



Social and economic value of protected areas in Western Australia

Department of Biodiversity, Conservation and Attractions

Acknowledgement of Country

Deloitte is a national firm and we acknowledge the Traditional Custodians of the lands, waters, seas of this Country, and pay our respect to the Elders past and present.

The Department of Biodiversity, Conservation and Attractions manages land and waters that Traditional Custodians have cared for over tens of thousands of years. For Traditional Custodians, the land has immeasurable value as a place of identity, language, nourishment, shelter, ceremony, trade and gathering.

We as a project team acknowledge this connection and recognise the deep wisdom that comes from an Aboriginal perspective on the value of our natural and cultural assets.

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Glossary

Term	Description
ARP	Aboriginal Ranger Program.
ATO	Aboriginal tourism operator.
DBCA	Department of Biodiversity, Conservation and Attractions.
DFES	Department of Fire and Emergency Services.
Economic contribution	Measures the value that an industry or organisation contributes to an economy in a given historical reference year. An economic contribution consists of value added and employment. Economic contributions include the direct economic contribution from the entity's operations and the indirect economic contribution from purchases made to local suppliers.
EKIP	Every Kid in a Park.
Existence value	The value that people place on the existence of a good or service, which is measured through contingent valuation approaches including Willingness to Pay (WTP) studies.
Experience value	The value of benefits that accrue from actual use of a good or service. The method used to estimate the experience value for this study is a travel cost methodology which is a revealed preference approach for quantifying use value.
FTE	Full-time equivalent.
GSP	Gross state product.
Induced tourism	Tourism that occurs specifically for the purpose of visiting a protected area. Induced tourism in this study was estimated through survey responses where visitors indicated that visiting parks was a reason for them taking their trip. This excludes visitors who would have taken a trip to the region, even if they were not able to visit a protected area.
MATES	Mentored Aboriginal Training and Employment Scheme.

Term	Description
NPV	Net present value.
Social asset value	The value derived from people who use a good or service directly or value the good or service despite not directly using that good or service. The social asset value for this study is the combination of the use value and existence value of a good or service for the local community over 30 years in present value terms.
Tourism contribution	Measures the value that additional spending by tourists contributes to a region in a given historical reference year. This expenditure occurs across a range of industries within the economy. Tourism contributions include the direct economic contribution from tourists' expenditure and the indirect economic contribution from purchases made to local suppliers to service this expenditure.
Travel cost	Travel costs include parking and fuel as well as the opportunity cost of their travel time is used as a proxy for the value they place on the parks. The travel costs incurred by visitors to the site are used to determine the value they place on visiting the parks.
UN SEEA	United Nations System of Environmental Economic Accounting.
Value added	The measure of an industry's or organisation's economic contribution to gross domestic product (GDP) at the national level, or gross state product (GSP) at the state level. Value added includes the gross operating surplus (GOS) which measures the return to capital owners, and labour income.
WAITOC	Western Australian Indigenous Tourism Operators Council.
Willingness to pay (WTP)	The maximum amount of money an individual is prepared to sacrifice for a particular good, experience or asset. In this study, willingness to pay was used to estimate the existence value of protected areas.



Executive summary

The economic and social contribution of Western Australia's protected areas

Western Australia's protected areas contributed \$2.4 billion in value added in the state in 2023-24, and supported 20,000 FTE jobs



Image source: Tourism WA



Protected areas attract millions of visitors each year

In 2023-24, protected areas in Western Australia received **24 million visits** across more than 400 parks.



Protected areas are a key tourism driver for Western Australia

Tourists from outside Western Australia generated **\$662 million in value added** for the Western Australian economy in 2023-24, supporting **5,600 FTE jobs**.



Travelling Western Australians support the diversification of regional economies

Western Australians **spent \$2.1 billion** visiting protected areas, contributing **\$1.4 billion in economic activity** and **12,600 FTE jobs**. **\$1.6 billion** of the visitor spend was from people travelling outside of their home region, helping to diversify local economies.



DBCA's management of parks supports significant economic activity

In 2023-24, DBCA contributed **\$353 million** to the GSP of Western Australia and **2,200 FTE jobs** through management and conservation of protected areas.



Protected areas are a key part of life in Western Australian

The social asset value of protected areas in Western Australia is estimated at **\$26.5 billion** in net present value terms over a 30-year period.



Protected areas provide critical ecosystems services and support biodiversity

A selection of marine ecosystems in protected areas in Western Australia support **\$1.8 billion** in ecosystem services measured in terms of carbon sequestration over 20 years.

Executive Summary

Protected areas are an inextricable component of Western Australia's uniquely outdoor lifestyle. Western Australia boasts a diverse and extensive network of protected areas that offers experiences for everyone.

Western Australia's protected areas form the largest conservation estate in Australia, covering 34 million hectares or 9.8% of the state's land area, along with 46% of its marine waters, managed by the Parks and Wildlife Service under the *Conservation and Land Management Act 1984*. The network includes over 400 parks, among them 122 national parks, 12 regional parks, 21 marine parks and 4 World Heritage sites.¹

Unique ecosystems and experiences

The state's protected areas span diverse and remote ecosystems, including rainforests, deserts, coral reefs, mangrove forests and coastal lands, and contain four World Heritage sites; Shark Bay Hamelin Pool, Purnululu National, Ningaloo Coast and Murujuga Cultural Landscape, which have been recognised for their national and international significance. These ecosystems support critically threatened species and protect culturally significant sites.

In 2023–24, Western Australian protected areas attracted over 24 million visits nationally, with the majority from intrastate and 26% from interstate and international tourists. Visitors engage in a wide range of recreational and nature-based activities, contributing to regional economies through spending on local services and garnering greater appreciation of the natural environment.

DBCA's role

The Department of Biodiversity, Conservation and Attractions (DBCA) manages Western Australia's protected areas under the Conservation and Land Management (CALM) Act 1984.

DBCA's mandate includes conserving biodiversity, culture and natural values, managing parks and reserves, enabling sustainable tourism and recreation, protecting communities from bushfire, and delivering scientific excellence.

Overtime, there is increasing recognition of the importance of both protected areas and the activities of DBCA for all Western Australians.

To develop a clear understanding of the worth and contribution of protected areas, this report explores its many sources of value – economic, social, cultural, scientific and ecological.

The analysis is informed by a bespoke survey, 470 Western Australians and 315 interstate residents, including visitors and non-visitors of protected areas, to understand how the protected areas are used and attitudes towards DBCA activities, alongside data provided by DBCA and numerous consultations with DBCA staff and external stakeholders.



24 million

visits to protected areas
in 2023-24.

Top reasons for visiting:



Sightseeing and
bushwalking



Relaxing and
having fun



To see and
appreciate wildlife
and nature

837,000

Visitors from
interstate and
overseas in
2023-24



\$968m

In induced
visitor spending
in 2023-24

Economic and tourism contribution

DBCA supports economic activity and employment in Western Australia through its direct operations and the role protected areas play in attracting visitors to the state. In 2023-24, protected areas attracted an estimated 830,000 additional visitors to Western Australia, 78% of which were interstate visitors (as opposed to international).

The role of the protected areas as visitor destinations and DBCA operations supported nearly \$2.4 billion economic activity in the Western Australian economy and 20,000 Full-Time Equivalent (FTE) roles in 2023-24. This economic activity and employment consists of:

- Almost \$353 million in economic activity and 2,200 FTE roles from **DBCA operations** and activity supported indirectly through purchases from Western Australian suppliers.
- Nearly \$662 million in economic activity and 5,600 FTEs attributable from the 830,000 **international and interstate tourists** to protected areas in 2023-24.
- Just over \$1.4 billion in economic activity and 12,600 FTEs from **intrastate visitors**, diversifying regional economies and distributing income around the state.

DBCA plays a central role in facilitating this activity, with **over \$9 of value added supported across the state for every \$1 of value added generated directly by DBCA.**

Social asset value

Western Australia's protected areas generate social value beyond conventional economic measures. This includes experience value from visitation and existence value held by non-visitors. These non-market values reflect the role of protected areas in preserving nature, supporting biodiversity, maintaining cultural connection and enabling recreation. Unlike economic contribution metrics tied to DBCA's contribution to State Accounts, these values capture broader societal benefits not reflected in standard market analysis.

The state's protected areas are a social asset for Western Australia. Our survey was used to estimate these values for protected areas. **Overall, the social asset value of protected areas is \$26.6 billion.** This represents the present value of the experience value and existence value over the next 30 years.

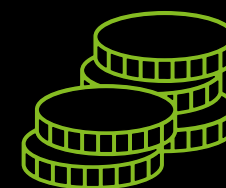
- The **experience value** represents the value that Western Australians derive from the 13.6 million visits to protected areas. This is estimated calculating travel costs alongside the individual's leisure time and totals \$861 million in 2023-24.
- The **existence value** of protected areas is estimated through a willingness to pay methodology. It reflects the intrinsic value residents place on protected areas and activities undertaken by DBCA, and totals \$281 million in 2023-24.

The role of DBCA conservation activities across the State, protecting biodiversity and supporting the continued existence of protected areas were the most important factors influencing Western Australian residents' existence value.

Protected areas supported

\$2.4 billion

in economic activity in 2023-24, both through DBCA operations and the role of protected areas as a tourist attraction



\$26.6 billion

in social asset value from protected areas



\$112.0 million

worth of carbon sequestered by DBCA-managed marine ecosystems in 2021

Aboriginal value

Aboriginal people have cared for Country in Western Australia for over 65,000 years. Protected areas remain vital to cultural identity, wellbeing and land stewardship.

Value extends beyond standard capital frameworks, requiring recognition of Cultural and Collective Capital to reflect Aboriginal perspectives.

Aboriginal Tourism Operators (ATOs) contribute \$55.1 million to Western Australia's GSP and 514 FTE jobs (2023–24), while enabling cultural preservation, education and reconciliation.² Visitor interest and participation is rising. ATOs empower communities, support connection to land and offer distinct, authentic tourism experiences. Empowering roles in land management and tourism strengthens cultural, environmental and economic outcomes for everyone.

Ecosystem services

Western Australia's protected areas deliver essential ecosystem services, including biodiversity conservation, carbon sequestration and cultural value.

DBCA plays a central role in habitat conservation, biodiversity protection and fire management as well. In 2023–24, it conducted prescribed burns across 101,632 hectares and managed bushfires across 4.58 million hectares. Fire research supports both ecological health and public safety. Partnerships with DFES, Traditional Owners and landholders strengthen integrated fire management. DBCA's work reflects strong community demand for conservation, with estimated public support for species protection exceeding \$411.8 million.

It is estimated that a selection of DBCA-managed marine ecosystems sequestered 1.6 million tonnes of carbon in 2021, valued at \$112.0 million. These figures reflect only a portion of the broader ecological and cultural value provided by protected areas.

Conclusion

Going forward, protected areas will require continued support and investment, both from the Government and the community, to continue to provide economic and social value of this scale to Western Australia.

\$246.6 million

worth of carbon sequestered by
DBCA-managed woodland ecosystems
in 2021



Aboriginal Tourism Operators
(ATOs) contribute

\$55.1 million

to Western Australia's GSP and 514 FTE
jobs (2023–24)³

01. Introduction



Introduction

Western Australia's protected areas comprise important and varied ecosystems, covering 10% of the state's landmass.

Introduction

Protected areas are an inextricable component of Western Australia's uniquely outdoor lifestyle. Western Australia boasts a diverse and extensive network of protected areas that offers unique experiences for everyone.

Western Australia's system of protected areas is the largest conservation estate of the Australian continent, making up 10% of the state's land area (or 34 million hectares). DBCA manages approximately 46% of Western Australia's total marine waters, and consisting of over 400 parks including, but not limited to:¹



122 national parks



12 regional parks



21 marine parks

This also includes four World Heritage sites; Shark Bay Hamelin Pool, Purnululu National, Ningaloo Coast, and Murujuga Cultural Landscape which have been recognised for their national and international significance. (See Figure 1.2).

Unique and varied ecosystems

Western Australia's protected areas are located in some of Western Australia's most remote areas and encompass a vast variety of ecosystems from ancient forests and expansive deserts to marine ecosystems and coastal lands. These ecosystems provide habitats to critically threatened species and preserve sites of cultural and spiritual importance, and include:

- **Terrestrial ecosystems** include rainforests, savanna woodland, grassland, shrubland, heathland, tall forests and woodland.
- **Marine ecosystems** include coral reefs, intertidal mangrove forests, seagrass beds, sandy beaches, coastal salt marshes, rocky shores, algal reefs and kelp forests.



Visitor experiences

The range of unique land and waterscapes attracted over 24 million visits in 2023-24 financial year to protected areas across Western Australia, with more than a quarter of these visits being from interstate or international visitors to Western Australia.

Whether it is to relax in nature, enjoy the beautiful natural scenery or to go on a thrill-seeking adventure, protected areas offer visitors a range of activities and programs. Some popular visitor activities are outlined in Figure 1.1.

While entry to many protected visitors is free, visitors to protected areas contribute to the local regional economies, creating jobs and economic opportunities through visitor spending on food, travel, tours and activities. Visitors to protected areas also gain an appreciation for the natural landscape.

Traditional Owners

For at least 65,000 years, Western Australia's protected areas have served as homes to Aboriginal communities and contain sites of significant Aboriginal heritage. These sites hold significant value to Aboriginal people for their social, spiritual, historical, scientific and aesthetic importance to Aboriginal culture – leading to the creation of extraordinary value for all Australians. For example, Murujuga Cultural Landscape has the densest known concentration of petroglyphs anywhere in the world, with an estimated 1-2 million petroglyphs recorded in an area of more than 100,000 hectares.

Figure 1.1: Activities available in protected areas



Source: DBCA Annual Report 2024

The Department of Biodiversity, Conservation and Attractions plays a significant role in managing WA's protected areas.

DBCA's role

Western Australia's protected areas are managed by the Parks and Wildlife Services under the Department of Biodiversity, Conservation and Attractions (DBCA), who operate within the Conservation and Land Management (CALM) Act 1984.

DBCA's mission includes the following:

- Manage Western Australia's parks, forests and reserves to conserve wildlife, provide sustainable recreation and tourism opportunities, protect communities and assets from bushfire and achieve other land, forest and wildlife management objectives.
- Inspire and act for wildlife conservation.
- Provide scientific excellence and deliver effective conservation of Western Australia's biodiversity.

DBCA plays a significant role and resources for the management of protected areas. This includes but is not limited to:



Parks and Visitor Services: works with the community and volunteers to facilitate public involvement, visitation and appreciation of the natural and cultural environment on lands and waters managed by the Department.



Conservation and Ecosystem Management: works across the department to develop and deliver strategies and programs contributing to the management of healthy and resilient ecosystems.



Regional and Fire Management: delivers frontline services on landscape scale conservation of biodiversity, protection of Aboriginal culture and heritage, threat mitigation, bushfire preparedness and response, visitor planning and visitor risk management.



Biodiversity and Conservation Science: coordinates and delivers science, providing biodiversity and science knowledge including animal science, marine science, ecosystem science, fire science, plant science and herbarium and rivers and estuaries science.



Nature-based Tourism: the Nature-based Tourism Division is the point of contact for departmental staff and the tourism industry to facilitate sustainable, nature and culture-based commercial tourism and attractions on national, marine and conservation parks and reserves managed by the Parks and Wildlife Service.

Figure 1.2: DBCA managed land and waters

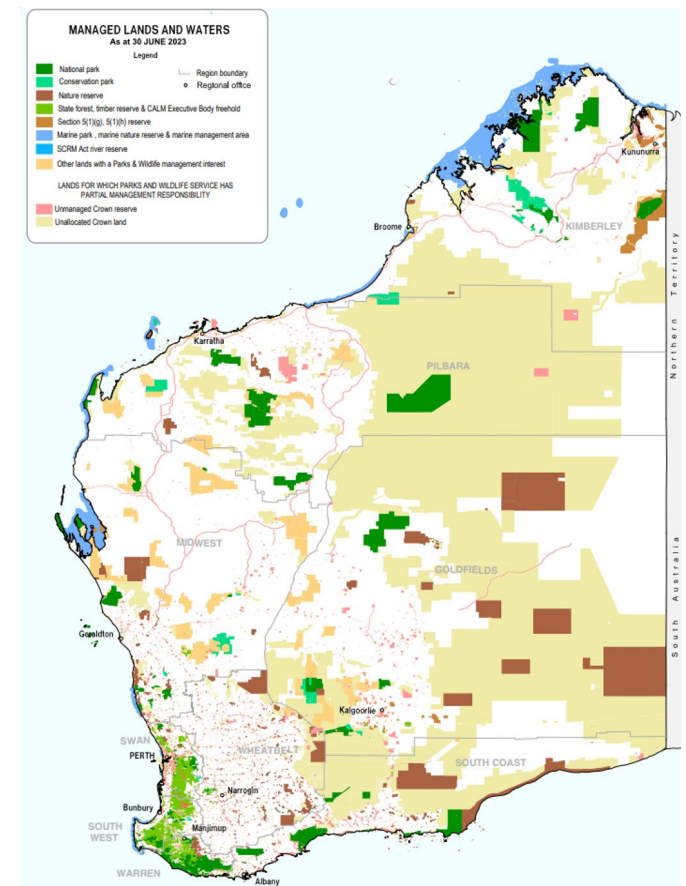


Image source: DBCA 2023-2024 Annual report.

Note: Since the creation of this map in 2023-2024, additional Joint Management Reserves have been created, which are not reflected in the image.

This report uses a variety of approaches to capture the holistic value of Western Australia’s protected areas.

This report

DBCA engaged Deloitte Access Economics to estimate the value of protected areas – specifically protected areas managed by Parks and Wildlife Services under the CALM Act 1984 to Western Australia and its economy. Acknowledging the vast and varied value of protected areas, this study uses a variety of approaches to capture the holistic value of protected areas to Western Australia. This report estimates the economic, social and environmental contribution of protected areas to the Western Australian economy in the 2023-2024 financial year. The report is structured as follows:

Chapter 2

Tourism and economic contribution:

The contribution to the Western Australian economy by DBCA through its operational activity in managing protected areas and tourists who come to experience Western Australia’s unique protected areas.

Chapter 3

Social value: The social value protected areas to Western Australians, including both the experience (or use) value and the existence value.

Chapter 4

Case studies: Case studies that showcase the transformative impact investment and maintenance of infrastructure within Western Australia’s protected areas can have on local regional economies.

Chapter 5

Aboriginal Value: A framework and case studies highlighting the value of protected areas to Aboriginal people and communities.

Chapter 6

Ecosystem services: Measuring the value of ecosystem services, including carbon sequestration to capture the economic benefits of DBCA-managed protected areas.

This report’s results are informed by various data sources, including:

- a bespoke data request to DBCA, including financial and operational expenses and sources of revenue, and data related to events, programs and community initiatives held in protected areas.
- a survey of 470 Western Australians and 315 interstate residents, including visitors and non-visitors of protected areas, providing insights into the use of protected areas, perceptions and attitudes towards protected areas and DBCA activities.
- consultations with key stakeholders, including DBCA staff, Western Australia Indigenous Tourism Operators Council, and a joint land management partner Yawuru.

Further information about the survey is available in Appendix A.



Image source: Tourism WA

02. Tourism and economic contribution



Image source: Tourism WA

02 Tourism contribution

Western Australia's protected areas attract millions of visitors each year

In 2023-24, there were over 24 million visits to Western Australia's protected areas. Visits were largely driven by **Western Australian residents, who made up almost 18 million, or 74%, of total visits**. Interstate travellers made up 19% of visits to protected areas, while international travellers accounted for the remaining 7% of visits (Chart 2.1).

Interstate and international visitors bring additional spending into Western Australia, much of which would not have otherwise occurred. This generates additional economic activity from the state's perspective.

Intrastate visitation to protected areas in Western Australia plays a vital role in diversifying regional economies by driving tourism beyond traditional urban centres. This expenditure helps to broaden the range of industries that regions are dependent on, sometimes reducing their reliance on other, less sustainable activity. In particular, visitor activity supports small businesses, creates local jobs, and strengthens the resilience of regional economies through diversification.

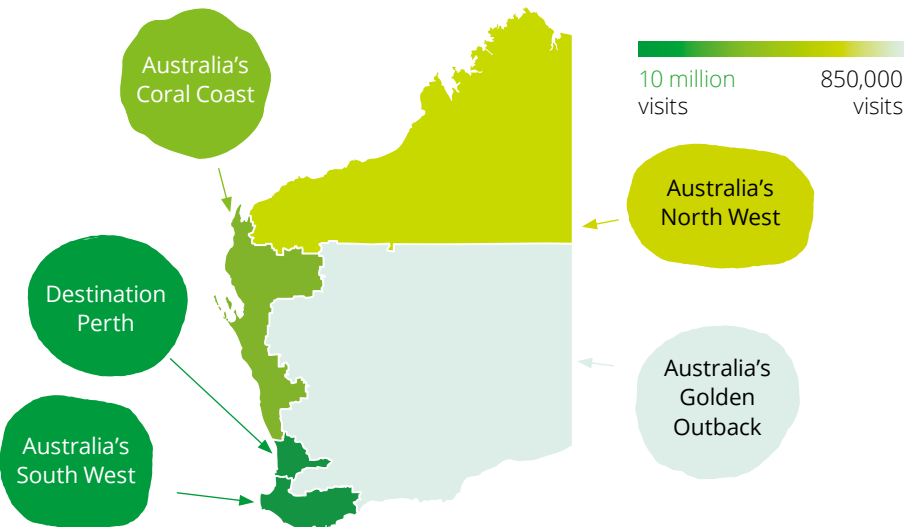
Leeuwin-Naturaliste National Park, which is a three-hour drive south of Perth, saw the most visits of all of WA's protected areas. The majority of visits occurred at parks in the Australia's South West and Destination Perth regions, highlighting the region's convenience and accessibility. Australia's Coral Coast (an area which includes Kalbarri and Ningaloo) also attracted a large number of visitors (Figure 2.1), attributable in large part to the iconic and world-class coral reefs and landscapes.

Chart 2.1: WA Protected Area visits by visitor type



Source: DBCA (2024)

Figure 2.1: Distribution of visits to protected areas by tourism region in 2023-24



Source: Deloitte Access Economics informed by data from DBCA (2024)

Tourism due to Western Australia’s protected areas contributed \$662 million to the Western Australian economy in 2023-24

Western Australia’s protected areas generate a significant amount of additional tourism activity for the state, with many visitors travelling to Western Australia for the specific purpose of visiting a protected area. In 2023-24, **protected areas attracted an estimated 830,000 additional visitors** to Western Australia, 78% of which were interstate visitors, with the remaining 22% from overseas.

Of those surveyed, **41%** of interstate visitors to Western Australia’s protected areas said that **visiting a protected area was the primary reason for their trip**. A further **51%** said it was one of several places they intended to visit on their trip.

This visitation resulted in **\$968 million in induced tourism expenditure in Western Australia** in 2023-24, which may have otherwise been spent outside of the state. This is comprised of **\$691 million in interstate tourism expenditure** and **\$277 million international tourism expenditure**.

This induced tourism expenditure is estimated to have generated **\$662 million in direct and indirect value added**, supporting **over 5,600 FTE jobs** in the state (Table 2.1).

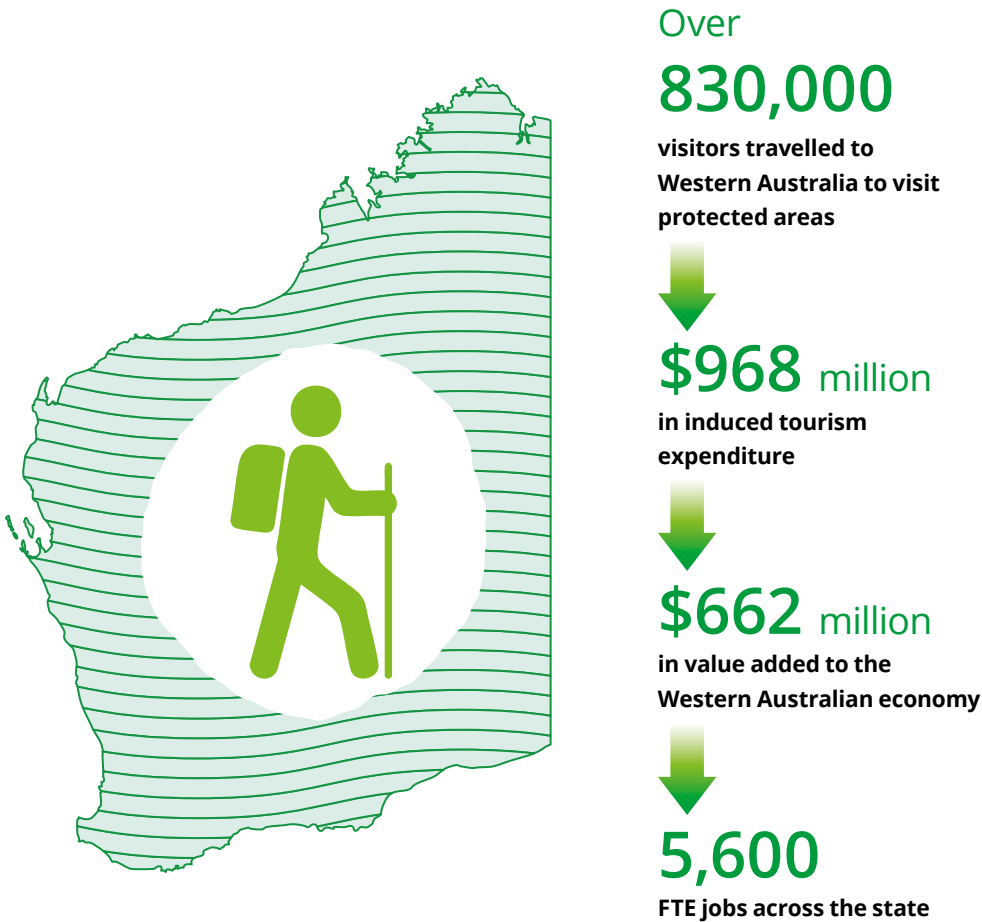
The majority (72%) of the total employment contribution is direct, reflecting that the tourism sector is generally made up of labour-intensive industries, such as hospitality, while indirect contributions generally arise in less labour-intensive industries such as manufacturing.

Table 2.1: Visitor contribution 2023-24

	Direct contribution	Indirect contribution	Total contribution
Value added (\$ millions)	\$337.1	\$324.8	\$661.9
Employment (FTEs)	4,043	1,596	5,639

Source: Deloitte Access Economics (2025)

Figure 2.2: Interstate and international tourism contribution, 2023-24



Source: Deloitte Access Economics (2025)

02 Intrastate visitation

Intrastate visitation generates significant economic value for regional communities in Western Australia

Western Australians are the key driver of visitation to Western Australia’s protected areas and support spending throughout the state. In 2023-24, it is estimated that **almost 2 million Western Australians visited a protected area**, equivalent to approximately two-thirds of the state’s entire population, based on total visits and survey data on the average number of visits per WA resident.

Western Australians spent **\$2.1 billion** in 2023-24 as part of visits to protected areas. This is comprised of spending on travel, accommodation, food and beverages as well as experiences within protected areas themselves. This expenditure is estimated to have generated **\$1.4 billion in value added** and **12,600 FTE jobs** for the Western Australian economy in 2023-24 (Table 2.2).

Intrastate visitation also plays an important role at a regional level in distributing income around the state and diversifying regional economies where visitor activity takes place, as residents spend their money in regions they do not usually reside in. In 2023-24, intrastate visitors spent an **additional \$1.7 billion visiting regions that they do not reside in** in order to visit protected areas. This included additional spending of:

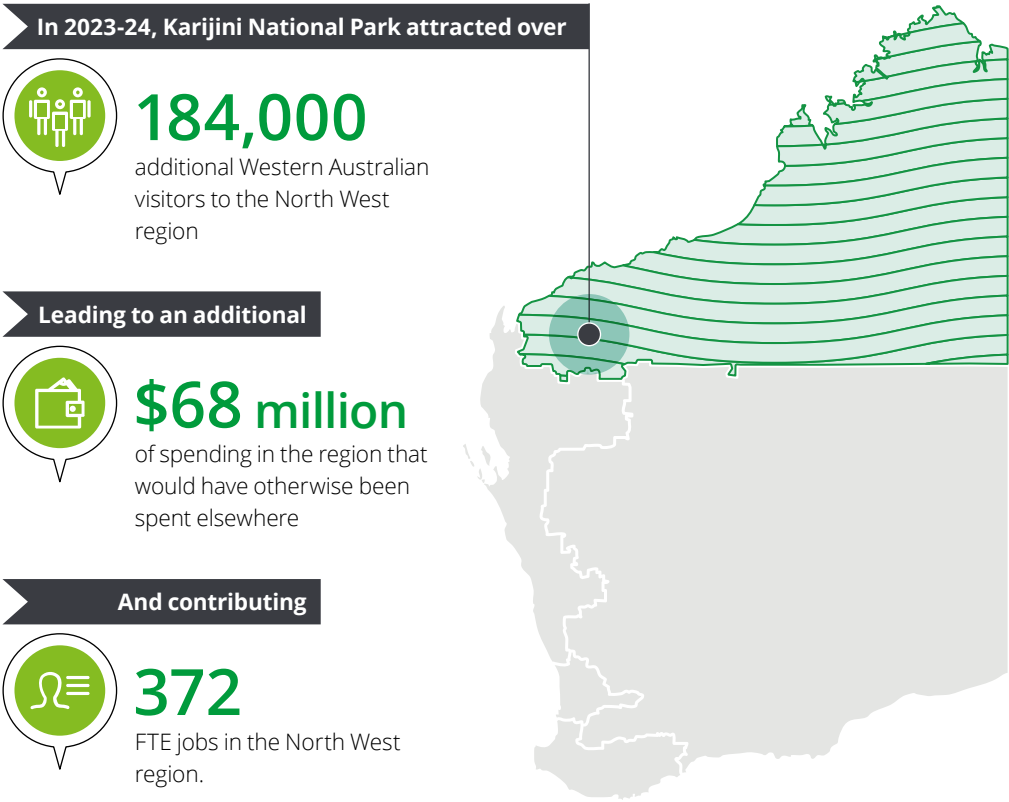
- \$1.2 billion in Australia’s South West
- \$149 million in Australia’s North West
- \$34 million in Destination Perth
- \$283 million in Australia’s Coral Coast
- \$72 million in Australia’s Golden Outback

Table 2.1: Visitor contribution 2023-24

	Direct contribution	Indirect contribution	Total contribution
Value added (\$ millions)	\$704.3	\$696.5	\$1,400.8
Employment (FTEs)	9,225	3,372	12,597

Source: Deloitte Access Economics (2025)

Figure 2.3: Intrastate visitor contribution from Karijini National Park and intrastate spend by region



Source: Deloitte Access Economics (2025)

02 Visitor experiences

Western Australia's protected areas offer truly unique experiences

Visitors come to Western Australia because of the unique natural environment and the array of opportunities to connect with nature across the state's range of protected areas.

Due to the remoteness of many of its national parks and protected areas, Western Australia provides visitors with unique opportunities to engage with nature, such as swimming with whale sharks at Ningaloo or visiting pristine coastlines, towering forests and ancient rock formations.

These unique experiences and authentic interactions with nature are crucial to driving visitation to Western Australia, particularly given the state's remoteness.

Since the COVID-19 pandemic, intrastate visits to protected areas have rebounded strongly, with overnight intrastate visits now higher than they were in 2019. DBCA staff attributed this to Western Australians having increased appreciation for Western Australia's natural assets, having explored their own state more during the pandemic. However, interstate and international visits have been slower to recover, with interstate overnight trips down 18% in 2024 from their 2019 level and international visits down 13% over the same period.¹

DBCA does not take a passive approach to visitation. A core focus is on delivering sustainable tourism outcomes by managing how and where people access protected areas. Staff describe an emphasis on providing and maintaining high-quality visitor experiences while actively minimising environmental degradation. Exposure to well-managed natural assets is also a key way to foster public care.

By experiencing nature first-hand, visitors are more likely to support conservation efforts.

“Western Australia's natural assets, including its beaches and coastline, pristine natural environments and unique natural sights are the main reason visitors choose to holiday in Western Australia.”

Tourism Western Australia

“No one will protect what they don't care about; and no one will care about what they have never experienced.”

David Attenborough

Image source: Tourism WA

Case study: Campground Hosts

The Campground Host Program is a volunteer initiative by DBCA and offers individuals the opportunity to support park rangers by assisting with visitor services and basic maintenance tasks in national parks and reserves.

Across 2023-24, **294 campground hosts volunteered across 53 campsites, an increase of 67% since 2012-13**. This growth over time is reflective of the positive experience and value realised by participating volunteers. These volunteers contributed over 142,000 hours of volunteering, **equivalent to 77 full-time workers** over a full year.

Almost **50% of campers were repeat visitors** to the park where they camped in 2023-24, further reflective of the positive visitor experience. Campground Hosts play a crucial role in this by greeting campers, providing information about local attractions and assisting with check-in procedures. They support DBCA staff with the upkeep of campground facilities and reporting maintenance or safety concerns.

Camping activity has grown significantly alongside shifting consumer preferences and travel behaviour following the COVID-19 pandemic, with **campground bookings increasing by 170% since 2018-19**. This highlights the growing importance of the support provided by campground hosts in facilitating quality camping experiences for Australians, as volunteers are vital to the continual operation, maintenance and conservation across campgrounds that are often in remote locations.

If it wasn't for campground hosts, we simply couldn't do our jobs. The commitment from our hosts volunteering their time ensures visitors receive a warm welcome to the campground and information about the park on arrival. Our campground hosts do an amazing job running the campground, making sure our guests have a place to stay and keeping amenities up to scratch. People appreciate great service wherever they go and national parks are no different.

Ranger Dan Peterson²



Image source: DBCA

02 Economic contribution

The management and maintenance of protected areas generates significant economic value for Western Australia

The activities of the DBCA in managing and conserving protected areas support economic activity across Western Australia. As previously outlined, this includes:

- 

Management of lands and water: backburning, weed management, rehabilitation of lands, forest management etc.
- 

Research and conservation: biodiversity, conservation, fire and social science. In 2023-24, DBCA employed 240 researchers, published 322 refereed papers, and collaborated on 95 projects with industry and the university sector.
- 

Tourism and recreation activities: Facilitating safe and sustainable visitation to protected areas through building and maintaining visitor infrastructure such as trails, footpaths and amenities etc.

The economic contribution of DBCA is **\$353 million** in value added across the Western Australian economy in 2023-24. DBCA also supported **2,200 FTE jobs** across the economy in this period (See Table 2.3).

This estimate includes the **direct contribution** of DBCA activities outlined above, which account for **\$261 million** in value added and **1,700 FTE jobs** across the organisation.

DBCA also **indirectly supports economic activity** through its purchases from Western Australian businesses. This includes paying for construction services for visitor infrastructure, leasing vehicles, scientific equipment, telecommunications, utilities and other services required by DBCA to deliver on its core services. These purchases supported **\$91 million** and **500 FTE jobs** across the WA economy.

Almost 75% of this contribution is directly contributed by DBCA, particularly through the labour income generated by a large and highly skilled workforce. The remaining 25% is attributable to flow-on effects through industry supply chains, such as in wholesale trade and professional, scientific, and technical services.



In addition to the economic contribution of DBCA, numerous businesses operate within protected areas. These businesses, such as tour operators, suppliers of recreational activities, restaurants, and cafes, benefit from the natural assets found in protected areas and DBCA's careful management of protected areas for attracting customers and commercial sustainability.



Image source: Tourism WA

Table 2.3: Economic contribution of DBCA, 2023-24

	Direct contribution	Indirect contribution	Total contribution
Total value added (millions)	\$261.1	\$91.4	352.5
Employment (FTEs)	1,677	532	2,209

Source: Deloitte Access Economics (2025)

02 Combined economic and tourism contribution

Western Australia's protected areas contributed over \$2.4 billion to the Western Australian economy in 2023-24, with associated employment of 1,680 full time equivalent jobs.

The combined economic contribution of protected areas to Western Australia includes contributions from induced tourism, intrastate visitation, and activity generated by DBCA's management of protected areas.

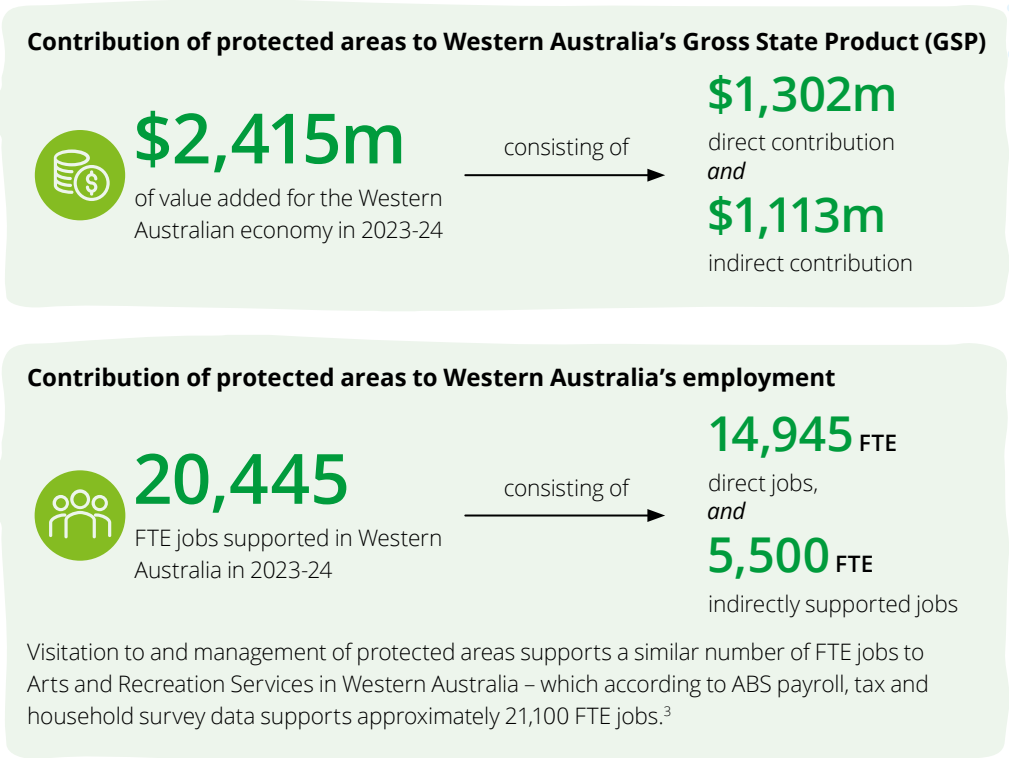
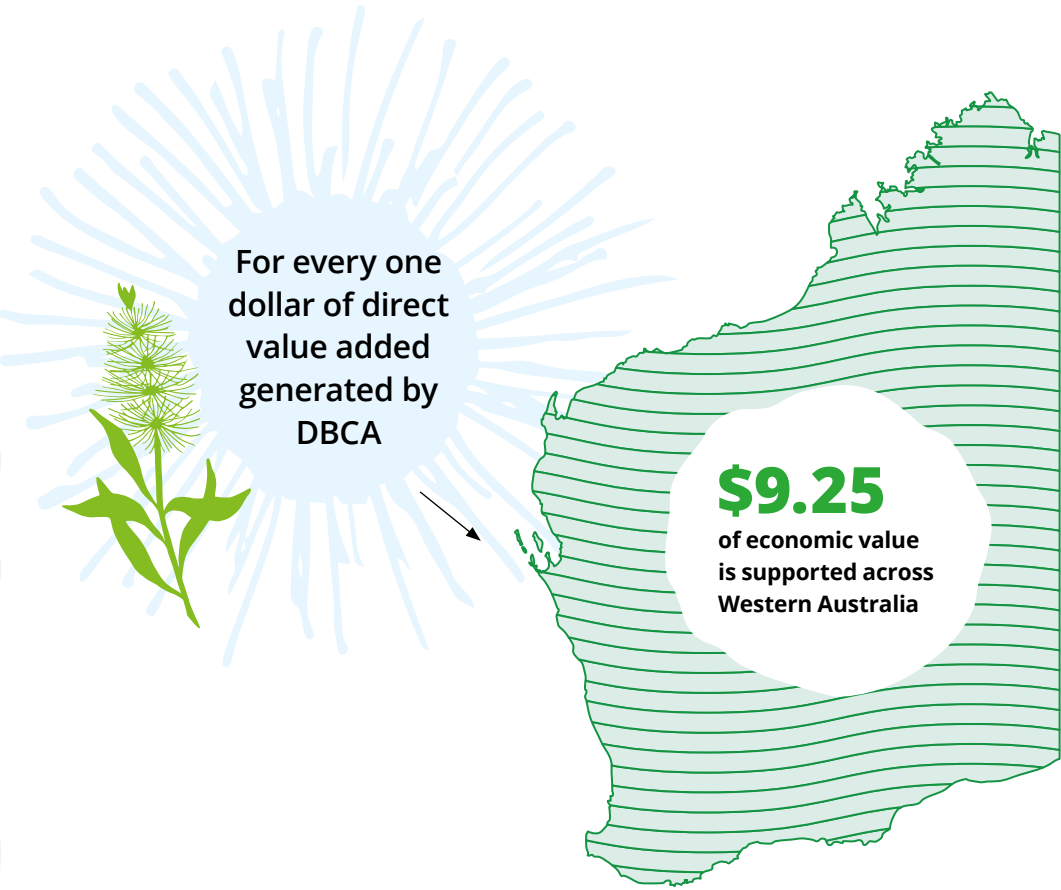


Figure 2.4: Indirect value added to WA



Source: Deloitte Access Economics (2025)



03. Social asset value

03 Social value of Western Australia's protected areas

Western Australia's protected areas are a significant social asset.

Social value overview

The value of Western Australia's protected areas goes beyond what is captured through conventional economic metrics. Their social value stems from their role in preserving the natural environment, supporting biodiversity, maintaining connection to Country, and enabling recreation, leisure and social connection.

These aspects fall outside the scope of standard market-based analysis, requiring alternative, non-market methods to estimate the broader social value of these places. For the purposes of this analysis, this includes:

- **Experience (or 'use') value:** the value Western Australians gain from visiting protected areas
- **Existence value:** the value placed on the continued existence of the protected areas, even by those who do not plan to visit

This form of valuation differs fundamentally from the economic contribution analysis in this report, which focuses on DBCA's contribution to the Western Australia State Accounts. It represents a wider conception of value and is not directly captured in DBCA's economic or tourism contribution.



Image source: Tourism WA

03 Social value of Western Australia's protected areas – Experience value

Visitors to Western Australia's protected areas derived \$861 million in experience value in 2023-24 – \$63 per visit.

Experience value

A survey of Western Australian and interstate residents was used to estimate the experience value of protected areas to the Western Australian community. Since access to these areas is mostly free, experience value has been calculated using the 'travel cost' method. This approach is based on the idea that visiting a site involves time and financial costs beyond any entry fee, and that individuals must value their visit at least as much as the cost of undertaking it.

Applying this method, **the experience value of protected areas is estimated to be \$861 million each year**. This reflects an estimated 13.6 million visits in 2024 year from Western Australian residents above 16 years of age, for an average experience value of \$63 for each visit.

Details on the use value methodology are available in Appendix D.



Image source: Tourism WA



Experience value

13.6 million

visits to protected areas from Western

Australians derived **\$861 million**

in experience value in 2023-24.

This experience value is made of both the time cost and travel cost associated with visits to protected areas...

Chart 3.1: Total experience value of Western Australia's protected areas

Travel Cost

Time Cost



The median travel cost reported was **\$14.76** per person and accounted for 30% of experience value on average.



The median cost of travel time was \$38.59 – representing 70% of experience value for the average visitor. Western Australians travelled a median of **1.7 hours** to visit a protected area, while the average travel time was **5.1 hours** – highlighting the diversity of distances visitors travelled.

Source: Deloitte Access Economics (2025)



Residents of Western Australia valued the existence of protected areas at \$281 million in 2023-24.

Existence value

The existence value reflects more than just the value of protected areas themselves. It encompasses the intrinsic value people place on the various scientific, cultural and educational activities DBCA undertakes as well as the management of protected areas. This research finds **the existence value for of Western Australia's protected areas is \$281 million, or \$145 per working age resident of Western Australia.**

Similarly to experience value, there is no market to determine the value of the existence of protected areas. A willingness-to-pay (WTP) method was used to determine the value people place on protected areas. To quantify this value, Western Australians were asked how much they would be willing to contribute in taxes to support the ongoing maintenance and preservation of protected areas, regardless of whether they visited a protected area.

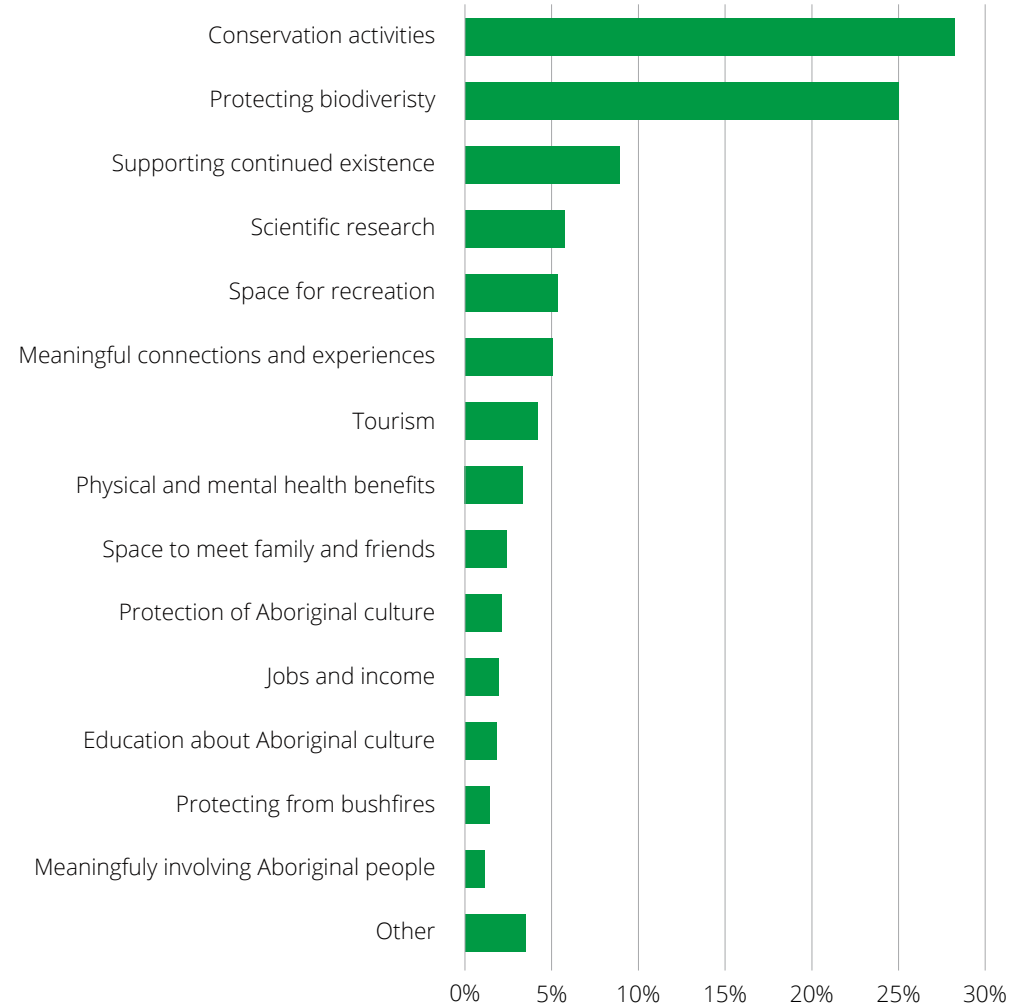
To estimate the existence value, only the WTP of individuals who had not visited a protected area was used. This approach isolates the value people place on the protected areas' existence, rather than capturing any experience (or use) value. In contrast, those who visit protected areas likely include both experience and existence values in their WTP. By excluding visitors, the analysis avoids overstating the non-use value and ensures that the estimate more accurately reflects the broader community's appreciation of protected areas beyond direct personal experience.

Details on the existence value methodology are available in Appendix D.



The existence value of protected areas was **\$281 million** for Western Australian residents in 2023-24

Chart 3.2: Top reasons why Western Australians value protected areas



Source: Deloitte Access Economics (2025)

03 Social value of Western Australia's protected areas – Total social asset value

Based upon the value generated for Western Australians, the total social asset value of Western Australia's protected areas is \$26.6 billion

The combined experience value and existence value suggests the total social value of Western Australia's protected areas is \$1.4 billion in 2023-24. This reflects the experience value of visitors to protected areas as well as the intrinsic existence value Western Australian residents derive from protected areas, supported by the conservation, management and research work undertaken by DBCA.

This annual value can be extrapolated to consider the total asset value of approximately \$26.6 billion to the Western Australian community over a 30-year period. This is driven by the experience value of protected areas which makes up approximately 76% of the total social value.

Appendix E provides further detail on methodology used to estimate the social asset value of protected areas.



Image source: Tourism WA

Chart 3.3: Total social asset value of Western Australia's protected areas



\$6.5 billion

of value for residents from the intrinsic **existence value** of protected areas, whether they visited or not

\$20 billion

of value for residents who visited protected areas, from **experiencing** the diverse areas

Western Australia's protected areas are worth
\$26.6 billion to the Western Australian community.

03 Benefits to the Community

The social value of Western Australia's protected areas means different things for everyone, demonstrated by the diverse reasons Western Australians reported for why they visited

Western Australians realise social value from Australia's protected areas through a number of different mechanisms.

Connecting with and enjoying the state's natural beauty is one of the main reasons Western Australians visit protected areas. Of all intrastate visitors, 49% reported sightseeing was one of the main reasons for their visit while wildlife viewing, photography and birdwatching (28%, 28% and 15% respectively) also featured as key reasons for visits.



49%

of visitors attend parks to see the sights



The average visitors comes with 3.9 other people

Protected areas also offer visitors **a unique place to connect with others** – the average visitor attends a protected area with 3.9 other people, and 24% of respondents said picnicking and barbecuing were a main reason for their visit. Protected areas are also an important source of leisure, with 57% of respondents reporting relaxing, fun and enjoyment was a main reason for their visit.

Visits to protected areas also give the community **an active space where they can prioritise their health**. Visitors said that bushwalking and hiking was one of the most common reasons to visit protected areas (50%) and a further nine per cent said fitness and health specifically was a reason. Furthermore; swimming, canoeing, cycling, mountain bike riding and rock climbing were all stated as reasons for park visits highlighting the diverse array of physical activities on offer.

These visits represent **a significant time investment** from visitors too. 40% of visitors stayed at least one night and 11% stayed four or more nights, demonstrating that, for many visitors, these visits are immensely valuable experiences.



40%

of visitors stay overnight, and 11% stay for four or more nights



Image source: Tourism WA

03 Benefits to the Community – Value of Volunteering

In the 2023-24 financial year, volunteers contributed \$40.1 million worth of their time to support protected areas.

Volunteers play an important role in Western Australia's protected areas. Their dedication, passion and commitment to the natural environment help sustain Western Australia's unique biodiversity, landscapes and cultural heritage. There are a wide range of volunteering opportunities in Western Australia's protected areas for the local community as well as organisations. Volunteering opportunities include campground hosting, animal and flora surveys, wildlife rehabilitation, animal surveys, clearing weeds and track, trail and park maintenance.

Numerous studies have cited the benefits of volunteering, for the **individual, community** and for the relevant **organisation**.

Values created for the individuals

Volunteers themselves also benefit, gaining a sense of fulfillment and purpose by contributing to important environmental and conservation efforts. Training and support offered by DBCA also allows volunteers to develop new skills, enhance their knowledge and build lasting friendships within a supportive community.

Value created for the community

Their efforts not only support conservation goals but also strengthen the connection between communities and the environment, fostering a collective sense of stewardship for future generations. The impact of these efforts is felt across Western Australia, including within local communities, which benefit from enhanced information, education, and management of local flora and fauna.

Value created for DBCA

Organisations benefit from volunteer contributions. Volunteers form an integral part of DBCA's day-to-day operations. Volunteers **enhance the existing assets offered by DBCA by helping maintain protected areas**. This includes assisting with the wildlife rehabilitation and track, trail and park maintenance.

According to DBCA program data, the 2023-24 financial year **7,102 active volunteers** contributed...



830,000 hours across



215 active projects, and contributed



\$40.1 million worth of volunteer time.



Track Care WA

Track Care WA was formed in November 1996 with the purpose of preserving the state's pioneering history along the Canning Stock Route. Since then, the group has evolved into a champion of bush heritage and environmental conservation and aims to ensure future generations can enjoy the bush.

In 2023-24, Track Care WA have volunteered over 1,000 hours within Wandoo National Park to clear fallen trees from tracks, remove dumped rubbish and in the process enjoy the distinct and ecologically diverse Wandoo forest. Volunteers checked and cleared over 208 km of track, and removed 349 obstructions.



Image source: Track Care WA

Case study: Every Kid in a Park

The Every Kid in a Park (EKIP) is an initiative by DBCA in partnership with Nature Play WA that encourages families with children of all abilities to explore and enjoy Western Australia's diverse natural environments. The program provides a suite of resources designed to make outdoor adventures more accessible, educational, and enjoyable for children and their families.

Encouraging children to get out and experience nature at a young age offers a wide range of health benefits for children and families. EKIP's education resources help children to develop an appreciation for the environment, something that will often stay with them for life.

Each month, EKIP highlights a **"Park of the Month"**, offering detailed information, photographs and resources to help families plan their visits. These resources include nature guides and social stories tailored to the featured park.



Image source: DBCA

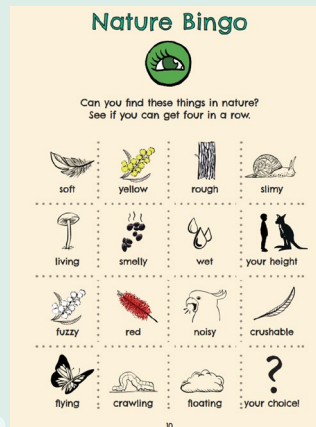


Image source: DBCA

The **"Every Kid in a Park activity booklet"** is a free, downloadable 24-page booklet filled with fun activities such as sensory games, mindfulness exercises, and conversation starters. The booklet is designed to be used before, during and after park visits to enhance children's engagement with nature. It helps children to engage with parks, encouraging them to pay attention to the sights and sounds of nature and learn about the various animals and plants around them.

The EKIP mobile app provides families with accessible resources, including audio guides, interactive maps, and virtual tours of various parks. The app is designed with features like audio recordings and image descriptions to cater to users of all abilities.

EKIP also provides activity sheets for kids and families to fill out during their park visits. These sheets include activities such as identifying sounds, recreating plant poses and creating stories using clouds as inspiration.

EKIP organises events at various parks, featuring activities that are designed to connect families with nature and cultural heritage in engaging ways.

A full-page underwater photograph. In the upper right, a diver in a purple wetsuit and black fins is swimming near the surface. The water is clear blue. Below the surface, a vast and diverse coral reef extends across the bottom. The reef features various types of coral, including large, flat, table-like corals and more complex, branching structures. The colors of the coral range from light tan and yellow to deep browns and greens. Small fish are visible swimming around the coral. The overall scene is bright and clear, showcasing a healthy marine ecosystem.

04. Regional Deep Dives

Image source: Tourism WA

04 Economic contribution of Ningaloo

Ningaloo Reef is a United Nations Educational, Scientific and Cultural Organisation (UNESCO) world heritage site and Australia’s largest fringing coral reef, located a 13 hours drive from Perth. The reef stretches over 260 km along the coast and is one of the few reefs in Australia located so close to land. The reef supports a rich diversity of marine life, including over 500 species of fish, 200 species of coral and 600 crustacean species. An estimated 300-500 whale sharks make their way to Ningaloo annually and many globally important and threatened mega marine life, including whales, dolphins, manta rays, dugongs, orcas, sharks and turtles can also be found in the reef’s area.

From a visitor’s perspective, Ningaloo offers an unparalleled marine experience, where you can swim directly from the beach into crystal-clear waters alongside the huge range of marine life. The reef’s unique accessibility as a fringing reef means visitors can experience world-class snorkelling and diving experiences without needing boats to travel far offshore.

The reef also drives significant economic activity in the coral coast region, primarily through four key channels:

- **Tourism expenditure** by international and interstate visitors to the Ningaloo region.
- **Intrastate visitation** by Western Australians from other regions travelling to visit Ningaloo.
- **Commercial fishing** in the Exmouth Gulf.
- **Management and research** relating to the reef.

In 2023-24 **Ningaloo contributed an estimated \$241 million** in value added to the Western Australian economy. **91% of this is attributed to tourism that occurs in the region surrounding Ningaloo**, as hundreds of thousands of intrastate, interstate and international tourists flock to Ningaloo each year, with this tourism activity largely contingent on Ningaloo’s unique existence. This visitation supported 1,351 FTE jobs in 2023-24.

Ningaloo is estimated to have **supported more than 1,450 total FTE jobs** in Western Australia in 2023-24.

Additionally, **commercial fishing at Ningaloo contributed \$10.5 million** to the Western Australia economy in 2023-24, while **management and research contributed a further \$4.5 million** in value added.

The contribution of economic activities related to the Reef is summarised in Table 4.1.



Image source: Tourism WA

Table 4.1: Economic contribution of Ningaloo Reef, 2023-24

	Economic expenditure (\$ millions)	Value added (\$ millions)	FTE employment
Tourism	\$128.1	\$89.8	792
Intrastate Visitation	\$90.5	\$61.9	559
Commercial Fishing	\$13.1	\$10.5	49
Management and research	\$9.8	\$4.5	53
Total	\$241.5	\$167.1	1,453

Source: Deloitte Access Economics (2025)

04 Kalbarri Skywalk

The Kalbarri National Park, located a 6-hour drive from Perth, is famous for its 80 km gorge, coastal cliffs and wildflowers. Kalbarri National park is renowned for its ecological diversity, with more than 800 species of wildflowers blooming from late winter through early summer.

Opened in June 2020, the Kalbarri Skywalk represents a \$24 million investment that consisted of two cantilevered platforms overlooking the Murchison Gorge, sealing 22km of national park roads and the upgrading of three visitor sites at the Skywalk, Z Bend and Meanarra Hill. Amenities available at the skywalk include a café – where visitors can purchase food and drink - shelters, toilets, parking and interpretation of cultural and natural values.

The Kalbarri Skywalk was a key attraction that drew visitors across Australia back to the area and reinvigorated the local economy in the wake of Cyclone Seroja in April 2021. The passing of Cyclone Seroja through the south of Kalbarri damaged 70% of buildings in the town and its accommodation, resulting in a steep fall in tourism as the Kalbarri township began to rebuild and recover.

The Kalbarri Skywalk draws in visitors from across Australia.



93% of interstate visitors said Kalbarri Skywalk was a reason for why they visited WA

Visitors are consistently satisfied with their Skywalk experience.



95% of visitors agreed or strongly agreed that they enjoyed their experience of the Kalbarri Skywalk

The Skywalk will continue to attract new visitors going forward.



55% of non-visitors said they are more likely to visit Kalbarri after learning about the Kalbarri Skywalk.



Image source: Tourism WA



443,000 visits in 2023-24.

\$13.3 million in attributable tourism spend in Australia's Coral Coast in 2023-24.



\$3.7 million in benefits for visitors.

\$95 million in benefits for local businesses and visitors over 10 years.



Over a five-year period, the Kalbarri Skywalk is projected to generate benefits amounting to 2 times its original construction cost.

*According to the 2021 ABS Census data, Kalbarri's population was 1,478.

**Informed by survey data on the share of visitors who indicated the Skywalk was a main reason for their visit to the region. The tourism spend was calculated using the same methodology as previous Tourism modelling, see Section 2.

***Consumer surplus was estimated as the difference between the median willingness to pay for entry measured through the survey and the actual cost of entry to the Skywalk.

^10 year forecast was estimated using Tourism Research Australia (TRA) 5-year average annual growth rate, and State Tourism Satellite Account data. Net present value was calculated using a discount rate of 7%.

Economic activity generated by the Skywalk

Each year, the Kalbarri Skywalk is enjoyed and visited by a significant number of tourists. In 2023-24, based on a combination of survey and DBCA visitation data, it was estimated that the Kalbarri Skywalk was visited **443,000** times, **300 times** greater than the population of Kalbarri.*

Visitors to the Kalbarri Skywalk spend money on food, beverages, tourism operators, and accommodation in the local area, supporting local employment and businesses. In the 2023-24 financial year, the interstate tourism spend in Australia's Coral Coast attributable to the Kalbarri Skywalk was **\$13.3 million**.** This is estimated to deliver **\$4 million** in economic benefits for local businesses measured in terms of producer surplus.

Visitors to the Kalbarri Skywalk enjoy a range of benefits, including breathtaking scenery, meaningful connections with nature and wildlife, and the opportunity to participate in engaging guided tours. These visitor benefits can be measured quantitatively as consumer surplus, which reflects their willingness to pay based on a hypothetical entry fee, as determined by survey data. It was estimated that in 2023-24, the consumer surplus among Western Australians who visited the Kalbarri Skywalk was equivalent to **\$3.7 million**.***

In terms of benefit for local businesses and visitors, this is equivalent to **\$7.7 million** in 2023-24. When projected over a 10 year period, this is equivalent to a net present value of **\$95 million**.^

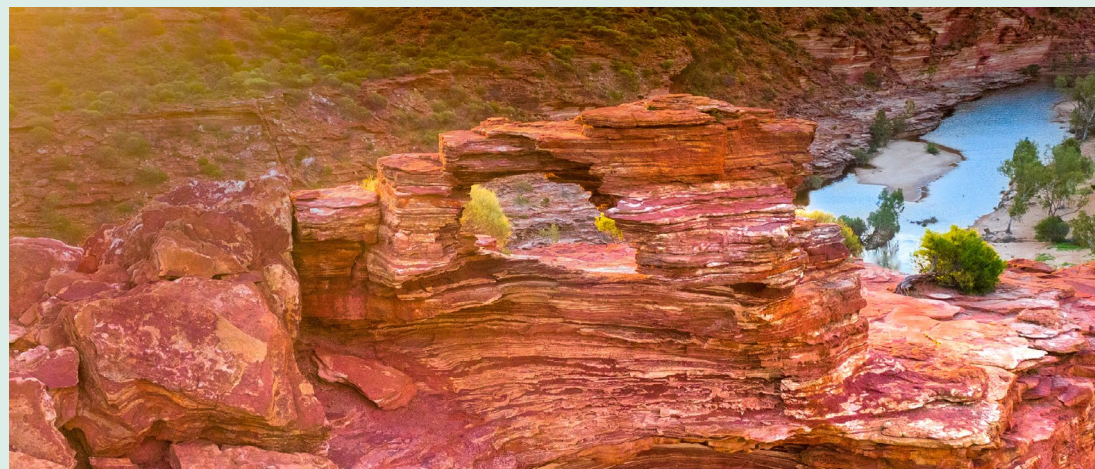


Image source: Tourism WA

04 Dwellingup Adventure Trails

For over 50 years, Dwellingup served as a major timber hub. In 1961, Dwellingup was destroyed by one of the worst bushfires in the history of Western Australia. Following the fires, the town was rebuilt, becoming a major centre for forestry, research, and management.

However, since the closure of the timber industry, Dwellingup was at risk of becoming a regional town in decline. Aware of this risk, DBCA, in partnership with the Shire of Murray and the Federal Government since 2019, has invested \$14 million transforming the historic township into a premier trail town enjoyed by thousands of visitors each year.

At the centre of this investment was new and upgrading existing mountain bike trails that make up Dwellingup Adventure Trails. Dwellingup Adventure Trails include the Turner Hill Circuit and the Murray Valley mountain bike trails in Lane Poole Reserve, offering visitors a range of adventure activities and facilities from tours, mountain bike and watercraft hire, outdoor retail, charters and accommodation.

To support the expected rise in visitors drawn in by the Adventure Trails, there has been significant investment in upgrading and constructing new infrastructure around the town for visitors to enjoy. This included a suspension bridge, upgraded roads, campgrounds, and walking trails in Lane Poole Reserve, as well as the construction of canoe facilities.

As the face of the town and trails, the Dwellingup Trails and Visitor Centre provides visitor information and has a café where visitors can purchase food and drink.

“Over the last 5 years what we’ve seen with the trail centre opening, skate park and a lot of work around the trails. There are a few new businesses opening up on the main street. Anecdotally on the weekends, you hear quite regularly that Dwellingup is quite literally humming and the café is full.”

Stuart Harrison, Project Coordinator Capital Works



Image source: DBCA/Flow MTB



169,200 visits in 2023-24.

\$3.7 million in attributable tourism spend in Australia's South West in 2023-24.



\$3.0 million in benefits for visitors.

\$48 million in benefits for local businesses and visitors over 10 years.



Over a ten-year period, the Adventure Trails is projected to generate benefits amounting to 3 times the capital investment from 2019-20 to 2025-26.

Economic activity generated by the Adventure Trails

Dwellingup Adventure Trails is central to the township's economic activity, attracting an estimated **169,230** visitors each year to the region.*

The Adventure Trails contribute significantly to the local economy by driving visitor spending on food, beverages, and accommodation. In the 2023-24 financial year, interstate tourism expenditure in Australia's South West attributed to the Adventure Trails reached **\$3.7 million**.** This is estimated to deliver **\$950,000** in economic benefits for local businesses measured in terms of producer surplus.

Western Australians experience significant personal value from visiting the Adventure Trails. Visitors derive significant enjoyment from the thrilling mountain bike tracks and 4WD tracks. This visitor benefit can be measured quantitatively through consumer surplus, which reflects their willingness to pay through a hypothetical entry fee, as determined through survey data. It was estimated that the consumer surplus generated by Western Australians who visited the Adventure Trails in the 2023-24 financial year was equivalent to **\$3.0 million**.

When estimated over 10 years, the total net present value of these to visitors and local businesses was estimated to be **\$48 million**.***



96% of survey respondents agreed or strongly agreed that they enjoyed their experience of the Dwellingup Adventure Trails



62% of survey respondents said the Adventure Trails was the reason why they visited Lane Poole and Dwellingup Reserves

*Estimated based on survey data on the share of visitors who indicated that the Adventure trail was a main reason for visiting the region and visitation data provided by DBCA.

**Tourism spend calculated using the same methodology as previous Tourism modelling, see Section 2 Tourism and Economic.

***10 year forecast was estimated using Tourism Research Australia (TRA) 5-year average annual growth rate, and State Tourism Satellite Account data. Net present value was calculated using a discount rate of 7%.

05. Aboriginal value

A man and a young girl are sitting on the ground in a natural, bushy environment. The man, on the left, is playing a long, dark wooden didgeridoo. He is wearing a light-colored short-sleeved shirt with a logo that says "ECO ADVENTURES" and dark shorts. The girl, on the right, is holding a mirla (a small wooden instrument) and looking towards the man. In the foreground, there is a bright, orange campfire. The background shows dry, scrubby vegetation and a clear sky.

05 Aboriginal value

Aboriginal people have a deep connection with the land and play a crucial role in caring for protected areas.

For tens of thousands of years, Aboriginal people lived and thrived on the land across Western Australia. To this day, protected areas in Western Australia hold immense value for Aboriginal people, serving as vital spaces for maintaining and strengthening cultural identity, spiritual connection and traditional knowledge.

Connection to Country and health of the land are central to the wellbeing of Aboriginal people and their connection to culture. Ensuring the appropriate infrastructure to protect Country is in place is vital. But this benefit is not just for Aboriginal people – it is for the betterment of Country, wellbeing and society.

To understand the true value of protected areas using Indigenous conceptions of value requires us to broaden our standard economic toolset. Deloitte Access Economics draws on the groundbreaking work of Professor Deen Sanders OAM (A Worimi Man, and Special Economic Counsel) to consider an expanded seven capitals framework, rather than the standard five. The traditional five capitals (produced, financial, human, natural and social capital) are the framework by which mainstream organisations typically value and assess wellbeing. They provide a basis for understanding sustainability in terms of the economic concept of wealth creation or 'capital'.

However, these capitals do not adequately capture the full potential and wealth creation value of complex systems, such as cultural landscapes and Aboriginal people and economy. Two other capitals are thereby introduced:

- **Cultural Capital:** shared knowledge, customs and relationships which affect how growth is generated.
- **Collective Capital:** the system-wide benefits associated with access to and ownership of the means of production; reflecting that a community's self-determination over its resources can multiply returns.

This report does not consider that expanded perspective but does encourage analysis of the crucial role that Aboriginal people, organisations and Country plays in economic impact. It does this by highlighting the tourism impact of Aboriginal Tourism Operators (ATOs) and their role in educating visitors about Aboriginal culture. Two case studies explore programs that provide pathways for Aboriginal people to work on Country and care for the land. The report also examines opportunities that ensure opportunities exist for Aboriginal people to be empowered in caring for Country.



Image source: DBCA

Aboriginal tourism businesses support awareness of culture and cultural preservation.

Aboriginal tourism operators (ATOs) in Western Australia play a vital role in both the state's tourism industry and the broader process of cultural recognition and reconciliation. As custodians of the world's oldest living culture, ATOs offer authentic, immersive experiences that allow visitors to engage directly with Aboriginal heritage, traditions, and storytelling. Their activities set Western Australia apart as a unique destination, where visitors can not only witness stunning landscapes but also gain deeper insights into Aboriginal connections to land ("Country"), history, and contemporary cultural practices.

Aboriginal based tourism is an important tool in preserving Aboriginal culture as it allows communities to practice culture, as well as improving the knowledge of visitors, developing their appreciation for culture, having experienced it more authentically.

Collaborations with government bodies and the tourism sector - guided by action plans like the Jina: Western Australian Aboriginal Tourism Action Plan¹ - aim to further embed these cultural experiences within mainstream tourism, promoting sustainable growth and regional dispersal of visitors.

Engagement with Aboriginal tourism experiences in Western Australia is growing. In 2023-24, **87% of visitors to Western Australia indicated an interest in Aboriginal tourism, while 36% of visitors participated in Aboriginal tourism** (up from 17% in 2019-20). In 2023-24, Aboriginal tourism businesses contributed \$55.1 million to Western Australia's GSP and 514 FTE jobs.²

The importance of Aboriginal tourism operators extends far beyond economic contributions - though these are significant. Aboriginal tourism enterprises foster community empowerment and skill development, allowing Aboriginal families to remain on Country and nourishing ongoing connections to traditional lands.

Organisations such as the Western Australian Indigenous Tourism Operators Council (WAITOC) support the growth, visibility, and sustainability of these businesses, while advocating for greater representation and participation within the industry. Furthermore, the sharing of stories and experiences by Aboriginal operators strengthens historical awareness and promotes intercultural understanding, leaving lasting impacts on both local communities and visitors from around the world.



Image source: Tourism WA

Case study: Aboriginal Ranger Program

The Aboriginal Ranger Program (ARP) is administered by the DBCA and delivers jobs, training and community development opportunities for Aboriginal people across a range of areas in regional and remote communities across Western Australia. The program began in 2017, with \$20 million invested into 35 ranger programs with 28 partner organisations. To date, the program has had over \$100 million of spending allocated in total through State Government investment. In 2025, the WA Government committed to a further four-year, \$69.5 million extension of the ARP out to 2029-30, including a \$20 million Election Commitment combined with Royalties for Regions funding, reflecting a strong commitment to its continued success.

The ARP provides a wide range of social and economic benefits, including meaningful employment, education and training, empowering people and community, gender equality, mental health and wellbeing, engaging with schools and communities and building partnerships. In 2023-24, funding provided an addition 164 full-time equivalent positions in ranger programs.

“Research shows that for every \$1 invested in the Aboriginal Ranger Program, approximately \$3 worth of social, economic, cultural, and environmental value is created.”

Environment Minister Reece Whitby

Rangers undertake diverse land and sea management activities, including biodiversity monitoring, fire management, cultural heritage protection, and eco-tourism. Examples of the ARP in action include:

1. Karajarri-Ngurrara Desert Fire and Biodiversity Project

This initiative involves the Karajarri Rangers from Bidyadanga and the Ngurrara Rangers from Fitzroy Crossing. Together, they manage over 110,000 square kilometres of the Great Sandy Desert, focusing on traditional fire management practices to enhance biodiversity and cultural heritage.

By implementing controlled burns, they aim to reduce the risk of large-scale wildfires and support the regeneration of native flora and fauna. This collaborative effort not only preserves the ecological integrity of the desert but also reinforces traditional knowledge and community engagement.

2. Dampier Peninsula Women Rangers – Monsoon Vine Thicket Recovery Program

Comprising the Nyul Nyul Rangers from Beagle Bay and the Bardi Jawi Oorany Rangers from Ardyaloon, this all-female team is dedicated to the conservation of the monsoon vine thickets on the Dampier Peninsula. These thickets are ecologically significant and culturally sacred.

The rangers employ prescribed burning techniques to mitigate the impact of intense late dry season fires, control invasive species, and protect these vulnerable ecosystems. Their work exemplifies the integration of cultural practices with contemporary conservation methods.



Image source: DBCA

Case study: MATES

The Mentored Aboriginal Training and Employment Scheme (MATES) aims to provide Aboriginal people with mentored employment and training opportunities in conservation and land management, primarily in regional areas of Western Australia.

Participants engage in various activities, including prescribed burning, bushfire suppression, flora and fauna protection, infrastructure maintenance, and supporting tourism and recreational services within protected areas.

In my first few months, I got shown around to all the parks and sites. I even got put on a trip to do some floral surveys.

Kurt Wright, MATES Graduate

As of November 2024, there were 40 trainees enrolled in the scheme. **In 2025, 19 trainees completed a certificate in Conservation and Ecosystem Management, the largest graduating group in the 22-year history of the program.**

The program emphasises on-the-job learning, mentorship, and cultural engagement, contributing to the conservation of Western Australia's natural heritage while fostering Aboriginal employment and capacity building.

I think the job I got really helped me flourish as a person. I've done a lot of training courses over the four years with pretty much anything that I wanted to learn or had an interest in. It's a really great stepping stone.

Kailah Robson, MATES Training Support Officer



Image source: DBCA

05 Aboriginal Value

Aboriginal people play a crucial role in managing and sustaining protected areas.

The department continues to focus on developing successful and ongoing joint management partnerships with Traditional Owners and engage with Aboriginal people to facilitate opportunities to access and care for Country to protect, promote and conserve Aboriginal cultural heritage.

In 2023-24, DBCA had 24 joint management arrangements with Aboriginal organisations across the state, covering 8.8 million hectares of parks and reserves, which equate to 31% of Parks and Wildlife Service managed estate.

Aboriginal community representatives engaged through this research identified several opportunities to further strengthen the role of Aboriginal people and communities in managing and operating land within protected areas. These opportunities reflect ways to enhance cultural, environmental, and economic outcomes for both Aboriginal communities and Western Australia more broadly:

- **Support businesses to be Aboriginal-run** – Supporting more Aboriginal-led tourism organisations to establish and operate on Country may create pathways for economic development, cultural exchange, and stewardship of land.
- **Support the promotion of cultural practices and protocols** – Increasing awareness and respect for cultural protocols and traditional land care practices among all tourism operators and visitors can support responsible tourism and help safeguard Country.
- **Continue to leverage partnership with WAITOC** – WAITOC continues to play a valuable role in mentoring Aboriginal tourism operators, advocating for Aboriginal-led initiatives, and fostering partnerships across the sector.
- **Supporting infrastructure that protects sacred sites** – Infrastructure such as signage, fencing, visitor facilities, and access controls can help protect sacred sites while providing educational opportunities about Aboriginal culture and heritage.

These opportunities highlight the importance of ongoing collaboration with Aboriginal communities to ensure that protected areas continue to deliver cultural, environmental, and economic benefits for generations to come.



Image source: Tourism WA

06. Ecosystems services

06 Ecosystem services

The UN SEEA Ecosystem Accounting Snapshot framework captures the environmental value of ecosystem services.

The many ecosystems within protected areas in Western Australia are critical for conserving biodiversity, supporting cultural values, and providing essential services like carbon sequestration and habitat preservation. These ecosystems maintain environmental health and contribute to sustainable economic outcomes.

Traditional economic thinking has typically thought of land as an input to production, but increasingly, there is a need to recognise the broader value that having a broad range of ecosystems provides. By integrating ecological values through frameworks such as the United Nations System of Environmental-Economic Accounting Framework (SEEA), it allows for more informed decision making that balances economic growth with long-term environmental sustainability.

The SEEA framework was adopted by the UN Statistical Commission in 2012. The global statistical framework is used in more than 34 countries, and its applicability is being increasingly explored in additional countries. The SEEA organises and links ecological data such as habitat extent, condition, and biodiversity with measuring social and economic value.¹

Australia has increased its implementation of the SEEA framework, applying it across a variety of sectors and regions to integrate environmental and economic data. The Australian Bureau of Statistics has developed several environmental-economic accounts aligned with the SEEA framework covering water, energy, waste and land.^{2,3}

In 2018, the Western Australian Government, along with all other state and territory Governments agreed, on a strategy and action plan to implement Environmental-Economic Accounting (EEA) across Australia to better integrate environmental data into wider economic decision-making.⁴

As part of this report, this framework has been applied to two specific case studies: carbon sequestration in DBCA-managed marine protected areas and the Great Western Woodlands. These case studies are intended to be illustrative and do not capture the full extent of all ecosystem services or protected areas in Western Australia.

UN SEEA Ecosystem Accounting Snapshot



Ecosystem extend accounts (physical)

Tracks coverage and change in area of ecosystems over time.



Ecosystem condition accounts (physical)

Measures health and integrity of ecosystems over time.



Ecosystem services flow accounts (physical)

Records amount and use of services ecosystems provide (e.g., carbon sequestration).



Ecosystem service flow accounts (monetary)

Quantifies ecosystem benefits (e.g., water, air, climate).



Ecosystem asset accounts (monetary)

Values ecosystem assets and their change in stocks due to action.

Source: United Nations, System of Environmental Economic Accounting, <<https://seea.un.org/ecosystem-accounting>>

06 SEEA Framework Worked Example

Carbon sequestration in DBCA-managed marine protected areas was valued at \$112.0 million in 2021.

Western Australia's diverse marine ecosystems including saltmarsh, seagrass, and mangroves, provide uniquely important ecosystem services. Unlike most land-based ecosystems, these "blue carbon" habitats store carbon in both vegetation and deep, waterlogged soils where it can remain for centuries. Mangroves and saltmarshes capture carbon from the air and tidal waters, while dense seagrass beds trap sediment and organic matter, enhancing storage.⁵

These key ecosystems deliver significant ecosystem service benefits by supporting marine biodiversity, protecting coastlines, and improving water quality. The ecosystems services benefits associated with carbon sequestration can be quantified in this context using the SEEA Framework.

In 2021, an estimated **171,795 hectares of these DBCA managed waters sequestered around 1.6 million tonnes of carbon**.^{*} Applying a social cost of carbon at \$71, based on Australian policy guidance, the estimated annual value of carbon sequestration equates to approximately **\$112.0 million** in 2021 dollars.⁶

If we consider this annual sequestration over a 20-year timeframe, **this equates to a benefit of \$1.8 billion in Net Present Value (NPV) terms** using a 3% discount rate. This estimate assumes that environmental quality and ecosystem condition remains stable over the valuation period.

Importantly, this estimate captures only one measure of ecosystem services from a limited set of marine ecosystems. The total value of Western Australia's marine protected areas would be significantly higher when accounting for a full range of ecological, cultural and economic benefits they provide.

^{*} The total area of these ecosystems in Western Australia is 371,656 hectares, as per national ocean account experimental estimates ABS data. Given DBCA managed waters account for approximately 46% of Western Australia's total marine waters, it was estimated that DBCA manages 171,795 hectares of these ecosystems.

Table 6.1: SEEA framework worked example – Western Australia Marine Protected Areas

Accounting component	Ecosystem	Measurement	Value
Extent accounts (Total WA)	Saltmarsh (WA)	Area of the ecosystem	55,055 ha
	Seagrass (WA)		89,522 ha
	Mangroves (WA)		227,079 ha
Extent accounts (DBCA Protected Area)	Saltmarsh (DBCA)	Area of the ecosystem	25,449 ha
	Seagrass (DBCA)		41,381 ha
	Mangroves (DBCA)		104,966 ha
Condition	Saltmarsh	Change in area of canopy cover [*]	NA
	Seagrass		NA
	Mangroves (hectares)		+5.7% (in terms of ha) from 1988-2021
Flow (physical)	Saltmarsh	Annual sequestration	293,157tCO ₂ e
	Seagrass		511,556tCO ₂ e
	Mangroves		772,514tCO ₂ e
Flow (monetary)	Saltmarsh	Value in 2021 dollars	\$20.8m
	Seagrass		\$36.3m
	Mangroves		\$54.9m
Asset (monetary)	Total	NPV over 20yrs	\$1.8b

Source: Deloitte Access Economics (2025).

^{*} Change in canopy cover is considered a measure of condition as it reflects shifts in vegetation health and density.

The Great Western Woodlands provide significant environmental and economic value.

The Great Western Woodlands span approximately 16 million hectares in southern Western Australia. It consists of diverse ecosystems which provide important ecosystem services, supporting biodiversity, regulating climate, and storing carbon. The ecosystem service benefits associated with carbon sequestration can again be quantified using the SEEA framework.⁷

The landscape comprises a mix of ecosystems including eucalypt woodlands, mallee, and shrublands. It is estimated DBCA manages **1.5 million hectares of these ecosystems, which sequester approximately 3.5 million tonnes of carbon annually**.^{8, 9, *}

Applying a social cost of carbon at \$71 per tonne, **the annual value of carbon sequestration across these managed ecosystems is estimated to be \$246.6 million**.^{10, **}

If we consider this annual sequestration over a 20-year timeframe, **this equates to a benefit of \$3.9 billion in Net Present Value (NPV)** terms using a 3% discount rate. This estimate assumes that environmental quality and ecosystem condition remains stable over the valuation period.

Eucalypt woodlands and mallee formations are significant carbon stores, capturing carbon in both living biomass and soil. These ecosystems capture carbon dioxide through growth, accumulating substantial amounts of carbon over decades, supporting biodiversity and ecosystem resilience.^{11, 12}

However, data on the extent of other ecosystems remains limited, this is a common issue in large remote landscapes due to inconsistent mapping methods and gaps in long-term ecological monitoring.¹³

Importantly, this estimate also captures only one measure of ecosystem services from a limited set of ecosystems.

* The total area of these ecosystems in the Great Western Woodlands is 14 million hectares, as per state Government estimates. Given managed/conserved areas account for approximately 13% of the Great Western Woodlands, it was estimated the DBCA and other Government departments manage/conserves roughly 1.5 million hectares of these ecosystems. ** This figure may vary depending on eucalypt woodland age; if younger woodlands with higher sequestration rates are assumed, the total annual value could reach up to \$1.5 billion, with a 20-year NPV of \$23.7 billion. ^Map created using shapefile data from the ABS (Digital boundary files, 2021) and Raiter (2017)

Table 6.2: SEEA framework worked example – DBCA managed Great Western Australia Woodlands

Accounting component	Ecosystem	Measurement	Value
Extent accounts (Total WA)	Eucalypt Woodlands (WA)	Area of the ecosystem	9,000,000 ha
	Mallee (WA)		2,300,000 ha
Extent accounts (DBCA Protected Areas)	Eucalypt Woodlands (DBCA)	Area of the ecosystem	1,170,000 ha
	Mallee (DBCA)		299,000 ha
Condition	Eucalypt Woodlands	Change in area of canopy cover*	NA
	Mallee		NA
Flow (physical)	Eucalypt Woodlands	Annual sequestration	2,340,000 tCO ₂ e
	Mallee		1,133,210 tCO ₂ e
Flow (monetary)	Eucalypt Woodlands	Value in 2021 dollars	\$166.1m
	Mallee		\$80.5m
Asset (monetary)	Total	NPV over 20yrs	\$3.9b

Source: Deloitte Access Economics (2025).* Change in canopy cover is considered a measure of condition as it reflects shifts in vegetation health and density.

06 Habitat Preservation

Protected areas are crucial in the preservation and conservation of ecosystems in Western Australia.

In the context of the SEEA framework, habitat preservation refers to the protection and maintenance of ecosystems in a way that supports their extent, condition, and services they provide over time. It ensures that protected areas retain ecological integrity, enabling continued biodiversity support, carbon sequestration, water regulation, and recreational value.

Protected areas play a significant role in the preservation and conservation of ecosystems in Western Australia, including native wildlife. DBCA's commitment to conservation through the management of protected areas is reflected through community partnerships and education, scientific research and monitoring and direct conservation work.¹⁴



Community Partnerships and Education: The DBCA runs education programs and supports community partnerships that promote environmental awareness and conservation. This includes work with schools, research organisations, and Aboriginal groups.



Scientific Research and Monitoring: The DBCA undertakes a range of scientific research and monitoring programs to support preservation and conservation efforts. Activities span forest health monitoring and studying coastal ecosystems to better protect marine life and habitats.



Biodiversity Conservation: The DBCA leads biodiversity conservation efforts across Western Australia, managing threats to over 250 animal species and 444 plant species listed as threatened. Through recovery plans covering more than 70% of critically endangered species, threat management, and initiatives like the Feral Cat strategy, it works to preserve ecological integrity and meet community support for conservation.¹⁵

Community Support for Conservation

A previous study in NSW found that the Willingness to pay to preserve a protected species was **\$183.6** per adult person.¹⁶ This represents the intrinsic value to the population of preserving protected species. This value can be multiplied by the total adult population of Western Australia to estimate the broader social value of species preservation, yielding an approximate total of **\$411.8 million in 2024 dollars**.¹⁷



Image source: Tourism Australia

06 Fire science

Fire science and management undertaken by DBCA play a vital role in protecting ecosystems and ensuring public safety.

For more than 65 million years, the species that live in WA have evolved and adapted to specific fire frequencies and intensities. Too much or too little fire can have detrimental environmental impacts on Western Australia's protected areas and the state more broadly.

DBCA leads comprehensive fire research and development in Western Australia. The strategic goal of the fire science program is to ensure that the best available information is used for integrated fire management to protect communities and natural assets. DBCA undertakes research related to bushfire risk management, fuel assessment and management, fire behaviour, fire ecology and biodiversity, and fire regimes.

Beyond the ecological and environmental benefits, fire management and science research undertaken by DBCA are critical in ensuring public safety such as managing risks for neighbouring homes and reducing the risk to infrastructure in parks. DBCA plays a large role in fire prevention for example by managing fuel loads through prescribed burning and responding to fires. In 2023-24, the Department conducted prescribed burning in 101,632 hectares and fought and monitored bushfires that burned 4,581,790 hectares.

The Department collaborates with Department of Fire and Emergency Services (DFES) and other emergency services organisations, local government, the Forest Product Commission, the plantation owners, volunteer bushfire brigades, Traditional Owners and private landholders on integrating shared responsibilities for fire management, mitigation and bushfire response activities. Through the Aboriginal Ranger program administered by DBCA and through joint management, Aboriginal people undertake fire management.

Looking forward, DBCA will continue to play a significant role in studying and managing the impacts of fire in WA's protected areas.

Savannah burning in Western Australia

Savanna burning programs in Western Australia use early dry season burns to reduce the severity and extent of late-season bushfires, significantly lowering carbon emissions. These programs deliver a range of environmental, cultural, and economic benefits, including improved biodiversity through integration of First Nations land management knowledge.

The emissions reductions associated with these programs amounted to 28,252 and 25,474 tonnes of CO₂-equivalent across 2023 and 2024 respective. This is valued at \$2.0 million in 2023 and \$1.8 million in 2024 using the social cost of carbon (see Appendix G).



Image source: DBCA

Appendices

Image source: Tourism WA

Appendix A: Survey

Deloitte Access Economics conducted a survey of 785 WA and interstate residents to better understand the use of Western Australia's protected areas. This survey was also used to understand the social attitudes towards DBCA activities and protected areas more broadly.

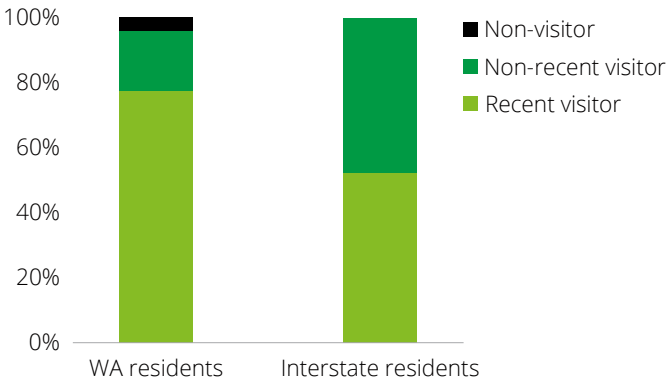
This survey canvassed people including:

- Residents who have visited (at least one) protected area(s) in the past three years.
- Residents who have visited (at least one) protected area(s) before but not recently (over three years ago).
- Residents who have never visited one or either of the parks.

Best efforts were taken by the survey provider to ensure the sample was representative in age, gender, metropolitan and regional location compared to the broader population.

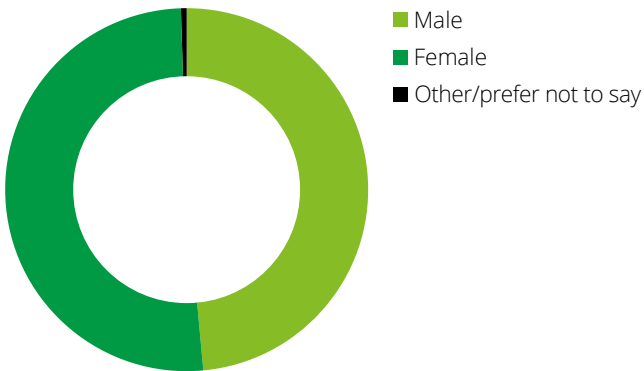
Survey respondents' visitation to protected areas is shown in Chart A.1. The demographic profiles of survey respondents including gender (Chart A.2), age (Chart A.3), and residence location (Chart A.4) are summarised below.

Chart A.1: Visitation profiles of survey respondents



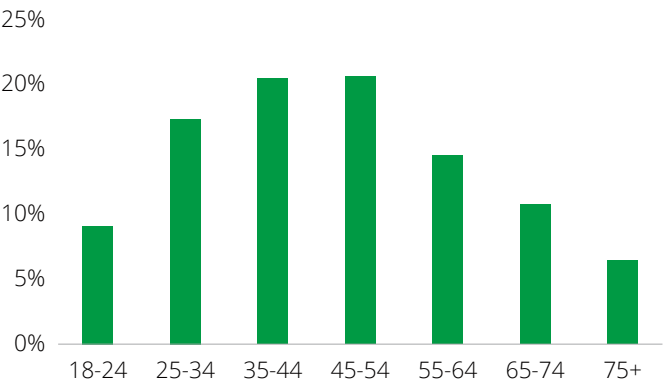
Source: Deloitte Access Economics (2025)

Chart A.2: Gender breakdown of survey respondents



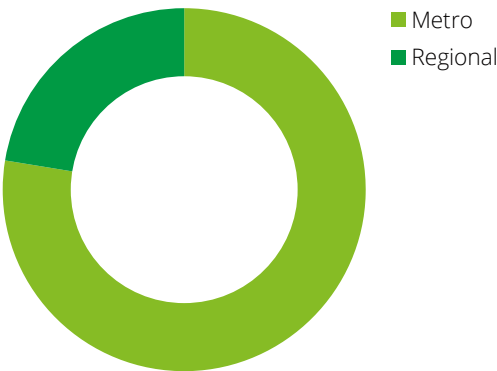
Source: Deloitte Access Economics (2025)

Chart A.3: Age of survey respondents



Source: Deloitte Access Economics (2025)

Chart A.4: Residence location of survey respondents



Source: Deloitte Access Economics (2025)

Appendix B: Economic contribution modelling

Economic contribution studies are intended to quantify measures such as value added, exports, imports and employment associated with a given industry or firm, in a historical reference year. The economic contribution is a measure of the value of production by a firm or industry.

B.1. Value added

Value added is the most appropriate measure of an entity's economic contribution to gross domestic product (GDP) at the national level, or gross state product (GSP) at the state level. Other measures, such as total revenue or total exports, may be easier to estimate than value added, but they 'double count'. That is, they overstate the contribution of an entity to economic activity because they include, for example, the value added by external firms supplying inputs or the value added by other industries.

Value added is the sum of:

- **Gross Operating Surplus (GOS).** Under a typical framework, the value of income generated by the entity's direct capital inputs, generally measured by earnings before interest, tax, depreciation and amortisation (EBITDA). However, in this instance, since DBCA is a non-market and profit-seeking entity, the aforementioned calculation is not appropriate. Instead, this report uses the value of depreciation and amortisation, as the general Government GOS is equivalent to the value of consumption of fixed capital on general government assets
- **Labour income,** which represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.
- **Tax on production less subsidy provided for production,** which generally includes company taxes and taxes on employment (given the returns to capital before tax (EBITDA) are calculated, company tax is not included or this would double count that tax). Gross output measures the total value of the goods and services supplied by the entity. This is a broader measure than value added because it is an addition to the value added generated by the entity. It also includes the value of intermediate inputs used by the entity that flow from value added generated by other entities.

- **Employment** is a fundamentally different measure of activity to those above. It measures the number of workers that are employed by the entity, rather than the value of the workers' output.

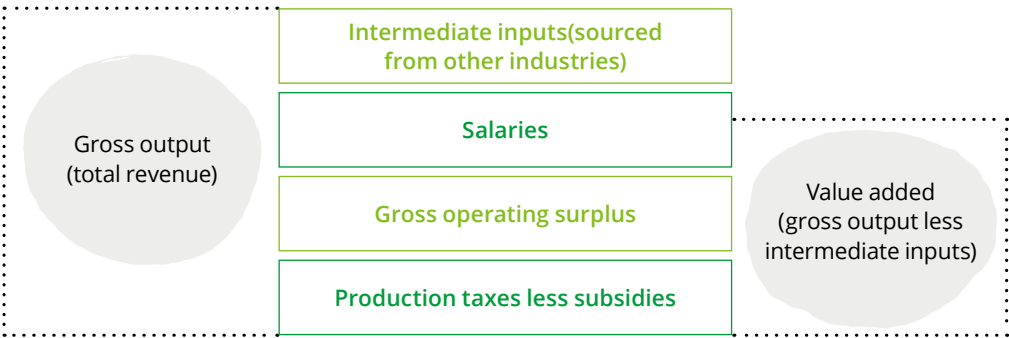
B.2. Measuring the economic contribution

There are several commonly used measures of economic activity, each of which describes a different aspect of an industry's economic contribution.

Value added measures the value of output (i.e., goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals GDP. Given the relationship to GDP, the value added measure can be thought of as the contribution to welfare.

Figure B.1 shows the accounting framework used to evaluate economic activity, along with the components that make up gross output. Gross output is the sum of value added and the value of intermediate inputs. Value added can be calculated directly by summing the payments to the primary factors of production, labour (i.e. salaries) and capital (i.e. gross operating surplus), as well as production taxes less subsidies. The value of intermediate inputs can also be calculated directly by summing up expenses related to non-primary factor inputs.

Figure B.1: Economic activity accounting framework



Source: Deloitte Access Economics (2025)

B.3. Direct and indirect contributions

Direct economic contribution is a representation of the flow from labour and capital within the sector of the economy in question. Indirect contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by the sector in question.

Estimation of the indirect economic contribution is undertaken in an input-output (IO) framework using Australian Bureau of Statistics input-output tables, which report the inputs and outputs of specific sectors of the economy. The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

B.3. Data sources

The financial data used to estimate the economic contribution of DBCA was sourced from DBCA for the 2023-24 financial year. The information received from DBCA was assumed to be accurate. For the purposes of this study, the economic contribution was estimated for the Western Australian economy.

B.4. Limitations of economic contribution studies

In a fundamental sense, economic contribution studies are simply historical accounting exercises. No 'what-if', or counterfactual inferences — such as 'what would happen to living standards if the firm disappeared?' — should be drawn from them.

The analysis — as discussed in the report — relies on a national input-output table modelling framework. There are some limitations to this modelling framework, including that it assumes that goods and services provided to the sector are produced by factors of production that are located completely within the state or region defined and that income flows do not leak to other states.

The IO framework and the derivation of the multipliers also assumes that the relevant economic activity takes place within an unconstrained environment. That is, an increase in economic activity in one area of the economy does not increase prices and subsequently crowd out economic activity in another area of the economy. As a result, the modelled total and indirect contribution can be regarded as an upper-bound estimate of the contribution made by the supply of intermediate inputs.



Image source: Tourism WA

Appendix C: Tourism contribution

C.1. Measures of tourism activity

There are two measures of tourism activity presented in this report:

- **Visitor expenditure** is a measure of the aggregate price of goods paid by the consumer or a reflection of the price impact on visitors. It includes components that are not directly related to the industries producing the goods and services for tourism purposes, including imports, product taxes, and wholesale margins. It is necessary to adjust for these non-industry components of supply.
- **Value added** is the most appropriate measure of economic contribution as it ensures no 'double counting' of components of spend that should be allocated to other industries. For example, taxes on products (such as the goods and services tax) are recognised as a component of the Government services industry, while wholesale margins should be allocated to the economic activity associated with the wholesale trade industry.

C.2. Measuring induced tourism expenditure

A visitor's trip activity in Western Australia was attributed in its entirety to the protected area they visited if the protected area was the primary reason for their trip. If a visitor highlighted that it was not the primary reason for their trip but one of several places to visit, their spending was multiplied by a lower attribution factor (25%). This definitional approach to 'induced tourism' is consistent with contemporary best practice conventions for place-based tourism contribution measurement.

The analysis used the Tourism Satellite Account (TSA) approach to measuring the economic contribution of induced tourism. The TSA framework is conceptually similar to and draws on the ABS Input-Output Tables to generate results. It is based on an international approach to defining the tourism sector and different tourism products and related industries depending on the extent to which they interact with tourists either directly or indirectly.

C.3. Direct contribution of tourism

A direct contribution occurs where there is a direct relationship, both physical and economic, between the visitor and the producer of the good or service. Direct tourism output is essentially the amount of tourism consumption less net product taxes, wholesale and transport margins and imports.

In the case of retail goods purchased by visitors, only the retail margin contributes to direct tourism output, value added and Gross Regional Product. This is because it is deemed that only the retailer has a direct relationship with the visitor and is therefore part of the tourism industry. Direct tourism gross value-added shows only the 'value' which a producer adds to the raw material goods and services it purchases in the process of producing its own output. Direct tourism gross value added is measured as the value of the output of tourism products by industries in a direct relationship with visitors less the value of the inputs used in producing these tourism products.

C.4. Indirect contribution of tourism

The indirect effect of tourism consumption is a broad notion that covers upstream and supplier effects of tourism demand. Intermediate inputs represent those goods and services which support the supply of the tourism product – the cleaning services that are inputted to the hotel sector; the fuel that is inputted to the aviation industry; the fruit and vegetables that are inputted to the restaurant industry. Together with any upstream impacts, it is these flow-on effects which determine the tourism industry's indirect contribution.

The definition of direct and indirect are slightly different in tourism satellite account as direct is defined as activity involving a direct interaction with tourists. Accordingly, the ratio of direct and indirect activity differs from results using a standard IO approach. However, estimates of total value added and employment should be similar across the two approaches.

Table C.1: Estimating induced tourism expenditure and contribution

	Total	Western Australian visitors	Interstate visitors	International visitors
Induced visitors (#)	2,800,459	1,962,479	653,564	184,416
Induced visitor spend (\$M)	\$3,066.9	\$2,098.9	\$691.4	\$276.5
Total value added (\$M)	\$2,062.6	\$1,400.8	\$459.4	\$202.5
Total employment contribution (FTE)	18,236	12,597	4,012	1,627

Source: Deloitte Access Economics (2025)

Appendix D: Ningaloo contribution

D.1. Ningaloo tourism expenditure

The tourism contribution of Ningaloo was estimated based on tourism expenditure by international and interstate tourists in the Ningaloo region. This approach was used in Deloitte’s report on the economic contribution of Ningaloo Reef published in 2020. The overall tourism contribution of Western Australia’s protected areas were estimated using a different approach, instead based on induced tourism.

Data used to quantify the economic contribution of tourism activity in the Ningaloo region are drawn from Tourism Research Australia’s National Visitor Survey (NVS), International Visitor Survey (IVS) and Regional Expenditure (REX) database.

Total expenditure by tourists associated with Ningaloo Reef is the product of the estimated number of visitors or visitor nights (based on NVS and IVS data) and the estimated expenditure per visitor or visitor night (based on REX data). Total expenditure is disaggregated to individual tourism product categories according to expenditure profiles based on the type of visitor (international, interstate or intrastate overnight, daytrip), purpose of visit and type of accommodation.

The economic value added that corresponds to this expenditure is then estimated using the TSA framework. All tourism activity in the Shire of Exmouth is assumed to be associated with Ningaloo; however, only a portion of trips and visitor nights to the Shire of Carnarvon are included in this analysis, reflecting that the town of Carnarvon and other tourist sites within the Shire of Carnarvon are not adjacent to Ningaloo.

Table D.1: Estimated number of visitors and spending in Ningaloo region, 2023-24

	Visitors ('000s)	Visitor nights ('000s)	Total expenditure (\$M)
International	33.8	160.5	\$34.5
Interstate	91.8	1,067.2	\$93.6
Intrastate	350.4	958.9	\$90.5
Total	476.1	2187.6	\$218.6

Source: Department of Primary Industries and Regional Development (2024)

D.2. Intrastate visitation

The intrastate visitation contribution of Ningaloo was estimated based on the expenditure by Western Australian residents to Ningaloo who live outside the Coral Coast region of Ningaloo. Data used to quantify the contribution of interstate visitation to Ningaloo are drawn from a survey conducted of WA and interstate residents. Details of the survey are available in Appendix A.

Total expenditure by intrastate visitors in the product of the estimated visitors to Ningaloo who live outside the Coral Coast region and the median spend per night as indicated by the survey. The economic value that corresponds to this expenditure is then estimated using the TSA framework.

D.3. Commercial Fishing

The estimated catch for the Exmouth Gulf Prawn Managed Fishery (EGPMF) is sourced from the Status Reports of the Fisheries and Aquatic Resources 2022-23, provided by Department of Primary Industries and Regional Development. Catch and estimated GVP per tonne by species is shown in table D2.

Table D.2: Exmouth Gulf prawn fishery, estimated catch and gross value, 2022-23

	Catch (tonnes)	GVP per kg (\$)	Total value (\$M)
Brown Tiger	411	\$18.07	\$7.4
Blue Endeavour	269	\$7.80	\$2.1
Western King	218	\$16.44	\$3.6
Total	898	N/A	\$13.1

Source: Department of Primary Industries and Regional Development (2024)

D.3. Management and research

Management and research expenditure data for 2023-24 was sourced from DBCA. Management, maintenance and research spending for the Exmouth District was supplied. This expenditure was assigned to input-output categories in line with DBCA’s overall management expenditure categories.

Appendix E: Experience value and existence value methodology

E.1: Experience (use) value methodology

Travel cost methodology was used to assess the experience value of protected areas. This is a revealed preference technique which aims to estimate the monetary value that people pay to gain access to recreational facilities and other non-market goods such as parks. The costs incurred by visitors to the site are used to determine the value they place on visiting the parks. Costs include parking and fuel as well as the opportunity cost of their travel time. This is used as a proxy for the value they place on the parks. Inputs for the modelling were drawn from the survey, which collected detailed information around visitor’s travel to protected areas. Key insights include visitors’ reason for visiting, travel costs, and method of travel.

To account for the fact only just over half of visits to protected areas captured in the survey were the main reason for the trip, an adjustment was made to weight reported travel costs accordingly. 100 per cent of the travel cost was used when the visit was the primary reason for the trip, 50 per cent when it was one of many reasons, and the travel cost was not included if the respondent simply took advantage of being nearby to visit.

The median roundtrip cost incurred by Western Australian residents to visit a protected area was \$14.76 per person, with a median travel time of approximately 102 mins. Travel time is converted to dollar-values using a private travel time value of \$22.70 per hour.* Given the high variance in travel costs between different protected areas, park-level costs were used to calculate experience value where sample size allowed (n>30). This gives a total average experience value of \$63.20 per visit, notably higher than simply summing the median cost and time as some of the most visited areas had significantly higher costs to visit. For example, visitors to Leeuwin-Naturaliste National Park, the most visited included in the survey, travelled a median of five hours and incurred a median of \$26.22 in travel costs per person.

This totals a sum of \$861 million when extrapolated over the total visits by Western Australian residents, based on visitation data provided by DBCA and an estimate of the proportion of visitors from intrastate based on the survey. This visitation data was adjusted to remove visits from people below 16 years of age, who are assumed to be less likely in actively choosing to visit protected areas, by scaling total visits by the proportion of over-16-year-olds in Western Australia.

*Private travel time valued at 40% of average hourly earnings via the ABS, in line with *Australian Transport Assessment and Planning* recommendations.

Table E.1: Travel cost parameters

Parameters	
Median travel cost (\$)	\$14.76
Median travel time (hours)	1.7
Average use value (\$ per person)	\$63.20
Sample size (unique visits)	865

Source: Deloitte Access Economics (2025)

Table E.2: Experience value of protected areas (2024)

Protected area	Use value (\$, pp)	WA visits (adjusted)	Total use value (\$, millions)
Total	\$63.20	13,628,153	\$861.28
Experience value of top five attended protected areas (2024)			
Leeuwin-Naturaliste	\$139.73	2,756,317	\$385.15
Marmion Marine Park	\$22.23	983,302	\$21.86
Woodman Point	\$25.98	669,747	\$17.40
Shoalwater Islands	\$32.49	509,057	\$16.54
Matilda Bay Reserve	\$19.35	505,669	\$9.78

Source: Deloitte Access Economics (2025)

Appendix E: Use value and existence value methodology

E.2 Existence value methodology

The existence value of Western Australia's protected areas was based on a stated preference approach to estimate willingness-to-pay (WTP) for the activities DBCA undertakes to manage the protected areas.

Inputs for the modelling were derived from the survey, in which residents were asked how much funding they believe DBCA should receive to support the ongoing maintenance of protected areas, with the caveat that changed funding levels would lead to corresponding changes in taxation levels. Respondents were provided with the current approximate funding level on a per working-age person basis as reference point. Based upon their answer, they were then given a series of questions asking if they believe it should be higher or lower than a given value to triangulate each respondent's WTP.

While this series of questions was asked of every Western Australian who responded to the survey (returning an average WTP of \$333.79), the 'non-user' WTP (i.e., respondents who have not visited a protected area in the last three years) was used to estimate the existence value of protected areas as it is expected that the premium that those who visit protected areas are willing to pay reflects, at least in some part, the experience value they receive from visiting parks and would therefore constitute double counting.

The non-user WTP, based on survey responses, is \$144.56. It should be noted the sample size for this figure is small (n=19) relative to the overall survey sample, largely due to the fact most respondents have attended protected areas in the last three years.

The total sum existence value of Western Australia's protected areas is \$281 million in 2024 when extrapolating to total working-age (i.e., tax paying) population of Western Australia, defined by the ABS as between 15 and 65.

Table E.3: Existence value of protected areas

Per person existence value	WA working age population	Total existence value (\$, millions)
\$144.56	1,942,259	\$280.78

Source: Deloitte Access Economics (2025)



Image source: Tourism WA

Appendix F: Social asset methodology

F.1 Social asset value methodology

Western Australia’s protected areas are social assets that people experience directly and value intrinsically. To estimate the social asset value the annual experience value and existence value was summed over a 30-year period, with future flows of income discounted.

Total asset valuation is highly dependent on the discount rate used. The total asset value of protected areas was modelled using a discount rate of 3.5%. This is in line with recommendations by the Victorian Institute of Strategic Economic Studies when valuing green spaces and reflects the nature of the parks as a natural asset, with long-term environmental effects.¹

The expected population growth rates over the 30-year period were used as inputs to forecast the future use values and existence values. The population growth rates were obtained from the Western Australia Tomorrow Population Report. The total social asset value of Western Australia’s protected areas is \$26.6 billion.

F.2 Social asset sensitivity

Given the sensitivity of this valuation method to selection of discount rate, sensitivity analysis was conducted to ascertain the magnitude of change in results for different discount rates and valuation timeframes.

The difference in results are summarised in the Table F.1.

Table F.1: Social asset sensitivity analysis

Discount rate	Time frame	Total value (\$, billion)	Experience value (\$, billion)	Existence value (\$, billion)
3.5%	30 years	26.55	20.02	6.53
2%	30 years	32.42	24.45	7.97
7%	30 years	17.86	13.47	4.39
3.5%	40 years	32.61	24.59	4.87
3.5%	50 years	37.64	28.38	9.25

Source: Deloitte Access Economics (2025)

Appendix F: Applications of the SEEA Framework in Australia

F.3 UN SEEA framework Australian applications

As is in the case in this report, most applications of the SEEA framework do not undertake full ecosystem asset valuations. Instead, they typically focus on the social and ecological dimensions, such as ecosystem condition, service flows, and biodiversity impacts.

As the application of SEEA frameworks become more widespread in Australia, they offer a valuable opportunity to move beyond solely measuring condition and service flow metrics, incorporating ecosystem asset valuation, ensuring the comprehensive economic contribution of ecosystems is acknowledged in government policy and planning.

This is reflected in Australian experimental ecosystem accounts, which generally apply the SEEA framework to assess ecological change and service provisions without assigning complete asset valuations.

The Experimental Ecosystem Accounts for the Central Highlands of Victoria in 2017 quantified key ecosystem services including carbon sequestration, water regulation, and nature-based tourism. It provided a detailed demonstration of the SEEA framework by aligning physical measures of service flow with land use and land cover classifications, without assigning full monetary value to all ecosystem assets.²

Similarly, the Experimental Ecosystem Account for the Murray-Darling Basin in 2023 used the SEEA framework to track ecosystem conditions across pilot projects in a large and ecologically diverse region. It applied an index-based approach to monitor changes in vegetation, water availability, and salinity over time, providing insights into ecological stability and degradation without estimating comprehensive asset values.³

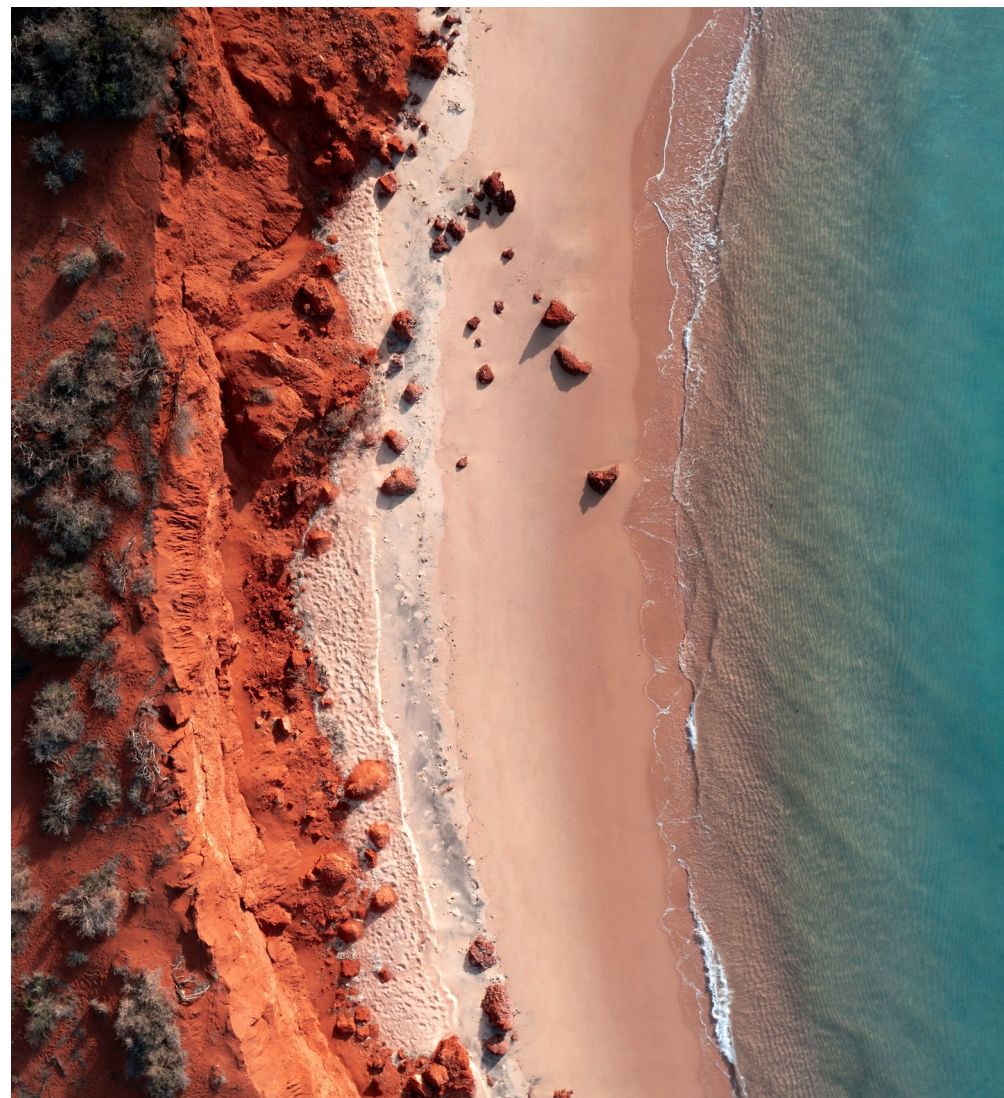


Image source: Tourism WA

Appendix G: Ecosystem services sensitivity analysis

F.4 Ecosystem services value methodology notes

To estimate the ecosystems value of Western Australia’s marine protected areas and the Great Western Woodlands, ecosystem extent and carbon sequestration rates were projected over a 20-year period, with future benefits discounted.

A 3% discount rate, consistent with Australian Government Policy guidance for valuing social costs of carbon, was applied. Unlike carbon credit prices, which reflect market trading values, the social cost of carbon measures the broader societal damages from emissions, resulting in generally higher values than carbon credit prices, and providing a more comprehensive overview of the environmental and community benefits of sequestered emissions.⁴

This valuation provides an indicative estimate of the long-term social, environmental and economic value these ecosystems deliver through carbon sequestration. Further research is recommended to capture the full range of ecosystem services and benefits provided.

F.5 Ecosystem services sensitivity

This sensitivity analysis tests how the estimated carbon sequestration benefit changes when using different carbon pricing approaches — specifically, the Social Cost of Carbon and the Australian Carbon Credit Unit (ACCU) spot price as at October 21st, 2021 (\$33.5).^{5, 6}

Given the valuation is highly sensitive to the carbon price applied, this analysis helps illustrate the potential variation in outcomes under alternative, but commonly used, carbon valuation metrics. Results are summarised in Tables F.2 and F.3.

Table F.2: Carbon sequestration benefits – Marine Protected Areas – Sensitivity analysis

	Price per tonne	Annual sequestration value	20-year NPV
Social cost of carbon	\$71.0	\$112.0m	\$1.8b
Australian Carbon Credit Units (ACCUs)	\$33.5	\$52.8m	\$838.9m

Source: Deloitte Access Economics (2025)

Table F.3: Carbon sequestration benefits – Great Western Woodlands – Sensitivity analysis

	Price per tonne	Annual sequestration value	20-year NPV
Social cost of carbon	\$71.0	\$246.6m	\$3.9b
Australian Carbon Credit Units (ACCUs)	\$33.5	\$116.3m	\$1.8b

Source: Deloitte Access Economics (2025)

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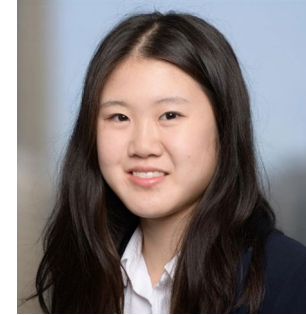
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