

# Australia

State of the Environment

2016

## Heritage



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## Heritage

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### Acknowledgement of Country

The author acknowledges the traditional owners of Country throughout Australia,  
and their continuing connection to land, sea and community;  
and pays respect to them and their cultures,  
and to their Elders both past and present



**Australian Government**

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**Department of the Environment and Energy**



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# Executive summary

Australia is a complex, layered set of natural and cultural landscapes in which unique geodiversity and biodiversity provide the palette for an ancient Indigenous culture, and more recent European exploration and postcolonial settlement history. Australia's heritage comprises natural, Indigenous and historic places with intergenerational value that we have inherited and will pass on to future generations. Heritage includes places that are listed and protected at the global, national, state and territory, or local level; it also includes many places that have not been formally identified or listed, but nevertheless contribute to the nation's natural and cultural inheritance.

Australia's extraordinary and diverse natural and cultural heritage generally remains in good condition, despite some deterioration and emerging challenges since 2011. The National Reserve System continues to improve through the addition of substantial Indigenous Protected Areas, and more than 17 per cent of Australian land and more than 36 per cent of Australia's marine area are now protected within reserves. Australia's Indigenous heritage remains inadequately documented and protected, and incremental destruction continues, although there is increasing recognition of the importance of Indigenous involvement in heritage management.

Many Australian historic heritage places remain in good condition. However, despite some focus on improving the calibre of historic heritage lists and registers, they too remain inconsistent and incomplete. Although substantial resources have been allocated to heritage through Australian Government, state, territory and local heritage programs, overall, since 2011, the public-sector resources allocated for heritage conservation and management have remained steady or declined. The resources and data available for assessing the state, condition and effectiveness of management of natural and cultural heritage have also declined, particularly in proportion to the amount of reserved lands and number of listed places. Cultural heritage, both Indigenous and historic, could be

better supported by planning and assessment systems, and continues to be threatened by development, often because heritage is identified during impact assessment processes, rather than proactively.

The national leadership shown by preparation of the Australian Heritage Strategy has reduced the overall risk to Australia's heritage. The strategy positions the Australian Government to lead major change and foster innovative approaches in partnership with the states and territories, private owners, and community groups. These partnerships, coupled with recognition and management of the threats posed by climate change and development, will be crucial to achieving the strategy's objectives. The continued involvement of Indigenous people in sustainable land and sea management will also be important to the protection of Indigenous heritage, as are ongoing improvements in knowledge and practices that support Indigenous cultural traditions and connections to Country. Ultimately, the success of the Australian Heritage Strategy and the outlook for Australia's heritage will depend on the commitment of additional resources and strategic responses to continuing pressures and emerging threats.





Kinchega Woolshed at  
Kinchega National Park,  
New South Wales  
Photo by Richard Mackay



# Key findings

Key findings	Explanatory text
<b>Australia's extraordinary and diverse natural and cultural heritage generally remains in good condition, despite some deterioration and emerging challenges</b>	<p>Nationally consistent information is not available to allow a single cohesive conclusion about the condition of Australia's natural and cultural heritage, given the diverse and fragmented nature of available data.</p> <p>Expert opinion and limited surveys suggest that the values for which heritage places are reserved and listed remain generally intact. However, there have been significant impacts on natural heritage values (such as coral bleaching in the Great Barrier Reef and fires in the Tasmanian Wilderness), and substantial impacts on both Indigenous and historic heritage, including destruction of significant sites through resource extraction or development. The condition of places on local heritage lists remains unclear.</p> <p>More than 17 per cent of Australian land and more than 36 per cent of Australia's marine area are now protected within reserves, and National Reserve System targets for specific bioregions are being actively pursued.</p>
<b>Australia's heritage remains vulnerable to both natural and anthropogenic threats</b>	<p>Climate change poses a major challenge for heritage owners and managers, and has the potential for high-impact and irreversible damage in the absence of remedial action. Natural areas continue to be affected by invasive species, loss of habitat and altered fire regimes.</p> <p>Economic growth creates pressures for redevelopment and resources extraction, which can cause major impact on natural and cultural heritage at the landscape scale and for individual heritage places.</p> <p>Population changes give rise to increasing density and redevelopment pressures for heritage places and conservation precincts in urban areas, whereas heritage places in rural areas remain under threat from redundancy, leading to neglect and decay.</p> <p>Tourism offers both opportunities and challenges for Australia's heritage. Sustainable tourism can provide important resources and raise awareness, but poorly managed tourism can damage heritage values.</p>
<b>Australia's heritage is also at risk from the loss of knowledge</b>	<p>Interpretation of heritage places and initiatives that communicate values are important aspects of their conservation, which make them accessible and engender community support. Wide-ranging education about heritage themes, places and values is crucial.</p> <p>Indigenous heritage has enjoyed resurgence and reconnection in some areas and communities, but remains at risk from loss of knowledge and tradition, as well as continuing incremental destruction.</p> <p>A major problem for historic heritage is continuing decline in access to specialised professional and trade skills, and an ageing workforce.</p>

Key findings	Explanatory text
<p><b>Australia has well-resolved processes for identification, protection, conservation, management and celebration of heritage, but requires more consistent approaches, standards and guidelines. Thorough and comprehensive assessments are needed to secure adequate areas of protected land and comprehensive heritage inventories</b></p>	<p>Protection for Australia’s heritage places relies on land reservation, statutory heritage inventories and sound management, but also reactive heritage impact assessment processes. Our protected natural and cultural resources do not yet comprise an appropriate set of heritage places.</p> <p>Australia’s heritage registers list natural and cultural places at national, state and local levels, but in an inconsistent manner and with disparate levels of resourcing and regulation. However, there has been progress towards more integrated, tiered systems of heritage management.</p> <p>There is a nationally coordinated strategic approach to inclusion of representative lands within the National Reserve System and the National Representative System of Marine Protected Areas, and an increasing trend towards strategic review of historic heritage registers and schedules.</p> <p>Although the Australian Heritage Strategy proposes a consistent approach to the recognition, protection and management of Indigenous heritage sites, no mechanism is in place to establish a national approach and standards for assessment and protection of Indigenous heritage.</p> <p>Progress has been made in determining the nature, purpose and scope of the National Heritage List. Substantial additional resources will be required to allow the National Heritage List to include and protect the places that reflect our identity as a nation, and tell our story.</p>
<p><b>Public-sector resourcing at all levels does not reflect the value of heritage to the Australian community</b></p>	<p>Substantial public-sector resources have been allocated to heritage through Australian Government, state, territory and local heritage programs. However, overall, the public-sector resources allocated for heritage conservation and management have remained steady or declined. Core staffing levels, grant programs and incentives for heritage place owners have decreased in proportion to the amount of reserved lands and number of listed places.</p> <p>In the natural heritage domain, considerable funding for applied research has been allocated under the National Environmental Research Program and the National Environmental Science Programme, some of which has been deployed to assist with managing heritage values. There has been no commensurate allocation of resources for applied research in the cultural heritage domain.</p> <p>Changed circumstances have seen Australian Government funding focus on major conservation challenges, such as the Great Barrier Reef, the Port Arthur Penitentiary and National Heritage sites, with reduced federal funding available for state and local heritage. There has been considerable variation in state and territory resource allocations for heritage management and grant funding.</p>



Key findings	Explanatory text
<p><b>Conservation of Australia's heritage is a shared responsibility that requires collaborative, innovative partnerships between government, corporations and the community</b></p>	<p>Heritage is a public 'good' that contributes to local communities and the economy, and therefore warrants a collaborative approach. Governments at all levels contribute through identifying, protecting and regulating heritage, by managing many significant heritage places, and by allocating resources, offering incentives and providing access to information. Corporate and private owners of heritage places contribute directly to their conservation and management, and warrant encouragement and support. Community organisations also make valuable contributions.</p> <p>The role of Indigenous people in managing Indigenous heritage continues to expand, as does recognition of the importance of intangible Indigenous heritage, despite a nationally fragmented jurisdictional approach to Indigenous heritage. Landscape-based approaches to assessing and managing Indigenous heritage are more prevalent.</p> <p>More flexible approaches are required to enable good heritage and community outcomes in the face of continuing pressures. Recognition of the embodied energy and cultural inheritance values of historic buildings, proactive land-use planning to reserve and conserve areas of Indigenous heritage value, and growing use of 'offsite' technology for delivery of information are examples of contemporary responses to the challenge of managing heritage places.</p> <p>The Australian Heritage Strategy commits to effective communication and fostering best practice, through partnership with professional and community groups, such as the Australian Executive Committee of the International Council on Monuments and Sites, the Australian Committee for the International Union for Conservation of Nature, and the National Trusts of Australia.</p>
<p><b>The Australian Heritage Strategy presents a vision in which Australia's natural, historic and Indigenous heritage places are valued by Australians, protected for future generations and cared for by the community</b></p>	<p>The Australian Heritage Strategy establishes a new outlook for heritage conservation and management in Australia. It positions the Australian Government to provide strong leadership for fundamental changes and to foster innovative approaches, in partnership with the states and territories, private owners, and community groups.</p> <p>The outlook for Australia's heritage will depend on the way the Australian Heritage Strategy is implemented, not only by the Australian Government, but also by the other partners.</p> <p>If the Australian Heritage Strategy is strongly embraced and supported, Australia's heritage can and should underpin our sense of place and national identity, and make a positive contribution to the nation's wellbeing.</p>



# Approach

In the 2011 state of the environment report (SoE 2011; SoE Committee 2011), the 'Heritage' chapter analysed information gathered from a wide range of information sources, including empirical datasets, commissioned field surveys and facilitated workshop discussions. Along with other SoE 2011 chapters, the 'Heritage' chapter presented information using a 'drivers–pressures–state–response' framework, augmented by discussions of resilience, future risks and outlook. The chapter sought to focus on issues that were relevant to environmental decision-makers and managers. Report card–style assessments were provided for condition, pressures and management effectiveness, and the chapter was comprehensively referenced.

SoE 2016 was compiled within a tighter timeframe and with fewer resources than SoE 2011. The reduction in available resources may itself be an indicator of changing priorities about the importance of data gathering and monitoring as part of the suite of tools available for effective heritage conservation. In view of these constrained circumstances, the approach that has been taken is to review and update the previous 2011 assessments, using readily available data, rather than undertaking new primary data collection. Where appropriate, this report incorporates and reproduces information and text from 2011, revised as necessary.

Heritage occurs across the full spectrum of domains and themes of the Australian environment. Other SoE 2016 reports, particularly *Antarctic environment*, *Biodiversity* and *Coasts*, address particular heritage places, contexts and issues. In general, although relevant cross-referencing has been provided, examples and content are not repeated across the SoE 2016 reports.

Assessing the condition of Australia's heritage places continues to be hampered by an incomplete and unrepresentative set of formally identified heritage places, and by the absence of a comprehensive body

of reliable national data. As was the case in 2011, available information relates more to inputs, such as the number of protected places or funding levels, rather than outcomes, such as the actual physical condition and integrity of listed places.

Some conclusions have been drawn through surveys, surrogate data and indicators. The SoE reports for 2001, 2006 and 2011 all relied on a set of natural and cultural heritage indicators, originally prepared in 1998 as the basis for summary assessment (Pearson et al. 1998). The same approach has been used here, augmented by selected case studies and additional information provided by the natural, Indigenous and historic heritage agencies and officials. However, this approach cannot thoroughly address some of the complexities and subtleties in the heritage system, including complex cultural landscapes, regional perspectives or unlisted sites. The approach reflects resource limitations, uses data that are available, and offers relevant observations, including perspectives on what has changed since 2011. It would be appropriate for these indicators to be reviewed and reconsidered in future phases of SoE reporting.

The assessments in this report particularly rely on the outcomes from workshops held with relevant stakeholder groups, including the Australian Heritage Council, Heritage Officials of Australia, the Wildlife Heritage and Marine Division of the Australian Government Department of the Environment and Energy, the Indigenous Advisory Committee of the department, representatives from the Australian chapter of the International Council on Monuments and Sites (Australia ICOMOS), and the Australian Committee of the International Union for Conservation of Nature. Although these workshops cannot replace empirical evidence, the results do provide assessments based on consensus, in which there can be some degree of confidence.





# Introduction

*Heritage is all the things that make up Australia's identity—our spirit and ingenuity, our historic buildings, and our unique, living landscapes. Our heritage is a legacy from our past, a living, integral part of life today, and the stories and places we pass on to future generations. (DoEE n.d.[a])*

Australia's heritage is an important element of the environment. Our land and surrounding waters feature extraordinary geodiversity, unique ecosystems and profound cultural traditions that extend back thousands of years. Layered across these ancient landscapes and seascapes is the evidence of these traditions and of more than 2 centuries of colonial and postcolonial history— young in global terms, but a vital part of our culture.

Australia's heritage comprises both natural and cultural places with tangible (physical) and intangible (associated) attributes that have intergenerational value—places that we have inherited and will pass on to future generations. Although this report focuses on places with natural or cultural values, Australia's heritage is multidimensional, and includes movable items and intangible elements such as stories and memories.

For many Australians, particularly those from Indigenous backgrounds, the divide between nature and culture is artificial because the environment is perceived as one interlinked, complex cultural landscape, created and lived in by ancestors and the contemporary community. This report recognises this complex relationship, but considers heritage in accordance with national listing and identification processes (see Box HER1), which divide heritage according to 'natural', 'Indigenous' and 'historic' domains (Australian Government 2015a). This approach is consistent with the SoE 2011 'Heritage' chapter, thereby allowing comparison between 2011 and 2016.

SoE 2016 adopts a national perspective. However, assessing the state of the nation's heritage also demands an understanding of state and territory, and local heritage, because it may be critical to

community identity. At the national level, heritage overlaps with other environmental components—such as air, biodiversity, the land, inland waters, marine environments, Antarctica or urban areas—which are covered in other SoE 2016 reports and documents.

## Heritage listings

Identifying and protecting heritage places is fundamental to ensuring that they are appropriately conserved, celebrated and passed on to future generations. The reasons to consider heritage as a discrete part of the environment and to list heritage places include:

- recognising, interpreting and celebrating their values
- providing legal protection
- informing management decisions and resource allocation.

Heritage is identified, assessed and listed through multilayered and overlapping statutory and bureaucratic processes that broadly parallel our multitiered systems of government:

- **World Heritage List**—World Heritage sites are places that have outstanding universal value that transcends the value they hold for a particular nation. These qualities are expressed in the Convention Concerning the Protection of the World Cultural and Natural Heritage. Australia's obligations under this convention are met through provisions in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which prescribe World Heritage as a matter of 'national environmental significance'.
- **National Heritage List**—The National Heritage List is established under the EPBC Act and includes natural, historic and Indigenous places that are of outstanding national heritage value to Australia. The EPBC Act prescribes national heritage as a matter of national environmental significance.

## Box HER1 Listed and unlisted heritage

Components of Australia's heritage, such as National Heritage places, Commonwealth Heritage places, or matters of national environmental significance are directly regulated and managed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

However, the state of the environment report covers all Australia's place-based heritage, not just that protected under the EPBC Act.

The EPBC Act specifically includes the 'heritage values of places' as part of the 'environment'. Heritage values are defined in the EPBC Act as including 'the place's natural and cultural environment having aesthetic, historic, scientific or social significance, or other significance, for current and future generations of Australians'.

In Australia, although many heritage places are recognised through land reservation or statutory listing,

many places that have heritage values are not formally identified or protected. Applying the EPBC Act definition of 'environment', this report considers both reserved/ listed and unreserved/unlisted places that have heritage values.

Consistent with the parameters of the EPBC Act, 'movable heritage' is excluded, except where such cultural property forms part of the heritage values of a place. Movable heritage is managed through different legislation and processes, including the *Protection of Movable Cultural Heritage Act 1986*.<sup>1</sup>

<sup>1</sup> The *Protection of Movable Cultural Heritage Act 1986* protects Australia's movable cultural heritage and provides for the return of foreign cultural property that has been illegally imported into Australia. The Act has been subject to an independent review, and the review report was submitted to the Australian Government in September 2015. The report recommends a new model and comprehensive modernisation of the legislation relating to Australia's movable cultural heritage.



Rock art, Mutawintji National Park, New South Wales

Photo by Richard Mackay



- **Commonwealth Heritage List**—The Commonwealth Heritage List is also established under the EPBC Act, and comprises natural, Indigenous and historic heritage places that are either entirely within a Commonwealth area, or are owned or leased by the Australian Government or an Australian Government authority.
  - **Australian National Shipwrecks Database**—The Australian National Shipwrecks Database was launched in December 2009 and includes known shipwrecks in Australian waters. Australia protects shipwrecks and their associated relics that are more than 75 years old through the *Historic Shipwrecks Act 1976*. This Act applies to Australian waters that extend from the low-tide mark to the end of the continental shelf, and is administered in a collaboration between the Australian Government, and state and territory governments (DoEE n.d.[b]).
  - **State and territory heritage registers**—At the state and territory level, the process for listing heritage places varies. All jurisdictions have dedicated national parks and reserves. Some jurisdictions have established registers of Indigenous sites; all jurisdictions protect Indigenous heritage through blanket statutory controls. Each state and territory also has a statutory list of historic places, but the criteria and thresholds for listing vary, and these registers are generally acknowledged as incomplete and inconsistent in some areas. For example, there are separate historic shipwreck registers in some jurisdictions.
  - **Local heritage**—Heritage identification at the local level varies from many thousands of heritage or contributory items in dense urban areas, to a complete absence of any statutory listing or controls for some local government areas. Most Australian local government agencies list, protect and provide advice about individually listed properties and larger heritage precincts, conservation areas and overlays. There are many locally managed reserves, generally dedicated for reasons of natural heritage or amenity, but some of these also contain significant Indigenous places. However, most Indigenous heritage is neither identified nor protected at a local level. Comprehensive national data for local heritage listings are not available.
  - **Antarctic heritage**—Heritage in the Australian Antarctic Territory can be protected through the Antarctic Treaty System through the designation of historic sites and monuments, and Antarctic Specially Protected Areas (see ‘Protected areas’ in the *Antarctic environment* report).
  - **Register of the National Estate**—The Register of the National Estate was a list of natural, Indigenous and historic heritage places throughout Australia, originally established under the *Australian Heritage Commission Act 1975*. The former Australian Heritage Commission entered more than 13,000 places in the register. In February 2012, the register ceased to have statutory status and is now an information source within the [Australian Heritage Database](#).
  - **International treaties, charters and guidelines**—Some aspects of Australia’s heritage are covered by other international agreements or guidelines, such as the [Ramsar \(wetlands\) Convention](#), the [United Nations Declaration on the Rights of Indigenous Peoples](#), and conventions relating to cultural property (e.g. [Convention for the Protection of Cultural Property in the Event of Armed Conflict](#)).
  - **Other nonstatutory lists**—Heritage lists are also maintained by nongovernment organisations such as the National Trust of Australia, the Institution of Engineers, and the Royal Australian Institute of Architects. Although these lists have no direct statutory force, they are sometimes used to inform decision-making processes such as new or potential heritage listings, and development and works approvals.
- Heritage can also be unlisted. Vast areas and many places have not been formally identified or listed, but nevertheless contribute to the nation’s heritage, especially at the local level. This will always be the case, since resources dedicated to survey and assessment projects are never sufficient to allow comprehensive coverage, and notions of what constitutes intergenerational value or heritage are constantly changing. Unlisted heritage can be well managed, particularly through the stewardship of private owners, communities and users, or where developers engage proactively with government agencies.

## Types of heritage

### Natural heritage

Natural heritage places are definable locations or areas of land and sea that can be identified and defined as heritage values by applying assessment criteria such as those used to assess places for the National Heritage List. The place either has been or should be formally identified, and set aside for conservation purposes or actively managed for these purposes (along with other uses). Such places might include national parks, marine protected areas, other reserves, botanic gardens and private conservancies, significant fauna and flora habitats, and geological sites.

Although our natural heritage includes both reserved and unreserved lands, and listed and unlisted places, this report focuses on natural heritage that has been identified and protected (see Box HER2). Natural heritage in Australia is identified and protected through a suite of strong natural protection mechanisms and statutory arrangements, including land reservation, listing of places, and provisions that apply to species or ecological communities.

Australia also has vast 'unlisted' natural heritage resources that have not yet been formally assessed, but may be of sufficient heritage value to justify inclusion on the National Heritage List or reservation within national parks. Australia also has large priority ecoregions that are under-represented on the World

#### Box HER2 Ediacara Fossil Site

The Ediacara Fossil Site, which was included on the National Heritage List on 11 January 2007, demonstrates both the diversity of values found at natural heritage places in Australia and the challenges that may arise in protecting such values.

The site was discovered in 1946, when geologist Reginald Sprigg discovered the fossilised remains of an entire community of soft-bodied creatures at the old Ediacara minefield in the Flinders Ranges. The fossils, which date from between 570 million and 540 million years ago, are of soft-bodied organisms, similar to jellyfish. The site, which gives its name to the period known as the Ediacaran Period, provides a unique opportunity to study a magnificent array of fossils of internationally significant biota, and is the most abundant, diverse and intact example of Precambrian multicellular animal life found within Australia (DoEE n.d.[c]). Unfortunately, the Ediacara site has also been subject to damage from unauthorised fossil collecting.

Management of fossil sites is an ongoing heritage management challenge because current systems and processes do not necessarily protect their significant values. The often remote location of such sites and the opportunity this brings to remove and sell fossils without detection pose significant threats. It is difficult to prove the provenance of excavated, decontextualised fossils, and there have been no successful prosecutions for fossil removal, even though significant Ediacaran and other fossils are sold and exported, and damage is clearly occurring.



Researchers looking over a jigsaw puzzle of sandstone containing hundreds of fossils, northern Flinders Ranges, South Australia  
Photo by [CJA Bradshaw](#)

Heritage List, several ‘centres of plant diversity’ that are globally important areas for the conservation of plants, and one large ‘endemic bird area’ that is globally important for the conservation of birds (Bertzky et al. 2013).

## Indigenous heritage

Aboriginal and Torres Strait Islander heritage extends back across many tens of thousands of years and is of continuing significance, creating and maintaining links between the people and the land. Human occupation

of the Australian continent has left a rich legacy of places that bear witness to our evolving human history. Indigenous heritage places include occupation sites, rock art, carved trees, places with known spiritual values, important waters or landscapes laden with meaning to people from that Country, and places with contemporary value to Indigenous people. Recognition of all aspects of Indigenous heritage is fundamentally important to protecting that heritage, and to the relationship between Indigenous and non-Indigenous people in Australia (see Box HER3).

### Box HER3 Kungun Ngarrindjeri Yunnan

At the World Indigenous Network gathering held in Darwin in 2013, Ngarrindjeri leaders made a powerful presentation arguing that non-Indigenous recognition of their beliefs and traditions is crucial to social justice and initiatives aimed at ‘closing the gap’ between Indigenous and non-Indigenous Australians (WIN 2013).

The ‘Kungun Ngarrindjeri Yunnan Agreement’ (which means ‘listening to Ngarrindjeri people talking agreement’) has been negotiated between the South Australian Government and the Ngarrindjeri Regional Authority. The agreement provides for Ngarrindjeri to be involved in caring for lands and waters, and to benefit from the management of parks and reserves within their native title claim. It also provides for negotiation and consultation to enable Ngarrindjeri cultural values to:

*... become integral to all planning and future management arrangements that are made with respect to the Land and aim to recognise and assure active Ngarrindjeri participation in those arrangements.*  
(KNYA Agreement 2009)

The agreement and the associated initiatives provide opportunities to develop a long-term Caring for our Country program targeting education, training and employment. This approach exemplifies current approaches to understanding, respecting and supporting the connections between Indigenous people and their Country, which are needed to understand and manage Indigenous heritage.



Swan (kungari) nest monitoring by Des Karpany and Jeremy Rigney  
Photo by the Ngarrindjeri Regional Authority



## Historic heritage

Historic heritage places relate particularly to the occupation and use of the continent since the arrival of European and other migrants, including pre-1788 Asian and European exploration, contact and settlement sites. Historic places tell us about the society we have formed in Australia during the past 2.5 centuries, and provide a tangible link to past events, processes and people. The Australian environment includes rare remnants of early convict history, contact sites, pastoral properties, small remote settlements and large urban areas, engineering works, factories and defence facilities, shipwrecks, and archaeological sites. Historic heritage illustrates the way in which the many cultures of Australian people (both Indigenous and non-Indigenous) have modified, shaped and created our cultural environment (see Box HER4). By its nature, historic heritage will continue to evolve to represent the flow of history and changing community perceptions.

## Heritage: 2011–16 in context

The SoE 2011 ‘Heritage’ chapter concluded that the outlook for Australia’s heritage was dependent on government leadership in 2 key areas:

- *undertaking thorough assessments that lead to comprehensive natural and cultural inventories and truly representative areas of protected land*
- *changing management paradigms and resource allocation in response to emerging threats—responding strategically, based on integrated use of traditional and scientific knowledge.* (SoE Committee 2011:787)

Since 2011, improvements and declines have been seen in the state, condition and circumstances of Australia’s heritage. Anecdotal evidence and limited surveys suggest that the values for which heritage places are reserved and listed remain generally intact. However, there have been significant impacts on natural heritage values (such as coral bleaching in the Great Barrier Reef and fires in the Tasmanian Wilderness), and substantial impacts on both Indigenous and historic heritage, including destruction of significant sites through resource extraction or development.

### Box HER4 Luna Park, Melbourne

Luna Park, St Kilda, is a Melbourne icon that is listed on the Victorian Heritage Register. Constructed in 1912, Luna Park is recognised as an exceptional operating example of a traditional fun park and symbol of popular culture. The iconic ‘moon’ entry face, historic carousel and ‘scenic railway’, which is the oldest continuously functioning roller-coaster in the world, provide a core set of historic elements within a wider set of constantly changing rides and attractions.

Like its Sydney counterpart, Luna Park is important as an operating attraction in which historic design features evoke a traditional past, while modern technology, new rides and new fabric allow the place to continue to contribute to community life.

Luna Park is an example of the diverse and eclectic range of historic places that form part of our collective heritage. It also demonstrates the benefits of flexible and innovative approaches to fabric conservation, change and ongoing use—all of which are needed for such a place to maintain its contemporary relevance (Heritage Council Victoria 2016).



Luna Park, St Kilda, Melbourne  
Photo by Martin Zweep

The most significant national heritage initiative in 2011–16 has been the preparation and launch of the Australian Heritage Strategy (Australian Government 2015a). The strategy provides a nationally driven strategic direction for heritage management across all levels of government and the community for the next 10 years (see Box HER5).

More than 17 per cent of Australian land and more than 36 per cent of Australia's marine area is now protected within reserves, and National Reserve System targets for specific bioregions are being actively pursued. However, the resources actually allocated for heritage assessment have either remained steady or diminished during 2011–16. There have been no Australian nominations to the World Heritage List, although the Australian Government is currently looking to revise and

update Australia's 'Tentative List' for World Heritage nomination. Relatively few new places have been added to the National Heritage List, although the additions that have occurred include both important Indigenous places and places that are relatively large and complex, such as the West Kimberley and the City of Broken Hill. There has been a marked increase in the number of Indigenous Protected Areas (IPAs). Progress has been made in state and local jurisdictions, but there is a long way to go before heritage registers could be regarded as comprehensive, or protected lands as truly representative.

Australian Government grant funding for heritage conservation has diminished, although there have been effective targeted programs, such as the Community

### Box HER5 Australian Heritage Strategy

*Australia has a rich natural and cultural heritage that underpins our sense of place and national identity and makes a positive contribution to the nation's wellbeing. We value our heritage and have a strong desire to see Australia's significant heritage places recognised and protected. (Australian Government 2015a:15)*

The Australian Heritage Strategy, published in December 2015, recognises that heritage is diverse, and that it encompasses natural, historic and Indigenous values. The strategy considers ways in which Australia's heritage places can be better identified and managed to ensure their long-term protection. It explores new opportunities to support and fund heritage places, including the potential for a national lottery. It considers how the community enjoys, commemorates and celebrates these special places and the stories that underpin them. The strategy highlights how heritage can lead to increased tourism and economic returns to place managers or owners and their communities, and makes clear that heritage identification, protection and management are a shared responsibility with state and local governments, businesses and communities.

The vision of the strategy is that:

*Our natural, historic and Indigenous heritage places are valued by Australians, protected for future generations and cared for by the community. (Australian Government 2015a:787)*

This vision is to be achieved through actions under 3 high-level outcomes:

- national leadership
- strong partnerships
- engaged communities.

Many actions rely on collaboration and partnerships across state, territory and local governments, as well as with community organisations, business and individuals. There are many opportunities for community involvement in the delivery of the strategy. The knowledge, skills and experience of all parties will be required to ensure that Australia's heritage is valued and well cared for into the future.



Cover of the Australian Heritage Strategy

Photo by Brian Prince, Australian Government Department of the Environment and Energy

Heritage and Icons Grants, and the Protecting National Historic Sites program. State and territory funding has varied during the past 5 years, but inconsistencies in available data mean that the overall pattern is not clear. However, there appears to have been growth in private-sector and community-group contributions to heritage conservation. Nationally funded projects within the National Environmental Research Program and its successor, the National Environmental Science Programme, have also contributed towards the conservation and management of several heritage places and reserved lands. These projects, and the Indigenous Ranger—Working on Country program, in conjunction with expanded traditional land and sea management in IPAs, have fostered the integrated use of traditional and scientific knowledge for conservation management purposes, and involved Indigenous people in active management of their heritage. They have also recognised the inseparable nature of natural and cultural heritage for Indigenous communities. Ongoing funding allocations for such programs, and for related training programs, will be important to secure and continue these achievements into the future.

There has been an increasing focus on the sustainable use and development of heritage, and the intergenerational value of embodied energy (the energy used to produce the building, including all materials), including the more recent notion that cultural inheritance values are also part of a sustainable future. There are new industry standards for sustainability (Australian Government 2015a), and there have been changes to some state legislation that will deliver heritage outcomes—for example, provisions to provide building upgrade finance that reflects the embodied energy of heritage places, legislation facilitating adaptive re-use (e.g. the *Planning and Development Infrastructure Act 2006* [SA]) and legislation that provides a more inclusive basis for involvement of Indigenous people in decisions that affect their heritage (e.g. the Victorian Aboriginal Heritage Amendment Bill 2015 and the South Australian Aboriginal Heritage [Miscellaneous] Amendment Bill 2016). Although there has been increasing international focus on the global response to climate change, and some local place-based approaches, there is, as yet, no substantive policy response that will contribute to long-term conservation of the nation's heritage in the face of climate change.



Menindee Lakes, New South Wales

Photo by Richard Mackay



# Heritage is an important part of our environment and a shared responsibility

Heritage can have natural, Indigenous and/or historic values.

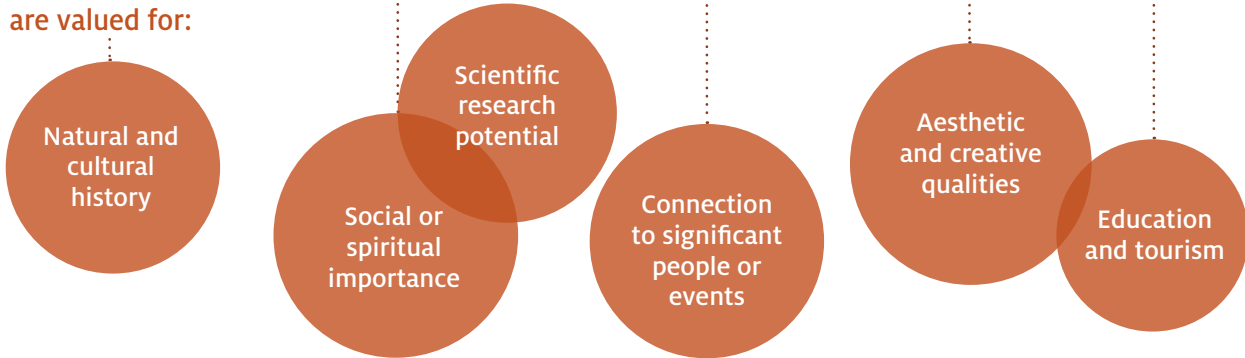


Heritage is a legacy from our past ...

... a living part of life today ...

... and the stories and places we pass on to future generations.

Heritage places are valued for:



We all have a role in looking after our heritage.





# Pressures affecting heritage

## At a glance

The drivers of the condition of Australia’s environment (including heritage) are both historical and contemporary. Historical pressures, such as a legacy of land clearing and changes in land use, cannot be addressed through short-term management. Other pressures, such as rising temperature or changes to rainfall patterns or fire regimes, warrant responses even though the root cause cannot be removed.

Contemporary pressures such as climate change, population growth and economic growth affect Australia’s heritage generally, and have some specific consequences for natural, Indigenous and historic heritage. The effects of environmental drivers are interrelated—for example, altered fire regimes or invasive species directly affect natural heritage, but may also have consequences for cultural heritage, because of their effect on Indigenous cultural heritage practices, and historical land-use patterns and cultural landscapes.

Climate change is leading to higher temperatures, more rainfall in northern Australia and less elsewhere, rising sea level, increasing frequency and intensity of wildfires, more soil erosion, additional damage from extreme weather events, and degradation caused by intensified ocean acidification. These climate change pressures have high impact and will irreversibly damage Australia’s heritage in the absence of remedial action.

Changes to population may reduce resources for conservation in rural areas while creating pressure for change and development in coastal and urban areas. Development pressures create tension between economic values and cultural values. Both inconsistent decision-making and differing perceptions of heritage value between communities and governments can lead to statutes, policies and outcomes that adversely

affect heritage. Individual sites may also be subject to neglect and vandalism or, conversely, damage from increased visitation.

Economic growth affects heritage through development projects that threaten heritage places, large-scale resource extraction and growing tourism—which may itself be associated with heritage values. Economic growth can have positive effects, including creation of employment, and support for communities and traditional cultural practices, but can also lead to altered resource allocation, such as an emphasis on providing visitor facilities or opportunities within reserved lands at the expense of conservation of heritage values. Localised decline may also result in the loss of significant original uses of heritage buildings, works, places and landscapes.

Pressures particular to natural heritage include invasive species, progressive loss of habitat (including loss of ecological connectivity), conflicting land use, and tension between the potential economic value of land and its dedication for conservation purposes.

Indigenous heritage in Australia remains under pressure from loss of knowledge and tradition, despite resurgence and reconnection in some areas and communities. Intangible Indigenous culture also continues to be threatened by disconnection between people and place, loss of language, and discontinuation of cultural practices, particularly where changing values and expectations of the growing proportion of young Indigenous people may not align with traditional values or systems. Indigenous sites continue to be threatened by incremental destruction associated with urban and industrial development, which is often approved despite heritage impacts being identified.

### At a glance (continued)

Historic heritage is particularly at risk from pressures for redevelopment on both large and small scales. The impacts range from complete destruction to inappropriate change and adverse effects on associated attributes such as visual setting. Other pressures include those that arise from population shift, including redundancy, neglect and decay. However, there is also greater recognition of the value of historic buildings and opportunities that can be provided by their adaptive re-use. The decline in professional and trade skills in the historic heritage sector, and the ageing specialist workforce and rise of nonspecialist tradespeople present a looming threat.



Remains of sealers' tryworks on Heard Island (see also the *Antarctic environment* report). The Heard Island Management Plan (AAD 2014) acknowledges that cultural heritage will be subject to managed decay, reflecting the practical realities of the context of, and pressures on, this World Heritage property

Photo by Eric Woehler

In this section, pressures on Australian heritage are considered firstly according to their major drivers: population growth and economic growth. Climate change is considered to be an overarching pressure, and specific pressures that relate particularly to natural, Indigenous or historic heritage in general are considered separately. However, many environmental drivers are interrelated and cross-disciplinary: factors that affect natural resources may also have significant cultural impacts.

## Population growth

Australia's population is projected to grow to nearly 40 million by 2055 (ABS 2016). This increase will be concentrated in our capital cities. Population growth will affect all aspects of the environment, including heritage.

Along with population growth, associated increasing recognition and prominence of heritage places can result in increased visitation to heritage places, leading to opportunities for interpretation and transmission of heritage values, but also potential damage or vandalism. Pressures from damage are greatest in popular heritage areas. In general, pressures from vandalism tend to be greatest in remote, unregulated areas, and where there is poor communication about heritage values and appropriate visitor behaviour. In addition, increasing urban density and rural decline may result in reduced attachment to local heritage places.

However, there is also likely to be an increase in the average age of Indigenous Australians in the future (ABS 2009), with recent data suggesting that, in the lead-up to 2026, the Aboriginal and Torres Strait Islander population will grow by 2.2 per cent per year compared with a projected annual growth rate of 1.6 per cent for the total Australian population (ABS 2014b). The increasing Indigenous population may create opportunities for transmission of knowledge and culture.

## Community perceptions of value

The resources that Australian society allocates to heritage conservation reflect the perception of its value by the general community, and particularly by decision-makers. There are perceptions that the 'cost' of identification and assessment of heritage can be prohibitive, and that there is a substantial opportunity cost of retaining and conserving heritage places. If the cost of identifying heritage values and retaining significant places is perceived as too high, resources may be allocated to other priority areas, so less heritage will be identified and protected. Community perceptions therefore exert a strong influence on the conservation outcomes for heritage places (see Box HER6).



## Box HER6 The Sirius Building—differing heritage perceptions

A recent decision in Sydney’s historic ‘Rocks’ precinct highlights the effects of differing perceptions of what constitutes ‘heritage’ and the potential tension between heritage and other values.

The Sirius Apartments building in Cumberland Street, The Rocks, built in 1978–79 in the Brutalist architectural style to a design by Tao (Theodore) Gofers, used off-the-form concrete and the stacking of cubic components to create a harmonious whole. Its massing was arranged to retain important views of the Sydney Opera House. The building was conceived to provide affordable public housing to people potentially displaced by other developments in the wake of the 1970s Green Bans movement, which successfully opposed wholesale

redevelopment of The Rocks and Millers Point (National Trust 2016).

In August 2016, the New South Wales Minister for Environment and Heritage declined to include this building on the NSW State Heritage Register, despite a recommendation from the NSW Heritage Council. In announcing his decision, the minister noted that the government could lose as much as \$70 million in sale proceeds that could fund social housing units elsewhere. The NSW Finance Minister was reported as commenting that the building is ‘not at all in harmony with the harbour and heritage that surrounds it’ (Saulwick 2016), but did not engage with the main rationale for heritage listing, which related more to its intrinsic design and social history.



The Sirius Building, The Rocks, Sydney, built in 1978–79 in the Brutalist architectural style  
Photo by the National Trust of Australia (NSW)

There have been no national studies of the importance of heritage in recent years, but, in 2015–16, the Heritage Council of Victoria commissioned *The community's perceptions of heritage: literature review* (Boerkamp 2016). This project recognised that heritage is a broad concept that extends beyond traditional views of history to intangible natural elements, and that heritage operates on a global, national, community and individual level. The project report notes the importance and value of heritage to Australians, and concludes that there is strong interest in learning about and protecting heritage, which acts as a medium for storytelling and intergenerational communication. But, whereas heritage may be valued by communities—and may be an important factor for people in deciding where to live, work and visit—its economic benefits are not widely understood.

Elements rated as important to protect and preserve, including native animals, natural icons and nature reserves, were seen as being irreplaceable and highly important for the future of Australia, and there is a perception that not enough is being done, particularly in the areas of education and recognition (McDonald 2010). This reflects historical data (Allen Consulting Group 2005) that indicate that most Australians felt that not enough was being done across Australia to protect its heritage. There is recognition of a shared obligation between the community and government for heritage management, but greater guidance could be provided. Noting the Australian Heritage Strategy's aspirations to broaden community engagement in the identification, protection and celebration of heritage, the project report recommends a heritage research program focused on the economic and social benefits of heritage, strengthened by input from state and local governments. The report also recognises property owners as important heritage stakeholders who require additional support.

Australia continues to grapple with how our heritage fits into the national narrative, our perception of who we are and the places that create our national identity. For example, the 2016 National Heritage place monitoring survey results suggest that decline in community appreciation is a significant issue (WHAM 2017). This is a matter that has been addressed in the Australian Heritage Strategy (Australian Government 2015a) and is currently under consideration by the Australian Heritage Council, in the context of the National Heritage List.

## Population shift

The Australian population is not only growing but continues to move away from rural centres and towards cities and coasts (see the *Built environment* report). More than 85 per cent of Australians live in urban areas, making Australia one of the world's most urbanised countries (ABS 2014a). This urban intensification causes significant pressures to which governments at all levels are seeking to respond.

The growth of urban and coastal populations places pressure on existing cultural sites, particularly those in areas selected for new suburban development. Construction of new infrastructure (such as roads, airports, energy supply facilities and telecommunications networks) can affect both natural and cultural heritage. Communities are under pressure to allow residential densities to increase—freestanding dwellings are replaced by apartment blocks, open areas are subdivided and developed, and heritage items are demolished to make way for new projects. However, there are also opportunities created, particularly for innovative conservation, through adaptation of significant historic buildings and precincts. In some urban areas, the rapidly increasing price of real estate has placed additional pressures on historic buildings that occupy sites that are perceived as 'underdeveloped'. There is inadequate understanding of the nature and extent of coastal heritage, particularly relating to cultural connections and identity for Indigenous people (Feary 2015; see also the *Coasts* report). Meanwhile, in rural areas, significant heritage places become redundant or vacant, and local communities struggle to find resources to conserve them.

## Economic growth

Heritage places are susceptible to loss of values through inappropriate changes arising from economic growth, including impact of production activities and damage from waste disposal. For example, intensification and extension of agriculture are occurring in response to food security concerns and development pressures (Australian Government 2015b), which can affect natural and Indigenous heritage. Pressures can be exacerbated or reduced by factors such as the adequacy of statutory protection and the allocation of financial resources.

Heritage places can also be affected by inconsistent approaches from decision-makers, particularly where there are major pressures for approval of new developments in urban and semi-urban areas.

## Resource extraction

Resource extraction industries place pressure on heritage places directly and indirectly. There has been significant expansion of Australia's export mining and energy sectors during recent years (e.g. Trading Economics 2016). Mining and gas exploration may result in actual removal of features of heritage value, adverse change to geological substructures, erosion or changes to groundwater. Logging and timber harvesting can affect both individual places, and intact natural and cultural landscapes. Balanced against these impacts are the economic benefits that flow from job creation—for example, the mining industry in north-western Australia provides employment for approximately 3000 Indigenous people, albeit predominantly in low-skilled jobs. There is also the benefit of additional cultural knowledge that arises from impact assessment surveys carried out, where legislative arrangements aim to identify and protect heritage values as part of the resource extraction process.

Resource extraction activities may also cause indirect pressures, such as disconnection from Indigenous and historic associative cultural landscapes, loss of access to heritage places for the people to whom they are important, visual scarring or loss of habitat corridors. Hunting and fishing can affect individual species or give rise to conflict between different land users, but may also be a significant and appropriate part of Indigenous heritage or local tradition.

## Development

Many heritage places are also valuable economic assets, and this underlying value can be both an asset and an incentive, as well as a threat to conservation. Development at all scales exerts direct pressure on heritage places, but particularly in areas where urban density is increasing, usually in response to population pressures. Development may involve construction of new buildings or infrastructure, or changes to existing structures. New developments may affect land, require removal of existing ecosystems or cultural sites,

or introduce uses that are incompatible with heritage values and the wider landscape within which they exist. There is also growing interest in domestic 'renovation' projects, which may be stimulated by reality television.

In Australia, consideration of heritage impact (and other environmental factors) is often reactive in response to compliance with statutory processes for a development that has already been announced. Heritage is therefore perceived as a 'problem' and is contested—development approval processes often characterise heritage as a barrier, rather than an opportunity. Such contests are evident in recourse to stop-work orders. Alternative approaches, such as the strategic assessment process of the EPBC Act and proactive strategic planning based on proactive assessment (as is occurring, for example, in the Greater Melbourne area and the City of Sydney), offer a means to address these pressures and the strategic protection of heritage places.

The determination process for proposed development does not always strike a balance between values, and there is a tendency to prefer perceived 'economic' benefits to the value of nature and/or culture. Local heritage places are at risk of destruction to make way for new development projects, as well as from the associated impacts of new development in the vicinity. In the case of Indigenous heritage, where native title and ownership rights are tightly connected with important traditional cultural practices, the underlying land value can influence decision-making and be given more weight than culture, with consequent adverse effects for the heritage value of the place.

## Tourism

Australian tourism is constantly growing and has exceeded 200 million visitors per year for the past 4 years. Tourism can be an opportunity and a threat for Australia's heritage.

Heritage conservation includes presentation, interpretation and celebration. Encouraging people to visit important places to learn stories and enjoy experiences connects them with their own heritage and the heritage of other people.

Although most tourist visits are to urban areas, the visitor numbers to rural areas, and to natural and cultural heritage places, are substantial and growing. In remote





Beechworth Station, Victoria, on the 'Murray to Mountains' rail trail. Experiencing heritage in a hands-on way, such as cycling along this converted historic railway line, connects people and places

Photo by Richard Mackay

Indigenous communities and IPAs, community-led tourism enterprises can be a source of employment, cultural revival and intergenerational transmission of culture. Sustainable tourism can provide important resources that facilitate heritage conservation. Well-managed tourism can raise awareness and appreciation of heritage values, as well as provide resources that can facilitate heritage conservation. However, poorly managed or unmanaged tourism also presents significant threats.

Growth in visitation may place additional pressure on the resource itself. Tourism pressures can cause physical damage (from construction of visitor facilities, increased erosion, vandalism or simply excessive use) or loss of amenity (noise, visual intrusion, pollution). For Indigenous heritage places, tourism can affect traditional access or involve culturally inappropriate visitor behaviour that affects intangible values. This is particularly the case with respect to gender-specific culturally significant sites.

## Sustainability

Globally, sustainability continues to be an emerging issue for heritage conservation. In this context, sustainable use includes retaining, conserving and passing on heritage places so that their values are transmitted to future generations. This approach is consistent with international understanding of sustainability that aims to meet the needs of the present generation without compromising the ability to meet the needs of future generations (UN 1987).

Increasing population and development in Australia necessitate more innovative approaches that maximise resource use, minimise waste and pollution, and generally reduce dependence on nonrenewable resources. Until recently, measures of sustainability in Australia have been predominantly focused on the use of renewable resources, rather than considering matters such as embodied energy. SoE 2011 noted that ratings systems such as Green Star were initially focused on building new sustainable buildings, rather than retaining and adapting old buildings, because the embodied energy in the

existing building was not included in sustainability and energy calculations. Less tangible attributes, such as natural and cultural inheritance values, were also not measured (SoE Committee 2011). However, recently, both embodied energy and broader inheritance values have been increasingly recognised. For example, the Green Building Council has developed and applied the [Green Star—Communities rating tool](#), which recognises projects that conserve, interpret and celebrate historic buildings through culture, heritage and identity measures. It also includes more broad-ranging opportunities to address Indigenous places through the Reconciliation Action Plan framework, which has been developed in conjunction with Reconciliation Australia (GBCA 2015).

## Climate change

Climate change is already affecting Australia's heritage (ANU 2009, Australia ICOMOS 2011). Australia's climate has warmed significantly, rainfall regimes have altered, and extreme fire and weather events are increasing in frequency and intensity (see 'Climate' in the *Atmosphere* report). Cultural heritage places are both directly and indirectly affected. Heritage managers will need to identify and better integrate climate change and extreme weather risk into forward planning and preparation, allocate resources accordingly, and seek out opportunities to respond to the symptoms or pressures that arise from climate change (Australian Government 2015c). In particular, opportunities should be embraced to facilitate appropriate adaptation and increase resilience (Dunlop et al. 2012).

### Rising temperatures

Australia is warming, with temperatures having increased by 1 °C during the past 100 years (BoM & CSIRO 2016; also see the *Atmosphere* report), and 2013 was Australia's warmest year on record. Rising temperatures alter ecosystems and may decrease resilience, with potentially devastating effects for niche-adapted rare and endangered species. Other pressures associated with climate change include the arrival or range expansion of other native species or introduced species, and increase in fire frequency and intensity. Climate change is also affecting seasonal patterns,

such as plant flowering and pollen distribution. Rising temperatures particularly affect the marine environment, causing adverse impacts such as coral bleaching.

Warmer air temperatures cause deterioration of building fabric, and changes to lifestyles and cultural practices. More frequent extreme temperature events may lead to increased human pressure on heritage places, including the negative effect of abandonment.

### Changing rainfall

Australia's rainfall patterns have varied greatly during the past century, but there is a long-term trend of declining rainfall in autumn and winter in south-eastern and south-western Australia. Higher rainfall in northern Australia may result in flooding and erosion of heritage places and archaeological sites, and possible destabilisation of historic buildings. Changing rainfall regimes can alter groundwater recharge patterns, and impact on avenues of trees (including memorial avenues of honour) and historic gardens. Lower rainfall in southern Australia is affecting vegetation communities, leading to associated impacts such as habitat loss, increases in invasive species, more frequent and more intense fires, and destabilisation of structures and archaeological sites. Reduced rainfall may also reduce the economic viability of rural communities, or affect Indigenous sites that are water reliant or related to the ability of local communities to live on Country. There is also increasing recognition of the social, cultural and spiritual value of water to many Indigenous Australians, and the importance of recognising the needs of Indigenous communities in relation to water access and management (Australian Government 2015b; see Box HER7).

### Rising sea levels

Sea level is rising globally, and the intensity and frequency of extreme sea levels have increased on the east and west coasts of Australia. Australian sea level has risen more rapidly than the global average since 1993, a result of natural climate variability (see the *Coasts* report for further details). Rising sea levels will place major pressure on Australia's coastal and island heritage, not only on natural heritage places, but also on cultural sites such as Aboriginal middens, sea cave deposits, archaeological sites and cave art sites. Places such as the Australian Antarctic Territory and the

## Box HER7 Macquarie River and the Macquarie Marshes—supporting cultural values through water management

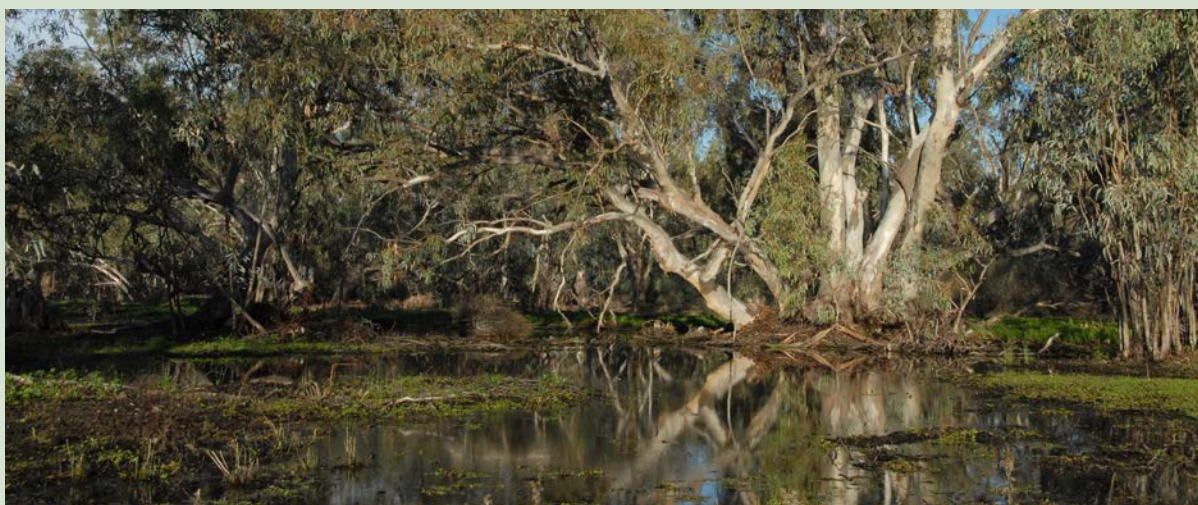
The cultural values of some places important to Indigenous people may be dependent on water. The internationally significant Macquarie Marshes are the traditional homelands of the Ngiyampaa–Wayilwan people. Explorer Charles Sturt observed them camping along the Macquarie River and using elaborate fish traps in 1833. In May 2016, the Kevin McLeod Reconciliation Award from the Australian Government Department of the Environment and Energy made it possible for Ngiyampaa–Wayilwan elders to undertake a journey along the Macquarie River and into the marshes with environmental water and natural resource managers from the Australian and New South Wales governments.

Although they no longer live in the marshes, Uncle Tom Carney and Great-Aunty Shirley Stroud happily talked about their connection with important cattle and sheep stations, such as Oxley and Buckiinguy. A large eroded area on the floodplain, possibly an important gathering place, showed evidence of traditional stone toolmaking and ovens. Elsewhere, scarred coolamon and canoe trees sheltered saltbush and warrigal greens—traditional bush foods. These vital and knowledgeable elders enjoyed spending time on Country, but they were saddened by the degraded state of this culturally important river and floodplain landscape, and expressed concern about its future.

Australian Government and New South Wales environmental water allocations help to support river and wetland health in the Macquarie catchment, particularly during dry times. In 2012, wetter conditions across the catchment resulted in environmental water being released into the marshes during spring. Culturally significant reed beds in the North Marsh Nature Reserve were inundated as part of this flow. Following the flow, 140 Aboriginal women from across New South Wales gathered for a week to collect reeds and share their knowledge and skills of traditional basket weaving at the culture camp. This demonstrates the multiple benefits of environmental water, including the maintenance of cultural values and practices of Aboriginal people.

As the 2016 Macquarie River journey drew to a close, discussions focused on how, by working together, stakeholders can contribute to linking environmental water with cultural values and activities—to maintain a ‘living culture’ and to provide a way for stories ‘from way back’ to be told to the young people, so they can be involved in environmental water planning and ensure that Country is looked after for those to come.

Source: Louise Armstrong, Senior Policy Officer Ecological Communities, Australian Government Department of the Environment and Energy



Mixed marsh–redgum forest wetland in the North Marsh Nature Reserve, Macquarie Marshes, New South Wales, after recent rain. The wetland supports habitat for nesting wedge-tailed eagles and other bird life, frogs, and traditional cultural plants, such as nardoo and reeds

Photo by Nerida Sloane



Torres Strait islands are particularly vulnerable to rising sea levels. Indirect pressures will arise from changes to settlement patterns. Changes to hydrology, soil migration and damage from storm washes may also affect historic sites, such as Port Arthur or the Sydney Opera House.

### Altered fire regimes

Fire presents a major threat to reserved lands and their ecosystems, and to Indigenous and historic heritage places (see Box HER8). The pressures and impacts from fire depend on a combination of management regimes and the responses of different plant groups. The nature, intensity, frequency and timing of fires are changing, as are the favourable ‘weather windows’ that allow proactive prevention measures.

Fire management regimes and response procedures have necessarily become more sophisticated and better adapted to the complex issues involved. Although focus understandably remains on protecting people and property, natural and cultural heritage values are increasingly recognised. If well conceived and implemented, wildfire abatement programs may reduce pressure on biodiversity, and Indigenous and historic values. There have also been positive environmental outcomes from active fire management, including emissions reductions (through early dry-season burning), and Indigenous knowledge being cultivated and transferred (through savanna fire management programs). In contrast, inappropriate fire management regimes may pose direct threats or affect cultural values.

### More frequent extreme weather events

Climate change is expected to increase the frequency and intensity of climatic events such as extreme rainfall, major sea level changes, severe fire weather, and droughts and floods, causing direct damage to natural and cultural heritage places. For example, respondents to the National Heritage survey (WHAM 2017) reported that more frequent and extreme weather events are the most significant climate change pressure threatening the listed values of National Heritage places (see Box HER9). Damage can also result from rescue and clean-up activities. Some places may suffer further deterioration through loss of economic viability.

### Ocean acidification

Increasing ocean acidification has been formally identified for more than 15 years (Kleypas et al. 1999). Ocean acidification arises from the effect of carbon dioxide on the chemistry of the ocean (see the *Marine environment* report for further details). Around 30 per cent of the carbon dioxide released to the atmosphere from burning fossil fuels is absorbed by the ocean. Once carbon dioxide has entered the ocean, it reacts with water to create a dilute acid. Since before the Industrial Revolution, the acidity of the ocean has increased by 30 per cent and carbonate ion concentrations have decreased by 30 per cent. Calcium carbonate is the critical mineral that many animals (such as coral) secrete to form their skeletons and shells.

The Intergovernmental Panel on Climate Change has concluded that current rates of ocean acidification are the highest in the past 65 million years (IPCC 2014). Given that it will take more than 10,000 years to restore ocean chemistry (Hoegh-Guldberg et al. 2007), these changes are extremely serious. Ocean acidification is anticipated to lead to changes in ecosystems that will magnify substantially, with major consequences for people and ecosystems in coastal Australia. Ocean acidification presents a substantial risk to marine organisms and ecosystems such as the Great Barrier Reef (see Box HER24). The main impact is to reduce the ability of organisms such as corals to build and maintain structures, leading to wholesale dissolution and break-up, which in turn has serious implications for coastal regions that will be experiencing more intense storms and sea level rise (Professor Ove Hoegh-Guldberg, University of Queensland, pers. comm., March 2016).

### Pressures on natural heritage

Our terrestrial and marine natural heritage is susceptible to the general pressures arising from climate change outlined above, as well as some of the pressures that flow from population and economic growth. However, other pressures apply particularly to natural heritage.

### Box HER8 Tasmanian Wilderness World Heritage Area fires in 2016

Extensive bushfires in Tasmania in early 2016 affected parts of the Tasmanian Wilderness World Heritage Area and the Western Tasmania Aboriginal Cultural Landscape, which is on the National Heritage List, as well as the Arthur–Pieman Conservation Area and Sundown Point State Reserve. These fires occurred after one of the driest summers on record and are likely to have been ignited by lightning strikes on peat soils.

Tasmanian alpine flora is not resilient to infrequent, large fires. Bare ground remains for half a century or more after fire, only decreasing once mammalian herbivores are excluded (Kirkpatrick & Bridle 2013). Many centuries may be required for coniferous heath to recover to a pre-burned state, even though most species apparently survive. In Tasmania, alpine vegetation is dominated by plants that have lasted since the Cretaceous period, but these relics have not developed long-distance dispersal mechanisms, which makes this community

very vulnerable to changing fire frequency. Fires caused by increased ignitions from lightning and arsonists are a major conservation issue (Kirkpatrick et al. 2010).

The Tasmanian Parks and Wildlife Service, Forestry Tasmania and the Tasmanian Fire Service have responded to this challenge by developing an integrated fire management and firefighting system. The distribution of fire-sensitive vegetation is mapped, so that expert fire planners can direct firefighting crews to the places where they can best minimise the chances of further vegetation loss. In the wake of the 2016 fires, the opportunity is also being taken to survey and document Aboriginal heritage during the narrow window available to assess the post-fire archaeological landscape of the west coast of Tasmania, before regrowth of vegetation cover reduces ground visibility or coastal erosion affects Aboriginal values (Tasmanian PWS 2016a).



Cushion plant and pencil pine after the Mackenzie fire, Tasmanian Wilderness World Heritage Area

Photo by Rob Blakers, CC BY-SA 3.0, via Wikimedia Commons

### Box HER9 Port Arthur Penitentiary—extreme weather impact on historic sites

Climate change is already posing risks for Australia's World Heritage properties, including historic sites. The Port Arthur Historic Site is one of the 11 historic places that together form the Australian Convict Sites World Heritage Property, which was inscribed on the World Heritage List in 2010.

At Port Arthur, high tides and storm surges threaten historic assets. In 2011, a major storm occurred concurrently with a high tide, flooding the Port Arthur Penitentiary. The impact of debris damaged the building, and salt water soaked into the fragile brick and sandstone walls.

Originally constructed as a flour mill and granary, the penitentiary was converted in 1857 to house more than 480 convicts in dormitory accommodation and separate apartments. At the time of construction, it was the largest building in Tasmania, and remains a potent symbol of Australia's penal origins.

The 2011 storm triggered a reassessment of the structural integrity of the penitentiary and confirmed the requirement for a major stabilisation project. Commencing in early 2014, the project was funded by the Tasmanian and Australian governments, and the

Port Arthur Historic Site Management Authority, using revenue raised from heritage tourism.

This substantial conservation project included the installation of reinforced concrete ground beams supporting 14 huge steel columns; around 5 kilometres of stainless steel reinforcing rod; 91 high-tensile stainless steel grouted structural anchors, precision drilled vertically down through the walls; and stainless steel bracing plates, which are concealed beneath the sandstone cornice.

The project addresses the potential impact of future storm surges and will ensure the long-term conservation of the structure. It also provides the opportunity to interpret the building in new and exciting ways that will enhance the visitor experience.

The penitentiary project illustrates the need for heritage managers to adapt to new risks, and to monitor and manage the impacts of those risks. It is important that skilled staff and systems are in place to protect the fabric and values of the site by minimising damage when extreme events occur.

Source: [Port Arthur Historic Site Management Authority](#)



Severe weather and high tides at Port Arthur, Tasmania, 2011  
Photo by the Port Arthur Historic Site Management Authority



## Invasive species

Invasive species and organisms place major pressure on natural ecosystems and their natural heritage values. Pest plants, pest animals and pathogens present an increasing threat to biodiversity generally, and specifically to threatened species (see the *Biodiversity* and *Land* reports). Many species, such as cane toads, carp, mimosa, feral cats, rabbits and camels, are already well established. Others, such as myrtle rust, pose serious emerging threats. There has been substantial national government engagement with biosecurity through the Intergovernmental Agreement on Biosecurity, which came into effect in January 2012, and substantial funding allocations to combat pest species, in accordance with the Australian Government agricultural competitiveness white paper, which places particular emphasis on supporting agriculture (Australian Government 2015d; see Box HER10).

Impacts of invasive species on the natural environment may also affect Indigenous and historic heritage. For example, invasive weeds such as buffel grass and gamba grass greatly increase fire intensity and elevate the risk of damage to art sites, as well as changing the structure and composition of natural ecosystems. The widespread presence of invasive weeds in western Arnhem Land also affects the ability of traditional custodians to use the landscape for food gathering and ceremony (see Box HER21).

## Loss of habitat

Habitat loss and fragmentation remain a major threat to Australia's flora and fauna, and are directly responsible for the extinction of Australian species. Australia currently has a growing list of almost 1800 plants and animals listed nationally as threatened (Australian Government 2015e). Two major drivers of habitat loss are land clearing and climate change. Although large-scale land clearing is primarily a legacy issue representing past human activity, it continues to destroy native habitat in a number of states, particularly Queensland (see the *Land* report). Habitat fragmentation reduces the opportunities for species to move to more favourable habitats as the impacts of climate change intensify. Climate change will continue to exert pressure, and will increase the severity and frequency of fires,

### Box HER10 Astrebla Downs— management response to invasive species

The cat eradication and bilby recovery program at Astrebla Downs is an inspirational example of an effective management response to invasive species.

Astrebla Downs National Park (Astrebla Downs) was declared in 1996 to protect Queensland's most significant population of the endangered greater bilby (*Macrotis lagotis*). In 2011, the bilby population at Astrebla Downs was estimated to be 700.

High rainfall on the Mitchell grass plains from 2009 to 2011 resulted in a plague of native long-haired rats (*Rattus villosissimus*), which provided an abundant food source and resulted in a feral cat population boom. In April 2012, a sudden influx of feral cats was reported at Astrebla Downs. Analysis of feral cat diets found that they were almost 100 per cent long-haired rat.

Queensland Parks and Wildlife Service rangers immediately implemented actions to control the cats, with some support from the Sporting Shooters Association of Australia.



Feral cat (4.6 kilograms) killed with bilby (2 kilograms), 15 May 2013

Photo by B Nolan © Queensland Government

## Box HER10 (continued)

In March 2013, the rat populations crashed, and cats were driven to switch to alternative food sources. Cats were observed hunting bilbies in April and May 2013, and analysis of the cats' diets found that bilbies were a significant food source.

The primary control method was shooting, augmented by 1080 baiting. Approximately 3000 feral cats were shot from May 2012 to late 2015 (with an additional number eradicated by baiting). These controls, along with the depletion of virtually all food sources, led to a significant decline in cat numbers by June 2013.

Regular spotlighting has continued at Astrebla Downs since 2012. There was an 18-month period when diggings and scratchings were the only evidence of bilbies, and there was great concern for the survival of the species. Since May 2014, bilby activity and the number of bilby sightings have increased. Preliminary results of an aerial survey conducted in September 2015 indicate that the bilby population on Astrebla Downs is now around 1000 animals.

Queensland Parks and Wildlife rangers monitor cat numbers approximately every 6 weeks from April to September every year, and continue to implement control methods and investigation of cats' diets.

Source: Marty McLaughlin, Principal Ranger Central Region, Queensland Parks and Wildlife Service



Bilby at a burrow entrance, Astrebla Downs, Queensland, May 2014

Photo by J Augusteyn © Queensland Government

some invasive species and other events, such as droughts, floods, coral bleaching and saltwater intrusion into coastal freshwater systems. Fire and extractive industries can also irreparably change and reduce habitat.

## Changing use

Changing land and marine use places pressures on both natural and cultural heritage. Landscape-scale shifts, such as new mining or large plantations on previous farmland, and ever-increasing urban sprawl, may increase impacts on reserves, adjacent natural ecosystems and connectivity; alter wildlife corridors; or increase risks for rare and endangered ecosystems. There may be physical impacts from resource extraction, such as run-off or subsidence, or indirect impacts, such as altered groundwater flows. Even within reserves, changes to allow new recreational uses can lead to unintended pressures and damage if they are not well planned and carefully managed. Pressure from changing use may be reduced by strategic planning and decision-making that is informed by thorough resource assessment.

## Loss of ecological connectivity

Related to loss of habitat and land-use changes is the progressive loss of ecological connectivity across the Australian continent. The disconnect between areas of particular species' habitats can cause systemic degradation of the whole, leading to loss of biodiversity and resilience. This includes species and ecological communities becoming threatened or extinct, either locally or more broadly. The pressure is broader than suggested by the species and ecosystems that are formally recognised as threatened. Australia's Biodiversity Conservation Strategy 2010–2030 (National Biodiversity Strategy Review Task Group 2010) and the National Wildlife Corridors Plan (DSEWPaC 2012) recognise the need to improve connectivity (see Box HER11). Although improved connectivity remains a priority for the Australian Government, connectivity objectives are now being pursued through initiatives that are implemented at regional and local scales, such as the 20 Million Trees Programme (Biodiversity Working Group 2016; see also 'Connectivity and revegetation' in the *Biodiversity* report).

### Box HER11 Great Eastern Ranges Initiative

The Great Eastern Ranges Initiative is a strategic response to the ongoing decline and mass extinction of native species in eastern Australia. It draws together industry, government and nongovernment organisations that are active in the conservation of our natural heritage, seeking to promote landscape-wide connectivity and high-priority biodiversity projects within the corridor.

The project aims to support biodiversity by strengthening the habitat value of a 3600 kilometre corridor of native vegetation between western Victoria and far north Queensland (Figure HER1), enabling native species to move, adapt to and survive the environmental challenges that threaten their long-term survival.

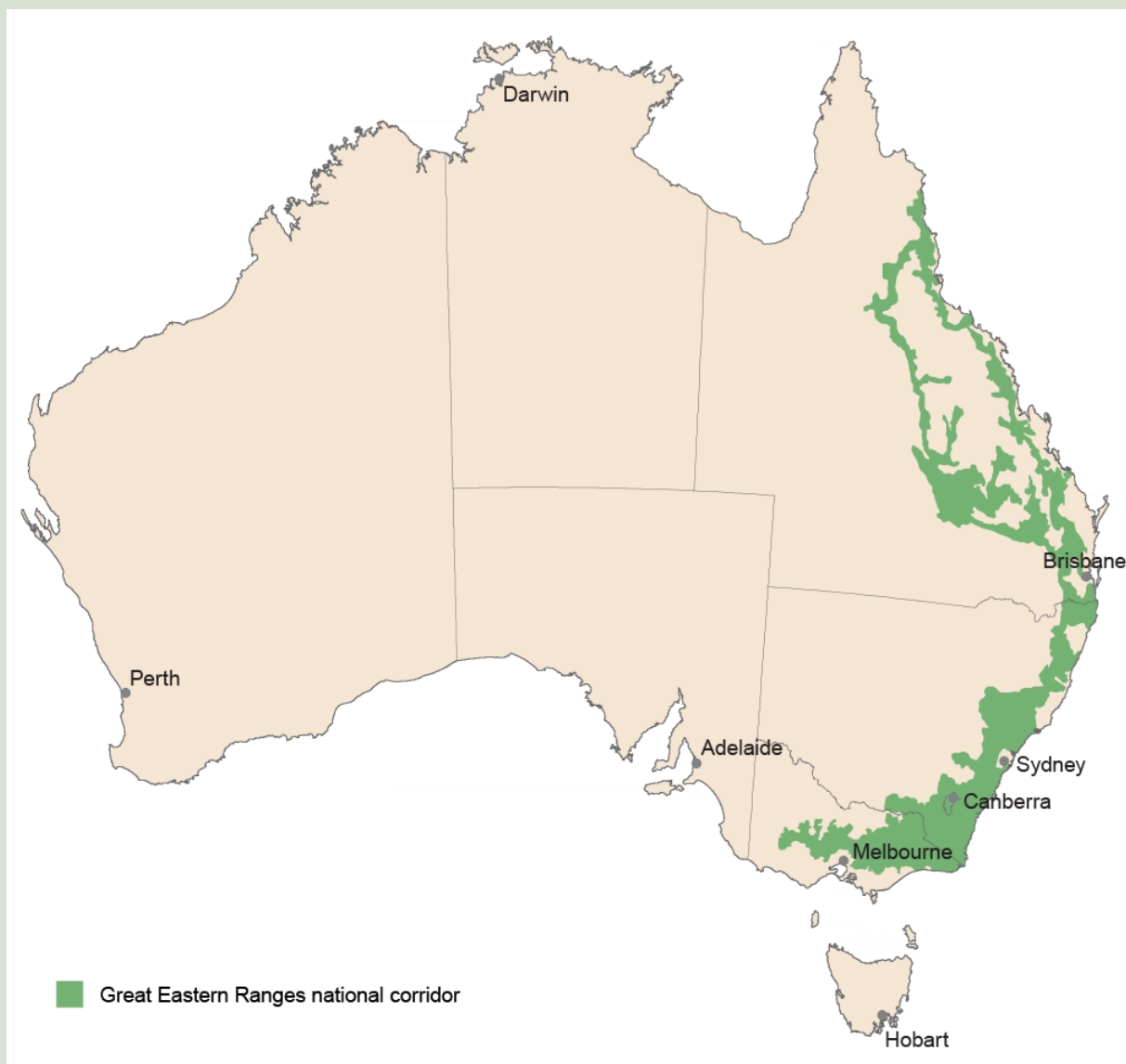


Figure HER1 Great Eastern Ranges connectivity corridor



### Box HER11 (continued)

This is to be achieved by (GERI 2016):

- improving the connectivity, condition and resilience of landscapes and habitats, thus halting the further decline and loss of species
- increasing the number of people working together in locally organised and managed regional partnerships to improve the connectivity and resilience of landscapes
- improving transfer of knowledge, skills and practices through community engagement, involvement and education
- improving understanding of species, ecosystems and local landscapes in the context of the wider Great Eastern Ranges, and their requirements for long-term persistence

Source: Mackey et al. (2010).

## Soil erosion

Natural heritage places are affected by a variety of erosion forms: streambank, beach, tracks, gully, wind, mass movement and sheet erosion. Despite soil conservation programs, current rates of soil erosion across much of Australia exceed soil formation rates (see the *Land* report). Mass movement and sheet erosion have far greater potential for habitat loss and adverse impacts on natural heritage values than other forms. Erosion is exacerbated by changing climate, especially desiccation and increased wind, but, if not well managed, can also arise from economic factors such as development, changing land use or increased tourism.

## Pressures on Indigenous heritage

There is a recognised gap between Indigenous Australians and the wider Australian community across many areas of economic and social measures and activity, including cultural heritage (COAG 2008). Although there have been very significant improvements during recent years in empowering and enabling Indigenous people to care for their Country, many Indigenous communities still need to fight for access to their heritage places and permission to pursue traditional practices, and to prevent incremental damage.

Disruption to traditional knowledge and culture places direct pressure on Indigenous communities and heritage. If Indigenous people with traditional knowledge have not been involved in heritage place assessment and nomination processes, heritage values related to tradition may not be correctly identified and managed. There are also continuing pressures on Indigenous Country that cause damage or destruction of sites through development, including urban intensification, agricultural development and resource extraction.

### Loss of traditional knowledge

Indigenous heritage has not been comprehensively surveyed and assessed across any Australian jurisdiction. Many of the assessments that have occurred were development driven and localised, or occasionally part of academic or community research projects. Knowledge of the nature and extent of Indigenous heritage resources is therefore incomplete, and decisions made based on this incomplete picture place pressure on an unknown but finite resource.

Intangible values of Indigenous heritage places are directly degraded because the knowledge relating to associated belief and traditional practices may have been lost or diminished, or access may not have been facilitated to allow transmission of this knowledge. This loss of knowledge undermines and affects Indigenous intellectual property rights and can indirectly affect cultural tourism opportunities.

On the positive side, native title and land rights have facilitated protection of Indigenous heritage, and traditional knowledge has been maintained in very large areas of Australia. There are also many examples of continuing connection with Country, and traditional owner groups reviving cultural knowledge and rediscovering previously unknown culturally significant places, leading to resurgence, reconnection and transmission of traditional knowledge.

### Loss of traditional cultural practice and social connections

Traditional practice may range from special ceremonies for a few individuals to wider land management across large natural and cultural landscapes. Traditional land and sea management practices are crucial to the wellbeing of Indigenous people, and to maintaining the



'Nhatji' sculpted by Badger Bates in 1993 is part of the 'living desert and sculptures' at Broken Hill, New South Wales  
Photo by Richard Mackay



values of their Country and transmitting them to future generations. Traditional ecological knowledge is also increasingly recognised for its potential contribution to contemporary natural resource management.

If people are denied access to, or otherwise disconnected from, Country, or prevented from pursuing traditional practice, or if the knowledge of place, spirit or traditional practice is not passed on, the Indigenous values of the place diminish (AHC 2002). Such loss can also adversely affect the health and socio-economic condition of Indigenous communities.

In recent years, there have also been strong continuing connections and significant reconnections between Indigenous communities in places. From a heritage perspective, such connections do not necessarily need to be continuous to be significant. In some cases, re-acquisition of knowledge through the rediscovery of significant places and practices—which has arisen from opportunities to participate in cultural heritage management—counters the loss of traditional cultural practice and social connections.

### Incremental destruction

The economic imperatives of development and infrastructure delivery can place great pressure on sensitive Indigenous heritage places and overemphasise the individual ‘site’, rather than understanding that Indigenous heritage exists at a landscape scale, covering both tangible and intangible manifestations. Although in-principle support for landscape planning and assessment exists, it has not been widely resourced or actively implemented by policy-makers. If sites are not listed and identified before developments are proposed, consideration of their cultural value is relegated to a reactive impact assessment.

Acknowledgement of the pressures on Indigenous heritage sites and their custodians is important in areas of fast-paced development and industrialisation. Failure to understand the heritage issues of sensitive cultural landscapes can lead to incremental, and sometimes inadvertent, destruction.

Although some sites are destroyed because they have not been identified or assessed, many are destroyed following conscious, informed decisions by development-consent authorities. Despite the protection that is offered to some large landscape areas that include

Indigenous heritage within reserved or heritage-listed lands (such as Kakadu, the West Kimberley and western Tasmania, and some state and territory national parks), physical destruction of Indigenous sites continues to occur across Australia.

Increasingly, the process employed by state agencies includes consultation with, and, in some cases, agreement from, traditional owners and other Indigenous stakeholders. Some statutory provisions include aims to prioritise protection and minimise harm to Aboriginal heritage places and landscapes (e.g. the *Aboriginal Heritage Act 2006* [Vic]). Despite this, approved lawful destruction, even where it includes decision-making by traditional owners, remains a major threat to Indigenous heritage. The total quantum of such impact is not clear, because there is no national assessment or public reporting of the cumulative impact of development on Indigenous heritage. Conversely, there are also examples of collaboratively prepared cultural heritage management plans leading to improved protection for Indigenous heritage places (see Box HER38).

High-profile conflicts between Indigenous people, government decision-makers and industries (including mining, forestry and urban development) about developments that destroy significant and sacred sites continue. Some recent legal cases have highlighted the challenges faced by Indigenous people seeking to enforce protection of their heritage (see Box HER12).

### Indigenous language

Indigenous language is an intangible aspect of heritage, but provides an important surrogate indicator of the maintenance of traditional knowledge. It affects the ability to identify and appropriately manage heritage places, and has been used as an indicator in previous SoE reporting (Pearson et al. 1998). The Second National Indigenous Languages Survey provides a useful indicative snapshot of the current condition of Indigenous languages in Australia. The survey notes that, although some traditional languages remain very strong and are even gaining more speakers, others continue to show signs of decline. The survey concludes that, despite an overwhelming desire to strengthen traditional languages, all traditional Indigenous languages remain at risk of decline (Marmion et al. 2014).



## Box HER12 Rocla Quarry, Calga, New South Wales

The Darkinjung Local Aboriginal Land Council and other objectors to an approved sand quarry expansion at Calga in New South Wales successfully overturned the approval on appeal to the New South Wales Land and Environment Court.

The court's decision to refuse the expansion rested on its application of the precautionary principle to the impact of the quarry's expansion on a significant Aboriginal 'Women's Site' in the project area and the wider Aboriginal cultural landscape.

The court did not accept the proponent's argument that the project area's intangible cultural heritage qualities could be protected through adaptive management and mitigation measures, considering such measures to be 'too simplistic due to the current state of knowledge about the development site and the area around it.'

Importantly, the court viewed the significance of the Women's Site as part of the wider cultural landscape (NSW LEC 2015).

The decision is a rare example where intangible Indigenous values prevailed over economic concerns and proposed landscape-scale resource extraction.



Aerial view of the existing Rocla Quarry, New South Wales, in the broader landscape

Photo by Beatty Legal

## Pressures on historic heritage

### Changing use and tension between cultural and economic values

For many historic sites, the current use of the site may itself be significant in a heritage context. Churches, community halls and post offices fall into this category. Pressures for change of use may arise in response to, for example, altered economic conditions, changing demographics or new commercial opportunities. Increasingly, adaptation is seen as an appropriate response; however, successful adaptation requires an understanding of the nature of the heritage values of place. Sometimes a new use is compatible with the heritage value of a place (see Box HER13), but not always.

For some historic sites, direct tension arises between cultural and economic values, with greater emphasis often placed on economic values. Australian State Heritage Officials observed that there is an increase in 'contested' heritage, covering both conflict between different heritage values, and conflict between heritage values and other (nonheritage) priorities, as evidenced by an increasing number of applications for protection orders.

### Loss of traditional heritage trade skills

The threat posed by declining heritage trade skills was prominently identified in the 'Heritage' chapter of SoE 2011 (Godden Mackay Logan 2010, SoE Committee 2011). Although there have been some subsequent success stories (see Box HER14), overall, there has been a further decline in heritage trades training and available resources (DoEE 2017a), which is recognised as a threat to the integrity and authenticity of historic heritage places (e.g. WHAM 2017).

Although not as serious as the current situation in relation to heritage trades, there are also emerging issues in the supply of trained and experienced heritage professionals. It may also be that specialist skills in the heritage sector remain undervalued, and that works and projects at heritage places are not always guided or undertaken using an appropriate degree of professional expertise.

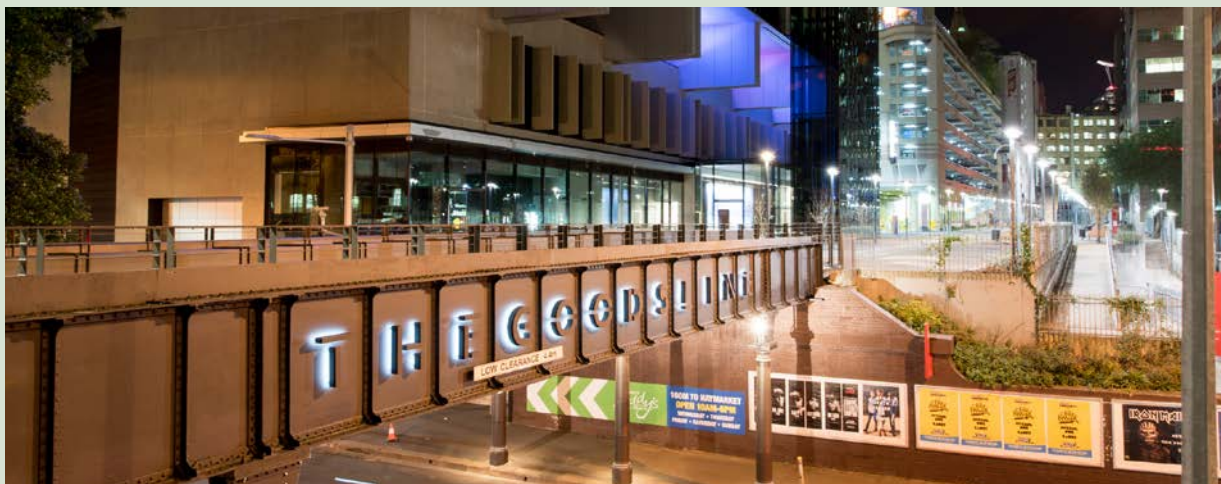
### Box HER13 The Goods Line, Sydney

A former disused rail corridor between Central Station and Darling Harbour in Sydney has been transformed into a vibrant public open space (SHFA 2016). This unique elevated park has seen a significant, but redundant, industrial heritage feature re-imagined as a leafy civic spine in the heart of Sydney's most densely populated area.

The original railway goods line, part of Sydney's first railway opened in 1855, ran from the Sydney Yard (Central Station) to Darling Harbour. In 1911, it was extended to Dulwich Hill, with major rail yards at Rozelle and Darling Harbour. Much of the line was closed when Darling Harbour Yard was redeveloped into the successful Darling Harbour precinct of today.

Commissioned by the Sydney Harbour Foreshore Authority, this new public precinct connects more than 80,000 tertiary students, locals and visitors to the attractions of Darling Harbour, via iconic landmarks such as the ABC headquarters and the new Dr Chau Chak Wing Building of the University of Technology Sydney, designed by internationally renowned architect Frank Gehry. The former elevated rail corridor features a series of 'platforms', which can be used for a variety of activities, including public entertainment, recreation and festivals.

The Goods Line is an example of the potential for innovative ideas and good design to incorporate heritage and history within creative public places.



The Goods Line Railway Bridge, Sydney

Photo by Stephen Pierce

## Box HER14 Inneston Village Heritage Artisan Training Program, South Australia

The Heritage Artisan Training Program has been delivered by Applied Building Conservation Training since 2009 in collaboration with the South Australian Department of Environment, Water and Natural Resources (DEWNR) and the South Australian Construction Industry Training Board. The program arose from a national study of dying artisan crafts and trades within the construction industry, and addresses skill gaps in existing training curriculums across tertiary and vocational institutions.

Between 2009 and 2016, more than 25 courses with approximately 750 attendees have been presented. Courses have been generally run on state or local heritage-listed structures, with a focus on regional areas. The evolving course content has diversified to cater for increased industry interest from tradespersons, planners, engineers and architects. This growing interest reflects the increasing recognition that traditional construction material use is more advantageous and environmentally sustainable in general construction. Some courses have also been undertaken as part of adaptive re-use projects, where severely dilapidated historic structures have been adapted to a new use with a substantial commercial return through tourist accommodation.

The curriculum is anchored within the principles of the Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013, which defines the basic principles and procedures to be followed in the conservation of Australian heritage places. Courses are run with a theory component as a knowledge base. The theory is then put into practice on real structures needing conservation.

Topics covered include traditional architectural stonemasonry, lath and plaster, lime renders, traditional methods of construction, identifying stone, lime mortar technology, timber conservation, traditional metal fabrication, dry stone walling, and the use of modern technologies within traditional construction.

Each participant receives a certificate of completion that is endorsed by DEWNR and the Construction Industry Training Board, making participants eligible to submit tenders for government works on state heritage-listed buildings.

The most successful program to date has been the Inneston Village Program at Innes National Park, Yorke Peninsula. Inneston village was a small gypsum mining town that began in 1913 and lasted until the depression years of the 1930s. As the mining works became more established, the company built stone cottages for its managers and workers. During the past 4 years, the Heritage Artisan Training Programs have worked to conserve these buildings with the support of local tradespeople, apprentices in the construction industry and national park rangers. Four historic buildings have been conserved and are being used for tourist accommodation, thereby generating revenue.

The program, which was recognised in 2013 with the South Heritage Heroes Award for valued contribution to the conservation of South Australia's heritage and the recording of its history, shows how creation of demand and government-funded conservation programs can facilitate transmission of vital heritage trade skills to future generations.

Source: Keith McAllister, Managing Director, CEO, Applied Building Conservation Training Pty Ltd



Inneston Village Heritage Artisan Training Program  
Photo by Keith McAllister



## Assessment summary 1

### Pressures affecting heritage values

Component	Summary	Assessment grade				Confidence		Comparability
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend	To 2011 assessment
Climate change—rising temperatures	Rising temperatures will cause habitat loss, species extinction, changes to traditional lifestyles and physical damage							
Climate change—changing rainfall	Rainfall changes affect habitat, and create flooding, erosion, destabilisation and desiccation. These changes may affect water-reliant cultural practices							
Climate change—rising sea level	Sea level rise will cause loss of coastal habitats and sites, and changes to traditional lifestyles and settlement patterns, as well as indirect impacts through local economic effects							
Climate change—altered fire regimes	Wildfires are increasing in frequency and intensity, causing loss of biodiversity and habitat, damage to sites and landscapes, and changes to cultural practices							
Climate change—more frequent extreme weather events	Damage is wrought by increases in the frequency and severity of extreme weather events, as well as collateral damage caused by rescue or clean-up activities, and loss of financial and human resources							
Climate change—ocean acidification	Ocean acidification has increased dramatically and is expected to magnify substantially, with serious consequences for ecosystems in coastal Australia							
Population growth—community perceptions of value	For some places, heritage values are perceived as less important than economic values. Increasing overseas investment means that less value is placed on Australian heritage by some sections of the community. The lower priority afforded to heritage is reflected in reduced public-sector funding							

## Assessment summary 1 (continued)

Component	Summary	Assessment grade				Confidence		Comparability
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend	To 2011 assessment
Population growth—population shift	Decline in rural population reduces demand for facilities and infrastructure, thereby placing pressure on redundant built assets and lessening resources available for heritage conservation Urban and coastal population increase creates more intensive land uses, and pressures from increasing land values and infrastructure demand							
Economic growth—resource extraction	Major resource extraction industries, such as mining and forestry, create pressure on both natural and cultural heritage places. The disparity in perceived value between exploitable resources and heritage resources exacerbates this pressure. Government actively seeks to remove barriers and facilitate resource extraction projects. Both emerging technologies for new resources, such as coal-seam gas, and legacy issues from closed mines create challenges for natural and cultural heritage conservation							
Economic growth—development	Developments may threaten the survival of heritage places, or jeopardise their natural and cultural values through inappropriate changes or impact on their setting The development-consent process often characterises heritage as a barrier							

## Assessment summary 1 (continued)

Component	Summary	Assessment grade				Confidence		Comparability
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend	To 2011 assessment
Economic growth—tourism	Heritage makes a major contribution to tourism in Australia. There is tension between the values of some heritage places and their role as tourist attractions. At some heritage places, tourism opportunities are favoured over conservation requirements. Although interpretation and experience of heritage are important conservation activities, overvisitation or inappropriate visitor behaviour can harm heritage values. Perceived importance of 'visitor services' can divert resources from conservation activities	■	■	■	■	●	◐	◊
Economic growth—sustainability	Measures of sustainability are beginning to consider embodied energy, natural and cultural inheritance values, lifecycles, and use of renewable resources. Continuing innovative approaches to achieving good heritage outcomes are desirable	■	■	■	■	◐	◐	X
Pressures on natural heritage—invasive species	Invasive species and pathogens directly affect natural heritage values. Despite Australia's active management, the number of terrestrial and marine invasive species, and the intensity of their effects are increasing	■	■	■	■	●	◐	◊
Pressures on natural heritage—loss of habitat	Impacts from climate change, land clearing and land management continue to affect terrestrial and marine ecosystems	■	■	■	■	●	◐	◊
Pressures on natural heritage—land use	Australian land suffers from the relic impact of extensive land clearing and the incremental impact of ongoing land clearing. Use of land for development, urbanisation, agriculture and resource extraction may conflict with natural values	■	■	■	■	◐	◐	◊



## Assessment summary 1 (continued)

Component	Summary	Assessment grade				Confidence		Comparability
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend	To 2011 assessment
Pressures on natural heritage—soil erosion	Natural heritage places remain at high risk from severe erosion types, such as mass soil movement, and sheet and gully erosion, and moderate risk from other erosion forms. Reliable trend data are not available							
Pressures on natural heritage—ecological connectivity	Progressive loss of ecological connectivity may lead to systemic degradation of the total natural heritage, leading to extinction and loss of biodiversity							
Pressures on Indigenous heritage—loss of knowledge	Knowledge of the nature and extent of the resource is incomplete. The intangible values of Indigenous heritage places are directly degraded when the knowledge relating to associated belief is lost and/or when Indigenous people are not able to use that knowledge on Country							
Pressures on Indigenous heritage—loss of traditional cultural practice and social connections	Some Indigenous communities in Australia continue to be disconnected from Country or face significant challenges in pursuing cultural practices. However, in other places, there are appropriate, inclusive management arrangements for Indigenous heritage							
Pressures on Indigenous heritage—incremental destruction	Indigenous heritage incurs ongoing incremental destruction through an accumulation of decisions associated with individual development and resource extraction projects							

## Assessment summary 1 (continued)

Component	Summary	Assessment grade				Confidence		Comparability
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend	To 2011 assessment
Pressures on Indigenous heritage—Indigenous language	Some traditional languages remain very strong and are gaining more speakers, but others are declining. Despite a widespread desire to strengthen traditional languages, all traditional Indigenous languages remain at risk							
Pressures on historic heritage—changing use and economic values	Some historic heritage places are perceived as redundant or incapable of new use, creating pressures to demolish or redevelop. Public heritage assets are increasingly being sold or leased. Major infrastructure projects and increased urban density threaten historic heritage places. However, there is also an emerging tendency to retain and adapt historic structures							
Pressures on historic heritage—loss of traditional heritage trade skills	The continuing decline in availability of specialist heritage tradespeople, lack of training opportunities and a looming skills shortage are placing major pressures on historic heritage conservation							

<b>Recent trends</b> Improving Deteriorating Stable Unclear	<b>Grades</b> <b>Very low impact:</b> Current and predicted impacts may have some effect on the heritage values of individual places <b>Low impact:</b> Current and predicted impacts are likely to have some effect on the heritage values of individual places and some landscapes <b>High impact:</b> Current and predicted impacts are wide-ranging and are likely to affect the heritage values of individual places and landscapes, and the whole of Australia's heritage <b>Very high impact:</b> Current and predicted impacts are wide-ranging and, if unchecked, will irreversibly affect the heritage values of individual places and landscapes, and the whole of Australia's heritage	<b>Confidence</b> <b>Adequate:</b> Adequate high-quality evidence and high level of consensus <b>Somewhat adequate:</b> Adequate high-quality evidence or high level of consensus <b>Limited:</b> Limited evidence or limited consensus <b>Very limited:</b> Limited evidence and limited consensus <b>Low:</b> Evidence and consensus too low to make an assessment	<b>Comparability</b> <b>Comparable:</b> Grade and trend are comparable to the previous assessment <b>Somewhat comparable:</b> Grade and trend are somewhat comparable to the previous assessment <b>Not comparable:</b> Grade and trend are not comparable to the previous assessment <b>Not previously assessed</b>
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# State and trends of Australia's heritage

## At a glance

Australia's heritage registers list natural and cultural places at national, state and local levels, but in an inconsistent manner, and with disparate levels of resourcing and regulation. As announced during the 2014 International Union for Conservation of Nature World Parks Congress, more than 17 per cent of Australian land is now within conservation reserves and Indigenous Protected Areas (IPAs), meeting one element of the threshold nominated in the Convention on Biological Diversity (CBD). The number of IPAs, in particular, has increased during the past 5 years, although not all IPAs have the same protected status, and the allowable uses and the statutory controls for some may not ensure protection of natural and cultural heritage values. Australia has one of the largest marine reserve networks in the world—more than 36 per cent of Australian waters are protected, exceeding the CBD Aichi Biodiversity Target 11, which is to include at least 10 per cent of marine waters in marine protected areas. However, such summary targets do not reflect the fine grain of significant ecosystems and habitats. Thirty-two of Australia's 89 terrestrial bioregions have less than 10 per cent of their area within reserved land. A greater percentage than the Aichi target is needed, comprising both protected and privately held lands, selected and managed to retain large-scale landscapes and promote ecosystem connectivity.

The role of Indigenous people in managing Indigenous heritage has expanded, as has recognition of the importance of intangible Indigenous heritage. Landscape-based approaches to assessing and managing Indigenous heritage are more prevalent, but individual assessment and development decisions continue to cause incremental destruction. Indigenous cultural practices can also be adversely affected by other environmental factors, such as land degradation and weed infestation.

Australia's reserved lands and marine reserves continue to face threats from invasive species, fire, erosion, use and impacts on threatened species. In addition, resources allocated for conservation of reserved lands have decreased relative to their extent. (Available information on reserved lands has been gathered from diverse sources and may not be truly representative.)

Attention has been focused on the integrity and representativeness of historic heritage registers. Nationally consistent information is not available about the condition of listed heritage places, but processes have been instigated to facilitate improved monitoring of the state of listed places. There have been no systematic national assessments to determine whether historic heritage places, apart from those on the National Heritage List, remain in good condition and retain their identified values. Historic heritage places that are vacant, not in use or in poor condition remain under threat.

The condition and integrity of Australia's reserved and listed heritage remain generally good, but there are examples of destruction, degradation and deterioration. The nation's natural and cultural resources are not yet adequately identified. Resources allocated for conservation and management of heritage have declined, both in real terms and relative to the extent of places being conserved and managed.

Unlike other aspects of the Australian environment, heritage places are already a discrete subset, defined by having natural or cultural 'value'. Therefore, the appropriate benchmark for measuring the state of Australia's heritage places is not a particular former condition (i.e. at the time of listing), but whether the place retains its heritage values. Retaining heritage values creates the opportunity to transmit value to other generations—an aim that aligns closely with the notion of heritage as 'inheritance'.



Heritage places and their values transcend jurisdictional boundaries and site types. However, identification and assessment can be described according to the different jurisdictions under which heritage places receive listing and statutory protection (i.e. world, national, state or local), and according to the nature of heritage places (i.e. natural, Indigenous or historic). The following assessments and commentary present information for both frameworks.

Where relevant, the commentary and assessments in this section consider the natural and cultural heritage indicators, which were first prepared for SoE 1998 and then referenced in SoE reports for 2001, 2006 and 2011 (Pearson et al. 1998). However, the methodology and resources for SoE 2016 have not extended to physical surveys, or independent research and documentation, so greater reliance has been placed on opinions expressed at workshops, anecdotal commentary and case studies.

## Identification

In Australia, heritage is defined by both statutory and nonstatutory listing processes, which result in inventories and areas of reserved lands. There is an inherent tension in the philosophical difference between identifying a series of individual sites as heritage (a 'dots on the map' approach) and listing whole cultural landscapes or reserving areas that may incorporate individual significant places, but may also have multiple layered values. Nowhere is this tension more apparent than in the difference between a single Indigenous site and the broader Indigenous perspective of Country.

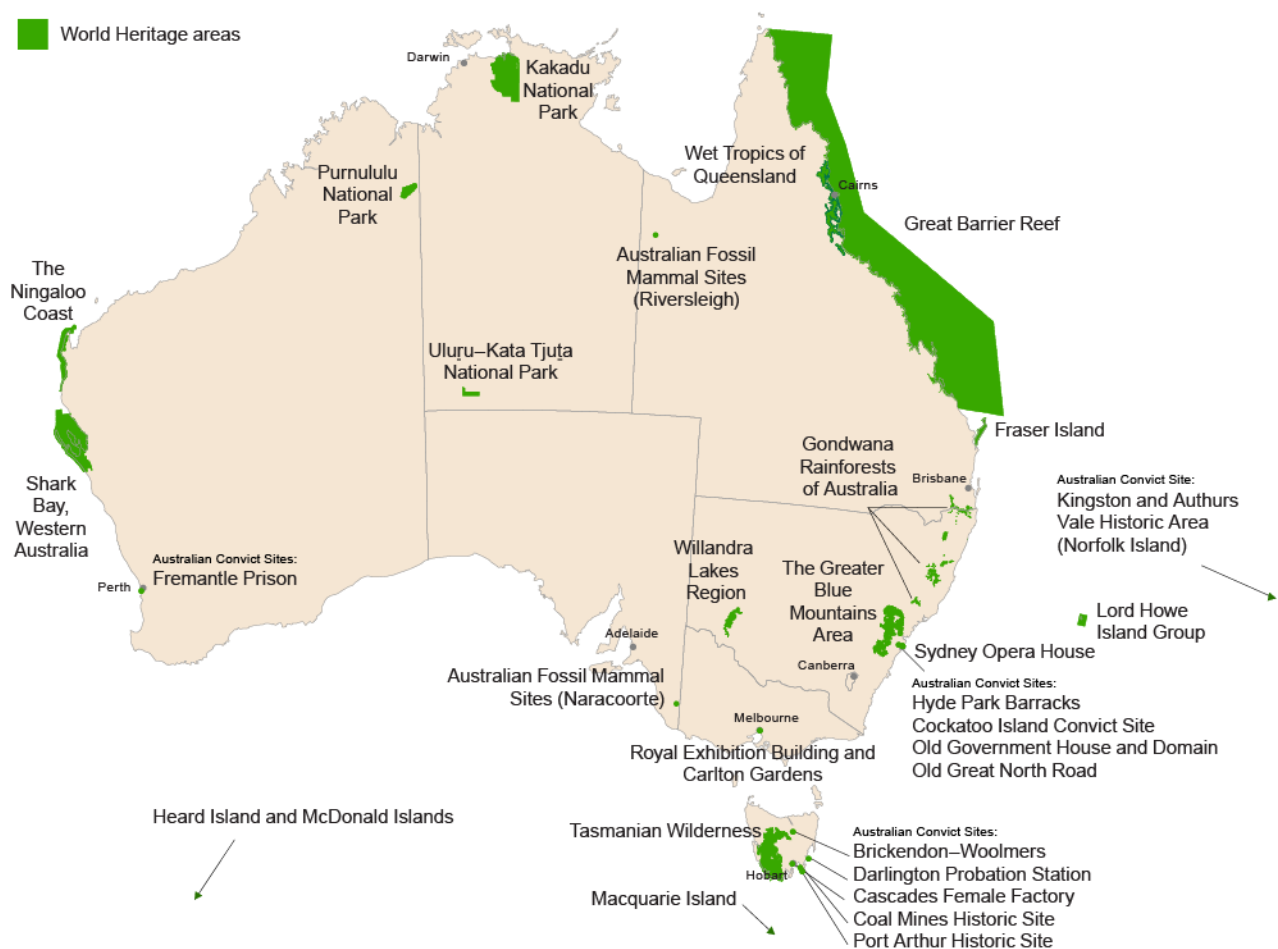
## World Heritage

The World Heritage List (of the World Heritage Convention [WHC]) comprises places that are of 'outstanding universal value' to humanity in both the natural and cultural environments. Australia has 19 World Heritage properties (Figure HER2). Some of these are serial listings or properties that encompass more than 1 land or sea area. The Ningaloo Coast was inscribed on the World Heritage List in 2011. Since then, resources have been allocated to consolidating and extending some existing World Heritage areas. The Koongarra area, of approximately 1200 hectares, was added to the Kakadu World Heritage Area by the

World Heritage Committee in 2011 (World Heritage Committee 2011). An extension to the Tasmanian Wilderness World Heritage Area of approximately 12 per cent was approved by the World Heritage Committee in 2013 (World Heritage Committee 2013).

Australia has not reviewed its World Heritage Tentative List for some years, but the Australian Heritage Strategy includes a commitment to updating the list in consultation with the states and territories, the Australia Chapter of the International Council on Monuments and Sites (Australia ICOMOS), the Australian Committee for the International Union for Conservation of Nature (IUCN) and traditional owners (Australian Government 2015a, Outcome 1). A meeting of Australian environment ministers in December 2015 agreed to explore potential nominations for Cape York in Queensland, subject to community and traditional owner views, and the Budj Bim Cultural Landscape in Victoria. The ministers also agreed to retain the current extensions to the Gondwana Rainforests of Australia and Fraser Island (Great Sandy Region) World Heritage Areas on the Tentative List, and that there would be further research and consultation with community and key stakeholder groups regarding other potential additions to the list (DoE 2015).

The IUCN has evaluated the World Heritage List and identified natural areas that are irreplaceable (Abdulla et al. 2013, Bertzky et al. 2013). The IUCN global analysis identifies the Wet Tropics of Queensland as one of the 10 most irreplaceable protected areas in the world for all species, including threatened species. Kakadu, Shark Bay and the Wet Tropics are among the 78 most irreplaceable protected areas (sites or clusters) for the conservation of the world's amphibian, bird and mammal species. Macquarie Island, Purnululu, Uluru–Kata Tjuta and Willandra Lakes feature in irreplaceability analysis of the 61 nonbiodiversity natural and mixed sites on the World Heritage List. The Australian Fossil Mammal Sites property (Riversleigh/Naracoorte) is noted as unique, having been unusually recognised under World Heritage criterion ix based on fossil (rather than living) biodiversity values. The Australian East Coast Temperate and Subtropical Rainforest Parks (now within the larger Gondwana Rainforests World Heritage Area) was the first Australian example of a serial nomination. (A serial nomination consists of 2 or more unconnected areas that are related because they belong to the same historico-cultural group; the same type of property that is characteristic of the geographical zone; or the same



Source: World Heritage Areas database (2016), Australian Government Department of the Environment and Energy

**Figure HER2 Australian World Heritage properties**

geological, geomorphological formation, the same biogeographic province, or the same ecosystem type. It is the series, and not necessarily each of its components taken individually, that is of outstanding universal value.)

Australia includes a very high number of biodiversity sites. The Forests of Eastern Australia are a biodiversity hotspot, with a particularly high percentage of area coverage (Bertzky et al. 2013). Australia has more marine World Heritage sites than any other country, and more than 50 per cent of Australia's nearshore marine provinces (as defined by the Marine Ecoregions of the World) include 1 or more World Heritage properties (Abdulla et al. 2013).

The IUCN global analysis also reaches conclusions regarding gaps in the World Heritage estate. Some of the large priority ecoregions with less than 1 per cent coverage on the World Heritage List are in Western Australia. One of the 46 priority ecoregions with no World Heritage properties inscribed for biodiversity values (World Heritage criteria ix and/or x; UNESCO WHC 2016) is the Great Sandy-Tanami-Central Ranges Desert, much of which lies within an existing IPA. Several globally important areas for the conservation of plants without corresponding properties listed for biodiversity are in the south-east, centre and north-west of Australia. One large important area for the conservation of endemic birds is in the south-west of Australia

(Bertzsky et al. 2013). The South-west Australian Shelf and the South-east Australian Shelf are identified as 2 of the 28 'gap provinces': nearshore and continental biogeographic areas without marine World Heritage sites (Abdulla et al. 2013). Therefore, scope exists for further expansion of Australia's Tentative List, recognising that the Australian Government is committed to appropriate consultative processes and seeking 'prior informed consent', and that Australia is committed to relevant World Heritage Committee policies and processes regarding the number and frequency of new nominations.

A number of Australian World Heritage properties that are listed for natural values may also meet the relevant World Heritage criteria for cultural values. Cultural values were added to the Wet Tropics of Queensland National Heritage values in 2012. Purnululu National Park was nominated as a mixed property, and the advisory bodies found that 'outstanding universal value' was demonstrated for both natural and cultural values (ICOMOS 2003, IUCN 2003). Australia originally nominated the Greater Blue Mountains to the World Heritage List for both natural and cultural values, but this property is only included on the National Heritage List for natural values, although it is currently on the National Heritage listing priority assessment list (see Natural heritage). The Australian Heritage Strategy commits to reviewing existing World Heritage places listed for natural values to identify whether the areas may also contain internationally significant cultural heritage (Australian Government 2015a; Outcome 1). Such renomination for properties such as the Wet Tropics of Queensland, Purnululu, the Greater Blue Mountains and possibly the Ningaloo Coast might afford recognition to cultural values. This would make a meaningful difference by triggering the EPBC Act provisions for matters of national environmental significance<sup>1</sup> and increasing eligibility for funding programs.

<sup>1</sup> Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Minister for the Environment and Energy, and the minister decides whether assessment and approval are required under the EPBC Act.

## National

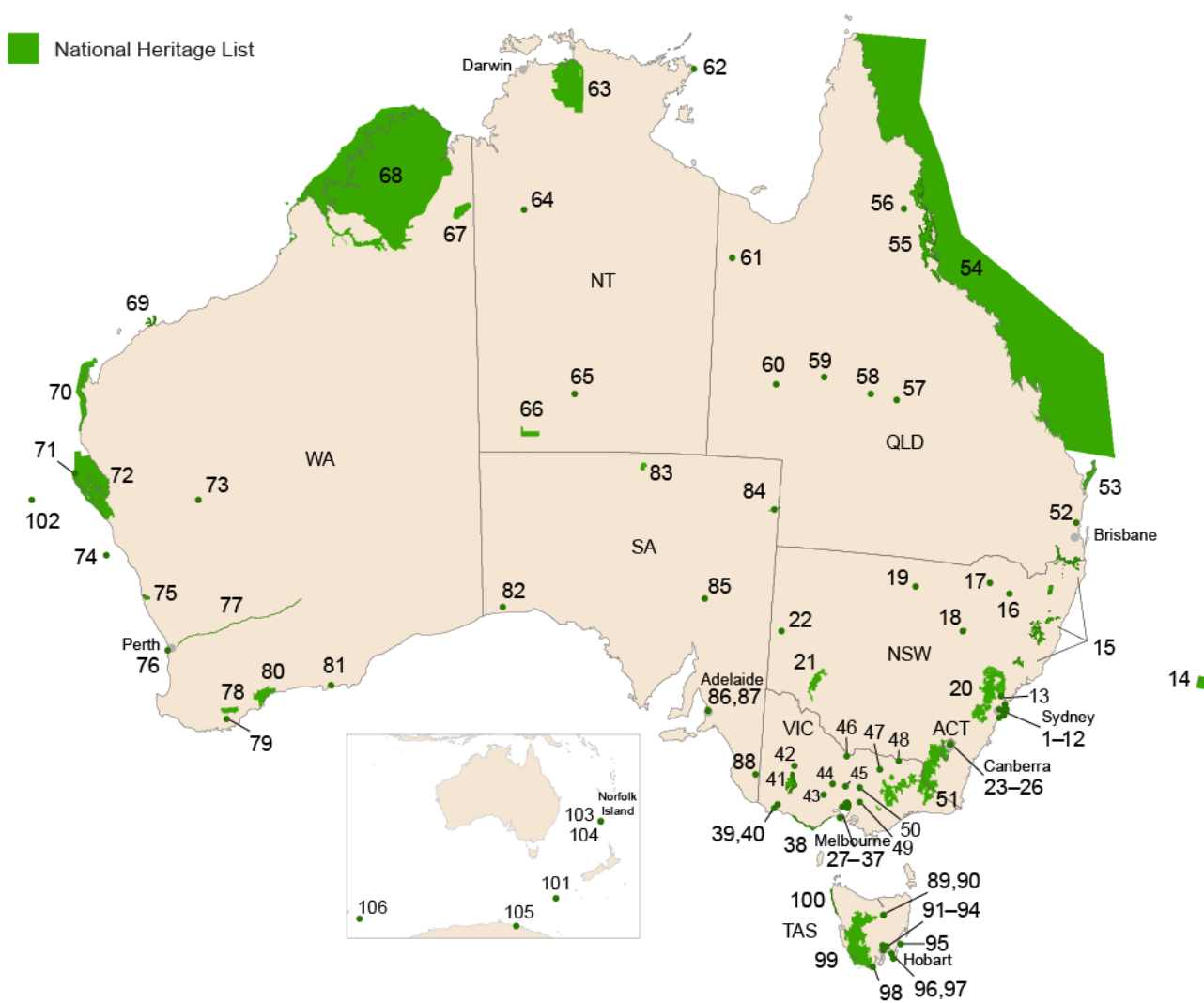
### National Heritage List

The National Heritage List includes natural, historic and Indigenous places throughout Australia and in the Australian Antarctic Territory (Figure HER3). As at 30 June 2016, the list contained 106 places, most of which were added between 2005 and 2008 (Figure HER4); 12 new places were added to the National Heritage List between 1 July 2011 and 30 June 2016 (Table HER1). The initial phase of including places on the National Heritage List included the addition of all the existing World Heritage properties, without further assessment or consideration of additional criteria.

Despite the Australian Government's inclusion of national heritage as one of the 4 pillars of its Plan for a Cleaner Environment (DoE 2016), progress with populating the National Heritage List has remained steady during 2011–16, and is constrained by both resourcing and statutory processes. Amendments to the EPBC Act in 2007 provide that items are assessed for inclusion on the National Heritage List only if they are placed on the 'priority assessment list' determined by the minister, following their initial nomination by the community or government and advice from the Australian Heritage Council. The minister may determine themes to be given priority during assessments, and there is a specified period each year during which nominations for that year will be received.

Because of resource limitations, the Australian Heritage Council can only assess a finite number of nominations. This restricted approach has been taken to cope with the volume of nominations received, and as a response to limited public understanding of the relevant threshold, which requires a place to be of 'outstanding value to the nation'. A nomination, even of a place that may meet the threshold and is strongly supported by the community, is not automatically included in the priority assessment list. When making choices, the Australian Heritage Council seeks to select places that would make a strong contribution to the overarching nature of the list. Owing to this process, valid and meritorious nominations may never be assessed, because nominations that are excluded from the priority assessment list for 2 consecutive years do not proceed (although these places may be renominated and reconsidered subsequently).





Source: National Heritage List Spatial Database (2016), Australian Government Department of the Environment and Energy

**Figure HER3** Places on the National Heritage List

<b>NSW</b>	<b>Vic</b>	56 Ngarrabullgan	84 The Burke, Wills, King and Yandruwandha National Heritage Place
1 Sydney Harbour Bridge	27 Royal Exhibition Building National Historic Place	57 Tree of Knowledge and curtilage	
2 Sydney Opera House	28 Newman College	58 QANTAS Hangar Longreach	85 Ediacara Fossil Site – Nilpena
3 Bondi Beach	29 Flemington Racecourse	59 Dinosaur Stampede National Monument	86 South Australian Old and New Parliament Houses
4 North Head: Sydney	30 ICI Building (former)	60 Great Artesian Basin Springs: Elizabeth	87 The Adelaide Park Lands and City Layout
5 First Government House Site	31 High Court of Australia (former)	61 Australian Fossil Mammal Sites (Riversleigh)	88 Australian Fossil Mammal Sites (Naracoorte)
6 Kurnell Peninsula Headland	32 Melbourne Cricket Ground	<b>NT</b>	<b>Tas</b>
7 Cockatoo Island	33 Sidney Myer Music Bowl	62 Wurrurrwuy Stone Arrangements	89 Brickendon Estate
8 Hyde Park Barracks	34 Rippon Lea House and Garden	63 Kakadu National Park	90 Woolmers Estate
9 Cyprus Hellene Club – Australian Hall	35 HMVS Cerberus	64 Wave Hill Walk Off Route	91 Richmond Bridge
10 Old Government House and the Government Domain	36 Point Cook Air Base	65 Hermannsburg Historic Precinct	92 Cascades Female Factory
11 Ku-ring-gai Chase National Park; Lion, Long and Spectacle Island Nature Reserves	37 Point Nepean Defence Sites and Quarantine Station Area	66 Uluru–Kata Tjuta National Park	93 Cascades Female Factory and Yard 4 North
12 Royal National Park and Garwarra State Conservation Area	38 Great Ocean Road and Scenic Environments	<b>WA</b>	94 Jordan River Levee Site
13 Old Great North Road	39 Budj Bim National Heritage Landscape – Mt Eccles Lake Condah	67 Purnululu National Park	95 Darlington Probation Station
14 Lord Howe Island Group	40 Budj Bim National Heritage Landscape – Tyrendarra Area	68 The West Kimberley	96 Coal Mines Historic Site
15 Gondwana Rainforests of Australia (NSW/Qld)	41 Grampians National Park (Gariwerd)	69 Dampier Archipelago (including Burrup Peninsula)	97 Port Arthur Historic Site
16 Myall Creek Massacre and Memorial Site	42 Murtoa No. 1 Grain Store	70 The Ningaloo Coast	98 Recherche Bay (North East Peninsula) Area
17 Moree Baths and Swimming Pool	43 Eureka Stockade Gardens	71 Dirk Hartog Landing Site 1616 – Cape Inscription Area	99 Tasmanian Wilderness
18 Warrumbungle National Park	44 Castlemaine Diggings National Heritage Park	72 Shark Bay, Western Australia	100 Western Tasmania Aboriginal Cultural Landscape
19 Brewarrina Aboriginal Fish Traps (Baiaimes Ngunnhu)	45 Mount William Stone Hatchet Quarry	73 Wilgie Mia Aboriginal Ochre Mine	101 Macquarie Island
20 The Greater Blue Mountains Area	46 Echuca Wharf	74 Batavia Shipwreck Site and Survivor Camps Area	<b>External territories</b>
21 Willandra Lakes Region	47 Glenrowan Heritage Precinct	75 Lesueur National Park	102 HMAS Sydney II and HSK Kormoran Shipwreck Sites
22 City of Broken Hill	48 Bonegilla Migrant Camp: Block 19	76 Fremantle Prison (former)	103 Kingston and Arthurs Vale Historic Area
<b>ACT</b>	49 Coranderrk	77 Goldfields Water Supply Scheme	104 HMS Sirius Shipwreck
23 Australian Academy of Science Building	50 Flora Fossil Site: Yea	78 Stirling Range National Park	105 Mawsons Huts and Mawsons Huts Historic Site
24 High Court – National Gallery Precinct	51 Australian Alps National Parks and Reserves	79 Porongurup National Park	106 Heard Island and McDonald Islands
25 Old Parliament House and Curtilage	<b>Qld</b>	80 Fitzgerald River National Park	
26 Australian War Memorial and the Memorial Parade	52 Glass House Mountains National Landscape	81 Cheetup Rock Shelter	
	53 Fraser Island	<b>SA</b>	
	54 Great Barrier Reef	82 Koonalda Cave	
	55 Wet Tropics of Queensland	83 Great Artesian Basin Springs: Witjira-Dalhousie	

Figure HER3 (continued)

### Box HER15 The City of Broken Hill—a National Heritage place

In January 2015, the City of Broken Hill was included on the National Heritage List—the first Australian city to receive this national recognition. Extensive research and community consultation, extending across several years, were a key part of the listing process. The values of the city underpin the ongoing management of the place. The Statement of National Heritage values says:

*The City of Broken Hill has outstanding significance to the nation for its role in creating enormous wealth, for its long, enduring mining operations ... in a remote location ... resilient to major social and economic change ... where outstanding technical achievement has occurred in mining ore for its minerals.* (DoEE n.d.[e])

Since national listing, recognition has resulted in the re-establishment of links with BHP Billiton, which has pledged substantial financial support for digitising archival records, upgrading Argent Street,

and commissioning artwork showcasing and explaining the city's rich mining heritage.

This support is testimony to the benefits of celebrating and recognising the importance of heritage by including the city on the National Heritage List. Although economic pressures continue with the fluctuations in mining viability and recent reduction in resource prices, heritage values now make an important contribution towards sustaining the city into the future.

Ongoing heritage incentives programs for property owners, including grants, and free heritage and technical advice, ensure that the Broken Hill community has pride in the presentation of its city. Varied arts-based cultural programs continue to promote the key role of the arts. Tourism is a key component of the city's future, focusing on storytelling of its mining significance and exploring the natural outback landscape values.

Source: Liz Vines, Heritage Adviser, City of Broken Hill

## Box HER15 (continued)



Broken Hill mining landscape, looking north, from the Line of Lode  
Photo by Richard Mackay



Argent Street, Broken Hill  
Photo by Liz Vines



Table HER1 Places added to the National Heritage List, 2011–12 to 2015–16

Place name	Register date
The West Kimberley	31 August 2011
HMS Sirius Shipwreck	25 October 2011
Jordan River levee site	23 December 2011
Western Tasmania Aboriginal Cultural Landscape	8 February 2013
Wurrurrwuy	9 August 2013
Moree Baths and Swimming Pool	6 September 2013
Murtoa No. 1 Grain Store	1 October 2014
Koonalda Cave	15 October 2014
City of Broken Hill	20 January 2015
The Burke, Wills, King and Yandruwandha National Heritage Place	22 January 2016
Fitzgerald River National Park	6 May 2016
Lesueur National Park	6 May 2016

Source: National Heritage List, Australian Heritage Database (2016), Australian Government Department of the Environment and Energy

Between 1 July 2011 and 30 June 2016, 63 places were nominated to the National Heritage List, and 24 National Heritage List assessment reports were completed and provided to the minister. The 63 places were represented by 72 different nominations, all but 2 of which were made by non-Australian Government agencies or individuals. During the same period, 13 places were added to the priority assessment list, 3 at the instigation of the minister (Wildlife Heritage and Marine Division of the Australian Government Department of the Environment and Energy, pers. comm., July 2016). As at 1 July 2016, 26 places are on the priority assessment list (4 natural, 5 Indigenous and 17 historic). More recent additions to the National Heritage List have generally been larger, and include more complex places that require complex assessment, but also extensive community and stakeholder consultation (see Box HER15). Although the Australian Heritage Council may only assess a place for its heritage values, the minister considers a broader range of matters, such as socio-economic benefits, public support and legal implications.

The Australian Heritage Council and the Australian Government Department of the Environment and Energy

are seeking to put a policy framework in place that will guide the future direction of the National Heritage List. However, even allowing for more complex and resource-consuming recent assessments, the resources available for documentation and assessment, and the rate at which places are being added to the National Heritage List do not yet reflect the importance of the National Heritage List as 'Australia's list of natural, historic and Indigenous places of outstanding significance to the nation' (DoEE n.d.[d]).

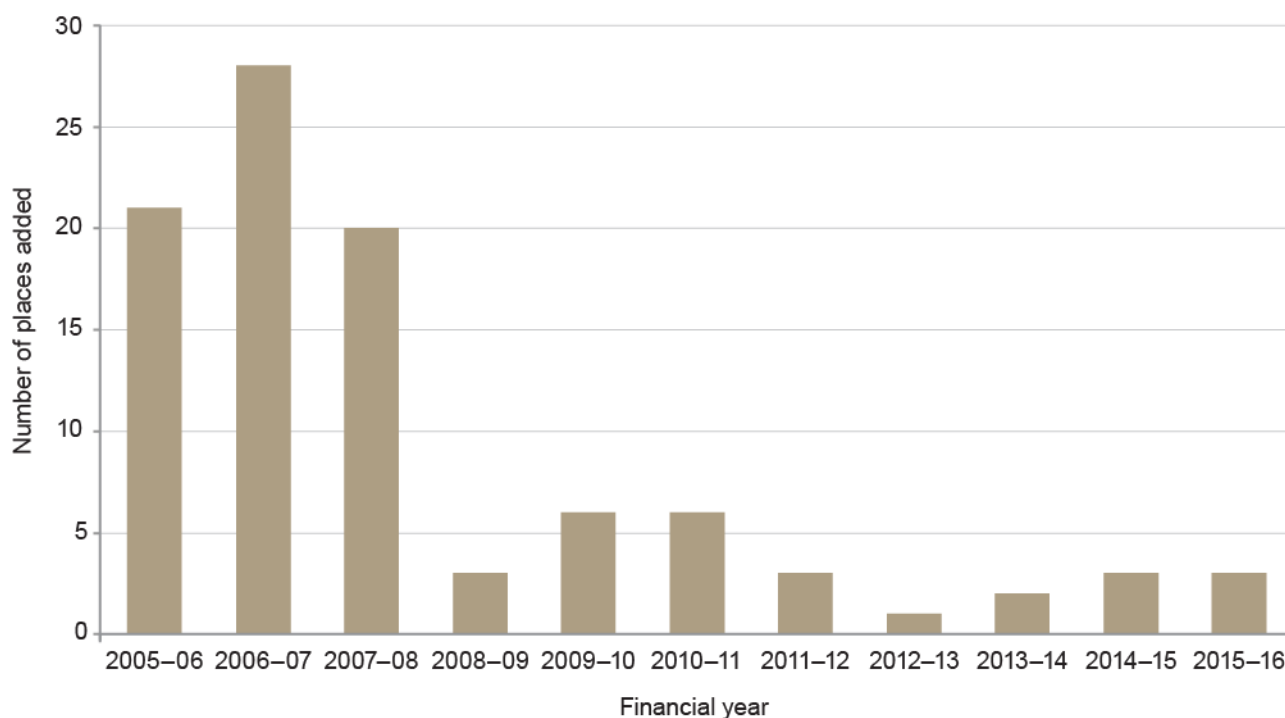
The Australian Heritage Strategy recognises the need to re-assess and refine the purpose and roles of the National Heritage List as a basis for determining how it should develop in future:

*Does the list include Australia's most important heritage assets, the places that reflect our identity as a nation, that tell our story and which we want to protect and value into the future? Does the list inspire, educate and delight us as Australians and paint a picture for visitors to Australia as to who we are? (Australian Government 2015a:22)*

### Commonwealth Heritage List

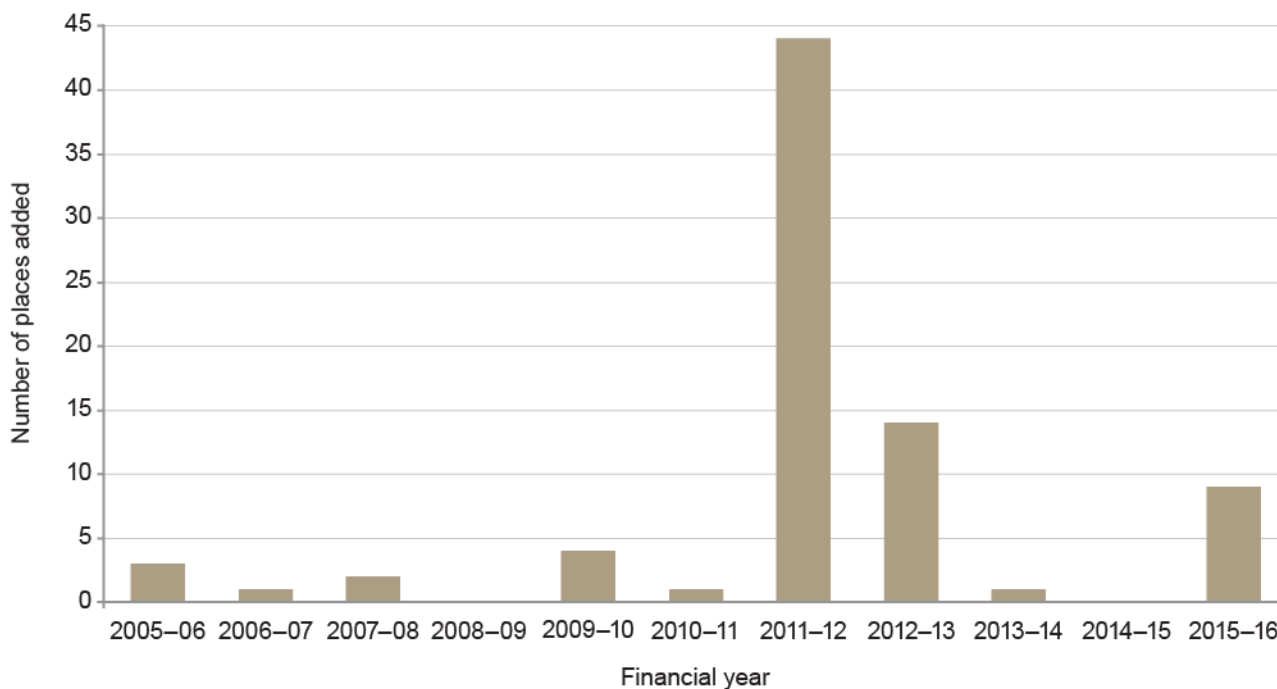
The EPBC Act provides that a Commonwealth-controlled property must have 'significant heritage value' to be included in the Commonwealth Heritage List. At 30 June 2016, there were 396 places on the Commonwealth Heritage List, of which 63 were added between 2010–11 and 2015–16 (Figure HER5); 43 post offices were added to the list in a single batch on 8 November 2011, all of which had been included on the former Register of the National Estate and were subsequently assessed as having Commonwealth Heritage values. During the same period, 5 places were removed from the Commonwealth Heritage List because they passed from Commonwealth ownership, and a further 2 places were removed from the Commonwealth Heritage List because subsequent information revealed that they were ineligible for inclusion.

The Commonwealth Heritage List remains a work in progress—partly because it will always evolve, but also because there are Australian Government agencies that are yet to assess the Commonwealth Heritage value of places in their ownership or control. There is a need to continue the process of ensuring that only eligible places are listed, but also to encourage new nominations from Australian Government agencies that are responsible for unlisted properties of 'significant heritage value'. The Australian Heritage Strategy observes that Commonwealth Heritage listing acknowledges and celebrates the heritage assets that the Australian Government controls, but also carries management and reporting obligations for the responsible Australian Government agency. The strategy commits to streamlining list and management processes for places on the Commonwealth Heritage List.



Source: Australian Heritage Database (2016), Australia's National Heritage List, Australian Government Department of the Environment and Energy

**Figure HER4** Number of places added to the National Heritage List, 2005–06 to 2015–16



Source: Australian Heritage Database (2016), Wildlife Heritage and Marine Division, Australian Government Department of the Environment and Energy 2016

**Figure HER5** Number of places added to the Commonwealth Heritage List, 2005-06 to 2015-16

### Register of the National Estate

The Register of the National Estate was established under the *Australian Heritage Commission Act 1975* as a list of important natural, Indigenous and historic heritage places. Following amendments to the *Australian Heritage Council Act 2003*, no new places were added to or removed from the register. The register ceased to be a statutory register in February 2012, but remains available as an archive. The demise of the statutory role of the Register of the National Estate left some previously 'registered' places without any statutory status.

### State and territory

Australian states and territories maintain statutory heritage registers. These vary in their coverage and thresholds because of differences in jurisdictional legislation. Some registers include natural, Indigenous and historic places, whereas others include only historic places. In most jurisdictions, the threshold for listing is significance at the state level.

Through regular liaison between senior heritage officials, there has been a gradual move towards standardised

approaches, in accordance with the 1997 *Intergovernmental Agreement on the Environment*. For example, following a decision by the former Environment Protection and Heritage Council (the meeting of Australian, state and territory ministers responsible for heritage), consistent heritage assessment criteria have been introduced in some jurisdictions.

During recent years, the focus for state and territory heritage register management has been on review and improvement of the quality of listing information (see Box HER16), as well as addressing anomalies, but there has been a net increase of 484 state and territory heritage listings during the past 5 years (Figure HER6). However, the overall pattern in state and territory heritage listing processes is not consistent (Figure HER7): 150 places were added to state and territory heritage registers in 2011-12, but only 62 in 2015-16. New listing programs have been instigated; these typically focus on particular themes, or were undertaken to address identified gaps. There has been some delisting of state-listed places—for example, 27 items (mainly comprising railway heritage) were removed from the NSW State Heritage Register in 2013-14 (Figure HER7).



## Box HER16 Tasmanian Heritage Register Integrity Project

When the Tasmanian Heritage Register was created, it was populated with entries drawn from local government, National Trust, and Register of the National Estate lists. Listing boundaries were not always clear, statements of significance were not usually prepared, and the content of data sheets varied considerably. This situation also duplicated other listing arrangements, and was confusing for owners and authorities.

A review of the *Historic Cultural Heritage Act 1995* in 2005 (Mackay 2005) highlighted the need to rationalise the register's entries. The Tasmanian Heritage Council responded—guidelines for assessing historic heritage significance have been published, a more comprehensive approach to listings has been developed, and an audit of all entries has been conducted. This was the first comprehensive review of all entries on the register, and has helped to evaluate whether each register entry meets the required threshold as defined by the criteria in the Act.

The audit concluded that 70 per cent of the entries met at least 1 criterion, but the balance needed further review. The Integrity of the Tasmanian Heritage Register Project was initiated in 2014 to facilitate this process. It has led to statutory decisions being made under the Historic Cultural Heritage Act to retain all entries that met at least 1 criterion, which has seen the proposed removal of more than 590 entries.

All proposed removals are subject to an owner and public consultation process that helps to identify if there is

any information available that would justify an entry's retention, before the Heritage Council can make a final decision. All entries subject to the formal 'intention to remove' process have been confirmed as not meeting a criterion in the Act and are also listed at a local level in the relevant planning scheme.

There has been community interest in the project, reflecting the importance of cultural heritage to Tasmania. Although the potential removal of state protection for places will not affect their listing on a local historic heritage code, concerns have been raised about the potential for previously listed places to become unprotected, and about opportunities to access relevant information and contribute to the review process. However, feedback from most affected owners has been positive, and targeted communications, including an online video, have provided stakeholders with access to useful information.

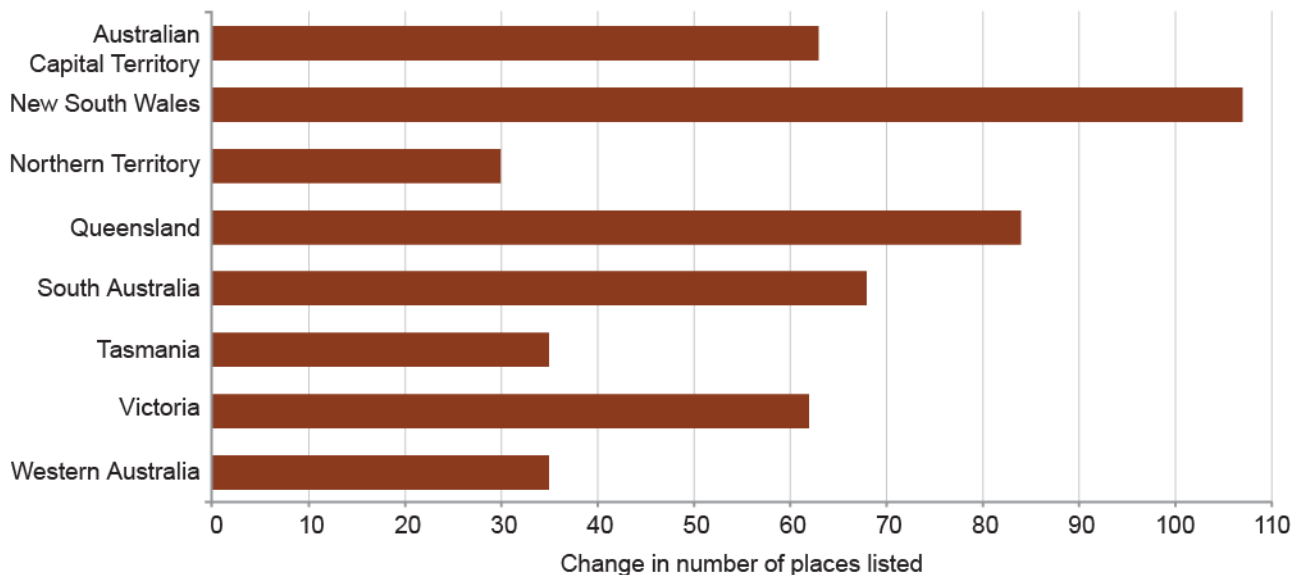
The project is part of a wider vision contained in the Heritage Council's Strategic Plan (2015–20), which incorporates projects that aim to bring the Tasmanian Heritage Register to life and create 'the Tasmanian collection'. Collectively, these projects aim to generate credibility, integrity and accessibility, and position the register to hold and impart the stories of the places and people of greatest importance to Tasmania.

Sources: Ms Brett Torossi, Chair Heritage Council of Tasmania, and Mr Pete Smith, Director, Heritage Tasmania



Hunter Street, Hobart. The Tasmanian Heritage Council has determined that more than 70 per cent of the places on the Tasmanian Heritage Register will remain protected and managed at the state level

Photo by Stewart Wells



Notes: There are limitations in the comparability of the above listing data arising from the disparity in place type, definitions, and regulatory and reporting processes across the state and territory jurisdictions. Heritage agencies vary between jurisdictions in administrative and legislative responsibilities. Most of the agencies are responsible for managing cultural (historic) heritage solely; ACT Heritage is also responsible for Aboriginal and natural heritage. The NSW Office of Environment and Heritage had Aboriginal and non-Aboriginal heritage combined into 1 entity in 2013–14. The net decline in listings (NSW 2013–14) is explained in the text above. In Western Australia, the commissioning of the new heritage business system, 'SHOBiz', in 2015 reduced the number of registered places as the redundant business system was over-reporting, but this is not reported as a genuine decline. Data were not available from the Northern Territory in 2015–16. Tasmania had zero change in 2015–16, and Western Australia had zero change in 2014–15.

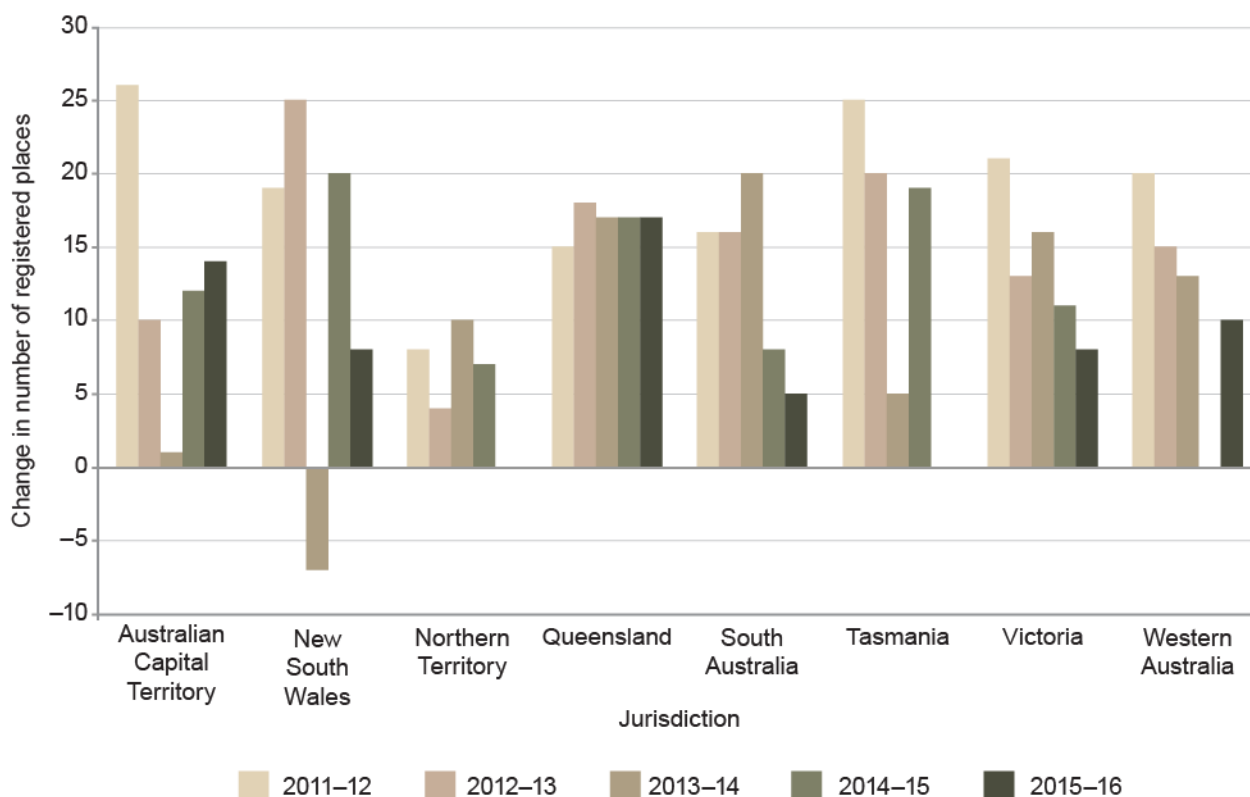
Sources: Data were requested via Heritage Chairs and Officials of Australia, comprising representatives from the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Department of Environment and Heritage Protection), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Heritage Victoria; Department of Environment, Land, Water and Planning) and Western Australia (State Heritage Office).

**Figure HER6** Net overall change in state and territory heritage register listings, 2011–12 to 2015–16

The deregistration of these items followed a review by NSW RailCorp of its own heritage and conservation register, and the recommendation of the NSW Heritage Council. The removed items were part of a very large group of listings made under transitional arrangements when the NSW State Heritage Register was first established. The review found that they did not meet the threshold for state listing (Heritage Division of the NSW Office of Environment and Heritage, pers. comm., August 2016).

## Local

Most heritage listings in Australia occur at the local level by local government agencies. The diversity in council areas across the nation, and differences in planning statutes and approaches, make it difficult to aggregate comparable data. Some local heritage lists include places of state, national or World Heritage value; others do not. Most local lists exclusively comprise historic places. In some jurisdictions, there is an overlap or duplication of local and state or territory listings. A general picture of what is locally listed in Australia was provided in SoE 2011, but nationally aggregated, comparable information is not readily available. The general pattern is that heritage listing is most intensive in coastal areas, and concentrated in and around urban centres.



Notes: There are limitations in the comparability of the above listing data arising from the disparity in place type, definitions, and regulatory and reporting processes across the state and territory jurisdictions. Heritage agencies vary between jurisdictions in administrative and legislative responsibilities. Most of the agencies are responsible for managing cultural (historic) heritage solely; ACT Heritage is also responsible for Aboriginal and natural heritage. The NSW Office of Environment and Heritage had Aboriginal and non-Aboriginal heritage combined into 1 entity in 2013-14. The net decline in listings (NSW 2013-14) is explained in the text above. In Western Australia, the commissioning of the new heritage business system, 'SHOBiz', in 2015 reduced the number of registered places as the redundant business system was over-reporting, but this is not reported as a genuine decline. Data were not available from the Northern Territory in 2015-16. Tasmania had zero change in 2015-16, and Western Australia had zero change in 2014-15.

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**Figure HER7** Year-by-year change in number of state and territory heritage register listings, 2011-12 to 2015-16

## Natural heritage

**Natural and cultural heritage indicator 1 considers the 'process of listing, area and distribution of identified natural heritage places'**

Appropriate statutory protection of Australia's natural heritage requires a combination of individually listed places and an adequate, representative set of reserved

lands. The National Heritage List includes 35 places that are predominantly included for natural heritage values (2 more than in 2011). At the state and local level, information on places included in heritage lists for natural values is inconsistent between jurisdictions.



Australia's reserved lands and waters include:

- Commonwealth, state and territory parks and reserves (marine and terrestrial)
- other lands and waters reserved for conservation purposes
- IPAs
- areas managed by conservation organisations
- ecosystems protected by farmers on their private working properties.

Together, these areas comprise more than 10,000 protected areas across more than 36 per cent of Australia's marine areas and more than 17 per cent of Australia's land mass (DoEE n.d.[f]; see the *Marine environment* and *Biodiversity* reports).

Between 2008 and 2014, the number of terrestrial protected areas in Australia increased from 9340 to 10,339, and the total terrestrial protected area increased from 98.5 million hectares to 137.5 million hectares (Figures HER8 and HER9). The total terrestrial protected area as a percentage of the terrestrial area of Australia increased from 13.4 per cent in 2011 to 17.9 per cent in 2014. By 2016, this total terrestrial protected area increased to at least 19.2 per cent through the addition of IPAs since 2014. To January 2016, the Australian Government has funded the establishment of 72 IPAs, across approximately 8 million hectares, now covering about 44 per cent of the National Reserve System (Figures HER13 and HER14). However, not all IPAs have the same protected status, and the allowable land use and the statutory controls for some may not ensure protection of natural and cultural heritage values.

The Convention on Biological Diversity has the following as one of its Aichi Biodiversity Targets (Target 11):

*By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes. (CBD 2011)*

These last key elements of Target 11 have not yet been satisfied. For example, the National Reserve System seeks to reserve representative areas of land within

Australia's bioregions, each of which is a geographically distinct area of similar climate, geology, landform, vegetation and animal communities (Figure HER10 and Box HER17).

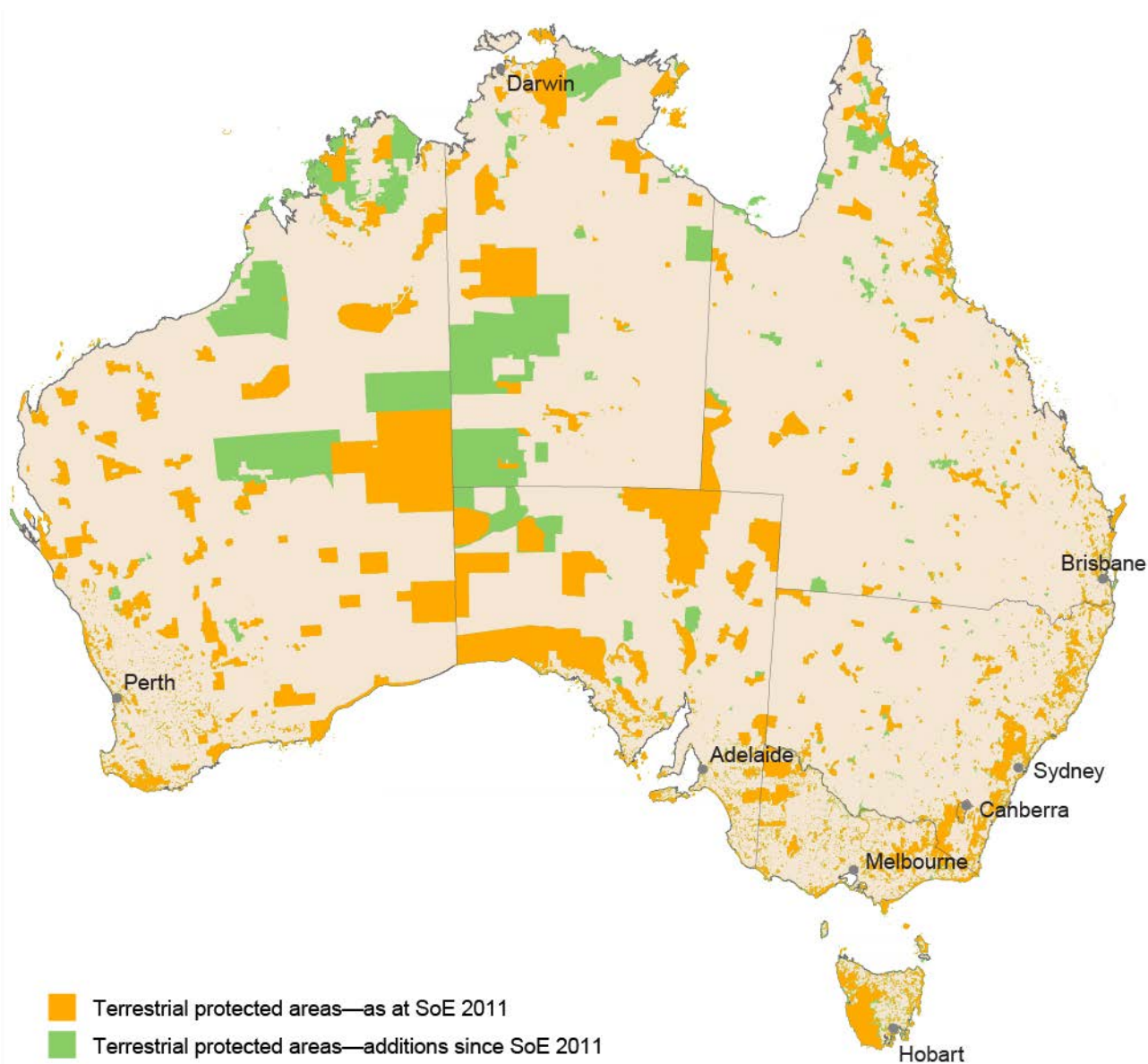
However, only 48 bioregions achieve the current target (3 fewer than in 2011), and 32 of the 89 terrestrial bioregions have less than 10 per cent of their area protected. During the past 5 years, reserved lands have decreased in 4 bioregions, but increased in 77. Figure HER11, which presents Australia's terrestrial bioregions according to their current level of protection, highlights that there are substantial and extensive under-represented regional areas (see 'Comprehensiveness, adequacy and representativeness of the terrestrial reserve system' in the *Biodiversity* report).

Some of these changes reflect administrative decisions, rather than actual change in land status.<sup>2</sup> The size and resilience of reserved lands are also a consideration: approximately half of the natural heritage areas in Australia that occur in public reserved lands are in pockets of less than 100 hectares. By contrast, more than 80 per cent of the area of public reserved lands occurs in blocks of greater than 100,000 hectares. To date, there has been no national evaluation of the natural conservation value or biodiversity status of reserved Indigenous lands (see 'Investment in Indigenous land and sea management' in the *Land* report).

By contrast, the total marine protected area increased from 89.6 million hectares to 323 million hectares (Figure HER12) and now substantially exceeds the Aichi Biodiversity Target 11 (CBD 2011). The National Representative System of Marine Protected Areas (NRSMPA) includes 62 Commonwealth marine protected areas (MPAs), a major increase of 34 between 2008 and 2014 (see the *Marine environment* report). Australia has also delivered on the World Summit on Sustainable Development (Rio+10)<sup>3</sup> commitment to establish representative networks of MPAs by 2012.

<sup>2</sup> Some proposed reserves were included in the release of the Collaborative Australian Protected Area Database (CAPAD) 2008 that were never gazetted by Western Australia and removed from future CAPAD releases. Queensland included timber reserves in CAPAD 2008 but removed them in 2014. Part of Limmen National Park in the Northern Territory was not included in the final gazettal. There have also been some other minor changes.

<sup>3</sup> The World Summit on Sustainable Development, Earth Summit 2002, took place in Johannesburg, South Africa, in 2002, 10 years after the first Earth Summit in Rio de Janeiro; hence, 'Rio+10'.



SoE 2011 = 2011 state of the environment report

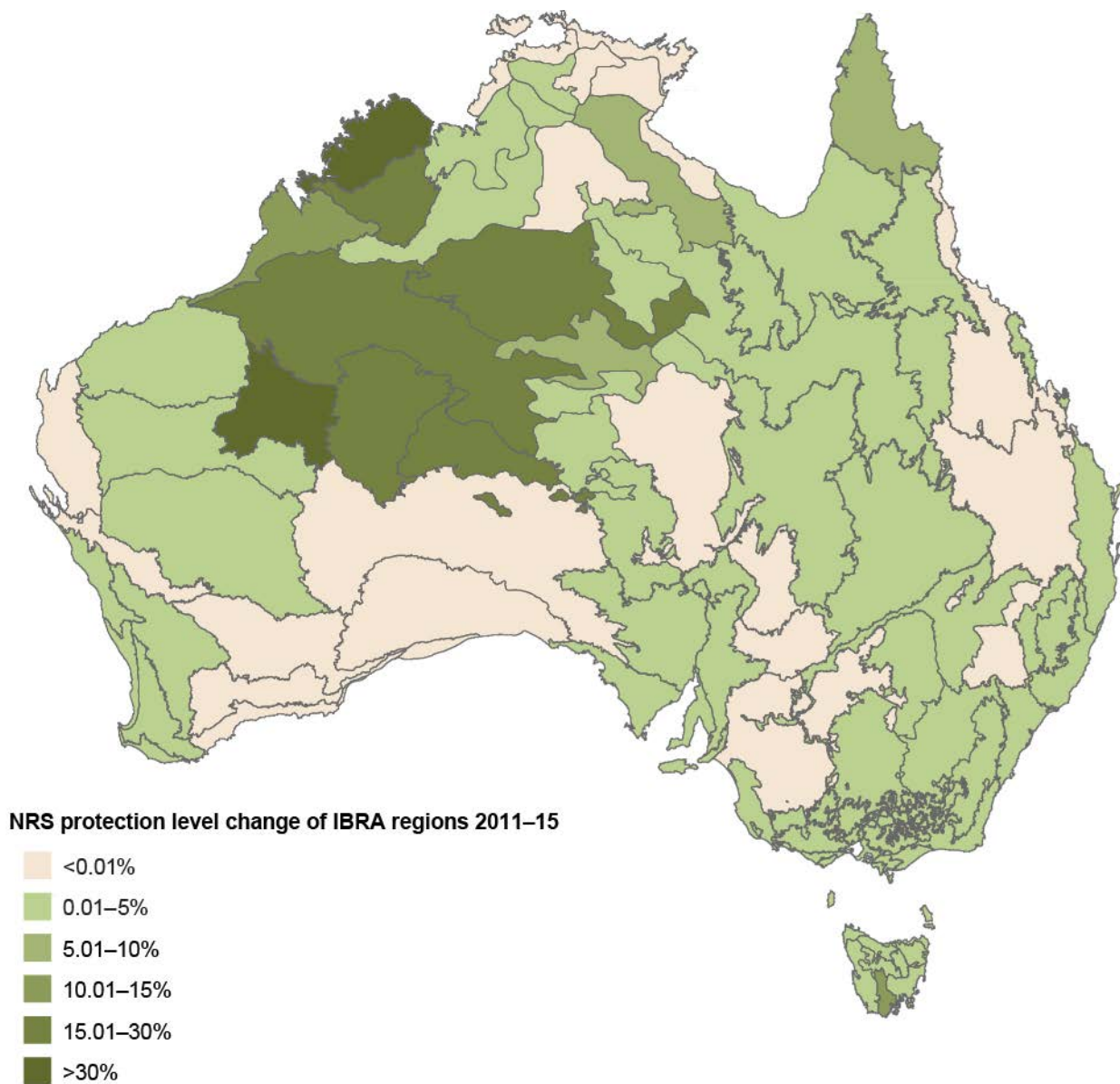
Source: Australian Government Department of the Environment and Energy; Collaborative Australian Protected Area Database (CAPAD) 2008 to 2014, Indigenous Protected Areas (as at 1 January 2016)

### Figure HER8 Additions to the National Reserve System, 2011–16

Australia does not have a national system for identification and protection of geological sites, other than through inclusion on the National Heritage List or state heritage registers. Kanawinka, an area with hundreds of volcanic and other geological sites and features, extending across the South Australian and Victorian border in south-eastern Australia, was declared Australia's first Geopark in June 2008, but was

deregistered in 2012. No other Australian places have been dedicated as United Nations Educational, Scientific and Cultural Organization (UNESCO) Global Geoparks.<sup>4</sup>

<sup>4</sup> On 17 November 2015, the 38th General Conference of UNESCO ratified the creation of UNESCO Global Geoparks. These are single, unified geographical areas where sites and landscapes of international geological significance are managed for protection, education and sustainable development.

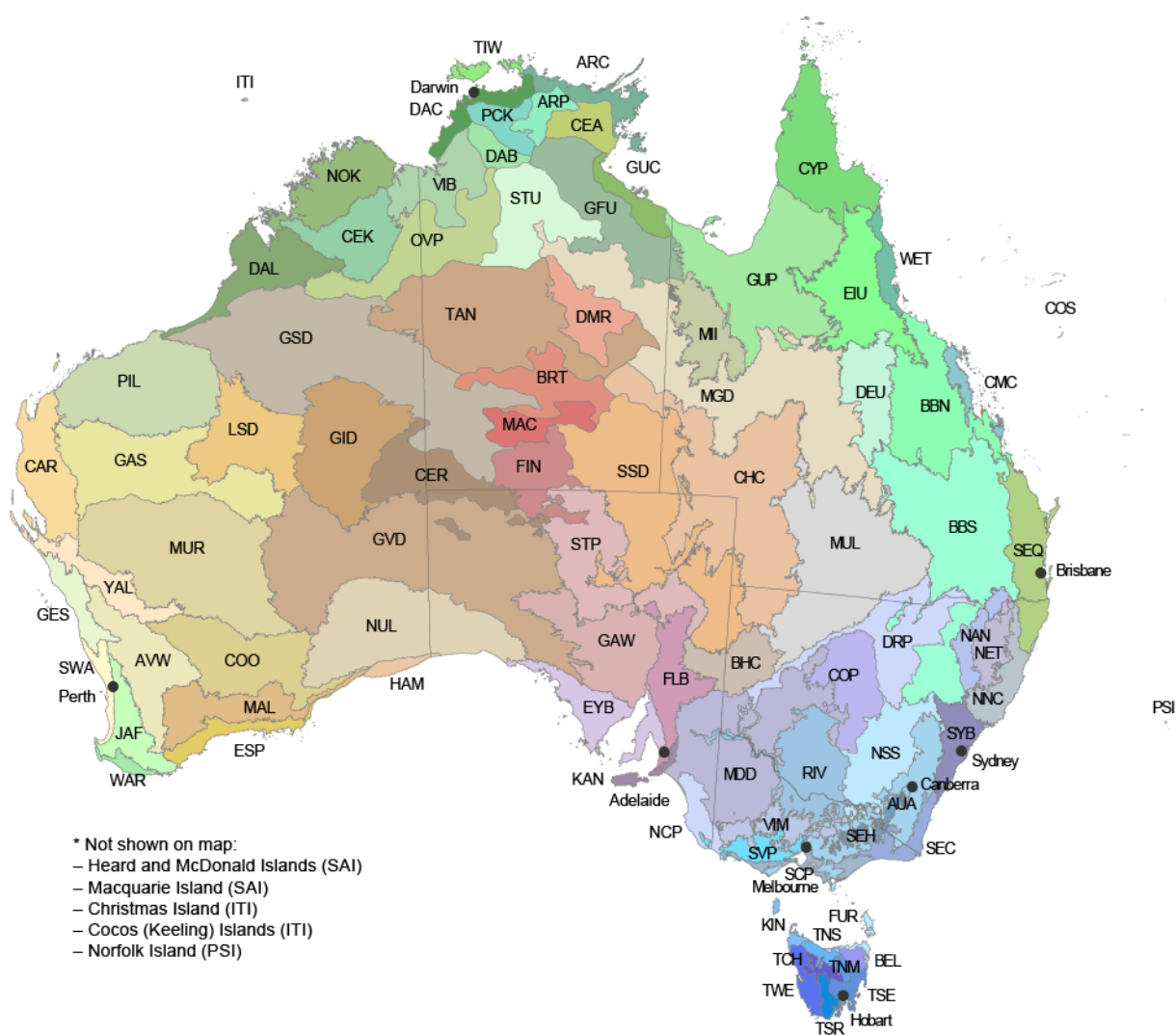


IBRA = Interim Biogeographic Regionalisation for Australia; NRS = National Reserve System

Note: Analysis for both 2011 and 2016 bioregional protected area representation was reassessed using Interim Biogeographic Regionalisation for Australia (IBRA 7) boundaries for comparability. The National Reserve System was derived from the Collaborative Australian Protected Areas Database (CAPAD), using CAPAD 2008, as was used in SoE 2011, and CAPAD 2014 updated with recent Indigenous Protected Area declarations as at January 2016. The 4 new offshore bioregions introduced for IBRA 7 (Indian Subtropical Islands, Pacific Subtropical Islands, Coral Sea Islands and Subantarctic Islands) are not shown in the extent of the maps and were excluded from the analysis. These bioregions are generally highly protected.

Sources: Australian Government Department of the Environment and Energy (DoEE)—[Interim Biogeographic Regionalisation for Australia \(IBRA 7\)](#) compiled by DoEE, with data provided by state and territory land management agencies, based on Australian Coastline and State Borders 1:100,000 (2004), Geoscience Australia; National Reserve System from [Collaborative Australian Protected Area Database \(CAPAD\) 2008 to 2014](#) and [Indigenous Protected Areas](#) (as at 1 January 2016)

**Figure HER9** Change in bioregion protection level, as the percentage improvement of each bioregion's protected area extent between 2011 and 2015



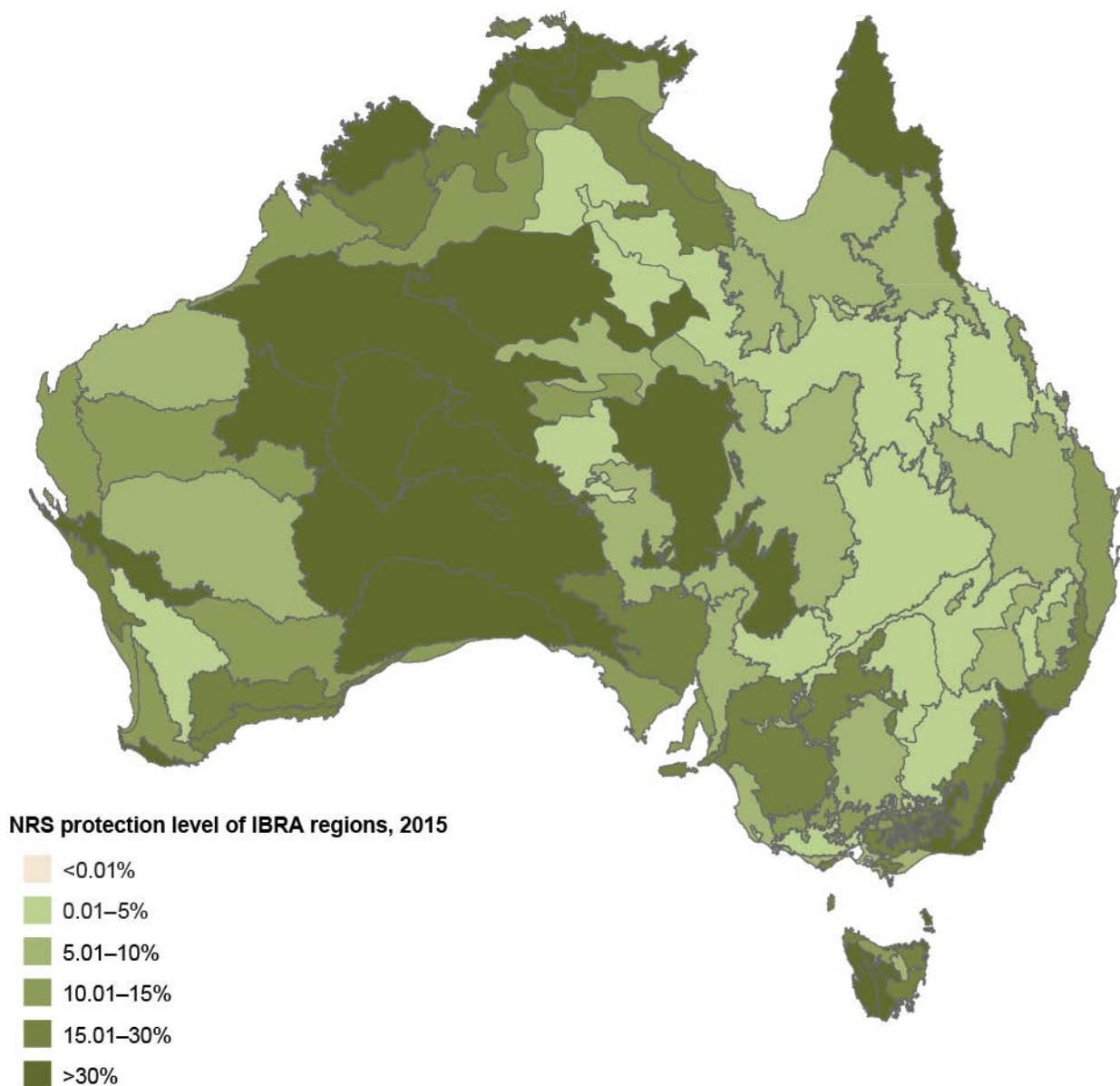
\* Not shown on map:  
 - Heard and McDonald Islands (SAI)  
 - Macquarie Island (SAI)  
 - Christmas Island (ITI)  
 - Cocos (Keeling) Islands (ITI)  
 - Norfolk Island (PSI)

ARC Arnhem Coast	DAB Daly Basin	GUC Gulf Coastal	NNC NSW North Coast	SVP Southern Volcanic Plain
ARP Arnhem Plateau	DAC Darwin Coastal	GUP Gulf Plains	NOK Northern Kimberley	SWA Swan Coastal Plain
AUA Australian Alps	DAL Dampierland	GVD Great Victoria Desert	NSS NSW South Western Slopes	SYB Sydney Basin
AVW Avon Wheatbelt	DEU Desert Uplands	HAM Hampton	NUL Nullarbor	TAN Tanami
BBN Brigalow Belt North	DMR Davenport Murchison Ranges	ITI *Indian Tropical Islands	OVP Ord Victoria Plain	TCH Tasmanian Central Highlands
BBS Brigalow Belt South	DRP Darling Riverine Plains	JAF Jarrah Forest	PCK Pine Creek	TIW Tiwi Cobourg
BEL Ben Lomond	EIU Einasleigh Uplands	KAN Kanmantoo	PIL Pilbara	TNM Tasmanian Northern Midlands
BHC Broken Hill Complex	ESP Esperance Plains	LSD Little Sandy Desert	PSI *Pacific Subtropical Islands	TNS Tasmanian Northern Slopes
BRT Burt Plain	EYB Eyre Yorke Block	MAC MacDonnell Ranges	RIV Riverina	TSE Tasmanian South East
CAR Carnarvon	FIN Finke	MAL Mallee	SCP South East Coastal Plain	TSR Tasmanian Southern Ranges
CEA Central Arnhem	FLB Flinders Lofty Block	MDD Murray Darling Depression	SEC South East Corner	TWE Tasmanian West
CEK Central Kimberley	FUR Furneaux	MGD Mitchell Grass Downs	SEH South Eastern Highlands	VIB Victoria Bonaparte
CER Central Ranges	GAS Gascoyne	MII Mount Isa Inlier	SEQ South Eastern Queensland	VIM Victorian Midlands
CHC Channel Country	GAW Gawler	MUL Mulga Lands	SSD Simpson Strzelecki Dunefields	WAR Warren
CMC Central Mackay Coast	GES Geraldton Sandplains	MUR Murchison	STP Stony Plains	WET Wet Tropics
COO Coolgardie	GFU Gulf Fall and Uplands	NAN Nandewar	STU Sturt Plateau	YAL Yalgoo
COP Cobar Peneplain	GID Gibson Desert	NCP Naracoorte Coastal Plain		
COS Coral Sea	GSD Great Sandy Desert	NET New England Tablelands		
CYP Cape York Peninsula				

Source: Australian Government Department of the Environment and Energy (DoEE); Interim Biogeographic Regionalisation for Australia (IBRA 7) compiled by DoEE, with data provided by state and territory land management agencies, based on Australian Coastline and State Borders 1:100,000 (2004), Geoscience Australia

**Figure HER10 Interim Biogeographic Regionalisation for Australia regions**





IBRA = Interim Biogeographic Regionalisation for Australia; NRS = National Reserve System

Note: Analysis for both 2011 and 2016 bioregional protected area representation was reassessed using Interim Biogeographic Regionalisation for Australia (IBRA 7) boundaries for comparability. The National Reserve System was derived from the Collaborative Australian Protected Areas Database (CAPAD), using CAPAD 2008, as was used in SoE 2011, and CAPAD 2014 updated with recent Indigenous Protected Area declarations as at January 2016. The 4 new offshore bioregions introduced for IBRA 7 (Indian Subtropical Islands, Pacific Subtropical Islands, Coral Sea Islands and Subantarctic Islands) are not shown in the extent of the maps and were excluded from the analysis. These bioregions are generally highly protected.

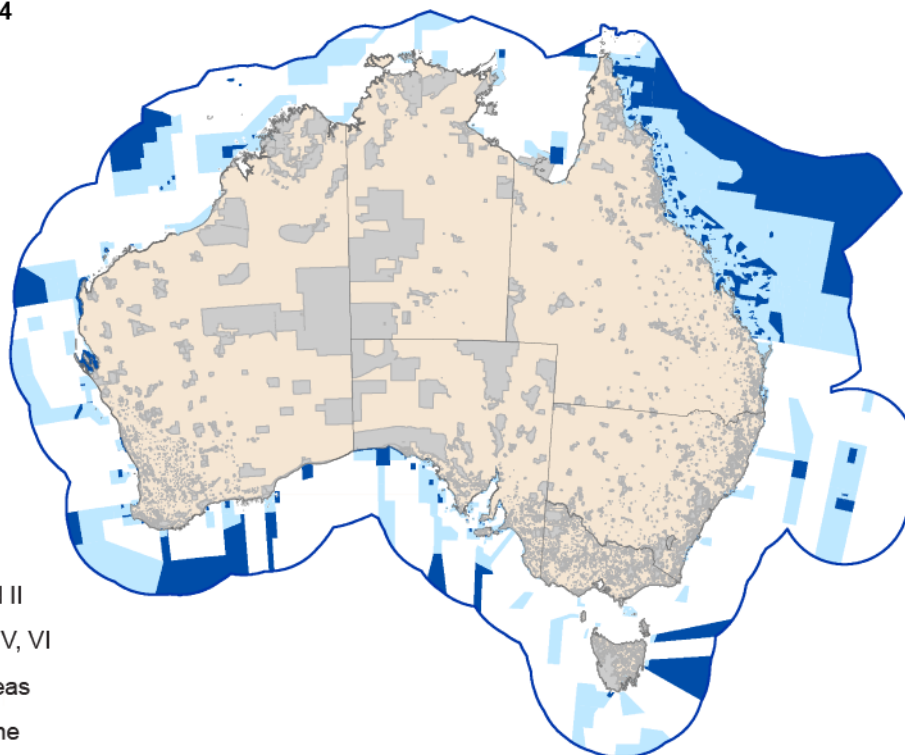
Sources: Australian Government Department of the Environment and Energy (DoEE)—Interim Biogeographic Regionalisation for Australia (IBRA 7) compiled by DoEE, with data provided by state and territory land management agencies, based on Australian Coastline and State Borders 1:100,000 (2004), Geoscience Australia; National Reserve System from Collaborative Australian Protected Area Database (CAPAD) 2008 to 2014 and Indigenous Protected Areas (as at 1 January 2016)

**Figure HER11 National Reserve System protection level of Interim Biogeographic Regionalisation for Australia regions, 2015**

### Marine protected areas 2008



### Marine protected areas 2014



- IUCN categories IA and II
- IUCN categories III, IV, V, VI
- Terrestrial protected areas
- Exclusive economic zone

IUCN = International Union for Conservation of Nature

Note: IUCN protected area management categories classify protected areas according to their management objectives.

Source: Australian Government Department of the Environment and Energy; Collaborative Australian Protected Area Database (CAPAD) 2008 to 2014; Indigenous Protected Areas (as at 1 January 2016)

**Figure HER12** Change in marine protected areas, 2008–14

### Box HER17 National Reserve System—targets

National targets for building the National Reserve System are set collaboratively by the Australian Government with the states and territories. The targets are part of the strategic national approach to making measurable progress towards the establishment of a comprehensive, adequate and representative protected area system (DoEE n.d.[g]).

In 2009, the National Reserve System Task Group, convened under the Natural Resource Policies and Program Committee, prepared an updated policy framework, Australia's Strategy for the National Reserve System 2009–2030.

The strategy identifies priority actions to provide a nationally coordinated approach, including the following national targets for the National Reserve System:

- examples of at least 80 per cent of all regional ecosystems in each bioregion by 2015
- examples of at least 80 per cent of all regional ecosystems in each subregion by 2025
- core areas established for the long-term survival of threatened ecosystems and threatened species habitats in each of Australia's bioregions by 2030
- critical areas for climate change resilience, such as refugia, to act as core lands of broader whole-of-landscape-scale approaches to biodiversity conservation by 2030.

There is no longer funding specifically allocated by the Australian Government for acquisition of lands to be added to the National Reserve System and the NRSMPA, but resources can be made available through the National Landcare Programme and through establishment of IPAs (see 'Management initiatives and investments' in the *Biodiversity* report).

Although the National Reserve System and the NRSMPA are recognised as the major current instruments for protection of intact ecosystems (see the *Biodiversity* and *Marine environment* reports), issues arise in relation to what constitutes a comprehensive, adequate and representative system (DoEE 2017b). In addition, protected lands and waters will need to support biodiversity conservation under current and future climatic conditions.

Areas of natural heritage occur in both publicly and privately owned and managed lands and waters, and heritage values transcend ownership boundaries. Australia's natural heritage would benefit from a whole-of-landscape or seascape approach that addresses management regimes across land tenure and considers individual places, different land holdings and subregions within the National Reserve System and the NRSMPA, as part of a broadly interconnected ecosystem (see Box HER11). A collection of baseline data on natural heritage values within regions would also be valuable (see Box HER18).

### Indigenous heritage

A major achievement since SoE 2011 is a very substantial increase in dedication of IPAs (DPMC 2016a), which provide protection for significant sites and landscapes, and facilitate 'working on Country' (Figures HER13 and HER14). As noted above, the expansion of the National Reserve System to meet the Convention on Biological Diversity 17 per cent target has relied heavily on new IPAs. SoE 2011 (relying on Collaborative Australian Protected Area Database [CAPAD] data from 2008) noted 25 IPAs, covering more than 20 million hectares. As of January 2016, there were 72 IPAs, covering more than 65 million hectares (data from the Department of the Prime Minister and Cabinet), which is more than a three-fold increase in area. As before, IPAs predominantly occur in the north and north-west of the country, reflecting the location of Indigenous owned and managed lands (Figure HER14).

#### Natural and cultural heritage indicator 2 considers the process of listing, area and distribution of identified Indigenous heritage places

Survey, assessment and listing of Indigenous heritage places around Australia are inconsistent. Most national parks include significant Indigenous heritage places (which are thereby afforded some statutory protection). State and territory jurisdictions prepare registers or statutory lists of Indigenous sites and hold information about them, which may or not be publicly available.

## Box HER18 Bush Blitz

Australia is home to about 150,000 identified native species, with more known endemic species than any other country. However, it has been estimated that approximately 75 per cent of Australia's biodiversity is still unknown to science; most of these are invertebrates and nonvascular plants (Chapman 2009). With so little baseline data to monitor and manage Australia's biodiversity effectively, it is important that we increase our knowledge of data-deficient plant and animal groups.

Bush Blitz is Australia's largest nature discovery project—a multimillion-dollar partnership between the Australian Government, Parks Australia, BHP Billiton Sustainable Communities and Earthwatch Australia, whose aim is to document the plants and animals across Australia. The program brings together multidisciplinary teams, with the main focus on discovering new species, recording rare and threatened species, and documenting weeds and pests. Bush Blitz expeditions are conducted in some of the remotest locations in Australia, and include properties in the National Reserve System, national parks, Indigenous Protected Areas and other conservation properties. Since the program began in 2010, Bush Blitz has discovered more than 1000 new species, contributed records for more than 20,000 plants and animals, including more than 300 that are rare and threatened, and contributed 900 pest species records. This provides baseline scientific data to help protect Australia's biodiversity for generations to come.

Few other countries have attempted to document their biodiversity in this way. The success of Bush Blitz is a result of its unique partnership between government, industry and nongovernment organisations, which brings together resources, expertise and knowledge to focus on a common goal. The program also aims to enhance and promote the science of taxonomy through the Bush Blitz Taxonomic Grants; Bush Blitz infield learning and development opportunities for BHP Billiton employees and Indigenous rangers; and Bush Blitz TeachLive, which allows science teachers to work alongside scientists in the field and 'teach live' back to the classroom using blogs and Skype.

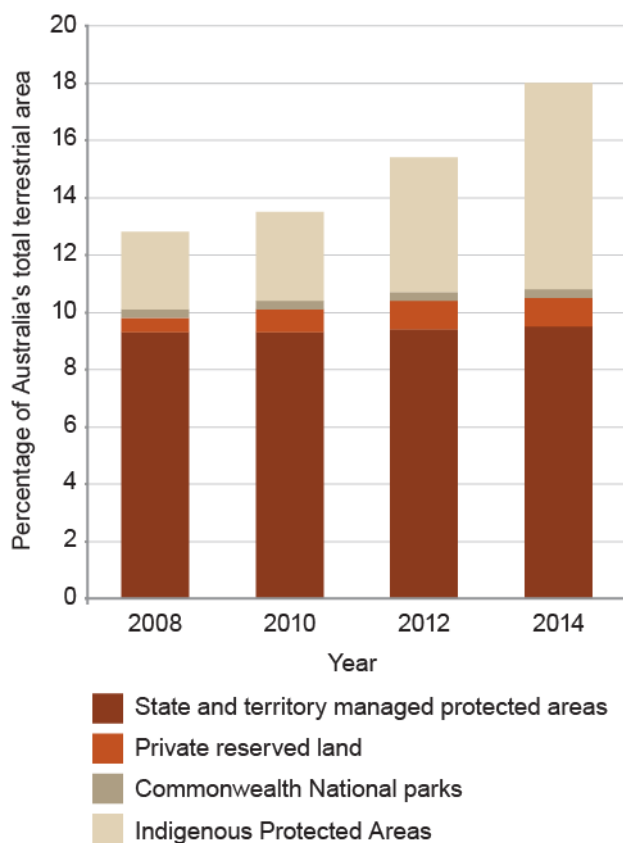
Source: Jo Harding, Bush Blitz Manager



Pip Russel (Totally Wild television program), Bradley Wilken (teacher, Alfred Deakin High School) and Dr Dane Trembath with a Stimson's python (*Antaresia stimsoni*) near Alice Springs, Northern Territory

Photo by Jo Harding





Note: Data post-2014 were not included because comparable data from all agencies were not available.

Source: Australian Government Department of the Environment and Energy; Collaborative Australian Protected Area Database (CAPAD), 2008–14

**Figure HER13** Australia's protected terrestrial areas according to management type

State and territory statutory legislation also includes 'blanket' protective provisions, which are important to provide protection for unknown significant sites. Some highly significant Indigenous places are included on the National Heritage List or included within IPAs (see Box HER19). In many cases, it is the wider land or sea Country that is significant, rather than individual sites. Overall, it is likely that the representation of Indigenous places within reserved lands and on major statutory heritage lists is inadequate.

At the state and territory level, consistent and comprehensive data relating to Indigenous heritage lists and registers are not available. Partial information, provided by some jurisdictions, suggests that survey and assessment programs have continued to contribute to Indigenous heritage inventories and registers

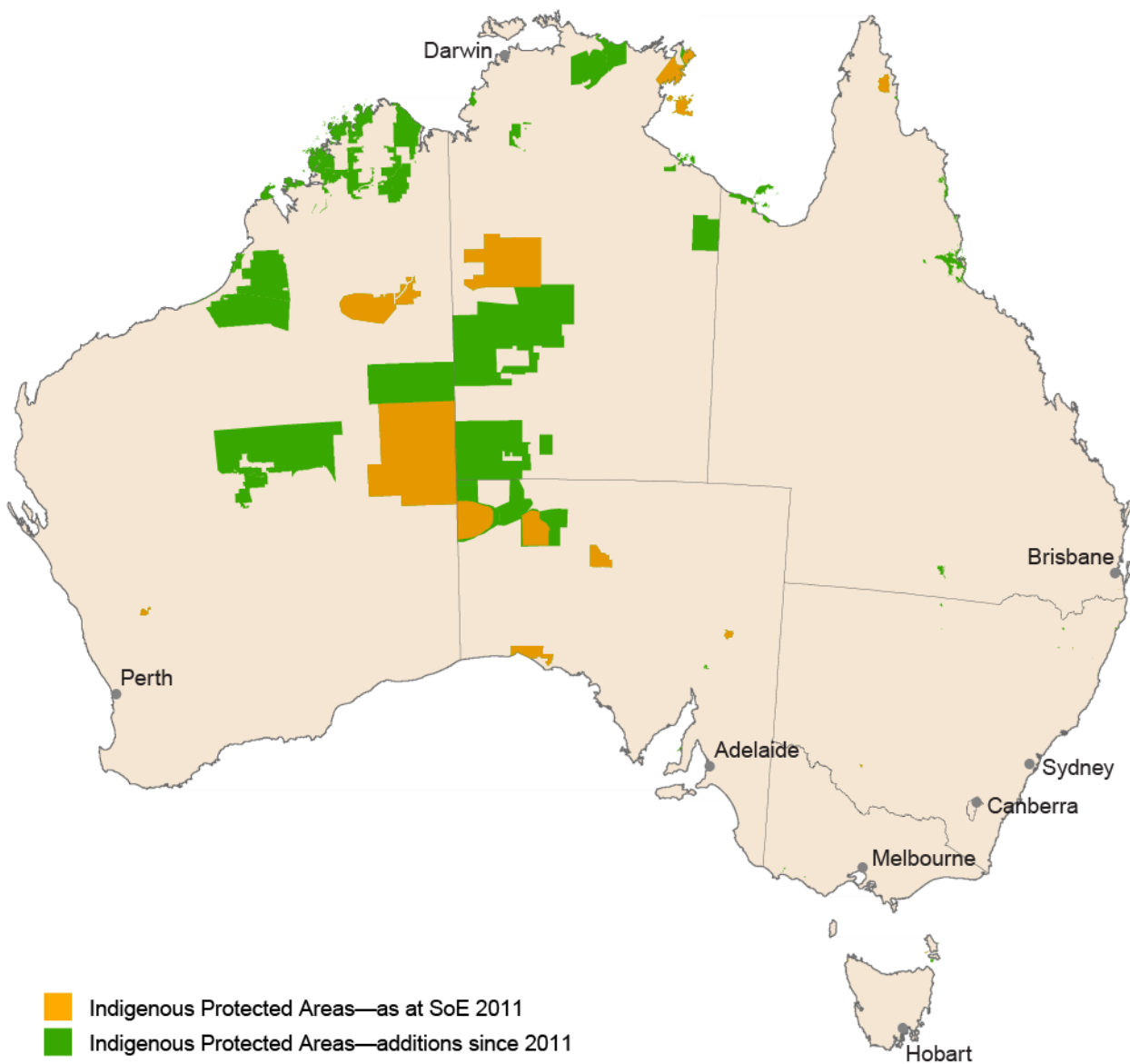
(Figure HER15). There have also been reductions—for example, 2319 sites were removed from the Western Australian register in 2013–14 following a review of a compliance report that demonstrated that these sites had been affected by mining following statutory consent (Department of Aboriginal Affairs, Western Australia, pers. comm., July 2016).

There is no readily available national perspective on the nature and extent of the Indigenous heritage resource—neither what is being listed nor what is potentially being destroyed, bearing in mind that most Indigenous heritage survey and assessment occurs in select areas, particularly in response to threats from development proposals. SoE 2011 highlighted how this situation contrasts with the circumstances of both natural and historic heritage, where national forums (the Heads of Parks, and the Heritage Chairs and Officials of Australia and New Zealand) are convened regularly to share information at a national scale to enable well-informed, holistic decision-making, based on proper understanding of the resource, and to agree to standards and formats for recording information. This disparity is addressed to some extent in the Australian Heritage Strategy, which commits to focusing protection efforts on Indigenous heritage and to 'promote a consistent approach to the recognition, protection and management of Indigenous heritage sites across all levels of government and other organisations' (Australian Government 2015a:43).

## Historic heritage

### Natural and cultural heritage indicator 3 considers the process of listing, area and distribution of identified historic heritage places

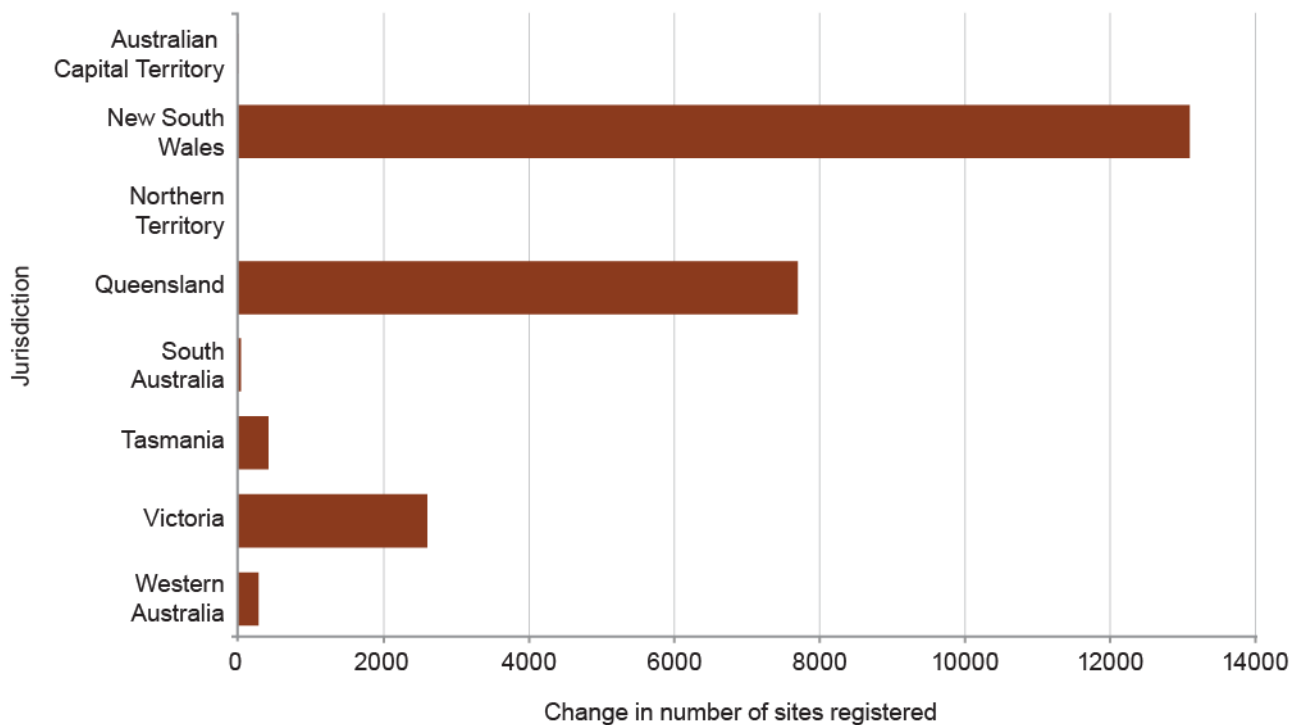
Australian historic place statutory registers are well established in all jurisdictions, but have been populated in an ad hoc manner, initially with a strong focus on buildings, and then in response to specific development threats. More recent practice in historic heritage listing has included a wider range of site types, such as historic archaeological sites, cultural landscapes and cultural routes. Listing programs have included more systematic survey and assessment projects, based on thematic studies, gap analysis, and systematic review of heritage lists at national, state and territory, and local levels. There has also been far greater direct involvement of local communities and incorporation of heritage lists within planning statutes.



- Indigenous Protected Areas—as at SoE 2011
- Indigenous Protected Areas—additions since 2011

Source: Australian Government Department of the Environment and Energy; Collaborative Australian Protected Area Database (CAPAD), 2008; Indigenous Protected Areas (as at 1 January 2016)

**Figure HER14** Indigenous Protected Area additions since 2011



Source: Data were requested from representatives of the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Cultural Heritage Unit, Department of Aboriginal and Torres Strait Islander Partnerships), South Australia (Aboriginal Affairs and Reconciliation), Tasmania (Aboriginal Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Aboriginal Victoria) and Western Australia (Department of Aboriginal Affairs).

**Figure HER15 Additions to Indigenous heritage lists and registers by state and territory agencies, 2011–12 to 2015–16**

In view of the limited resources allocated to historic heritage survey, assessment and listing in recent years, state and territory historic heritage agencies are focusing efforts and resources on improving the calibre of data, integrity representativeness and ease of use of their heritage registers rather than embarking on major programs for addition of new listings (DoEE 2017a; see Box HER16).

## Condition and integrity

This section examines the condition and integrity of Australian heritage places according to both jurisdiction and type. For previous SoE reports, the condition and integrity were sampled and surveyed, allowing comparable application of the same natural and cultural heritage indicators. The resources available for SoE 2016

have not enabled such surveys, so the assessments are not directly comparable. Indeed, a general lack of condition audits and monitoring for listed heritage places presents a continuing challenge for conservation and management, and places a growing number of heritage places at risk. (This issue is further addressed in [Effectiveness of heritage management](#).)

## World Heritage

The Australian Heritage Strategy recognises that:

*The Australian Government, jointly with the states and territories, uses the best scientific, technical and community advice available to maintain and protect Australia's World Heritage properties. (Australian Government 2015a:14)*

Objective 1 of the strategy commits to continued support for Australia's iconic World Heritage properties through

### Box HER19 Moree Baths and Swimming Pool Complex—a National Heritage place

The Moree Baths and Swimming Pool Complex was the 100th place to be included on the National Heritage List, in September 2013 (DoEE n.d.[h]). The complex became a symbol of official segregation and the exclusion of Aboriginal people during the 1965 Freedom Ride, during which Student Action for Aborigines visited rural towns in New South Wales and southern Queensland to highlight inequalities and racism experienced by Aboriginal people. The ride was led by Indigenous student activist Charles Perkins.

Arriving in Moree on 19 February 1965, the Freedom Riders encountered a bylaw that prevented Indigenous people from entering the Moree Baths and Pool. The ensuing protest and its consequences were of pivotal importance in the history of Australian race relations, as they drew widespread attention to racial discrimination, resulting in a change in attitude in the Australian community.

The state of the environment report in 2011 (SoE Committee 2011) observed that the spirit of the Freedom Ride was part of our national story, but the associated places were not listed on any statutory heritage register at the time. The inclusion of the Moree Baths and Swimming Pool Complex on the National Heritage List demonstrates a broadening and more inclusive approach to understanding how Indigenous historic themes are part of our heritage. This approach is similarly reflected in the more recent inclusion on the National Heritage List of the Burke, Wills, King and Yandruwandha National Heritage Place in January 2016,

recognising not only the epic story of European explorers, but also the support provided by the Yandruwandha Aboriginal people as the expedition passed through their traditional lands (DoEE 2016a).



Moree Baths and Swimming Pool Complex, New South Wales  
Photo by Peter Read (courtesy of the Australian Government Department of the Environment and Energy, Heritage Photo Library)

a range of statutory processes and other initiatives, including significant investment such as \$37 million from 2013 to 2018 under the World Heritage Grants program (see [Inputs](#)).

The most recent periodic report on Australian World Heritage properties was provided to the World Heritage Committee in 2011. This report (Australian Heritage Council 2010), which was noted in SoE 2011, found that the 3 most significant factors affecting World Heritage properties in Australia are:

- invasive and alien species, or hyperabundant species
- climate change and severe weather events
- social or cultural impacts on heritage (including changes in traditional ways of life as well as impacts of tourism).

Recently, concerns have been expressed about the condition and integrity of a number of Australian World Heritage properties (Figgis et al. 2012). Of these, the most prominent has been the World Heritage Committee's consideration of inscription of the Great Barrier Reef on the List of World Heritage in Danger. In July 2015, the 39th Session of the World Heritage Committee noted, with concern, that the *Great Barrier Reef outlook report 2014* (GBRMPA 2014) concluded that the overall outlook for the property is poor, and that climate change, poor water quality and impacts from coastal development are major threats to the property's health. The committee expressed regret that key habitats, species and ecosystem processes in the central and southern inshore areas have continued to deteriorate (World Heritage Committee 2015).



Welcoming the efforts of the Australian Government and other parties to establish the Reef 2050 Long-term Sustainability Plan (Australian Government & Queensland Government 2015) and its overarching vision for the future conservation of the property, the World Heritage Committee did not inscribe the Great Barrier Reef on the List of World Heritage in Danger. In doing so, the committee also noted:

- the proposed 80 per cent reduction in pollution runoff in the property by 2025
- a ban on disposal of capital dredging material within the property
- additional investment to accelerate progress in water quality improvements
- protection of greenfield areas by restrictions on major new port development in and adjoining the property
- associated research and monitoring initiatives.

The report *IUCN World Heritage outlook 2014* (Osipova et al. 2014), prepared by the IUCN as the relevant advisory body to the World Heritage Committee, provides a global desktop evaluation of the current state and trends of the values of natural World Heritage properties. The assessments in this report indicate whether a natural World Heritage site is likely to conserve its values over time, based on a desk-based assessment of:

- the current state and trend of values
- the threats affecting those values
- the effectiveness of protection and management.

Of the 19 World Heritage properties in Australia, 3 are assessed to be of 'significant concern', and a further 5 of 'some concern' (Osipova et al. 2014; see Box HER20).

In 2015, a monitoring mission comprising IUCN and ICOMOS representatives visited the Tasmanian Wilderness World Heritage Area, following a request by the World Heritage Committee. The mission report (Jaeger & Sand 2015) found that the area continues to be in an overall good state of conservation, but recommended changes to proposed management arrangements, including in relation to proposals for timber harvesting, tourism activities and community consultation. The mission also recommended that a cultural heritage survey be undertaken in consultation with the Tasmanian Aboriginal community. The Australian and Tasmanian governments accepted all 20 mission recommendations in March 2016 (Hunt & Groom 2016).

## National heritage and Commonwealth heritage

National heritage is identified and managed by the Australian Government under the EPBC Act, which established the National Heritage List and Commonwealth Heritage List. The second review report on these lists, covering 1 January 2008 to 30 June 2013, was published in 2013 (DoE 2013). In accordance with requirements specified in the EPBC Act, this report focuses on the processes followed and compliance with processes, rather than assessing the condition and integrity of listed places. However, this report does highlight that, relative to the total number of listed heritage places, the number of compliance incidents is relatively small. For the period covered, there were 61 compliance incidents reported to, and investigated by, the Australian Government Department of the Environment and Energy. Significant compliance outcomes included (DoE 2013):

- cessation of a cattle-grazing trial in the Australian Alps national parks and reserves
- an enforceable undertaking arising from quarrying activity in the Dampier Archipelago
- a conservation agreement relating to cassowary habitat in the Wet Tropics of Queensland
- multiple actions, including notices and orders, related to environmental issues, approvals and infringements within or affecting the Great Barrier Reef.

Studies of natural, Indigenous and historic heritage completed for SoE 2011 suggested that identified places with National Heritage values were generally in good condition and retained a high degree of integrity. This finding reflects that the overwhelming majority of these places are in public ownership, were often subject to conservation planning as part of the listing process, and are specifically managed for conservation purposes in many cases.

### National Heritage place monitoring survey

Results from the initial National Heritage place monitoring survey (WHAM 2017) indicate that the condition of the listed National Heritage values of most places has remained stable or improved since the time of listing. Very few National Heritage places reported a deterioration in the condition of listed values, and these arose from factors such as external

## Box HER20 IUCN World Heritage outlook 2014

Of significant concern:

- **The Great Barrier Reef** is subject to very high threats, with several values declining, mostly from human activities such as fishing, coastal development, ports and shipping, but also from other pressures such as climate change.
- **The Wet Tropics of Queensland** is subject to high threats, posed by invasive plants, animals and diseases, exacerbated by predicted impacts of climate change, all of which present a real danger to the continuing integrity of the site's biodiversity and associated endemic species.
- **Kakadu National Park** is subject to high threats and decline in many species of small mammals, as well as some birds and other species, the recent introduction of cane toads, and the existence of a uranium mine and yet-unknown effects of climate change.
- **The Greater Blue Mountains World Heritage Area** is subject to threats from activities outside the World Heritage Area boundary, including urban development, coalmining and a second airport for Sydney.
- **The Gondwana Rainforests World Heritage Area** is subject to threats from decline in some significant species and climate change.
- **Macquarie Island** is subject to threats that may be removed through the (now completed, and successful) pest-eradication program on the island, and if the cause of the die-off of the endemic cushion plant can be identified and remediated (see 'Terrestrial environment' in the *Antarctic environment* report).
- **The Tasmanian Wilderness World Heritage Area** is subject to threats from competing land-use claims along its boundaries, inadequate resourcing of scientific research and monitoring, and increasing pressures to allow intrusive commercial tourism.

Good with some concern:

- **Fraser Island** is subject to high threats from increasing visitation and climate change.

Source: Osipova et al. (2014)

environmental pressures. Most survey respondents indicated that National Heritage listing has made some difference to the management of a National Heritage place and the condition of its listed values, with more than half considering listing to have made a significant or moderate difference.

The Australian Heritage Strategy, released in December 2015, includes an action for the Australian Heritage Council and the Australian Government Department of the Environment and Energy to provide guidance for regular, long-term monitoring, evaluation and reporting of World Heritage and National Heritage value conditions. The Australian Heritage Council has instigated a condition-monitoring project for places on the National Heritage List, which will involve proactive consultation with site managers.

Phase 1 of this task involved the department surveying National Heritage place managers in early 2016. The National Heritage place monitoring survey was designed to provide data for several purposes, including SoE reporting. Place managers self-reported current condition and trends since that place's National Heritage listing (WHAM 2017).



Du Cane Hut, 2014, on the much-visited Overland Track, exemplifies how historic heritage conservation and low-impact experiences can co-exist in the Tasmanian Wilderness World Heritage Area

Photo by Richard Mackay

The collated data from the survey provide a major source of comparable information on the state, pressures and trends for National Heritage places. Survey questions were not specific to natural, Indigenous or historic heritage, and the places in the respondent group reflected the general proportions and geographic distribution of these values on the National Heritage List.

For the 104 places on the National Heritage List at the time of the survey, the department received 52 responses. According to survey respondents, the condition of most places had either remained stable or improved somewhat or significantly, and National Heritage listing had made some difference to the condition and management of the place. This was less relevant for those National Heritage places that are also World Heritage listed. Overall, 92 per cent of respondents experienced high to very high pressures on values in some areas, given current management and resourcing. Of these, the main pressures were elemental or external (e.g. exposure, unplanned fire, pest species and pathogens), followed by resourcing, climate change, issues of authenticity, and visitation and use. Pressures on integrity were reported by 60 per cent of respondents. Only 37 per cent indicated that development pressures posed a high to very risk to values (WHAM 2017).

The next phase in this work involves developing a longer-term monitoring methodology.

For the Commonwealth Heritage List, the EPBC Act requires Australian Government agencies to prepare heritage strategies and management plans directed towards retaining Commonwealth Heritage values. A number of such plans and strategies are in place, and guidance has been provided (DoE 2013), but up-to-date information on management plans and strategies is still being compiled by the department (Wildlife Heritage and Marine Division of the Australian Government Department of the Environment and Energy, pers. comm., August 2016). Reliable data—based on monitoring of the actual condition of the Commonwealth Heritage places—are not available, so the outcome of this management cannot be meaningfully assessed.

## State and territory heritage

At the state and territory level, efforts and resources continue to focus on listing and impact assessment processes, rather than on monitoring and evaluating condition and integrity. There is considerable variation in scope and approach in state and territory SoE reporting, and approaches to recording condition are inconsistent. There is a general trend towards disposal of redundant state-owned heritage assets and a perception that idle, unused heritage properties are at greatest risk of degradation through lack of maintenance. In some jurisdictions, there is interest in community-based, volunteer monitoring of the condition of state-listed heritage items (DoEE 2017a). Summaries of state and territory results are as follows:

- The **Australian Capital Territory** completed an SoE report in 2015, with a chapter on heritage that adopts the methodology and grading system from the Australian SoE 2011. However, in the absence of monitoring and assessment of the condition of heritage in the territory, the report relies on changes in heritage listings. The territory has developed an integrated biosecurity strategy. Policies have been prepared for cultural heritage reporting, repatriation of Aboriginal artefacts, Indigenous consultation and requirements for archaeological investigations. A backlog in nominations awaiting assessment has decreased. Significant amendments were introduced to the *Heritage Act 2004* in late 2014.
- **New South Wales** completed 28 Aboriginal joint-management agreements encompassing 2.2 million hectares (or 28.5 per cent of the reserve system), and notes that knowledge is increasing and information gathering is continuing, as are efforts to improve the protection of natural and cultural heritage assets. In 2013, the New South Wales Government released a model for proposed Aboriginal heritage legislation, which aims to improve the identification of important objects, provide more effective protection for cultural assets, and better integrate cultural heritage in planning processes. The Heritage Near Me incentives program is a \$28.5 million program comprising heritage activation grants, local heritage grants and heritage green energy grants. It began in April 2015 and aims to transform the way heritage is protected, shared and celebrated.

- In the **Northern Territory**, resources available for heritage programs have decreased, but grant funding has continued for conservation projects. An Indigenous Land Use Agreement was reached between Territory Iron, the Northern Land Council and senior traditional owners in 2006 in the Frances Creek area.
- In **Queensland**, development pressures continue to affect natural and cultural heritage, in combination with impacts of drought, fire, flood and major weather events. Substantial efforts have been directed at fish habitat areas and turtle conservation. Additional resources have been allocated to employ Indigenous rangers, particularly in Cape York. A revised heritage strategy has been prepared to provide a framework for managing Queensland's heritage (see Box HER28). This strategy defines how the Queensland Government and Queensland Heritage Council will manage and coordinate heritage issues in a sustainable manner that reflects the contribution of heritage to community sustainability, ethos and identity. A new web-based 'living heritage information system' has been implemented to provide better public access to heritage information.
- In **South Australia**, available information shows an increase in the number of listed places, and increased protection for Indigenous sites and objects, and shipwrecks. There has been substantial investment in community access to heritage places, including the Kangaroo Island Wilderness Trail, improved visitor facilities at the Naracoorte Caves World Heritage property and better access to national parks near Adelaide. There has been an increase in direct engagement with Indigenous people in land and park management, as well as improvements to statutory provisions, following a review of the *Aboriginal Heritage Act 1988* in March 2016.
- In **Tasmania**, emphasis has been on reviewing entries on the Tasmanian Heritage Register to ensure that they meet at least one criterion in the legislation (see Box HER16), and developing works guidelines that set clear expectations for heritage property owners, developers and local government. These guidelines offer a consistent framework for assessing and determining development applications. Amendments to the *Historic Cultural Heritage Act 1995* will provide greater clarity, consistency and certainty about the listing processes. The Parks and Wildlife Service and the Tourism Industry Council of Tasmania entered an agreement to achieve environmentally, socially and economically sustainable tourism in the reserve estate. Sustainable access arrangements were implemented for the Arthur–Pieman Conservation Area, and the first stage of the Three Capes Track was completed on the Tasman Peninsula. Major conservation programs were undertaken at Low Head, and public and volunteer resources were deployed in response to the impacts of recent severe fire seasons.
- In **Victoria**, the Living Heritage Program audited 150 at-risk places on the Victorian Heritage Register that were identified as being in poor condition. The audit, completed in December 2015, involved an assessment of the condition of each place, and the identification of essential maintenance and repair requirements. More than 140 heritage places were found to need urgent works, with an even split between rural and urban locations. The audit also noted the positive impact of past heritage grant programs, with some places previously assessed as in poor condition now actively being used and in good condition. The Living Heritage audit also led to a new heritage grants program—the Living Heritage Grants Program (Victorian Government, pers. comm., June 2016). Changes to Aboriginal heritage legislation provide for registration of Aboriginal intangible heritage, and increased compliance monitoring and enforcement powers for traditional owners. The *Heritage Act 1995* was reviewed to provide improved protection for postcontact heritage.
- In **Western Australia**, the State Register of Heritage Places has an active portfolio, with around 900 planning referrals received each year for projects on state-registered places. This process provides information on the condition of properties across a large portion of the register each year. There are numerous examples of places receiving significant investment and being very successfully adapted for contemporary use. The State Heritage Office was established in July 2014 as a standalone agency to support the Heritage Council and minister, to deliver heritage services. In 2011, the State Cultural Heritage Policy was adopted, formalising the responsibilities of government agencies and local authorities to recognise, promote and protect cultural heritage. A \$5 million Goldfields Earthquake Restoration Fund



was established, and several conservation projects were funded for historic heritage places. Proposed changes to the *Aboriginal Heritage Act 1972* aim to increase protection and involve traditional owners, but may also reduce some protective provisions (see Box HER29).

## Local heritage

At the local level, comprehensive national data about the condition and integrity of Australia's heritage are not available. Several key factors influence local heritage:

- The identification process, which is inconsistent and incomplete on a national basis, leads to inadequate information for good decision-making and an unknown level of impact to significant—but unlisted—places.
- Processes for impact assessment and considerations of development consent are almost invariably framed in terms of one-off adverse effects on local heritage, without long-term consideration of cumulative adverse effects and progressive, incremental destruction.
- The establishment of heritage policies and guidelines can improve the condition and integrity of local heritage items.
- Local incentive programs, including access to information, grants and award schemes, can improve the condition and values of local heritage places.
- Community stewardship programs, such as Landcare, Hands on Heritage and Working on Country, also play a significant role in heritage conservation at the local level.

## Natural heritage

### Natural and cultural heritage indicator 5 considers the physical condition and integrity of a sample of natural heritage places

No sample surveys of natural heritage places have occurred to provide data for SoE 2016. This report therefore relies on surrogate data sources and expert opinions, including workshops with the Australian Heritage Council (DoEE 2017c) and the Australian Committee for IUCN (DoEE 2017b), and surveys of the Australian Heads of Parks agencies (DoEE 2017d) and members of the Australian Committee for IUCN (DoEE 2017e).

There is no 'central' picture of the condition and integrity of natural heritage places, although this is an issue that was identified in Australia's Strategy for the National Reserve System 2009–2030 (NRSTG 2010).

## Indigenous heritage

SoE 2011 considered 2 indicators of the state of Indigenous heritage: the physical condition and integrity of a sample Indigenous heritage places, and the use of Indigenous languages, based on summary data from the 2005 National Indigenous Languages Survey (AIATSIS 2005). These indicators parallel the natural and cultural heritage indicators used in previous SoE reporting (Pearson et al. 1998).

### Natural and cultural heritage indicator 7 considers the physical condition and integrity of a sample of Indigenous heritage places

No sample surveys of Indigenous heritage places have occurred to provide data for SoE 2016. This report therefore relies on surrogate data sources and expert opinions, including workshops with the Australian Heritage Council (DoEE 2017c), and the Indigenous Advisory Committee of the Australian Government Department of the Environment and Energy (DoEE 2017f) and a survey of representatives of Indigenous heritage agencies (DoEE 2017g).

Indigenous heritage is managed through multiple jurisdictions, and, as outlined in SoE 2011, a cohesive picture is difficult to achieve.

Conflicts about destruction of Indigenous heritage remain common, and there are diverse perspectives about whether the support available for Indigenous culture and heritage programs is adequate. As noted in *Incremental destruction*, one of the main threats to Indigenous heritage places is conscious destruction through approved development—that is, development where decision-makers are aware of Indigenous heritage impacts, yet authorise the destruction of Indigenous heritage. In some jurisdictions, a more robust and inclusive process involves traditional owners in decisions regarding the potential impacts on their cultural heritage. This involvement may range from an approval role to direct engagement and negotiation with land users to seek to avoid impact on culturally significant places. However, the process of reactive decision-making for individual sites or areas, sometimes combined with a general lack of understanding of the interconnected





Gwion figures in a rock shelter on the Roe River,  
Kimberley region, Western Australia  
Photo by Mike Donaldson



landscape scale of Indigenous heritage, or limited controls where unknown heritage 'may' exist, mean that individual decisions on assessment and development continue to result in progressive, cumulative destruction of Indigenous cultural heritage (DoEE 2017f).

Indigenous people play an important role in managing Indigenous heritage and sustainably managing Australia's natural resources, including an increasing percentage of Australia's reserved lands. The relationship between nature and culture, and Indigenous people's rights to use, access and manage lands, waters and natural resources for cultural purposes are increasingly recognised. For example, the *Conservation and Land Management Act 1984* (WA) provides for joint vesting of conservation reserves. In the Kimberley region, a number of terrestrial and marine reserves are, or will be, jointly managed by Western Australian Parks and Wildlife and Aboriginal traditional owners. There is also increasing recognition that incorporating traditional ecological knowledge augments western conceptions of land and sea management (see Box HER21).

However, the capacity of Indigenous people to care for their own heritage, exercise responsibility for Country and transmit cultural practice to new generations also continues to be hindered by governance arrangements, as well as social and economic disadvantage, as acknowledged in the Australian Government's Closing the Gap initiative (COAG 2008).

#### Natural and cultural heritage indicator 24 is a survey of use of Indigenous languages

Indigenous language is an indicator of the health of Indigenous culture, and has therefore been used as a surrogate indicator of the condition of the nation's Indigenous heritage (Pearson et al. 1998). It would be useful and instructive to measure the extent to which Indigenous heritage sites are preserved in areas where traditional languages are spoken; however, such a study is beyond the scope of this report. Indigenous language is included here, despite this shortcoming, to provide a measure of comparability with previous SoE reports.

Reporting on Indigenous language has focused on numbers and proportions of speakers, using data collected by the Australian Bureau of Statistics, the National Aboriginal and Torres Strait Islander Social Survey and, more recently, the National Indigenous Languages Survey, a comparative assessment of

the endangerment status of individual Indigenous languages across the country (Marmion et al. 2014).

The second National Indigenous Languages Survey was undertaken by the Australian Institute of Aboriginal and Torres Strait Islander Studies in 2014. The aims for the project were to build a better understanding of (Marmion et al. 2014):

- the current situation of Australian languages
- activities supporting Australian languages,
- people's attitudes towards, and aspirations for, their languages
- views about the most effective types of language action.

The survey found that there is an overwhelming desire to strengthen traditional languages among Indigenous people of all ages across Australia.

The findings of the survey reveal a complicated picture, with signs of both language recovery and decline (see Box HER22). They suggest that there are now only around 120 of 250 languages still spoken, compared with 140 in 2005. Only 13 of these languages are now considered strong, compared with 18 in 2005. Approximately 100 languages are assessed as severely or critically endangered, but around 30 of these have had significant increases in use levels as a result of language programs.

Most of the widely spoken Indigenous languages are spoken in remote areas of Western Australia, the Northern Territory and Queensland. In these areas, the focus of language policy and programs is on maintenance and preservation. In other parts of the country, particularly in the south-east and along the south-east coast, Indigenous languages are no longer fully or fluently spoken. The focus in these regions is on language revitalisation—a process that has been the subject of increasing interest and support from the Indigenous community during the past 5 years.

## Box HER21 Bushfood plants and 'unwelcome strangers'

Changes to the natural environment may affect cultural practices and heritage values.

Aboriginal people who use plants for bushfoods, medicines and other purposes often observe 'stranger plants' before botanists and others. These weeds can have significant impacts on species that are important to Aboriginal families. In central Australia, the bush onion (*Cyperus bulbosus*) or *yalka* (in the Western Aranda language) is one species that has been reduced by invasive buffel grass (*Cenchrus ciliaris*) and couch grass (*Cynodon dactylon*).

*Yalka* is one of the most valuable bushfood species in the region. Its small edible tubers were readily collected in large quantities. The tubers were prepared in various ways—raw, roasted in ashes to eat, or ground to a paste to feed to children and old people. *Yalka* was also one of the few plants that could be stored. *Yalka* continues to be favoured by desert people.

River corridors and wetlands were prime habitat for *yalka*. In central Australia, buffel and couch grasses now dominate these habitats. In displacing *yalka*, they reduce both food security and intergenerational learning opportunities for Aboriginal people. This is of deep concern to families who see bushfoods as integral to cultural identity and heritage.

Western Aranda people view buffel grass as an 'unwelcome stranger' (CSIRO 2012). Its presence is blamed for the disappearance of productive *yalka* patches that have been harvested for generations. Families can no longer take children and young people to visit and harvest from these locations.

Older Western Aranda people, concerned with *yalka* being displaced by buffel grass, sought the assistance of the Tjuwanpa Rangers, an award-winning ranger group based at Ntaria (Hermannsburg) in central Australia. They are the longest established of the Central Land Council's ranger groups. The rangers revitalised



A Western Aranda boy collects *yalka* (bush onion—*Cyperus bulbosus*) growing amid invasive buffel grass (*Cenchrus ciliaris*) at a location that has been harvested for generations

Photo by Fiona Walsh, CC BY-NC-SA 4.0



*Yalka* (bush onion—*Cyperus bulbosus*)

Photo by Fiona Walsh, CC BY-NC-SA 4.0

an area known for its *yalka* by reducing buffel grass. This provided opportunities for teaching children, and keeping practice and knowledge strong.

Despite the detrimental impacts of buffel grass on the intergenerational transmission of traditional knowledge, and scientific recognition of its negative impact on biodiversity, ecosystem processes and fire regimes, buffel grass is only listed as a weed in South Australia (Grice et al. 2012, DEWNR 2015).

Source: Josie Douglas, Senior Policy Officer, Central Land Council



## Historic heritage

**Natural and cultural heritage indicator 6 considers the physical condition and integrity of a sample of historic heritage places**

No sample survey of historic heritage places has been done to provide data for SoE 2016. This report therefore relies on surrogate data sources and expert opinions, including workshops with the Australian Heritage Council, Australia ICOMOS and Australian Heritage Officials (DoEE 2017a,c,h), augmented by some online surveys and consultation with officers from the Wildlife Heritage and Marine Division of the Australian Government Department of the Environment and Energy.

There is a substantial gap in the process of monitoring the state of the historic environment. Management plans for National Heritage places are required to include monitoring, but there are no corresponding requirements for places of state or local heritage value. The National Heritage monitoring survey—which was instigated by the Australian Heritage Council and is being implemented by the Australian Government Department of the Environment and Energy—provides a method for national-level comparison and reporting for National Heritage places (WHAM 2017; see Box HER23).

Survey responses from Australia ICOMOS (DoEE 2017i) and Australian National Trusts (DoEE 2017j), and workshop discussions with state and territory heritage officials (DoEE 2017a) suggest that, overall, the condition and integrity of historic heritage (and particularly publicly owned heritage assets) are good. There is, however, a high correlation between good condition and places that are actively used, inhabited and maintained, or have been repurposed through successful, sympathetic adaptation.

As noted in SoE 2011, heritage place maintenance is cyclical and responsive to economic conditions. Historic places particularly may be conserved as funds become available to the owner or manager. For example, grant funds may instigate a one-off major conservation exercise. Alternatively, after a long period with no maintenance, an owner may decide to undertake overdue works, or deferred maintenance may occur when a place changes ownership. In such circumstances, the condition of the place may be reported as

### Box HER22 Second National Indigenous Languages Survey—key findings

There is great variety in the situations of traditional languages, but, regardless of their situation, all traditional languages are at risk of declining.

Some of the traditional languages considered to be 'very strong' are showing signs of decline.

Some traditional languages are gaining more speakers. Mostly, these are languages that have not been spoken for some time, but have been gradually brought back into use.

Some traditional languages have a substantial number of full speakers and are in a stable state of vitality.

Recently developed Indigenous languages, such as Kriol and Yumplatok, have the largest speaker numbers—in the thousands.

Source: Marmion et al. (2014)

deteriorating, when in fact the observed condition may be part of a relatively normal maintenance cycle.

## Box HER23 Places at risk in South Australia—monitoring for management



Bell's Plumbers Shop at College Park, South Australia—one of South Australia's state heritage places at risk

Photo by Margaret Heathcote, South Australian State Heritage Unit

The general aim of heritage legislation and heritage lists across Australia is to support the identification and conservation of our most significant heritage places and precincts. However, the way in which the significance of those places is 'conserved' is generally reactive rather than proactive.

The State Heritage Unit in South Australia is addressing this issue through a fieldwork project to find out how many places are at risk or vulnerable, and to identify the main causes. The project process includes visiting places to assess and photograph all significant components, including noting condition, occupancy, apparent usage, integrity, and any apparent risk factors that are affecting the place, such as weather, vandalism, subsidence, plants, disuse and neglect.

### Trends and lessons learned

So far, 41 per cent of South Australia's state heritage places have been assessed through the project, and a wealth of valuable data has been collected. Based on

Source: Anna Pope

these data, around 11.6 per cent of the state places are 'at risk'—about 265 places. In addition, around 30 per cent of state heritage places are classed as 'vulnerable', with only 58 per cent being considered 'safe'. Reasons for places being at risk are varied, but many are unoccupied or neglected, often because owners no longer consider them useful or viable. Much of this damage could be prevented by strategic intervention.

### What could be done?

Assessing and then continuing to monitor the condition of heritage places is an important missing link in efforts to protect significant heritage. Protection will require a proactive program that identifies the places that are most at risk and supports the best interventions for preserving them. There are some successful programs that might guide such a program, including the Victorian Living Heritage Program audit. An initial condition audit, which allows an understanding of the nature and scope of the conservation challenge, is an important first step.

## Assessment summary 2

### State and trends of heritage values

Component	Summary	Assessment grade				Confidence Comparability		
		Very poor	Poor	Good	Very good	In grade	In trend	To 2011 assessment
Natural heritage— process of listing, area and distribution of natural heritage places	<p>Statutory heritage lists are inconsistent in coverage of natural heritage places, both between jurisdictions and across site types</p> <p>The National Reserve System (NRS) now includes more than 17% of terrestrial Australia, meeting the Convention on Biological Diversity target, and the comparable marine figure is more than 36%, which substantially exceeds the Aichi Target 11</p> <p>The NRS is focused on incorporating the full range of ecosystems and other important environmental values across each of the 89 bioregions; 48 of these bioregions have more than 10% of their area protected in the reserve network</p>							
Natural heritage— physical condition and integrity of natural heritage places	<p>The very limited available data relating to natural heritage values, environmental threats and management plans for natural heritage places suggest that Australia's reserved lands are in good condition, but continue to face threats from invasive species, fires, erosion, use and effects on threatened species. Lessening of the resources available for reserve management (particularly relative to the increasing extent of reserved lands) means that these threats to natural heritage values are increasing</p>							





## Assessment summary 2 (continued)

Component	Summary	Assessment grade				Confidence		Comparability	
		Very poor	Poor	Good	Very good	In grade	In trend	To 2011 assessment	
Indigenous heritage—process of listing, area and distribution of identified Indigenous heritage places	<p>There is no nationally coordinated inventory of significant Indigenous places</p> <p>Survey and assessment programs for Indigenous heritage are often undertaken in response to threats from development projects, rather than proactively, owing to perceptions about cost and resource availability</p> <p>There has been a major increase in dedication of Indigenous Protected Areas</p> <p>Additional Indigenous places have been included on the National Heritage List</p>								
Indigenous heritage—physical condition and integrity of Indigenous heritage places	<p>No nationally coordinated data exist about the condition and integrity of Indigenous heritage places.</p> <p>There have been many positive developments, but also some trends that significantly undermine the protection of Indigenous heritage.</p> <p>Recognition of the role of Indigenous people in managing Indigenous heritage has expanded, but individual assessment and development decisions continue to cause cumulative, incremental destruction of the Indigenous cultural heritage</p>								
Indigenous heritage—use of Indigenous languages	<p>Despite some improvement to particular languages arising from language revitalisation programs, Indigenous languages remain highly endangered, and there has been a net reduction in the number of Indigenous languages that are actively spoken</p>								

## Assessment summary 2 (continued)

Component	Summary	Assessment grade				Confidence			Comparability
		Very poor	Poor	Good	Very good	In grade	In trend	To 2011 assessment	
Historic heritage—process of listing, area and distribution of identified historic heritage places	<p>Progress continues to be made in the collection of data relating to statutory listing processes for historic heritage at the national and state level</p> <p>The number of listed places continues to increase, and there have been more systematic, thematic historic heritage assessment projects, and projects to improve the quality of listing data</p> <p>However, gaps remain in statutory registers and heritage lists, and the resources allocated to survey and assessment have declined. At the local level, processes for heritage listing are inconsistent, sometimes perceived as costly and often under-resourced</p>								
Historic heritage—physical condition and integrity of historic heritage places	<p>No nationally coordinated data exist about the condition and integrity of historic heritage places, but those on national, state and territory lists appear to be in good condition and retain integrity of their identified values. Idle, unused historic places remain at risk</p>								

<p><b>Recent trends</b></p> <ul style="list-style-type: none"> <li> Improving</li> <li> Deteriorating</li> <li> Stable</li> <li> Unclear</li> </ul>	<p><b>Grades</b></p> <ul style="list-style-type: none"> <li> <b>Very good:</b> Places with heritage values have been systematically and comprehensively identified and included in relevant inventories or reserves. Heritage places are in very good condition, with identified values retaining a high degree of integrity</li> <li> <b>Good:</b> Places with heritage values have been systematically identified and included in relevant inventories or reserves. Heritage places are in good condition, with identified values generally retaining their integrity</li> <li> <b>Poor:</b> Places with heritage values have not been systematically identified. Heritage places are in poor condition, and/or their values lack integrity</li> <li> <b>Very poor:</b> Places with heritage values have not been identified. Heritage places are in degraded condition, and their values lack integrity</li> </ul>	<p><b>Confidence</b></p> <ul style="list-style-type: none"> <li> <b>Adequate:</b> Adequate high-quality evidence and high level of consensus</li> <li> <b>Somewhat adequate:</b> Adequate high-quality evidence or high level of consensus</li> <li> <b>Limited:</b> Limited evidence or limited consensus</li> <li> <b>Very limited:</b> Limited evidence and limited consensus</li> <li> <b>Low:</b> Evidence and consensus too low to make an assessment</li> </ul>	<p><b>Comparability</b></p> <ul style="list-style-type: none"> <li> <b>Comparable:</b> Grade and trend are comparable to the previous assessment</li> <li> <b>Somewhat comparable:</b> Grade and trend are somewhat comparable to the previous assessment</li> <li> <b>Not comparable:</b> Grade and trend are not comparable to the previous assessment</li> <li> <b>Not previously assessed</b></li> </ul>
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# Effectiveness of heritage management

## At a glance

The Australian Heritage Strategy, launched in December 2015, recognises Australia's significant achievements in heritage management and sets out a program that aims to improve the effectiveness of heritage management. Successful implementation of the Australian Heritage Strategy can reduce pressures and minimise risks to Australia's heritage, while helping to retain and communicate those values that make Australia's heritage places special. Australia is continuing to identify, protect, manage and celebrate heritage. However, identification processes and programs for Australian heritage remain inconsistent and erratic. The National Reserve System has expanded—particularly through the addition of new Indigenous Protected Areas, resulting in a more representative system of natural heritage places—but there are still gaps, and significant natural resources are yet to be included. Indigenous heritage continues to lack a national perspective or integrated coordination between jurisdictions. In many cases, protection of Indigenous heritage continues to rely on general provisions in legislation, sometimes leading to narrowly focused decisions and incremental destruction. Many historic heritage places have been identified, and resources are being directed at improving the representativeness and integrity of heritage registers, but the registers remain skewed towards particular aspects of history and a select group of values.

There is considerable scope for continued improvement so that planning systems, land zonings and related regulations can encourage appropriate conservation outcomes. Legislation that is focused on enabling development, as well as some building codes and development industry standards, continue to create pressure for demolition or other inappropriate change. The reactive nature of the development-consent process and an inadequate knowledge of the total heritage resource militate against well-informed, values-based

conservation outcomes. Nevertheless, there are excellent examples of heritage conservation being achieved through clever adaptive re-use, increased connection between Indigenous people and their Country, and management of public heritage assets using well-prepared, values-based management plans.

Funding for assessing and managing historic places is difficult to measure on a national basis, because there are inconsistent approaches to the allocation of available resources and gaps in reporting. There has been considerable variation in allocation of grant funding for heritage conservation projects at the state and territory level. At the national level, some programs—such as Your Community Heritage and Protecting National Historic Sites—have targeted specific components of Australia's heritage, with some outstanding outcomes. However, a combination of declining resources (both human and financial) have worked against a positive long-term prognosis for heritage management.

Despite excellent heritage management processes and programs, the resources allocated to heritage identification, protection and monitoring at both the national and state and territory levels have generally remained steady or declined. The success of the Australian Heritage Strategy will rely heavily on participation by both government and nongovernment organisations, allocation of additional resources, and the reduction of inappropriate or unnecessary processes in the Australian heritage management system.

As noted in *Australia: state of the environment 2011*, community perceptions of the value of heritage as a public good are still not reflected in commensurate public-sector resourcing, nor in incentives for private owners. The Australian Heritage Strategy seeks to address this issue through national leadership, strong partnerships and engaged communities.

Managing Australia's heritage requires action to protect heritage places from pressures, to retain their values. Effective heritage management requires a holistic approach across the spectrum of relevant pressures, rather than individual responses for every pressure (see Box HER24). There is a well-established, logical process for effective heritage management: understand the place and its values, identify the issues (i.e. the pressures) and then manage the place in response. This process is set out in key guideline documents such as the Burra Charter, the Ask First Guidelines and the Australian Natural Heritage Charter, but it is not always

reflected in statutory requirements. The outcomes achieved by applying this process and the ability to gather information that allows informed judgement are dependent on the availability of adequate resources.

The following discussion and assessment summaries consider the effectiveness of Australian heritage management according to components of the management process—understanding, planning, inputs, processes and outcomes. This structure parallels the logic and process of key Australian heritage management guidelines.

### Box HER24 The Great Barrier Reef—World Heritage in focus

Heritage issues have been prominent in the media and community debate in recent years. In particular, the consideration by the World Heritage Committee of potential inclusion of the Great Barrier Reef on the List of World Heritage in Danger in 2015, and the subsequent major coral bleaching event of 2016, have received extensive media coverage (Slezak & Hunt 2016).

The Australian and Queensland governments have prepared the Reef 2050 Long-term Sustainability Plan and established the associated Reef Trust:

*The Reef Trust is one of the key mechanisms to assist in the delivery of the Reef 2050 long-term sustainability plan. It will provide cost-effective, strategic investment to support on-ground action for the long-term protection and conservation of the Great Barrier Reef and focuses on known critical areas for investment: improving water quality and coastal habitat along the reef, controlling the current outbreak of crown-of-thorns starfish, and protecting threatened and migratory species, particularly dugong and turtles. (Australian Government 2015a:21)*

The Reef Trust and the 2050 Plan are part of an integrated plan to improve water quality and coastal habitats, and protect threatened and migratory species such as dugong and turtles. To date, \$210 million has been allocated, including additional funding in 2016 for addressing outbreaks of crown-of-thorns starfish. In addition, \$101 million is being contributed from the National Landcare Programme. The total projected investment

of Australian governments to protect the Great Barrier Reef during the next decade exceeds \$2 billion.

Detailed guidelines have been prepared to assist with good decision-making for the Great Barrier Reef, including consideration of actions that may have significant impact and the requirements for referral under the *Environment Protection and Biodiversity Conservation Act 1999*. These guidelines are intended to facilitate conservation of the 'outstanding universal value' and National Heritage value of the Great Barrier Reef (DoE 2014).

Nevertheless, the Reef remains extremely vulnerable to climate change-induced heat stress and ocean acidification, as well as other anthropogenic pressures, including indirect impacts arising from major development such as the recently approved Carmichael Coal Mine and Rail Project in the Galilee Basin.

Preliminary findings from research conducted by the Great Barrier Reef Marine Park Authority and the Australian Institute of Marine Science suggest that, in early 2016, up to one-quarter of the coral on the Reef suffered from bleaching caused by heat stress, mostly concentrated in the northern third of the Reef, from Port Douglas to Cape York (GBRMPA 2016a; Figure HER16).

More information on the Great Barrier Reef is available in the *Coasts and Marine environment* reports.

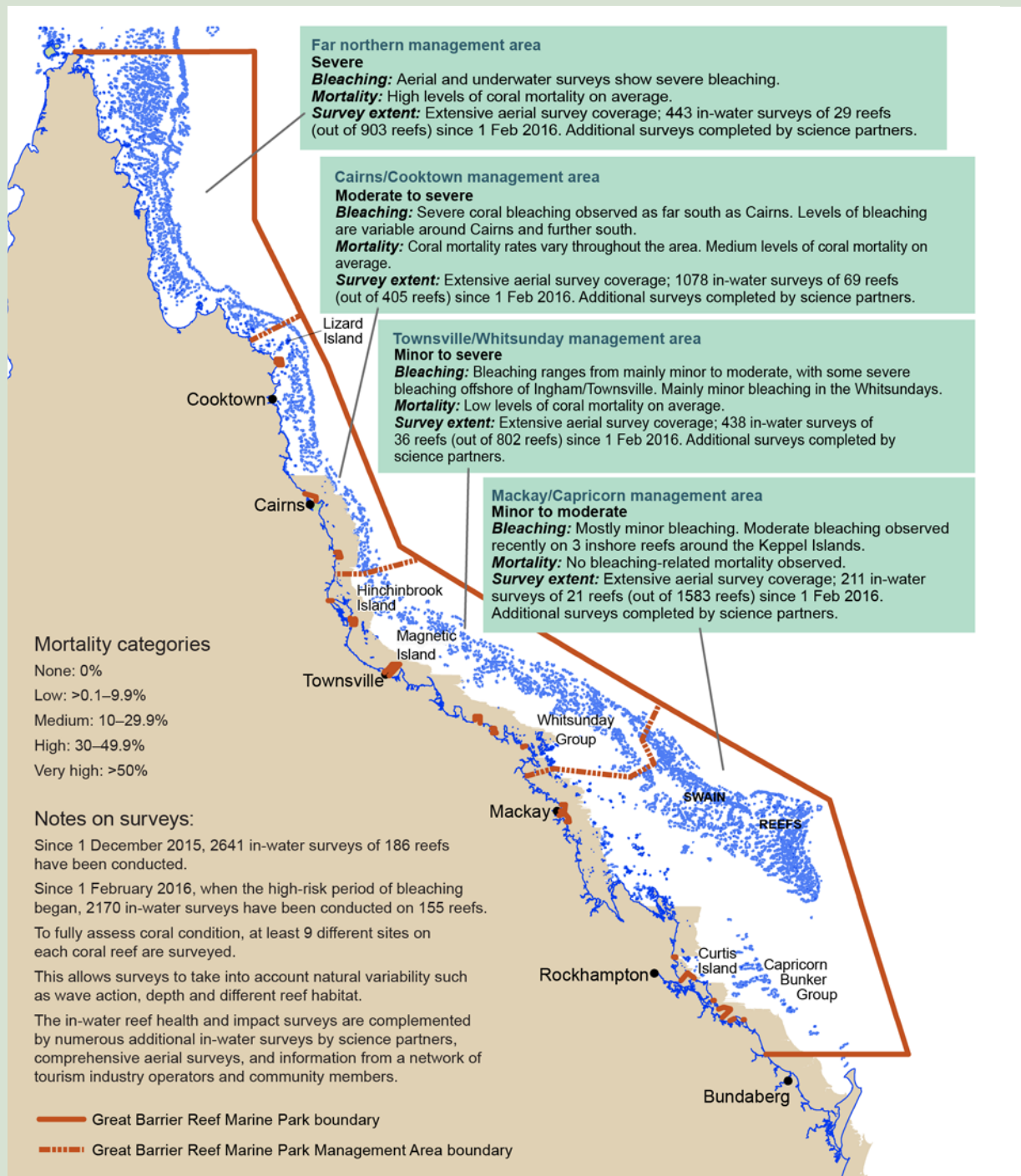


**Box HER24 (continued)**



Diver surveying coral death at Lizard Island on the Great Barrier Reef, Queensland  
Photo by [The Ocean Agency / XL Catlin Seaview Survey](#)

## Box HER24 (continued)



Source: GBRMPA (2016b)

Figure HER16 Map of observed bleaching of the Great Barrier Reef as at 13 June 2016

## Understanding

Effectiveness of heritage management is constrained by the broader environmental and socio-economic context of heritage values, and the current and emerging threats to those values.

### Understanding values

In the absence of basic information about the nature and extent of the heritage resource, good decision-making is difficult, and proactive strategic planning is impossible. Heritage needs to be systematically assessed both geographically and according to theme—across natural and cultural environments—to provide a sound basis for effective heritage management. The absence of such knowledge places additional pressure on natural and cultural heritage (see Box HER25).

Gaps in understanding Australia’s heritage resources extend across the full spectrum of places at all levels of jurisdiction and government. Some types of place, such as geological sites, are under-represented in statutory lists and reserved lands. At the international level, the IUCN and ICOMOS have prepared global studies of places and site types that are under-represented on the World Heritage List (ICOMOS 2004, Bertzky et al. 2013). The National Heritage List is not complete, despite efforts of the Australian Heritage Council and the Australian Government Department of the Environment and Energy during the recent years of decreasing resources. The Australian Heritage Strategy recognises the need to determine the future directions of the National Heritage List, so that it truly reflects the Australian story (Australian Government 2015a, Outcome 2).

### Box HER25 Cultural values and World Heritage properties—implications of incomplete assessment and listing of heritage values

A number of Australian World Heritage properties that have been inscribed for natural values also have significant cultural values. In some cases, Australia originally nominated the property to the World Heritage List for cultural values, but the property has not been included on the National Heritage List for these values. The Australian Heritage Strategy commits to:

*... progressively review existing World Heritage places that have been listed for natural values only to identify whether the areas may contain internationally significant cultural heritage.*

(Australian Government 2015a, Outcome 1:20).

Accurate and comprehensive identification of heritage values—whether international, national, state or local—is an important component of effective heritage management. This is because values may determine whether particular legislation applies, or whether there are matters that trigger environmental assessment. For example, in the case of World Heritage places that have been listed for natural values only, cultural values are not a ‘matter of national environmental significance’ and therefore cannot trigger a ‘controlled action’ under the *Environment Protection and Biodiversity Conservation Act 1999*.



Aboriginal rock art at Eagles Reach, Wollemi National Park, New South Wales. The Greater Blue Mountains is being reassessed for potential National Heritage values, including Indigenous cultural values

Photo by Paul Taçon



The representativeness and completeness of heritage registers are not only a national or international issue. The nature of our statutory protection and approval processes relies on comprehensive state and local lists. There has not been a comprehensive analysis of statutory listings in Australia, but it would be a timely and valuable exercise. SoE 2011 noted that, in its submission to the 2009 Hawke review of the EPBC Act, Australia ICOMOS identified the need for a strategic overview of heritage listing activity in Australia:

*An expert review of all heritage registers in Australia should be undertaken, including the Register of the National Estate, with a view to developing a strategic view about the future of listing activities. The review should consider statutory and non-statutory lists. This review should be completed well before the statutory decline of the Register of the National Estate. (DoEE 2017h)*

No such review took place, despite the closure of the Register of the National Estate. The Australian Heritage Strategy is silent about the need for comprehensive heritage registers and adequately representative reserved lands.

## Understanding threats

Climate change, population growth and economic growth all create threats for Australian heritage. Many of these threats are well understood and are being addressed through management responses. Some threats are beyond direct management. Legacy issues—such as the impacts from widespread land clearing, or the loss of an Indigenous landscape or tradition—may threaten the integrity of a natural or cultural landscape, but are impossible to reverse. Some invasive species are now so well established that management intervention is unlikely to restore the resulting degradation of heritage places. Respondents to the National Heritage monitoring survey indicate that invasive species are the most significant external pressure affecting the listed values of National Heritage places. Unplanned fire and exposure to the elements, including erosion and corrosion, also pose significant threats (WHAM 2017).

Climate change itself is beyond the control of heritage place managers, but they can respond to the pressures that it causes through mitigation and adaptation measures. Altered bushfire management (see Box HER26, and ‘Fire regimes’ in the *Biodiversity* report), active erosion control, and dune and midden stabilisation all demonstrate awareness and response to climate change threats. There is increasing awareness of the impact of population pressure, including the effects of rural decline and urban intensification.

### Box HER26 Using traditional fire knowledge

Landcare groups in north-eastern Victoria are partnering with traditional owners to revive the use of traditional fire knowledge as a land management tool. The aim is to reduce fuel loads and conduct field trials to rejuvenate native grasses and regenerate healthy ecosystems. The program illustrates both proactive responses to threats such as climate change and invasive species, and the rejuvenation of applied traditional Indigenous knowledge.

The initiative came about when traditional owners from Cape York in far north Queensland offered to share their knowledge with their countrymen in the south. They visited the North East Natural Resource Management (NRM) region in Victoria, talking at Landcare events, participating in an Indigenous fire forum in 2013 and talking to the local Aboriginal community.

In 2013, the Kiewa Catchment Landcare Groups (in north-eastern Victoria) secured Australian Government NRM funding to undertake fire trials with traditional owners in the region. The group selected 3 trial sites (2 in Talgarno and 1 in Baranduda), and a project ecologist designed the trial. The aims of the trial were to measure the impact of fire on weed and exotic species, provide local guidelines on how traditional fire knowledge can be incorporated into land management practices, and provide opportunities for Indigenous people to undertake cultural practices on Country.

Two of the trial sites are located on grazing properties (cattle and sheep), so tests were carried out on both grazed and ungrazed areas. Overall, the 4 tests were burned/grazed, burned/ungrazed, not burned/grazed and not burned/ungrazed. The ungrazed plots were fenced to prevent grazing.



### Box HER26 (continued)

Vegetation assessments undertaken in November 2014 showed that the burned plots had an increased number of native grass species and a reduction in the abundance of exotic cover compared with the unburned plots. The Landcare groups are aiming to undertake and monitor further burns with traditional owners at the 3 sites.

One of the highlights of the project has been the partnership between traditional owners, landholders, Landcare groups, Country Fire Authority volunteers and the North East Catchment Management Authority. Each component partner has been vital to the success of the project.



Native grass regrowth after fire (left) compared with unburned dry grass (right) in north-eastern Victoria

Photo by North East Catchment Authority



Peta-Marie Standly (left) with Cape York traditional owners Dorothy Pootchemunka, Dawn Koondumbin and, in the foreground, Joel Ngallametta inspect native grass species at Bonegilla as part of a traditional fire knowledge exchange program

Photo by North East Catchment Authority

Source: North East Catchment Management Authority and National Landcare Programme

Major developments—in particular, landscape-scale infrastructure or resource extraction—pose threats to Australian heritage. A worrying trend during recent years is a growing disinclination to enforce protective provisions. This seems to happen even when seemingly obvious breaches of legislation and substantial impacts to highly significant places occur. Another unfortunate trend is using regulatory means, including enabling legislation, to avoid existing heritage protection requirements, by addressing heritage matters through other legislation. The trend towards fast-track approval routes for ‘major projects’ or ‘state significant development’ is particularly concerning.

## Planning

The adequacy of planning for heritage management can be assessed by considering the policies and plans in place that result in management actions to address major pressures and risks to heritage values. These plans and policies should also include allocation of roles and responsibilities for managing heritage issues.

### Management plans

Nearly all National Heritage places that responded to the National Heritage monitoring survey have a management plan in place or are preparing draft plans, which identify the values for which the place was listed, and address the condition, conservation, management and presentation of National Heritage values. The majority also aim to have a new or updated management plan within the next 5 years. However, there are opportunities to improve policies and guidance on monitoring and reporting on the condition of listed values (WHAM 2017).

Resource limitations affect other national contributions to heritage planning. For example, in a 5-year review period leading up to 30 June 2013 (DoE 2013), only 1 management plan for a Commonwealth Heritage place was finalised as a legislative instrument (Mawson’s Huts Historic Site), having been through the full EPBC Act process. The department has received 45 draft management plans, which await review. Summary figures are not available on the number of Australian Government agencies that do not have the required written heritage strategies for managing places with listed or potential Commonwealth Heritage values.

## Leadership

The preparation and launch of the Australian Heritage Strategy represent the most significant improvement in leadership of Australian heritage since SoE 2011. The strategy sets out a clear and strong vision, and an ambitious set of objectives. However, it will require resourcing and further leadership from the Australian Government (see Box HER27), and state and territory governments, and support from nongovernment organisations and private owners, if it is to deliver its ambitious aspirations. Meanwhile, there continue to be constraints on other areas of effective national leadership, including the statutory limitations on the role of the Australian Heritage Council, the absence of any nationally coordinated leadership in Indigenous heritage, and the continuing diminution in resources allocated to heritage management by the Australian, and state and territory governments.

The Australian Heritage Strategy recognises the importance of developing standards and coordinating matters of common interest across the Australian heritage sector. Unfortunately, although there is recognition of the need for national leadership, there is a lack of corresponding resources. The diminishing heritage budget available to the department and the limits on the statutory coverage provided by the EPBC Act mean that national efforts focus on managing Commonwealth lands and agencies, places on the National Heritage List and Commonwealth Heritage List, associated processes for listing, and EPBC Act referrals and approvals. The framework of the Australian Heritage Strategy offers opportunities for state and local government agencies, as well as professional and community groups, to assume greater strategic roles in heritage conservation. Some Australian states have initiated their own heritage strategies (see Box HER28).

## Box HER27 Commitment to national leadership—the Australian World Heritage Advisory Committee and the Australian World Heritage Indigenous Network

The Australian World Heritage Advisory Committee (AWHAC) was created to provide a forum for liaison between individual World Heritage Area community advisory committees and advice to the government on cross-cutting issues. AWHAC operates in accordance with the Intergovernmental Agreement on World Heritage 2009 and comprises representatives from each Australian World Heritage property.

Since the 2011 state of the environment report, AWHAC has held 2 face-to-face meetings, both in conjunction with other national events. With support from the Australian Government Department of the Environment and Energy, AWHAC meets regularly by teleconference. Its primary focus in recent years has been the development of a web-based guidance document—the *Framework for best practice management of Australian World Heritage properties*. The framework is intended to encourage a consistent approach to management of properties across Australia, and support the sharing of information, expertise and resources. The framework illustrates an innovative national approach to leadership in heritage management, which will facilitate one of the objectives of the Australian Heritage Strategy, ‘to provide consistent best-practice standards and guidelines for heritage conservation and management’ (Australian Government 2015a, Objective 11; Mackay 2012).

The Australian Government convened the Australian World Heritage Indigenous Network (AWHIN)—a gathering of representatives from each Australian World Heritage property with associated traditional owners—but no longer provides resources that allow face-to-face meetings. The inevitable result of this funding reduction is that this important Indigenous group is not able to facilitate inclusive and consultative processes for traditional owners of Australian World Heritage properties, as originally intended.

AWHAC and AWHIN offer opportunities for the Australian Government to demonstrate leadership and commitment to the Australian Heritage Strategy.



Members of the Australian World Heritage Advisory Committee meeting at the Sydney Opera House in November 2014, in conjunction with the World Parks Congress  
Photo by Richard Mackay



## Box HER28 Recasting the Queensland Heritage Strategy

The Queensland Heritage Strategy, which was launched in 2009, established a framework for managing Queensland's heritage. The strategy was reviewed in 2014–15 to reflect changing government priorities and current circumstances (Queensland Government 2015).

This strategy explains the importance of the state's heritage and defines how Queensland—through the leadership of the government and the Queensland Heritage Council—will manage and coordinate heritage issues that are central to community sustainability, ethos and identity. It is built around 3 key directions for heritage at state, regional and local levels:

- leadership—strengthen and streamline heritage protection
- investing in Queensland's heritage—a collaborative effort
- our state—our heritage—connecting Queenslanders with their heritage.

The Queensland Heritage Strategy illustrates the important roles of different levels of government in a collaborative approach to conserving, interpreting and celebrating heritage.



Albert State School exemplifies the Heritage Schools Program component of 'investing in Queensland's heritage: a collaborative effort'

Image provided by Queensland Department of Environment and Heritage Protection

## Jurisdictional arrangements

Heritage management in Australia is undertaken by all 3 levels of government, with considerable overlap and inconsistency. The Australian Government is responsible for World Heritage, National Heritage and Commonwealth Heritage places under the provisions of the EPBC Act, but may also manage other heritage places directly through ownership, or indirectly through other statutory instruments or control mechanisms (e.g. the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* or Foreign Investment Review Board approvals). State and territory governments typically regulate places of state or territory significance, but also places of local significance that are owned and managed by state or territory agencies, and some classes of places, such as Aboriginal sites or habitat for threatened species. Local government often (but not always) protects and regulates local heritage, but may also own or manage places of state or national heritage value.

The complexity of these jurisdictional arrangements results in 2 general problems. Firstly, the management

of heritage according to 'natural', 'Indigenous' and 'historic' categories at the national level by a single government agency contrasts with many state and territory arrangements, where these responsibilities are split between different agencies. It would be helpful if the Australian Government could lead a move towards a consistent approach across the jurisdictions. Secondly, there is a continuing lack of clarity between the roles of the Australian, state and territory, and local governments. The Australian Heritage Strategy notes that the shared nature of heritage management in Australia can lead to 2 unintended consequences (Australian Government 2015a:11):

- *situations where there is duplication of effort and overlap of regulatory coverage, which can increase the burden on business and communities, and lead to inefficient allocation of scarce resources*
- *situations where some heritage matters do not receive the attention or protection they deserve because there is an expectation that other parties, including private owners, are responsible.*



The Intergovernmental Agreement on the Environment and the Australian World Heritage Intergovernmental Agreement are clear about some roles and responsibilities. Coordination also occurs through the Heads of Parks, and the Heritage Chairs and Officials of Australia and New Zealand. However, there are no similar national group or coordination processes for Indigenous heritage.

There are a range of important statutes, national policy documents and strategies that provide an excellent foundation for holistic heritage management and leadership. Australia's Biodiversity Conservation Strategy 2010–2020, for example, indicates:

*The important role of traditional Indigenous knowledge in contributing to the maintenance of Australia's biodiversity must be actively promoted to the whole Australian community. We also need to ensure that curriculums at all levels in Australia promote an understanding of traditional Indigenous knowledge, how it has shaped Australia's environment, and the social and economic benefits of applying it in conjunction with modern management techniques.* (National Biodiversity Strategy Review Task Group 2009:38)

However, Australia has yet to ratify the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage. This is a significant omission, because the convention aims to raise awareness of, and protect, the uses, expressions, knowledge and techniques that people recognise as an integral part of their cultural heritage. Intangible heritage such as oral traditions, performing arts, social practices, rituals, festive events, and traditional craftsmanship knowledge and techniques may constitute part of the value of both Indigenous and historic places, and may also contribute to traditional conservation and management of natural and cultural heritage.

Substantial gaps remain in the legislative protective regime for Australian heritage. In particular, protection of natural and Indigenous places and values in several jurisdictions remains inadequate (see Box HER29). Some jurisdictions offer little protection for natural places of significance outside reserved lands. Indigenous heritage protection continues to face significant issues relating to the recognition of 'traditional' or 'associative', as opposed to 'scientific', values. This situation arises from early Indigenous heritage legislation, which was designed to protect archaeological sites rather than wider Indigenous culture and, therefore, may not

protect contemporary values held by the community. A welcome exception is provided by recent amendments to the *Aboriginal Heritage Act 2006* (Vic), which enable registration of Aboriginal intangible heritage on the Victorian Aboriginal Heritage Register. The amendments also establish Aboriginal intangible heritage agreements, which allow traditional owners to decide whether and how their traditional knowledge is used, and for what purpose (Aboriginal Victoria 2016).

### *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) enables Aboriginal and Torres Strait Islander people to apply to the Australian Government Minister for the Environment and Energy to protect areas and objects (including, in some cases, human remains) from injury or desecration. In response, the minister can make declarations to protect areas and objects from threats of injury or desecration when they are of particular significance in accordance with Aboriginal tradition, as defined in the ATSIHP Act.

The ATSIHP Act has done little to fulfil its intended purpose of protecting significant Aboriginal areas or objects. Between 2011 and 2016, 32 applications were received for emergency protection under s. 9 of the Act, 22 applications were received for long-term protection under s. 10 of the Act, and 7 applications were received for protection for objects under s. 12 of the Act. During the past 6 years, no declarations under ss. 9, 10 or 12 of the Act were made (Figure HER17).

In 2015, the Australian Government released *Our north, our future: white paper on developing northern Australia* (Australian Government 2015b), which includes a commitment to consult Indigenous Australians and industry on possible amendments to the ATSIHP Act. This includes the possibility of a system of accreditation of state and territory laws that meet certain standards. This would enable the Australian Government to take a more active leadership role in the protection of sacred sites and objects. In the first instance, consultation is being progressed through the Indigenous Advisory Committee to the Minister for the Environment and Energy. The Australian Heritage Strategy also commits to 'review the effectiveness of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*'.

## Box HER29 Western Australian Aboriginal heritage protection

The *Aboriginal Heritage Act 1972* (WA) protects all Aboriginal heritage sites in the state, whether registered or not. Consent is required for any action that will adversely affect Aboriginal heritage sites. The expert Aboriginal Cultural Material Committee considers applications to disturb heritage and, historically, grants permission in the overwhelming majority of cases.

The Western Australian Government has introduced legislation in response to perceived inadequacies with the current legislation, on the basis that ‘modest’ changes are now required to ensure that Aboriginal heritage can continue to be protected in an efficient and effective way (Collier 2014). The changes are intended to improve the protection of Aboriginal heritage in Western Australia by (Western Australian Government agencies, pers. comm., July 2016):

- enabling a clear pathway for the thousands of unassessed heritage places to be formally assessed and protected where they meet the relevant criteria
- ensuring that Aboriginal people with knowledge of Aboriginal heritage places being assessed under the Act have sufficient opportunity to comment and provide further information
- allowing for engagement of Aboriginal honorary wardens who may assist with on-ground protection of Aboriginal heritage
- improving enforcement provisions and increasing penalties.

However, the Aboriginal Heritage Amendment Bill 2014 proposes a range of changes that appear to reduce both protection and transparency of process.

In Western Australia, developers already have the right to apply for consent to disturb Aboriginal sites and to appeal decisions, whereas the Aboriginal custodians or native title holders have no such appeal right, either under the current Act or through the proposed amendments. The Aboriginal Heritage Amendment Bill appears to simplify the approval process for damage or destruction of Aboriginal sites without free, previous and informed consent of relevant Aboriginal people (Jones 2015).

The Bill moves responsibility for evaluating the significance of Aboriginal heritage places and objects to the Chief Executive Officer of the Department of Aboriginal Affairs, and allows them to issue declarations that no sites exist in certain areas. Currently, the Minister for Aboriginal Affairs makes these decisions.

The proposed amendments also do not address anomalies between the statutory protection and management systems for Aboriginal and non-Aboriginal heritage. Although the penalties for offences will increase, the maximum penalty for an individual illegally disturbing a non-Aboriginal heritage site will be \$1 million and 2 years’ imprisonment, but for an Aboriginal site it will be \$100,000 and 12 months’ imprisonment.

The proposed changes in the Bill have been controversial, and the minister has announced that consideration of the legislation will be deferred until after the next state election (Kagi 2016).

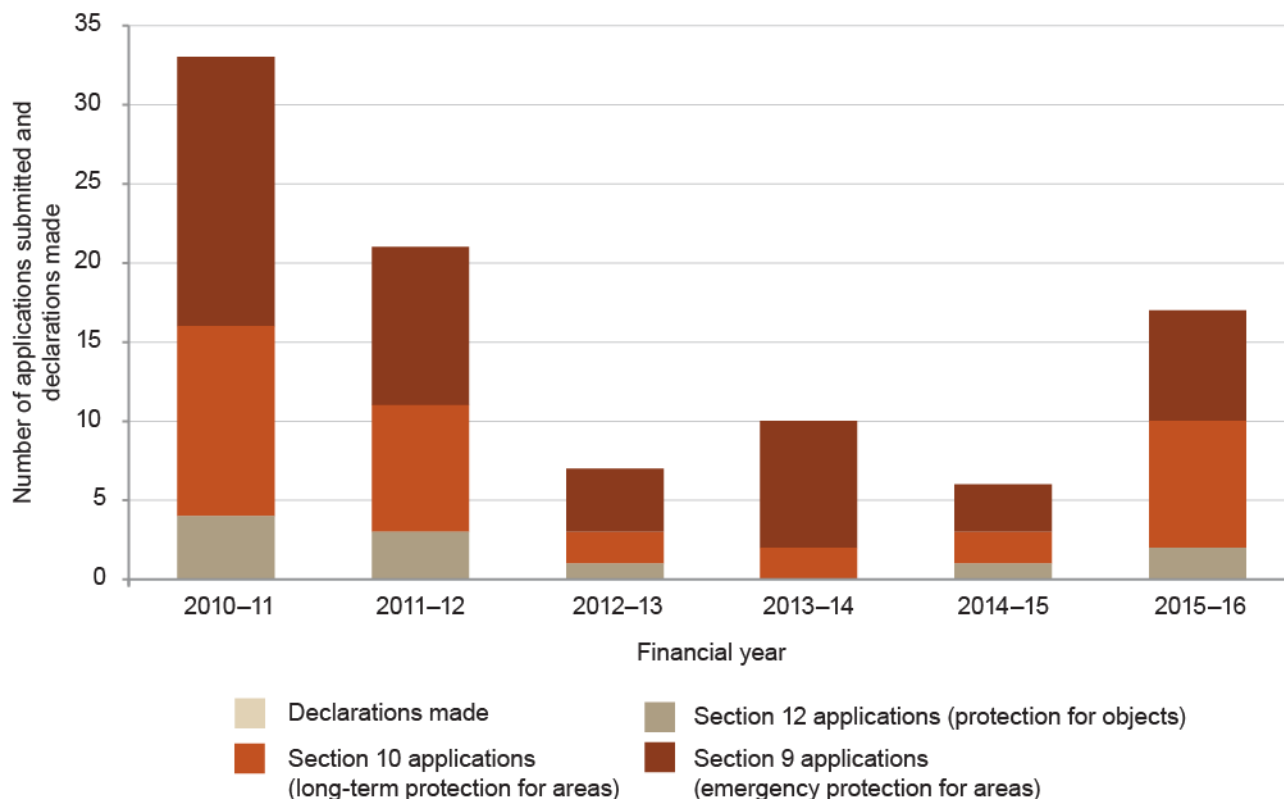
The changes are proposed in a context where a recent report by independent consultant archaeologists suggests that 3207 registered Aboriginal heritage sites have been removed from the Aboriginal Heritage Register, including 69 mythological sites and 14 ceremonial sites (AHAA 2015, Dortch & Sapienza 2016). One such site is the Collie River, which was originally protected in 1999, but removed from the Aboriginal Heritage Register in 2009. The Beeliargu Wilman tribe believe the river was created by an ancestor being known as the Ngarngungudditj Walgu, or the hairy-faced serpent.

When interviewed by the Australian Broadcasting Corporation in 2015 (Moodie 2015), Noongar man Joe Northover expressed the concerns shown by many traditional owners about the importance of protecting Aboriginal places with strong associative values. Before the Collie River was removed from the Aboriginal Heritage Register, he had been consulted about—and had successfully challenged—several development proposals that affected the site.



Joe Northover, who is regarded by some as ‘the contemporary custodian’ of the Collie River mythology, is interviewed by [Claire Moodie](#)

Photo by Julian Robins



Source: Australian Government Department of the Environment and Energy

**Figure HER17** Applications for protection under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, 2010-11 to 2015-16

## UNESCO 2001 Convention for the Protection of the Underwater Cultural Heritage

Australia has a rich underwater cultural heritage, including historic shipwrecks, aircraft, and underwater archaeological sites and artefacts. Although current state and Australian Government legislation protects historic shipwrecks and relics, other forms of underwater cultural heritage do not receive the same level of protection.

Since SoE 2011, little progress has been made towards ratification of the UNESCO 2001 [Convention on the Protection of the Underwater Cultural Heritage](#), even though a meeting of the former Environment Protection Heritage Council in November 2009 endorsed Australia pursuing ratification. The convention aims to assist countries in managing and preserving their unique underwater cultural heritage. Australia's ratification of the convention would help ensure the effective safeguarding of all forms of underwater cultural heritage.

The *Historic Shipwrecks Act 1976* (Cwlth) is also under review, to include a broader definition of underwater cultural heritage, and to improve outdated compliance and enforcement mechanisms that are no longer consistent with best-practice heritage management (see Box HER30).

The Australian Heritage Strategy includes a statement of intent to 'progress ratification of the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage', and commits to 'review and modernise the *Historic Shipwrecks Act 1976* to better align with international best practice' (Australian Government 2015a:31). In November 2016, the Australian Government announced that new legislation would be introduced in 2017 to extend protection to plane wrecks, Indigenous heritage sites and other underwater cultural sites in addition to shipwrecks, noting that this will enable Australia to pursue ratification of the convention (Frydenberg 2016).

### Box HER30 Monitoring historic shipwrecks for management

South Australia's *Zanoni* shipwreck illustrates improved management and compliance for historic shipwrecks, in the absence of progress towards ratification of the UNESCO 2001 Convention for the Protection of the Underwater Cultural Heritage at the national level.

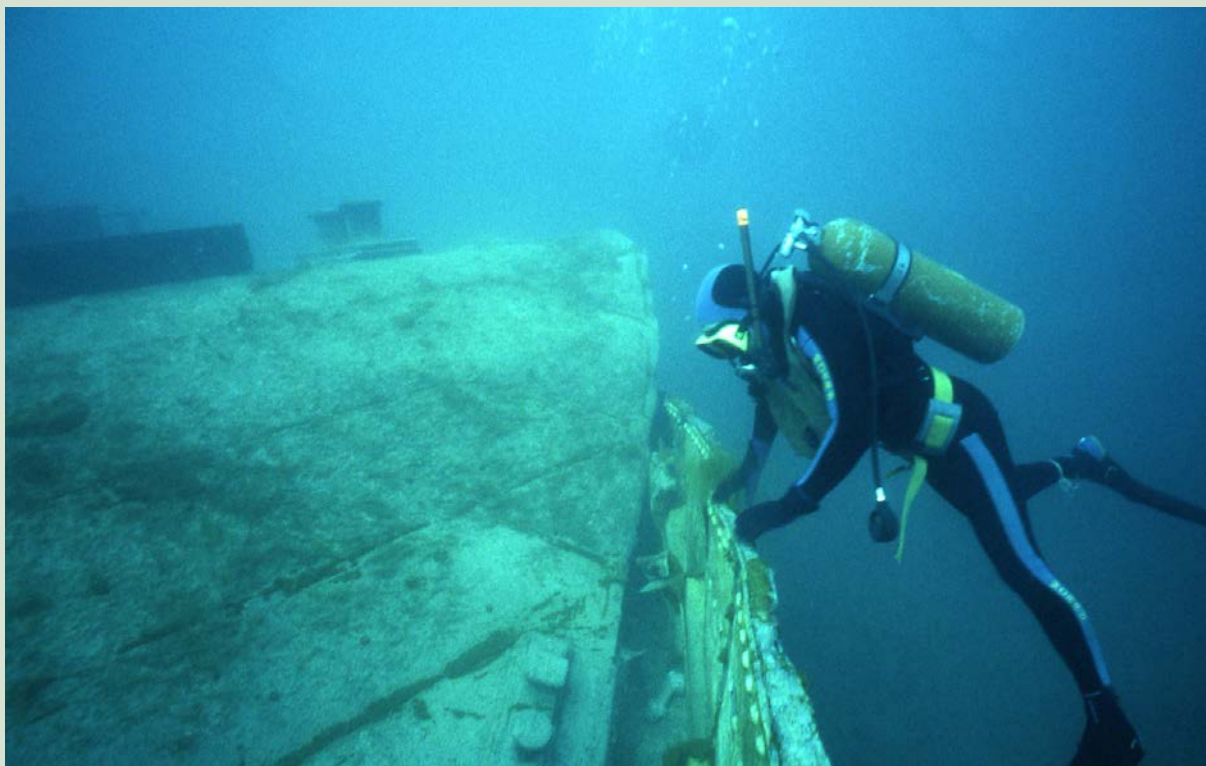
The *Zanoni* is the most complete 19th-century composite shipwreck in South Australia, and possibly all of Australia. Wrecked off Ardrossan in 1867, it is currently at risk from illegal fishing activities that result in damage from entanglement with anchors, chains, fishing nets and unauthorised makeshift moorings.

In 1981, South Australia developed legislation to protect shipwrecks in state waters that mirrored the Commonwealth *Historic Shipwrecks Act 1976*. Outdated compliance capabilities of the Act have raised the need to independently update South Australia's legislation to revise maximum penalties, add the ability to issue on-the-spot infringement notices, and include additional evidentiary provisions for inspectors to seize equipment and gather evidence.

Efforts to update state legislation have been accompanied by proactive site monitoring and compliance operations. Fouling material has been periodically removed from the site to reduce the impact of illegal fishing. Furthermore, the re-establishment of an in situ protection and monitoring regime, which includes the use of sacrificial anodes to reduce corrosion of the wreck's metal framing, is under consideration. Additional efforts have been directed towards increased community awareness and access to information.

The *Zanoni* has become an important case study for a variety of management strategies for historic shipwrecks under threat in South Australia. It is expected that lessons from the *Zanoni* will help guide management decisions in relation to other forms of underwater cultural heritage in South Australia, once the 2001 UNESCO Convention is ratified.

Source: Amer Khan and Anna Pope, State Heritage Unit, South Australian Department of Environment, Water and Natural Resources



Wreck of the *Zanoni*, off Ardrossan, South Australia  
Photo by State Heritage Unit, South Australia



## Statutory protection

Heritage statutes and regulations are effectively planning controls with additional management provisions. Many heritage decisions are made in the context of applications for development consent. Officers at the national, state and territory, and local level play an important role in managing heritage through the consent process, by evaluating applications, and providing guidance to both public-sector and private-sector applicants through prelodgement engagement processes. Most statutes, planning instruments and guidelines are well resolved and contribute to good outcomes. However, the planning system does not always serve cultural heritage well in 4 areas, thereby increasing pressure on the resource:

- The notions of ‘inheritance’ and ‘public good’ could be better integrated within strategic planning frameworks and processes. Heritage places are typically managed as a constraint to be overcome or a restriction on orderly land use, rather than as a community asset to be understood, valued and celebrated.
- The planning systems in all jurisdictions are perceived as reactive and incorporating a principle that heritage can be negotiable or expendable if a sufficient case can be made.
- It is difficult to consider the cumulative impact of many individual decisions, in the absence of readily available, comprehensive data across multiple jurisdictions and levels of government.
- The systems do not offer adequate incentives to the thousands of private owners who are responsible for the care, control and conservation of the overwhelming majority of historic buildings in Australia.

The development assessment and consent process relies on reserved lands and statutory heritage lists. In Australia, most cultural heritage places are only protected if they are formally identified and listed, whether at local, state and territory, or national level. (Exceptions include Aboriginal objects, and rare and endangered species habitat in most jurisdictions.) However, many heritage lists have grown through inconsistent and sporadic processes, leading to significant gaps and implicit threats to unlisted places or unreserved significant lands. Predevelopment

assessment processes and discussions (which may identify actual or potential unlisted heritage places) are therefore important, especially where major development is proposed, and can contribute to sound project and risk management.

By volume, the greatest number of individual properties are identified, protected and regulated at a local level within heritage precincts, conservation areas or overlays. These larger areas of the local government agencies can manage collective values proactively in a manner that is less resource intensive than individual property listings (see Box HER31). The assessments of significance, and related policies, guidelines and controls are usually more thorough, and therefore of greater assistance to both owner and regulatory authority than the provisions for individually listed places.

## More flexible approaches

A perverse pressure on historic heritage arises from the interest of many Australians in conserving these places. Although the overwhelming majority of listed historic heritage places are intact buildings that remain in use, there are also vacant buildings in remote areas, remnants of former mining and other defunct industrial activity scattered across the landscape, and large industrial structures that are beyond practical physical conservation. However, there is a widely held perception that the only way to conserve historic heritage is restoration or reconstruction to an intact former state. This attitude conflicts with more innovative (and often more realistic) outcomes, such as allowing places to become ruins within the landscape, adaptation involving significant intervention or archival recording before demolition. The appropriateness of a particular approach will depend on the values for which a heritage place is listed and the effect of a particular management action (or lack of action) on those values. A good example of a values-based flexible approach is the recently published Western Australian Abandoned Mines Policy (WA DMP 2015), which recognises the value of historic mining features and aims to rehabilitate these areas according to the desired outcomes of local people. This may mean that a site is restored to a former state, or modified to provide habitat, tourism or other desirable and agreed-to outcomes.

### Box HER31 Innovative management of local heritage—the City of Ballarat

The City of Ballarat is a ‘goldfields’ town with many heritage places that reflect different phases of Ballarat’s development, set within a historic urban landscape and protected using the ‘heritage overlay’ provisions of the planning scheme (City of Ballarat 2016). In 2013, Ballarat became the first local government authority to become part of an international pilot program to implement the Recommendation on the Historic Urban Landscape (HUL) of the United Nations Educational, Scientific and Cultural Organization (UNESCO 2011).

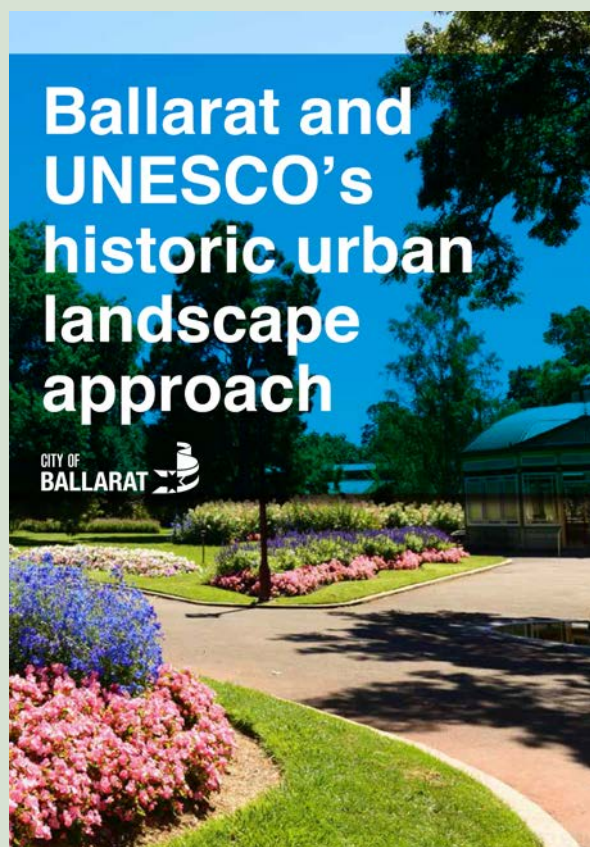
The HUL approach integrates urban heritage conservation with social and economic development and local community values. This method sees urban heritage as a social, cultural and economic asset for the development of cities, by (HULBallarat 2016):

- recognising that a city is not static, but subject to forces that have shaped it and continue to shape it
- understanding that heritage, economic, environmental and cultural approaches do not conflict but are complementary, and their long-term success depends on their linking together
- using urban heritage as a catalyst for development through tourism and commercial use, which contributes to higher land and property values
- reinvesting revenues into further maintenance and restoration
- recognising that the success of strategies results in a strengthened ‘sense of place’, and a balance between heritage preservation and development.

This values-based approach involves working collaboratively with communities rather than relying on regulation, and clearly acknowledges the significant and essential role that local governments and local communities play in protecting and enhancing the urban landscape. The City of Ballarat recognises that the framework can help the city grow without compromising its heritage and special character, integrating the approach across the city’s long-term growth plan, *Today tomorrow together: the Ballarat strategy* (Guy et al. 2015).

The HUL Guidebook was launched by the City of Ballarat and other project partners at the 2016 meeting of the League of Historical Cities held in Bad Ischl, Austria.

The Preserving Our Heritage Strategy has introduced programs that align with the HUL approach. Conceived to combat neglect of heritage places, this strategy outlines initiatives to assist and encourage owners of heritage properties to undertake conservation works. The strategy has been recognised with awards from the Planning Institute of Australia and the Heritage Council of Victoria. The creation of Visualising Ballarat, a web-based set of tools that asks ‘What makes Ballarat, Ballarat?’ is central to multiple processes that facilitate community research exchange and input to various cultural mapping processes. The [HULBallarat website](#) received the Victorian Spatial Excellence Award for People and Community in 2015 (HULBallarat 2015).



Ballarat’s historic urban landscape approach  
Image provided by the [City of Ballarat](#)

## Inputs

In the absence of comprehensive programs for monitoring the state of Australia's heritage, inputs provide a surrogate basis for evaluating some aspects of management effectiveness. Relevant inputs include financial and human resources, and investment

in applied research. Although some of the individual heritage initiatives and programs that have been allocated resources are impressive and self-evidently valuable (see Box HER32), measuring input data alone cannot provide an accurate or comprehensive understanding of the results and outcomes achieved by such investments.

### Box HER32 World Parks Congress 2014

In 2014, the Australian and New South Wales governments joined forces with the International Union for Conservation of Nature (IUCN) to bring the World Parks Congress to Sydney. This was a significant investment in effort and resources to give Australia a major voice in showcasing our approach and achievements to the world.

More than 6000 people from 170 nations attended to discuss and test new ideas and approaches, and to shape the international agenda for protected areas. The congress was the largest event of its kind, bringing together people from all walks of life—rangers, protected area experts, scientists, doctors, young people and business people.

The congress adopted 'the Promise of Sydney'—a pledge to work together to deliver innovative solutions—and included pledges from governments, international organisations, the private sector, Indigenous leaders, community groups and individuals. Key messages include the need to engage a broader constituency for conservation that connects people with nature, and that

values nature for its health and wellbeing benefits. The thinking and commitments from the Promise of Sydney were carried into the World Conservation Congress in Hawaii in September 2016 as part of a package of solutions to sustain and protect the world's heritage.

The voice of youth and young professionals at the congress was loud, clear and encouraging. Younger generations are ready to step up and make a difference, and embrace new ways and new technologies in managing protected areas. They are in tune with research that shows that being in contact with nature, and understanding and respecting culture can make a big difference to humanity.

The congress was a successful example of government investment and leadership, with a direct financial contribution from the Australian Government of around \$2.5 million. Staff from Parks Australia, the NSW National Parks and Wildlife Service, and the IUCN provided the secretariat that helped deliver this international event. Business Events Sydney estimated that the value of the event exceeded \$42 million.



The voice of young participants was loud and clear at the World Parks Congress 2014, an event that highlighted leadership and investment in long-term solutions for heritage conservation

Photo by Wayne Quilliam, courtesy of the Director of National Parks

## Financial resources

Sound management practices in the heritage system are ultimately determined by available resources, especially funding. It is appropriate that resources are allocated by government, because heritage is a public good, but it is also important that other sectors of the community also value heritage and contribute to conservation.

The issues of who pays for heritage conservation and who is responsible (the owner, community or government) is contentious. Many heritage places are privately owned, and their cultural benefits are shared by their owners and the community, so it is reasonable that the owners contribute some resources and the government contributes others, either directly with funding or indirectly through services and incentives. However, public funding for heritage in Australia continues to decline.

As noted in SoE 2011, the Productivity Commission made an important distinction between the respective roles and responsibilities of government and private-sector owners of heritage places:

*Governments are the custodians of the vast majority of the most significant or 'iconic' heritage places. They also own a very large number of less significant places.*

*There is significant scope for governments to improve how they identify and fund the conservation of government-owned places.*

and

*For many private owners, the current use and enjoyment of their property are consistent with, indeed require, maintaining its heritage attributes.*

*... the wider cultural benefits of the place are provided to their community with little added costs, apart from the extra administrative cost involved with government identification, assessment and listing. (Productivity Commission 2006)*

Since 2011, more than \$39.8 million of heritage grant funding, contributing to 1129 projects, has been allocated by the Australian Government through programs including Grants to Voluntary Environment, Sustainability and Heritage Organisations; the Indigenous Heritage Programme; Community Heritage and Icons Grants; Celebrating Community Heritage; and Protecting National Historic Sites. There has been a relatively greater proportion of funding allocated to projects at National Heritage places. Very substantial additional funding has also been made available to address environmental and

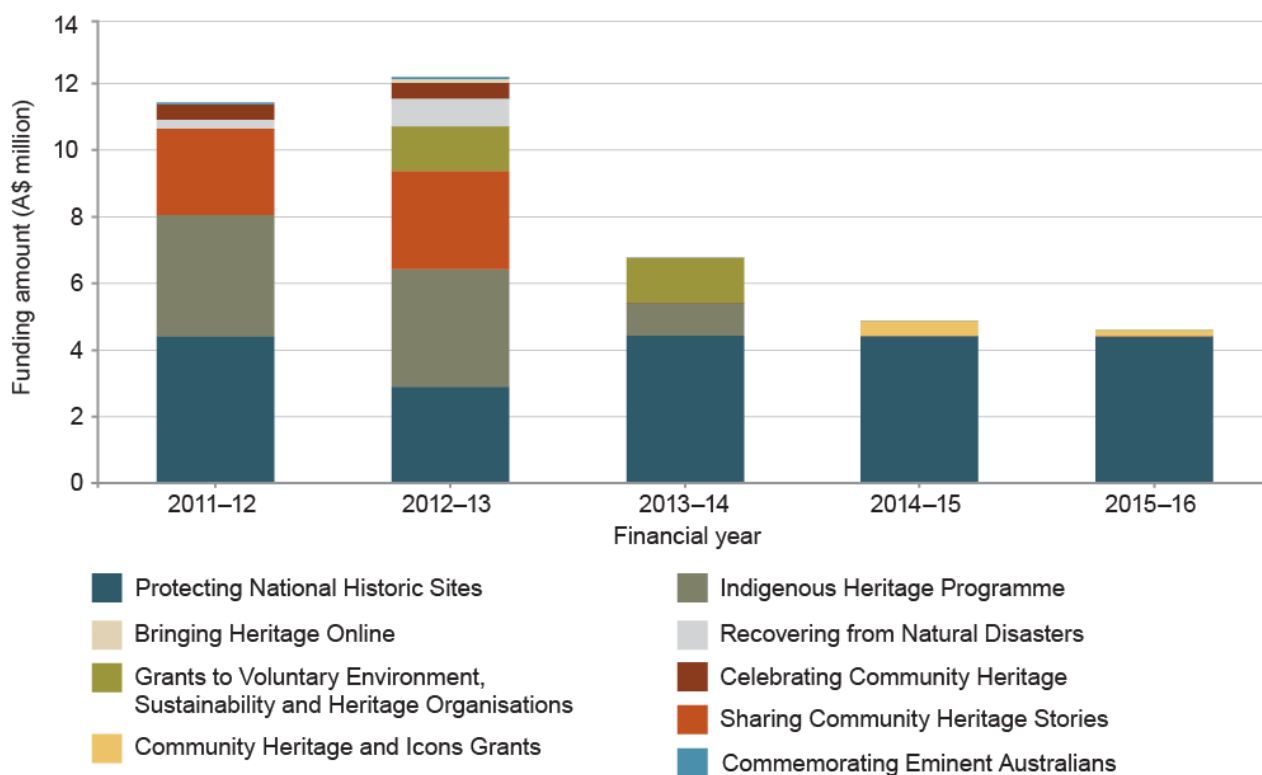
conservation issues for the Great Barrier Reef, through the Reef Trust (DoEE 2015) and the Reef 2050 Long-term Sustainability Plan (Australian Government & Queensland Government 2015), with more than \$300 million allocated to date (see Box HER24).

Heritage places have benefited from mainstream environment initiatives throughout the past 5 years, including the 20 Million Trees and Green Army programs. Natural World Heritage properties have received ongoing funding support through Natural Heritage Trust funds. Individual sites have received significant one-off grants. For example, a grant of \$1.5 million was provided in 2014–15 to conserve and stabilise the penitentiary building at the Port Arthur Historic Site, and additional funding enabled the appointment of an executive officer in support of the Australian World Heritage Convict Sites. A grant of \$20 million was also made in 2012 in support of the World Heritage-listed Royal Exhibition Building and Gardens in Victoria.

However, a number of heritage programs have now concluded (Bringing Heritage Online, Recovering from Natural Disasters, Sharing Community Heritage Stories and Commemorating Eminent Australians), and the Indigenous Heritage Programme has been transferred to the Department of the Prime Minister and Cabinet. In some cases, specific programs with a finite term have been replaced by new projects with different purposes or target recipients.

These changes have seen the Australian Government's expenditure on core heritage programs decrease from \$12.3 million in 2011–12 to \$5.8 million in 2015–16 (Wildlife Heritage and Marine Division of the Australian Government Department of the Environment and Energy, pers. comm., July 2016; Figures HER18 and HER19). Excluding Great Barrier Reef funding, both the amount of grant funding and the number of projects supported have substantially declined during the past 5 years. Grant funding provided by the Australian Government for heritage places has significantly declined, with the total funding from dedicated heritage grants reduced by 53 per cent since 2011. The period has also seen large-scale changes to the Australian Government's grant programs arising from the consequences of the High Court decision on the *Chaplains Case* (HCA 2012, Ryall 2015), which restricted federal funding in state jurisdictions. Heritage grant programs were accordingly refocused, and now support World Heritage properties and places on the National Heritage List.





Source: Australian Government Department of the Environment and Energy

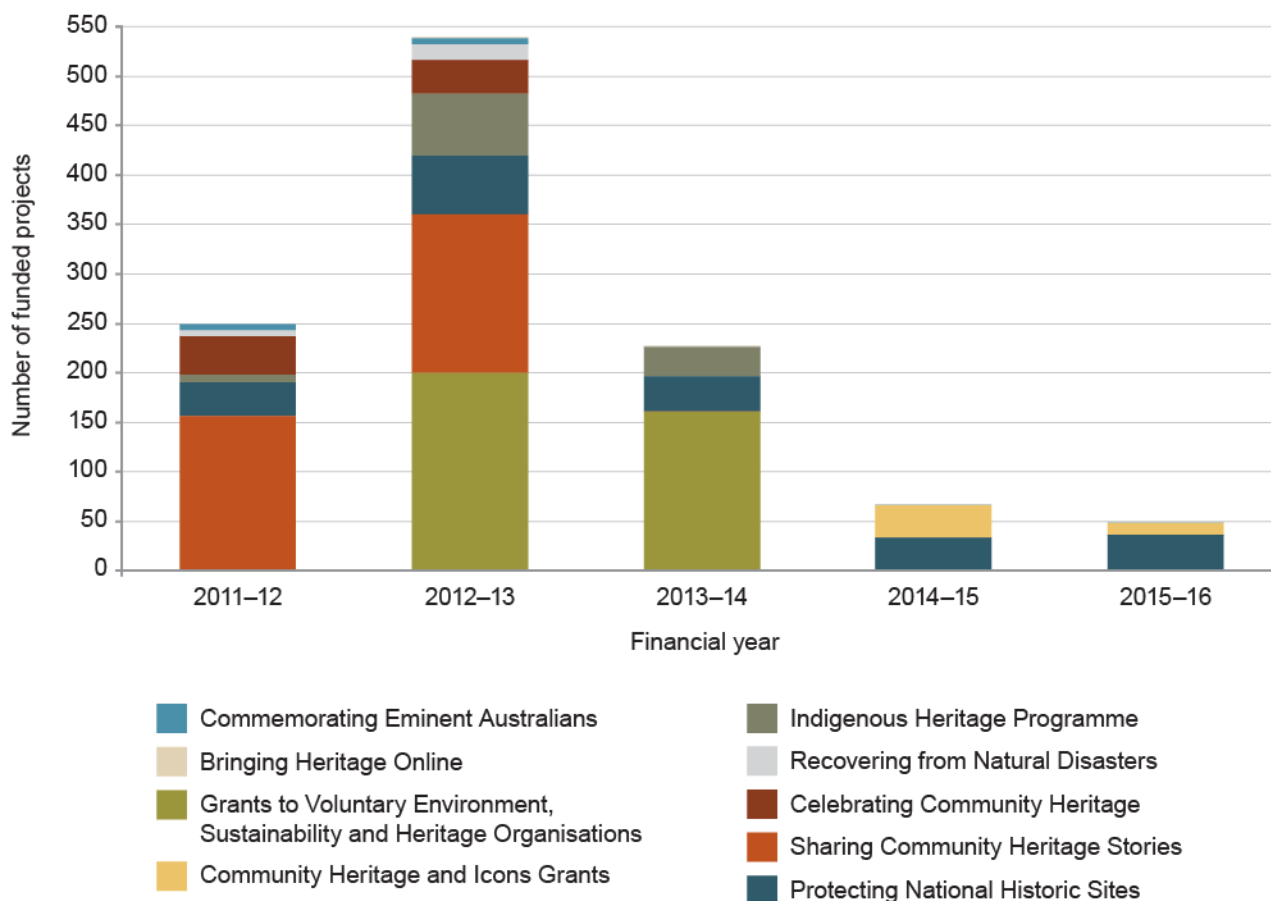
**Figure HER18 Value of Commonwealth Heritage projects funded by the Australian Government, 2011-12 to 2015-16**

At the state and territory level, the funding pattern is erratic, but there have been some substantial grant programs. For example, the Victorian Living Heritage Program will provide \$30 million over 4 years (DELWP 2016a), and Western Australia has increased grant funding for private owners by 25 per cent and established a \$4 million Heritage Revolving Fund (Heritage Council & State Heritage Office 2014).

#### Natural and cultural heritage indicator 9 considers funding provided to heritage and other agencies for natural heritage places

Notwithstanding the additions to the National Reserve System during the past 5 years (even after excluding new IPAs), funding for management of national parks

seems to have remained relatively stable (Figure HER20). Substantial new reserves and additions to existing reserves have been dedicated without proportional increases in management agency resourcing. For example, available data indicate that the operating budgets for Australian parks management agencies may have increased slightly during 2012-15, but that current levels are not markedly different from 2011, even after allowing for gaps in the information (Figure HER21). Australian parks appear to lack adequate resources to address major emerging pressures, and conservation programs are constrained by available resources. These limitations affect the values of cultural places within reserved lands, as well as natural values.

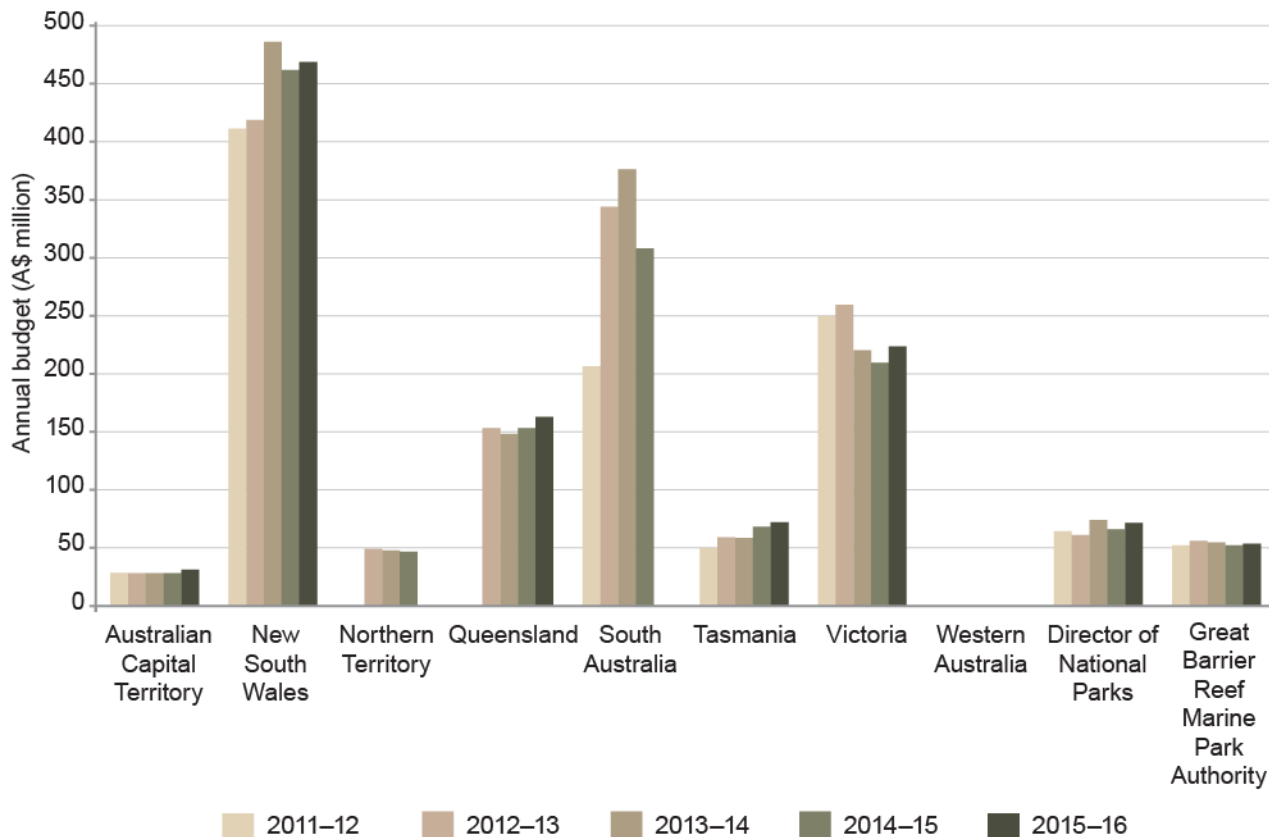


Source: Australian Government Department of the Environment and Energy

**Figure HER19** Number of Commonwealth Heritage projects funded by the Australian Government, 2011-12 to 2015-16

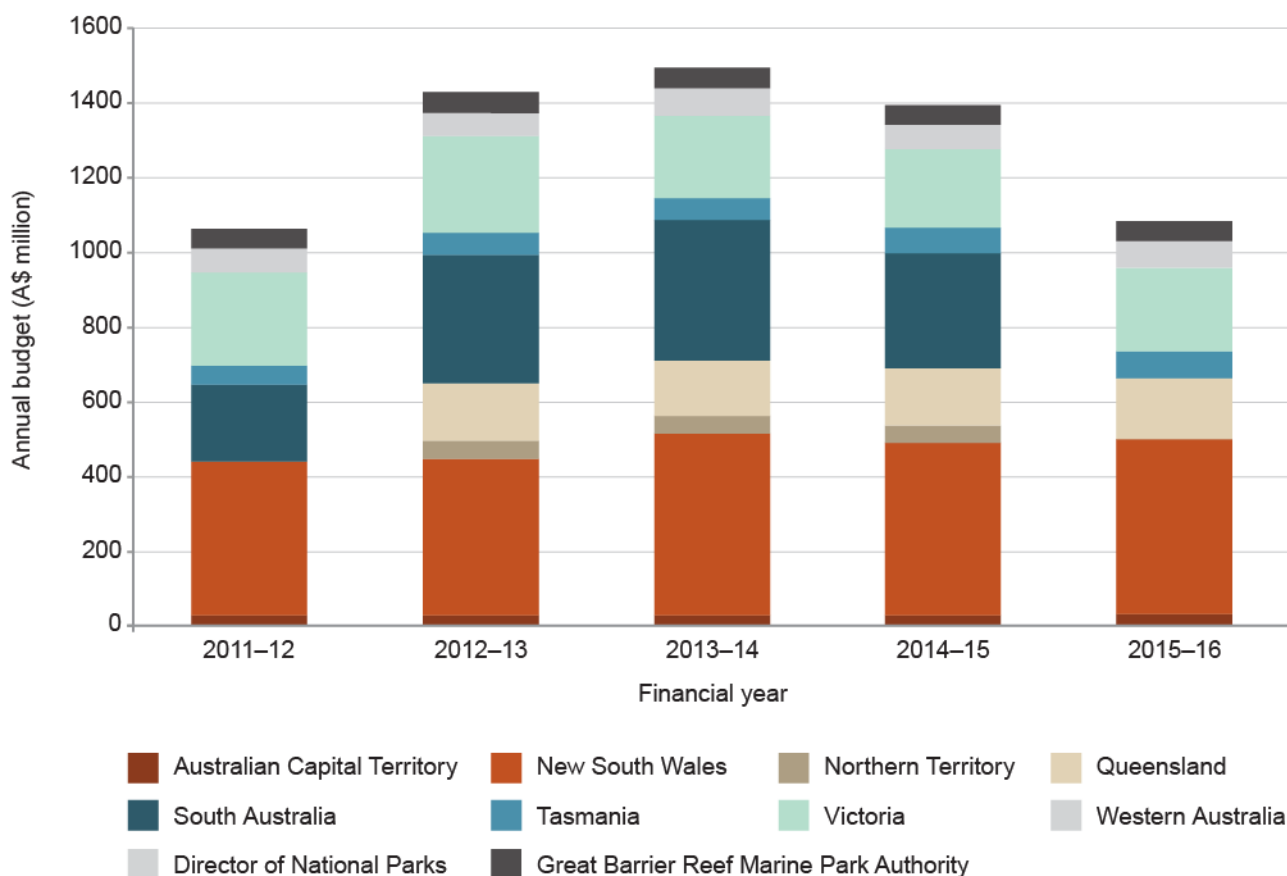
Nevertheless, some specific public-sector funding programs—such as the National Landcare Programme, Caring for our Country and the Green Army initiative—have contributed to natural heritage place management. For example, of the 1145 projects approved under the Green Army program to date, 181 projects have heritage as the primary investment priority. Substantial funding for applied science has been made available through the National Environmental Research Program (NERP) and the subsequent National Environmental Science Programme (NESP). Many NERP and NESP projects have involved work directly within World Heritage properties, national parks or other lands reserved for conservation purposes (DoEE 2017k).

The Australian Government continues to provide direct support for the care, control and management of Australian World Heritage properties, but there has been an overall decrease in the funding level during the past 5 years. This decrease is particularly pronounced for those properties that are not directly managed by the Commonwealth (i.e. if management funding for the Great Barrier Reef, Kakadu National Park and Uluru–Kata Tjuṯa National Park is excluded; Figure HER22). These figures also exclude the recent additional Australian Government investment in the Great Barrier Reef (see Box HER24).



Note: There are limitations in the comparability of the above resourcing data between the state and territory jurisdictions. Parks agencies vary widely between jurisdictions in their respective administrative and legislative responsibilities. Their respective reserve estates vary in number, area, and types and levels of protection and management across either or both terrestrial and marine environments. Reserve management also varies according to the jurisdiction population size, the volume of their visitor base and the complexity of stakeholder joint management. Data were not available for parks agencies from the Northern Territory for 2011-12 and 2015-16, Queensland for 2011-12, South Australia for 2015-16 and Western Australia for 2011-16. Sources: Data were requested from representatives of the following agencies: Australian Capital Territory (Parks and Conservation, ACT Environment, Planning and Sustainable Development), New South Wales (National Parks and Wildlife Service, Office of Environment and Heritage), Northern Territory (Parks and Wildlife Commission), Queensland (Department of National Parks, Sport and Racing), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Parks and Wildlife Service), Victoria (Parks Victoria), Western Australia (Department of Parks and Wildlife) and Commonwealth (Director of National Parks and Great Barrier Reef Marine Park Authority)

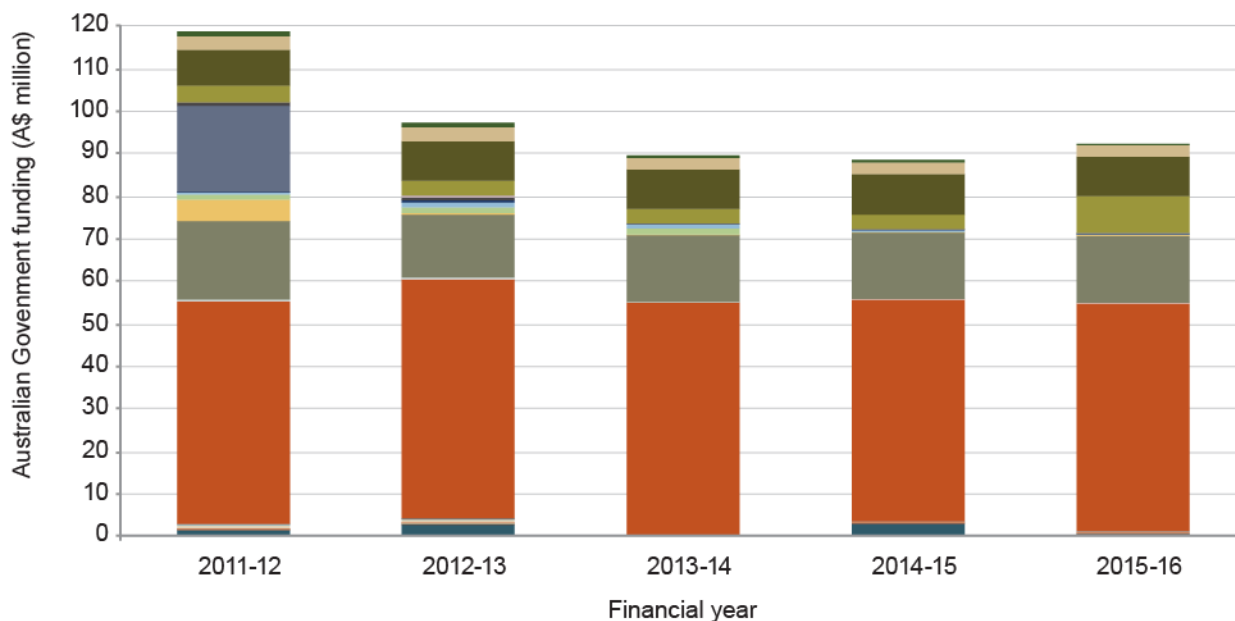
**Figure HER20 Annual budgets of parks agencies, 2011-12 to 2015-16**



Note: There are limitations in the comparability of the above resourcing data between the state and territory jurisdictions. Parks agencies vary widely between jurisdictions in their respective administrative and legislative responsibilities. Their respective reserve estates vary in number, area, and types and levels of protection and management across either or both terrestrial and marine environments. Reserve management varies also according to the jurisdiction population size, the volume of their visitor base and the complexity of stakeholder joint management. Data were not available for parks agencies from the Northern Territory for 2011-12 and 2015-16, Queensland for 2011-12, South Australia for 2015-16 and Western Australia for 2011-16. Sources: Data were requested from representatives of the following agencies: Australian Capital Territory (Parks and Conservation, ACT Environment, Planning and Sustainable Development), New South Wales (National Parks and Wildlife Service, Office of Environment and Heritage), Northern Territory (Parks and Wildlife Commission), Queensland (Department of National Parks, Sport and Racing), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Parks and Wildlife Service), Victoria (Parks Victoria), Western Australia (Department of Parks and Wildlife) and Commonwealth (Director of National Parks and Great Barrier Reef Marine Park Authority)

**Figure HER21** Aggregated annual budgets of parks agencies, 2011-12 to 2015-16





Notes:

1. 2011–12 to 2012–13: includes projects from Caring for our Country, Your Community Heritage and Working on Country.
2. 2013–14 to 2014–15: includes projects from World Heritage Grants program, Your Community Heritage, Working on Country and Biodiversity Fund.
3. Only funding for World Heritage values for which the property was listed (e.g. natural or cultural) has been included.
4. Great Barrier Reef Marine Park Authority figures are ‘total cash received’ from annual reports.
5. No funding was provided for Heard Island and McDonald Islands.

Not included in this graph:

1. Funding for World Heritage assessment.
2. Caring for our Country projects carried out outside World Heritage properties that were intended to facilitate the management of those properties (e.g. by controlling introduced weeds or pests, improving water quality of waterways running into properties, improving connectivity of vegetation of adjacent properties with a World Heritage property).
3. Funding under Green Army or 20 Million Trees programs.

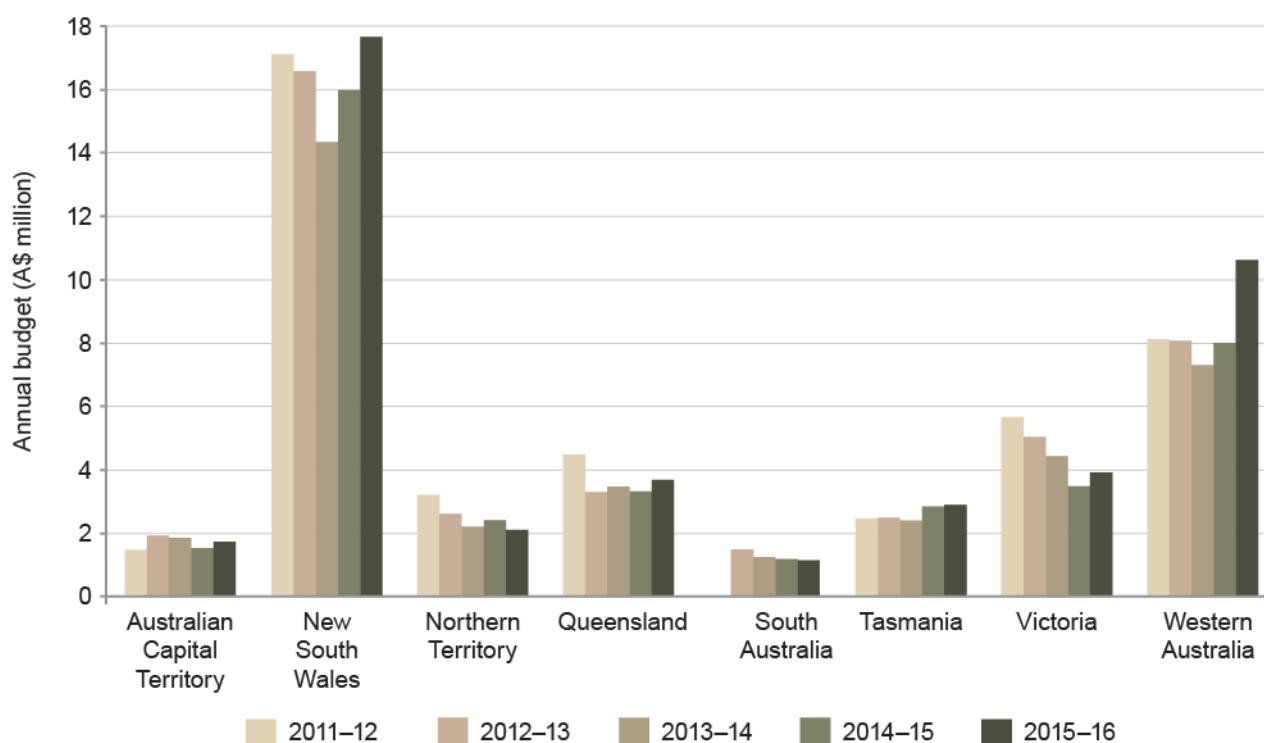
Sources: Heritage Branch, Australian Government Department of the Environment and Energy; Parks Australia; and Great Barrier Reef Marine Park Authority

**Figure HER22 Australian Government funding for the management of World Heritage properties, 2011–12 to 2015–16**

### Natural and cultural heritage indicator 10 considers funding provided to heritage and other agencies for historic heritage places

Funding for assessing and managing historic places is difficult to measure on a national basis because there are inconsistent approaches in the allocation and reporting of budget resources. The number of historic place National Heritage List assessments has declined, but some of the assessments that have been completed

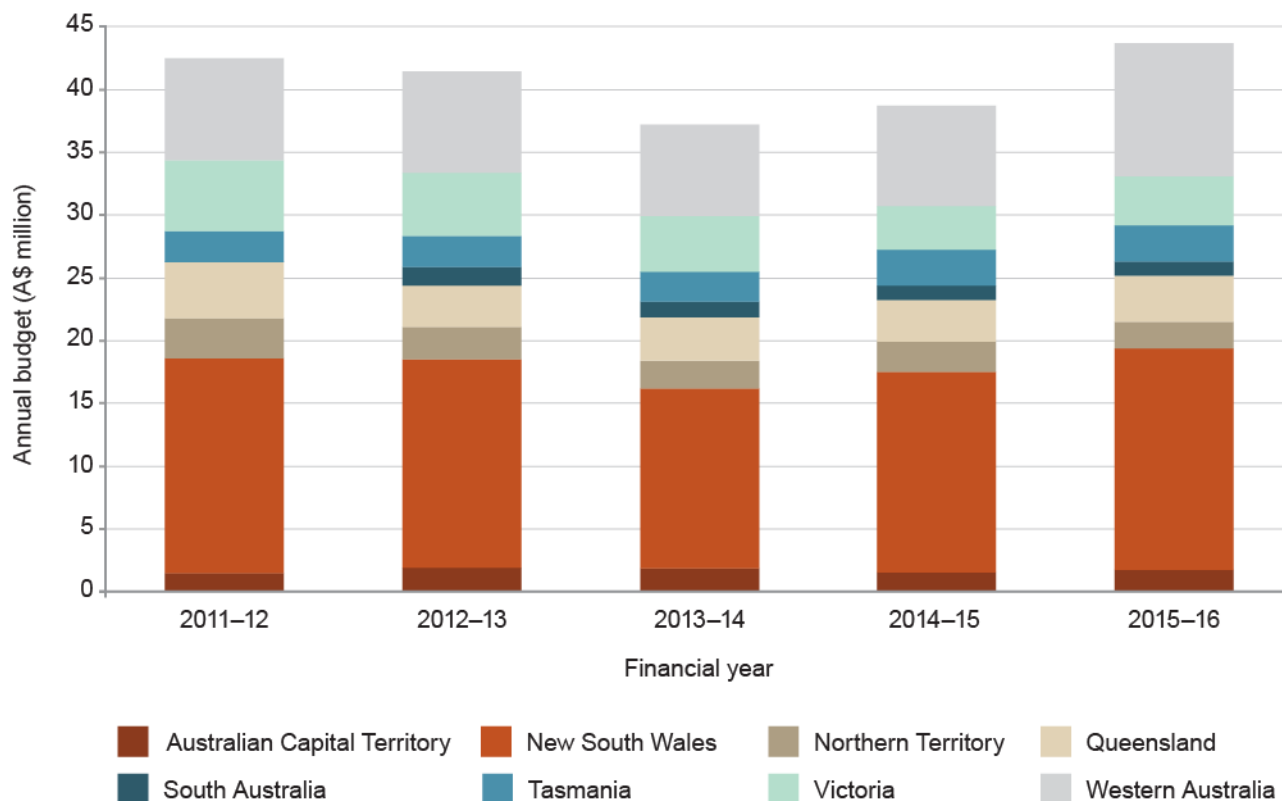
are for larger and more complex places. At the state and territory level, information is inconsistent and the data contain anomalies. For example, the New South Wales data include Indigenous heritage, which cannot be disaggregated from historic heritage (Figure HER23). Overall, and allowing for gaps in available data, there appears to have been a modest increase in funding for state and territory historic heritage management at the agency level (Figure HER24).



Notes: New South Wales had Aboriginal and non-Aboriginal heritage combined into one entity in 2013-14, and data are unable to be separated after this. Heritage agencies vary between jurisdictions in respective administrative and legislative responsibilities. Most of the agencies are responsible for managing cultural (historic) heritage solely; others are also responsible for Aboriginal and natural heritage. In some jurisdictions, Indigenous heritage is managed by a separate agency. Data were not available from heritage agencies in South Australia in 2011-12.

Source: Data were requested via Heritage Chairs and Officials of Australia, comprising representatives from the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Department of Environment and Heritage Protection), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Heritage Victoria; Department of Environment, Land, Water and Planning) and Western Australia (State Heritage Office).

**Figure HER23** State and territory historic heritage agency annual budgets, 2011-12 to 2015-16



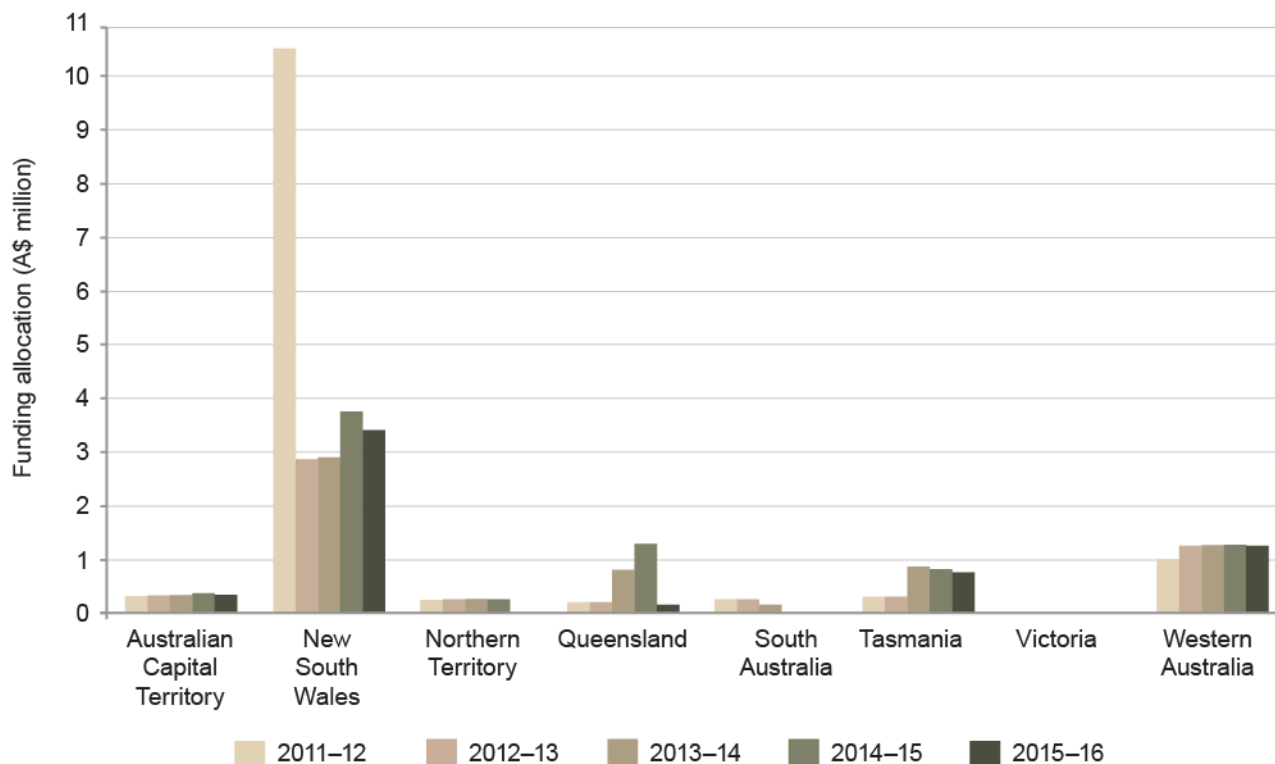
Note: New South Wales had Aboriginal and non-Aboriginal heritage combined into one entity in 2013-14, and data are unable to be separated after this. Heritage agencies vary between jurisdictions in respective administrative and legislative responsibilities. Most of the agencies are responsible for managing cultural (historic) heritage solely; others are also responsible for Aboriginal and natural heritage. In some jurisdictions, Indigenous heritage is managed by a separate agency. Data were not available from heritage agencies from South Australia in 2011-12.

Source: Data were requested via Heritage Chairs and Officials of Australia, comprising representatives from the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Department of Environment and Heritage Protection), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Heritage Victoria; Department of Environment, Land, Water and Planning) and Western Australia (State Heritage Office).

**Figure HER24 Aggregated state and territory historic heritage agency annual budgets, 2011-12 to 2015-16**

Since 2011, there has been considerable variation in allocation of grant funding for heritage conservation projects at the state and territory level. The reliability of the numbers and trends is affected by both gaps in the data and some large one-off programs or projects (Figures HER25 and HER26). The seeming decline of grants and incentives for heritage property owners is concerning, but some other forms of resourcing, such as tourism, regional development and programs such as the Green Army, are also contributing to heritage conservation. Access to free professional advice at the local level remains an important incentive that can assist private owners of heritage places (see [Natural and cultural heritage indicator 21](#)).

Many Australian historic sites in public ownership lack adequate resources to address major conservation priorities. Private owners of historic sites do not receive incentives that are proportional to the public value of the places they own and manage. Particular challenges are faced by owners and managers of heritage places in remote locations. However, other sources of funding can also contribute to heritage conservation outcomes. For example, the Western Australian Mining Rehabilitation Fund provides a financial resource for abandoned mines, which can be used to conserve features with heritage value (WA DMP 2016).



Note: Data were not available for heritage agencies in the Northern Territory for 2015-16, South Australia for 2014-16 and Victoria for 2011-16.

Source: Data were requested via Heritage Chairs and Officials of Australia, comprising representatives from the following agencies:

Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Department of Environment and Heritage Protection), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Heritage Victoria; Department of Environment, Land, Water and Planning) and Western Australia (State Heritage Office).

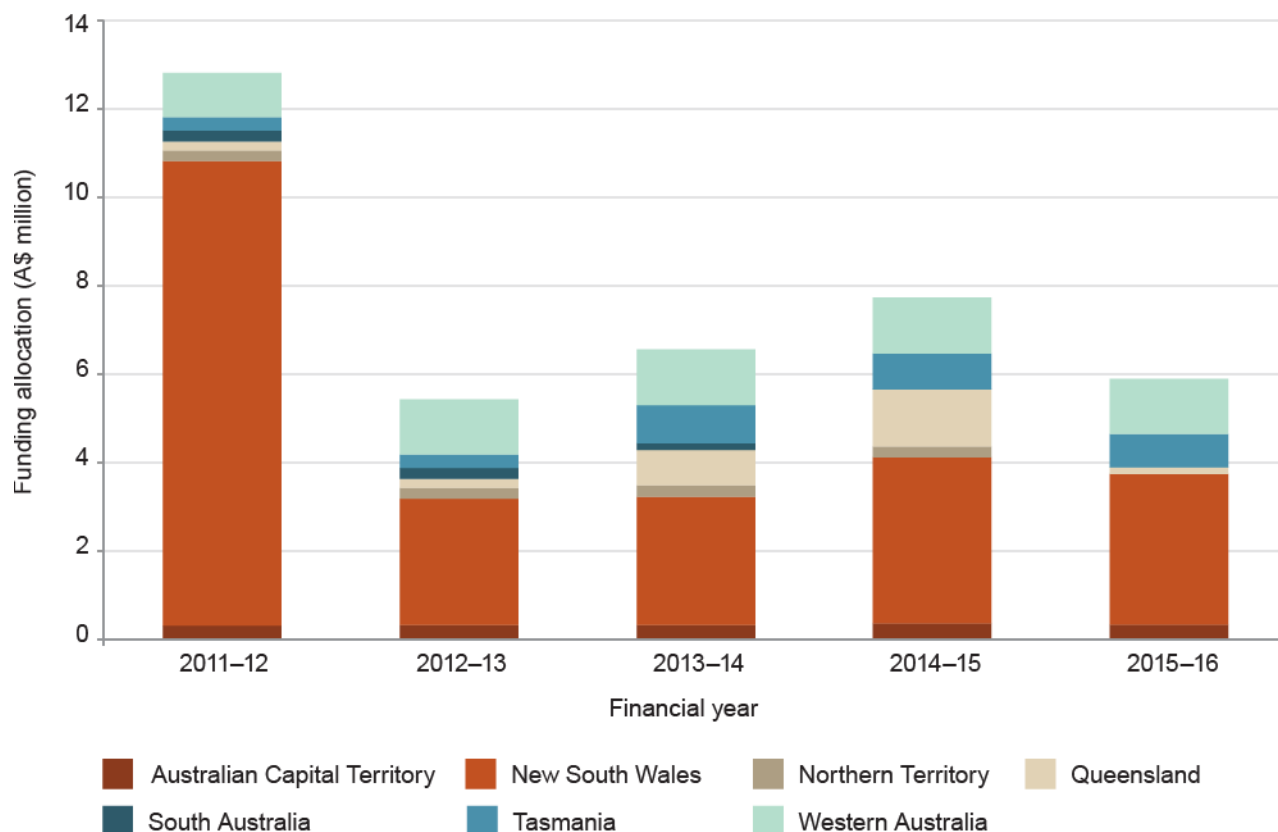
**Figure HER25 State and territory grant funding allocated to heritage conservation projects, 2011-12 to 2015-16**

Australian Government grant funding has been made available for historic heritage conservation and management through national programs. For example, the Sharing Community Heritage Stories program provided more than \$5 million between 2011 and 2013, and the Community Heritage and Icons Grant program has provided more than \$600,000 to 35 projects between 2014 and 2016. Under the Protecting National Historic Sites program, more than \$18 million has been provided to 98 projects between 2011 and 2016 (Figures HER18 and HER19).

#### Natural and cultural heritage indicator 11 considers funding provided to heritage and other agencies for Indigenous heritage places

Incomplete data are available about the operating budgets of state and territory agencies involved in Indigenous heritage management. The available information indicates a substantial increase in resourcing (Figure HER27). However, the figures for New South Wales may influence the result, because historic and Indigenous heritage resources have been amalgamated since 2013-14 and cannot be disaggregated. The absence of comparable data for 2 jurisdictions makes comprehensive comparison difficult, and highlights one aspect of the lack of national leadership and coordination in Indigenous heritage management.





Note: Data were not available for heritage agencies in the Northern Territory for 2015-16, South Australia for 2014-16 and Victoria for 2011-16.

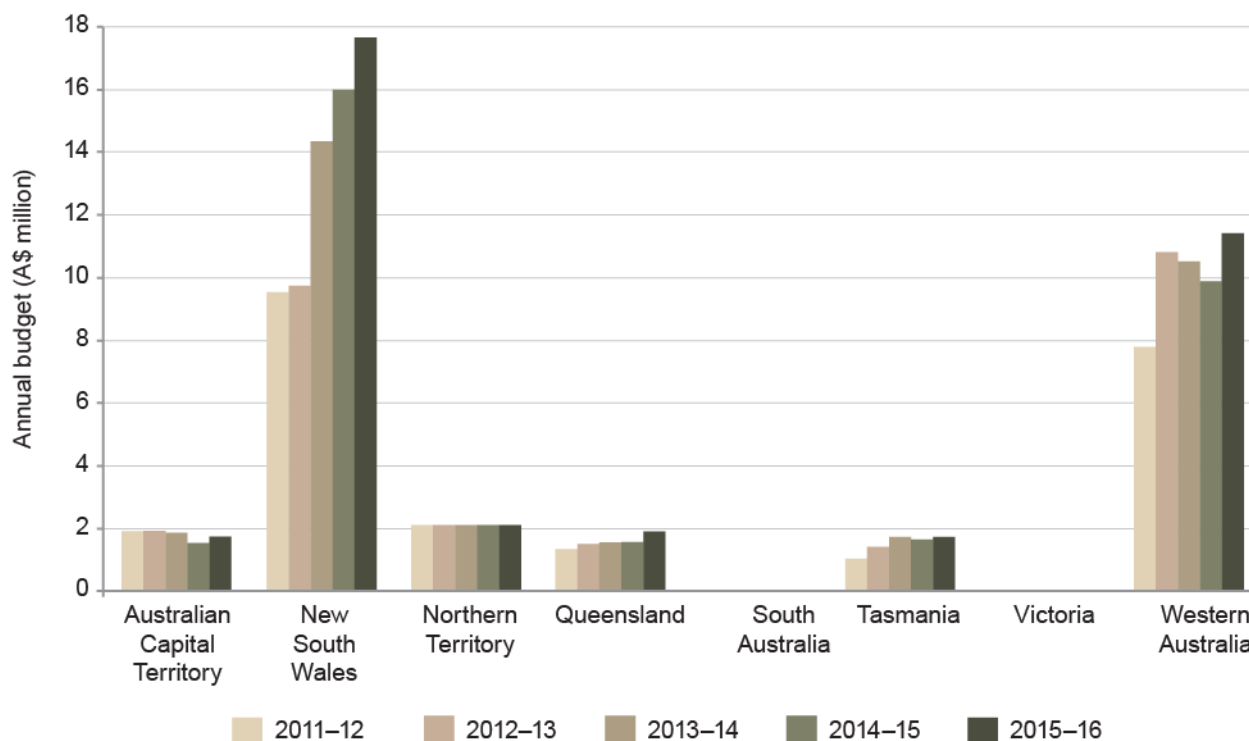
Source: Data were requested via Heritage Chairs and Officials of Australia, comprising representatives from the following agencies:

Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Department of Environment and Heritage Protection), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Heritage Victoria; Department of Environment, Land, Water and Planning) and Western Australia (State Heritage Office).

**Figure HER26** Aggregated state and territory grant funding allocated to heritage conservation projects, 2011-12 to 2015-16

Resources for listing and protecting Indigenous heritage places proactively are limited, and are often only allocated when potential adverse impacts may arise as the result of development proposals. Insufficient attention is paid to intangible values and effective means of protection other than through listing or reservation. There are no nationally consistent standards or guidelines for documenting and assessing Indigenous heritage places across different jurisdictions, although this gap is addressed in the Australian Heritage Strategy (Australian Government 2015a, Outcome 9).

Australia's listed Indigenous sites do not receive adequate resources to address major conservation priorities. It has not been possible to gather information on grant funding programs from state and territory agencies (this information was requested, but not provided). The Australian Government allocated more than \$8 million to 68 projects under the Indigenous Heritage Programme between 2011 and 2014, before responsibility for Indigenous heritage resourcing was moved from the Department of the Environment and Energy to the Department of the Prime Minister and Cabinet (Wildlife Heritage and Marine Division



Note: New South Wales had Aboriginal and non-Aboriginal heritage combined into one entity in 2013-14, and data are unable to be separated after this. Data were not available for Indigenous heritage agencies in South Australia and Victoria for 2011-16.

Sources: Data were requested from representatives of the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Cultural Heritage Unit, Department of Aboriginal and Torres Strait Islander Partnerships), South Australia (Aboriginal Affairs and Reconciliation), Tasmania (Aboriginal Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Aboriginal Victoria) and Western Australia (Department of Aboriginal Affairs).

**Figure HER27 Annual budgets of state and territory agencies involved in Indigenous heritage management, 2011-12 to 2015-16**

of the Australian Government Department of the Environment and Energy, pers. comm., September 2016). For some Indigenous communities, challenges arise from constraints in grant program rules, especially restrictions on use of funding for project staffing and coordination, which especially affects Indigenous heritage places (DoEE 2017f). Caring for our Country and Green Army projects have been undertaken on Indigenous land. There are also other programs, such as Aboriginals Benefit Account grant funding, which is available under the *Aboriginal Land Rights (Northern Territory) Act 1976* for projects that benefit Aboriginal people living in the Northern Territory (DPMC 2016b; Box HER33).

### Box HER33 Indigenous heritage support through white paper on developing northern Australia

*Our north, our future: white paper on developing northern Australia*, released by the Australian Government in 2015, explicitly recognises the importance of Indigenous cultural knowledge and commits to a range of Indigenous cultural heritage programs:

*The application of traditional Indigenous cultural knowledge to improve environmental understanding, inform ecological management and create new technologies, medical treatments and industries has the potential to strengthen the economic future of northern Australia.* (Australian Government 2015b:135)

The white paper expresses strong continuing support for Indigenous Protected Areas, additional funding for

Indigenous ranger programs, and joint management of national parks and other reserves. These initiatives directly support cultural heritage by enabling Indigenous people to connect with Country in a manner that is respectful of cultural practice while undertaking well-resourced land management activities such as savanna burning, pest and weed management, biosecurity, and tourism (Campbell 2015).

The white paper also raises the prospect of a system to accredit state and territory Indigenous heritage protection regimes, where they meet Australian Government requirements and standards, thereby reducing duplication, as the Productivity Commission recommended in 2013 (Productivity Commission 2013).

## Human resources

Human resource inputs for heritage include the knowledge and skills of staff employed in reserves and cultural sites; heritage advisers and regulators; and private-sector owners, managers and volunteers.

### Natural and cultural heritage indicator 17 considers the number and distribution of professional heritage-related courses, enrolments and graduates

SoE 2011 observed that there was a net increase in the number of professional heritage-related courses between 2006 and 2011. However, available courses were concentrated in eastern Australia and major cities. It was also noted that practice standards in heritage professional and trades practice rely on skilled practitioners, and that there was a progressive skills erosion. This challenge has been a matter for continuing focus by the Heritage Chairs and Officials of Australia and New Zealand, who jointly funded another heritage trade skills report in conjunction with the Construction & Property Services Industry Skills Council.

The *Heritage trade skills report* (Performance Growth 2012) is particularly directed at building conservation trade skills, rather than the full spectrum of heritage skills. It concludes, among other things, that there is declining demand for work requiring specialist heritage trades, and that more than two-thirds of respondents have difficulty in recruiting or contracting people with sufficient

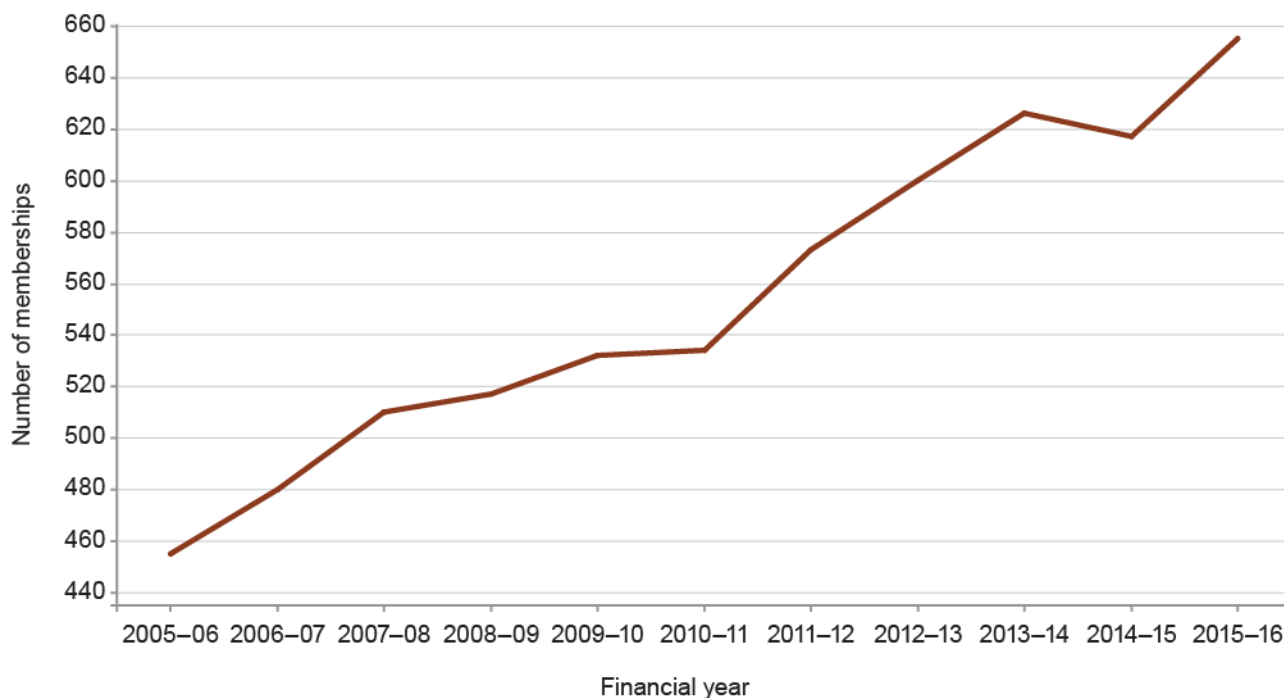
and appropriate skills to work on heritage projects. The report makes a number of recommendations that are directed towards improving traditional skills in existing trade-based training, developing further competency areas, and sharing information about practitioners and programs. However, it does not address the underlying issues arising from the lessening demand for such services and the ageing population of skilled practitioners, as identified in a previous report, also commissioned by the Heritage Chairs and Officials of Australia and New Zealand (Godden Mackay Logan 2010).

### Natural and cultural heritage indicator 18 considers membership of selected peak professional heritage associations

Comprehensive, reliable longitudinal data are not available for peak professional associations across the heritage sector. Surrogate partial data from the sector (such as membership of Australia ICOMOS) suggest a substantial increase in membership of professional heritage associations of around 20 per cent between 2011 and 2016 (Figure HER28).

### Natural and cultural heritage indicator 19 considers the number of volunteers trained by heritage organisations and institutions

Volunteers make a major contribution to the conservation of Australia's heritage. Whether they are local Landcare groups, rural firefighters, active Indigenous elders or



ICOMOS = International Council on Monuments and Sites  
Source: Australia ICOMOS

**Figure HER28** Membership of Australia ICOMOS, 2005-06 to 2015-16

historic property guides, heritage volunteers are integral to some of the best initiatives and outcomes achieved in the Australian heritage sector. The private owners of heritage places are also included within the heritage 'volunteer' community.

Comprehensive, reliable data are not available for the heritage volunteer sector. Surrogate data suggest that volunteer participation is declining. For example, information provided by the National Trusts of Australia has gaps and some variation between states, but shows a major decrease between 2010-11 and 2012-13, a general increase since and a decline overall (Figure HER29). Although National Trust membership can be regarded as indicative only, the figures suggest that, despite some periods of growth, volunteerism in the heritage sector may be declining.

However, volunteers continue to make many positive and important contributions to heritage conservation (see Box HER34).

**Natural and cultural heritage indicator 20 considers the number of people working in Indigenous organisations, number of Indigenous enrolments in university heritage courses, and number of Indigenous people employed by agencies involved in Indigenous programs and management of Indigenous heritage**

There is no nationally coordinated network for standard setting and information sharing between Indigenous heritage management and regulatory agencies. Therefore, insufficient data are available to provide an accurate assessment of this indicator.

**Natural and cultural heritage indicator 21 considers the number of local government heritage advisers**

Local heritage advisers, who usually work within local government agencies, provide an exceptionally valuable contribution to historic heritage conservation (see Box HER35) and one of the few incentives available to private owners of listed heritage places. Unfortunately, insufficient data are available to provide an accurate assessment of this indicator.





Note: Where data for a year are absent (null), the data were not available or not provided.

Source: National Trusts of Australia

**Figure HER29 National Trust membership, 2005-06 to 2015-16**

### Natural and cultural heritage indicator 22 considers the number of professional heritage employees in government agencies

Australian Government funding for heritage has changed in quantum and application during 2011-16 (Wildlife Heritage and Marine Division of the Australian Government Department of the Environment and Energy, pers. comm., June 2016). As at 30 June 2016, the Australian Government Department of the Environment and Energy had a heritage workforce of approximately 44 personnel dedicated to core heritage activities of managing World Heritage, National Heritage and Commonwealth Heritage policy, supporting the Australian Heritage Council, and fulfilling its statutory obligations that arise under the EPBC Act, Historic Shipwrecks Act, ATSIHP Act and Australian Heritage Council Act. In 2011, this workforce numbered approximately 101. During the period 2011-16, the department has altered resource allocation to heritage tasks and broadened its approach to heritage conservation issues. The department now draws on capabilities from across the department, the department's agencies and the wider Australian Government sector.

Many activities previously addressed by staff within the Heritage Division or Branch are now managed centrally within the department—for example, heritage grants, the maintenance of specialist databases and mapping services, communications, and web content development. Other activities—such as the effort to conserve the Great Barrier Reef—are coordinated by biodiversity conservation personnel (including a dedicated Reef Branch) in partnership with the Great Barrier Reef Marine Park Authority and other Australian Government departments, while drawing on the expertise of staff from across the department.

The reduction in resources previously allocated to the Heritage Division has necessitated change in the way the Australian Government addresses its heritage responsibilities, and reduced its capacity to provide support to community, academic and expert groups such as the Australian World Heritage Advisory Committee. The release of the Australian Heritage Strategy can enable the Australian Government to continue in a national heritage leadership role by providing a framework to coordinate the efforts of different heritage stakeholders.

### Box HER34 Sydney Harbour Federation Trust's Cockatoo Island volunteer restoration program

Volunteers have played a crucial role in the work of the Sydney Harbour Federation Trust from its inception in 2001. Because the Harbour Trust is a fully self-funding government agency, its volunteer program has been an important way for it to engage with the community, increase public access to its sites and provide services that would otherwise not be possible.

One of its most significant volunteer projects is the Cockatoo Island heritage restoration volunteer program, which has made a major contribution to conserving, restoring and preserving the island's maritime industrial heritage.

The team consists largely of retired engineers and tradespeople with high levels of technical skills. Their areas of expertise include fitting and turning, carpentry, electrical work, toolmaking, refrigeration, boiler-making and pressure vessel fabrication.

Their early restoration projects included a 12 pounder Admiralty cannon from 1797 and a small mobile crane built in 1912. These are both on permanent display near the island's visitor centre.

The group also restored the fast motorboat *Sydney*, the former captain's barge to the aircraft carriers *HMAS Sydney* and *HMAS Melbourne*, which are now proudly moored at Camber Wharf.

Recently, the main focus of the Harbour Trust's heritage volunteers has been on restoring the cranes around the island's Fitzroy Dock. From 2008 to 2011, they refurbished the 1891 Mort's Dock Steam Crane, which is the island's oldest crane and one of the few surviving steam cranes in Australia.

The team has now almost completed the restoration of 2 other cranes of exceptional heritage significance: the Travelling Steam Crane, built in 1900, and the Electric Travelling Jib Crane, built in the 1940s. Both were dismantled, repaired structurally and treated for rust, and had new metal and timber components installed.

When this work is finished, all of the Fitzroy Dock's cranes will have been fully restored. Visitors to the dock will be able to experience a fascinating snapshot of the island's industrial heyday as Australia's leading dockyard.

Source: Sydney Harbour Federation Trust



Cockatoo Island heritage restoration volunteers painting the Mort's Dock Steam Crane, Fitzroy Dock, Cockatoo Island, New South Wales  
Photo by Zakarij Kaczmarek, courtesy of the Sydney Harbour Federation Trust

### Box HER35 The City of Port Phillip—heritage overlay provisions and advice

Two developments within the City of Port Phillip in Victoria highlight the application of local planning controls to heritage conservation and the potential benefits of local heritage advice.

The City of Port Phillip Planning Scheme applies the statewide heritage policy of the Victorian Planning Provisions (DELWP 2016b) to the development of heritage places within the city's heritage overlays, each of which has a statement of significance. There are now also individual precinct overlays, which have been fine-tuned recently.

A residential development proposal on the corner of Durham and Greig streets in Albert Park, within the then H03 overlay, was considered by the Victorian Civil and Administrative Tribunal (VCAT) following the refusal of a planning permit application. The existing building was a 1970s dwelling identified as 'noncontributory' and of no heritage significance. The VCAT hearing centred on the suitability of the proposed new building, rather than demolition (which was uncontested). VCAT found that the proposed building would not affect the overall significance of heritage overlay H03. Since that time, overlay H03 has been divided into a number of smaller precinct overlays, which provide more specific understanding of heritage values, and therefore better guidance for applicants and the consent authority.

A project in McGregor Street, also in H03 at the time, was identified as a 'significant' dwelling. In this case, the application process recognised the importance of the surrounding context and involved both advice to, and negotiation with, the applicant. The result was a recessive and respectful addition to the rear of the existing heritage building, which complied with the specific heritage policy at Clause 22.04 of the City of Port Phillip Planning Scheme (DELWP 2016c). The project resulted in a successful nomination for the city's heritage awards soon after construction.



Durham and Greig streets—lawfully approved and compliant with the applicable heritage overlay context, but not necessarily respectful of it

Photo by Robyn Clinch

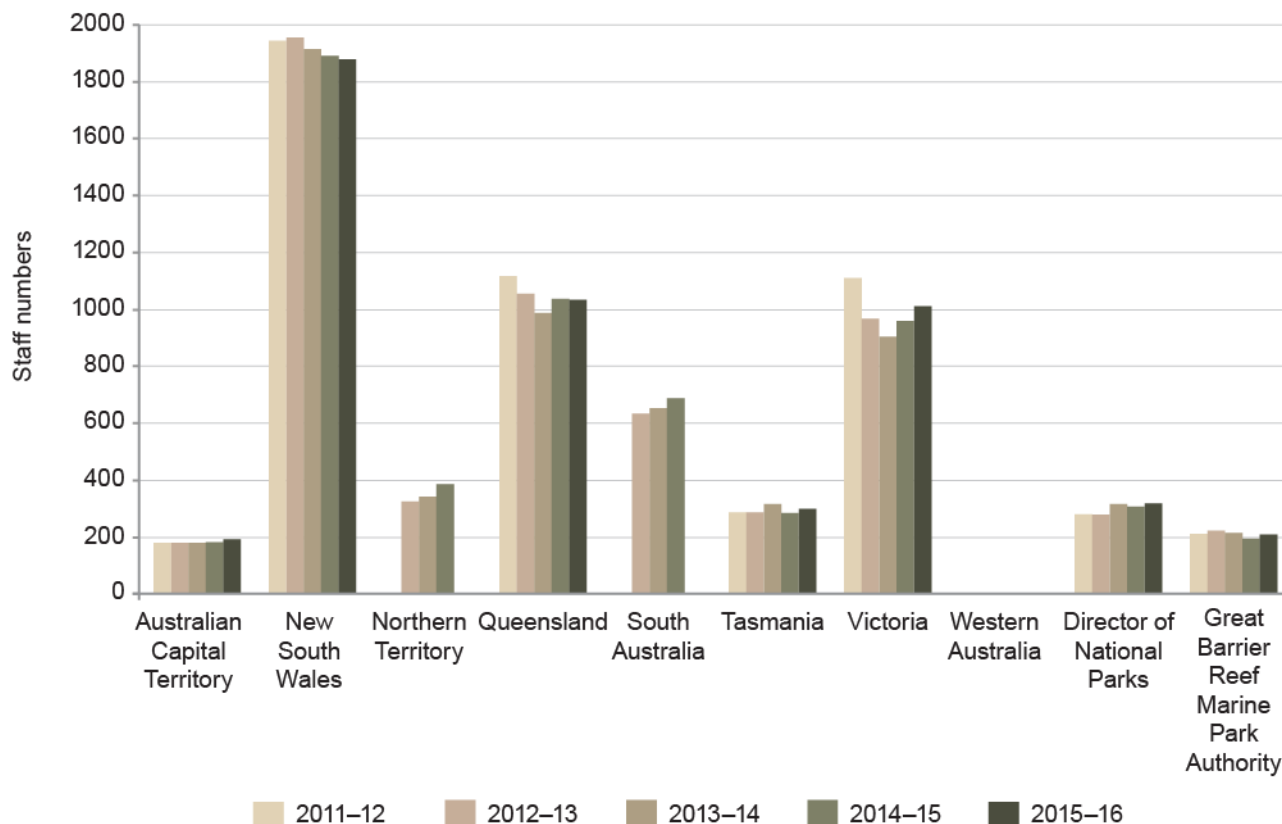


McGregor Street—a recessive and respectful rear addition, informed by an understanding of heritage values and interactive local advice

Photo by Robyn Clinch

At the state and territory level, the available information has gaps, but, for those national parks agencies that have supplied data, staffing levels have remained relatively static, with only minor variation (Figure HER30). However, staff numbers have declined in proportion to

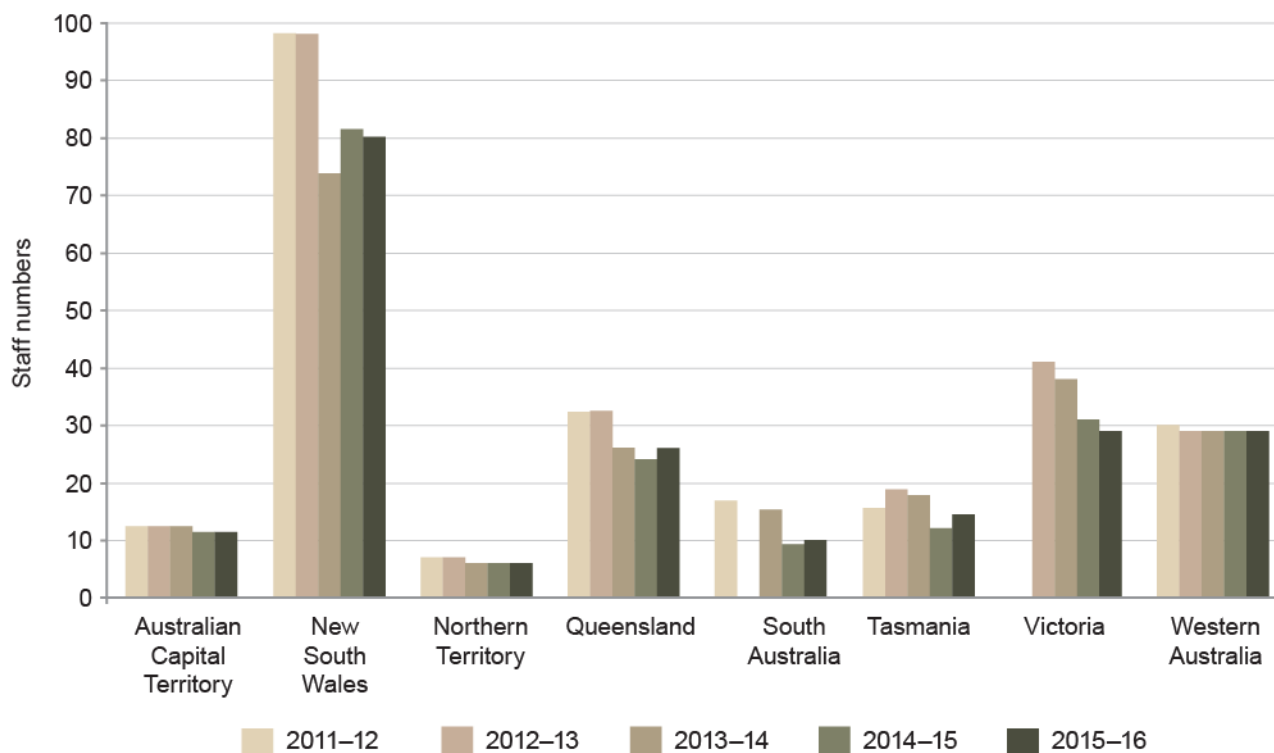
the significantly increased extent of reserved national park lands under management (Figures HER8, HER9 and HER12). State and territory heritage office staff numbers have also generally declined (Figure HER31).



Note: There are limitations in the comparability of the above resourcing data between the state and territory jurisdictions. Parks agencies vary widely between jurisdictions in their respective administrative and legislative responsibilities. Their respective reserve estates vary in number, area, types and levels of protection, and management across either or both terrestrial and marine environments. Reserve management varies also according to the jurisdiction population size, the volume of their visitor base and the complexity of stakeholder joint management. Data were not available for parks agencies from the Northern Territory for 2011-12 and 2015-16, South Australia for 2011-12 and 2015-16, and Western Australia for 2011-16. Source: Data were requested from representatives of the following agencies: Australian Government (Director of National Parks), Great Barrier Reef Marine Park Authority (Australian Government), Australian Capital Territory (ACT Environment and Planning, Parks and Conservation), New South Wales (National Parks and Wildlife Service, Office of Environment and Heritage), Northern Territory (Parks and Wildlife Commission), Queensland (Department of National Parks, Sport and Racing), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Parks and Wildlife Service), Victoria (Parks Victoria) and Western Australia (Department of Parks and Wildlife).

**Figure HER30 Full-time-equivalent employees involved in natural heritage management in state, territory and Australian Government national parks agencies, 2011-12 to 2015-16**





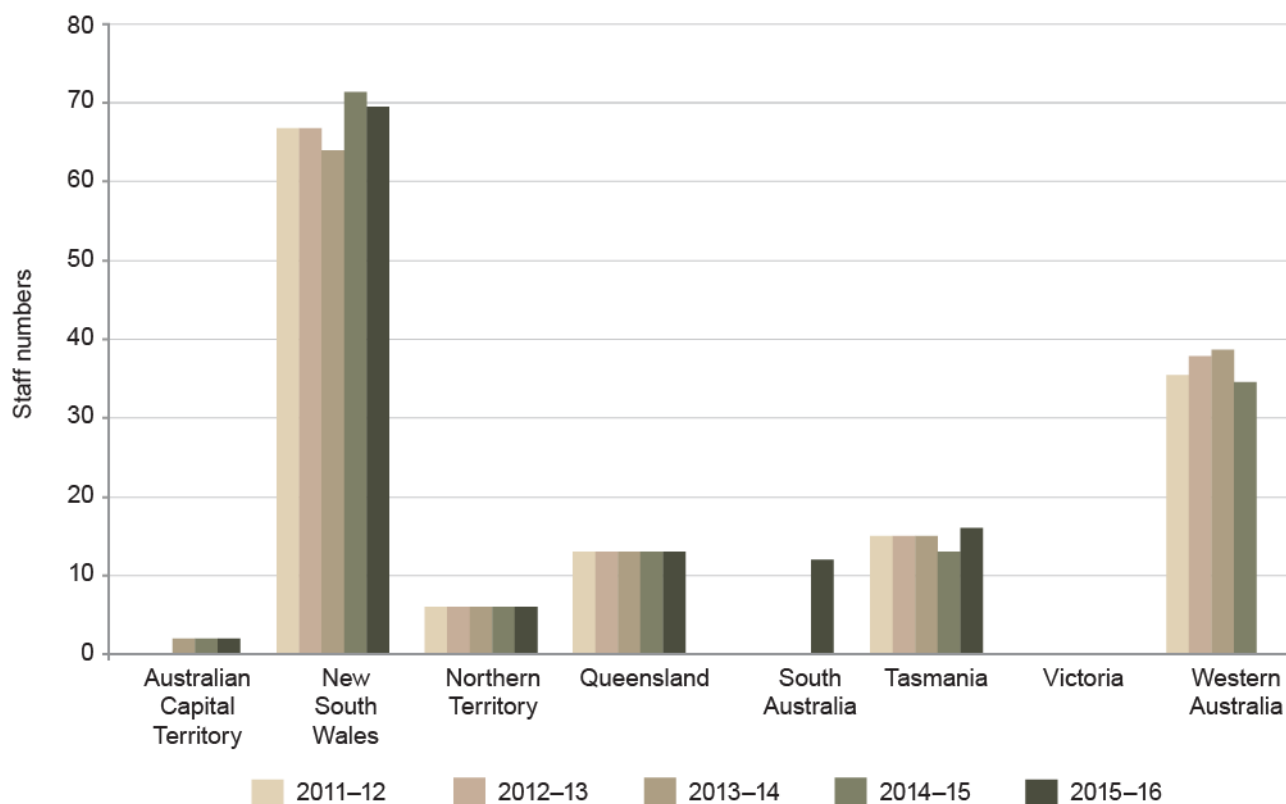
Note: Data for staffing levels within historic heritage agencies are not gathered consistently across jurisdictions; in some cases, the relevant information is subsumed within summary figures for larger agencies, or compromised by changes to government structures. Available information shows that heritage agency staffing levels across Australia have been generally consistent between 2011 and 2016 (Figure HER30). A small decline since the peak in 2012-13 may reflect actual reductions, or may arise from gaps and inconsistencies in available data. There are no obvious correlations between operating budgets, staffing levels and the number of listed places (Figures HER6, HER21, HER22 and HER29). The relationship between budgets, listings and staff levels is likely to be complex, as greater staff resourcing may enable more places, whereas more listed places also require more staff regulators. New South Wales had Aboriginal and non-Aboriginal heritage combined into one entity in 2013-14, and data are unable to be separated after this. Heritage agencies vary between jurisdictions in respective administrative and legislative responsibilities. Most of the agencies are responsible for managing cultural (historic) heritage solely; others are also responsible for Aboriginal and natural heritage. In some jurisdictions, Indigenous heritage is managed by a separate agency. Data were not available for heritage agencies in South Australia for 2012-13 and Victoria for 2011-12.

Source: Data were requested via Heritage Chairs and Officials of Australia, comprising representatives from the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Department of Environment and Heritage Protection), South Australia (Department of Environment, Water and Natural Resources), Tasmania (Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Heritage Victoria; Department of Environment, Land, Water and Planning) and Western Australia (State Heritage Office).

**Figure HER31** Full-time-equivalent state and territory heritage office staff, 2011-12 to 2015-16

The limited and incomplete data available for state and territory Indigenous heritage agencies suggest that staff numbers have been generally steady between 2011–12 and 2015–16 (Figure HER32), but drawing definite conclusions is difficult, given the absence of a national forum of Indigenous heritage managers and regulators.

The overall picture may be skewed by New South Wales, where there have been significant changes to institutional arrangements, and it is therefore impossible to distinguish between historic heritage and Indigenous heritage staff in recent years.



Notes: For some jurisdictions, 'Indigenous' heritage agencies are not distinct from a broader 'heritage' agency, and the same staff and resources are provided for historic, Aboriginal and/or natural heritage. Clear separation of resources is not readily available. New South Wales had Aboriginal and non-Aboriginal heritage combined into one entity in 2013–14, and data are unable to be separated after this. Data were not available for Indigenous heritage agencies in the Australian Capital Territory for 2011–13, South Australia for 2011–15, Victoria for 2011–16 and Western Australia for 2015–16. Source: Data were requested from representatives of the following agencies: Australian Capital Territory (ACT Heritage, Environment and Planning Directorate), New South Wales (Office of Environment and Heritage), Northern Territory (NT Heritage; Department of Lands, Planning and the Environment), Queensland (Cultural Heritage Unit, Department of Aboriginal and Torres Strait Islander Partnerships), South Australia (Aboriginal Affairs and Reconciliation), Tasmania (Aboriginal Heritage Tasmania; Department of Primary Industries, Parks, Water and Environment), Victoria (Aboriginal Victoria) and Western Australia (Department of Aboriginal Affairs).

**Figure HER32** Full-time-equivalent state and territory Indigenous heritage agency staff, 2011–12 to 2015–16

## Applied research

Well-resourced research is critical to the effective management of Australian heritage, in a manner that responds to threats and retains values. In particular, research relates to landscape-scale heritage places that are subject to significant pressures from climate change, but the principle applies broadly to both natural and cultural heritage places, large and small.

The Australian Government has invested significantly in applied research during recent years (see Box HER36), through a range of programs that contribute to heritage outcomes, such as the Invasive Animals Cooperative Research Centre, which is focused on reducing the impact of invasive species (Invasive Animals CRC 2016). Between 2011 and 2015, the NERP was funded at a level of around \$20 million per year, supporting 136 projects aimed at key environmental issues (DoEE 2016b; see Box HER37). Of all NERP projects, 42 per cent contributed to heritage place conservation and management; 27 per cent (37 projects) supported projects involving World Heritage properties and National Heritage places, with 59 per cent of these (22 projects) relating to the Great Barrier Reef, 27 per cent (10 projects) relating to the Wet Tropics of Queensland, 8 per cent (3 projects) relating to Kakadu National Park, and individual projects in the Tasmanian Wilderness World Heritage Area and the Wet Tropics (DoEE 2017k; Science Partnerships Section, Australian Government Department of the Environment and Energy, pers. comm., July 2016).

The more recent NESP (DoEE n.d.[i]) is continuing this process of assisting decision-makers to understand, manage and conserve Australia's environment through support for biodiversity and climate science. Between 2014–15 and 2020–21, the current NESP is providing around \$2.5 million to address emerging research priorities and around \$142.5 million to the following 6 research hubs:

- clean air and urban landscapes
- earth systems and climate change
- marine biodiversity
- northern Australian environmental resources
- threatened species recovery
- tropical water quality.

Approximately half of the current NESP has been allocated. It is not straightforward to identify the 'heritage' component of NESP separately, as many projects have heritage components or involve listed heritage places. However, analysis of current NESP projects indicates that approximately 27 per cent of current NESP projects (36 projects and around \$8.2 million funding) support heritage places, and a further 16 per cent (20 projects and around \$59.7 million) contribute to heritage places, but the full nature and extent of the heritage contribution cannot be more accurately determined (Science Partnerships Section, Australian Government Department of the Environment and Energy, pers. comm., July 2016). Of the 36 projects with a known heritage focus, the overwhelming majority (33 projects with around \$7.5 million funding) are in the Great Barrier Reef, and the other 3 (8 per cent with around \$640,000 funding) are in Kakadu National Park (DoEE 2017k; Science Partnerships Section, Australian Government Department of the Environment and Energy, pers. comm., July 2016).

NESP has an Indigenous engagement strategy to facilitate involvement with, and guidance from, Indigenous people in developing and delivering research projects. Some NESP projects have a cultural dimension, where they involve cultural landscapes such as Kakadu National Park or the Wet Tropics. This is integrated throughout NESP, rather than being via a separate research hub for Indigenous cultural heritage.

NESP is a substantive and important program, which includes and applies to a range of significant heritage places and issues. The focus on the Great Barrier Reef and Kakadu National Park will contribute to effective conservation, but there are also opportunities to afford priority for future NESP and other environmental research programs to other World Heritage properties and National Heritage places, and to establish a separate hub for applied heritage research. The Australian World Heritage Advisory Committee has made representations to the Australian Government about these matters, suggesting that NESP resources should be directed towards establishing a national World Heritage priority research agenda.

### Box HER36 Innovative research approaches by Parks Australia

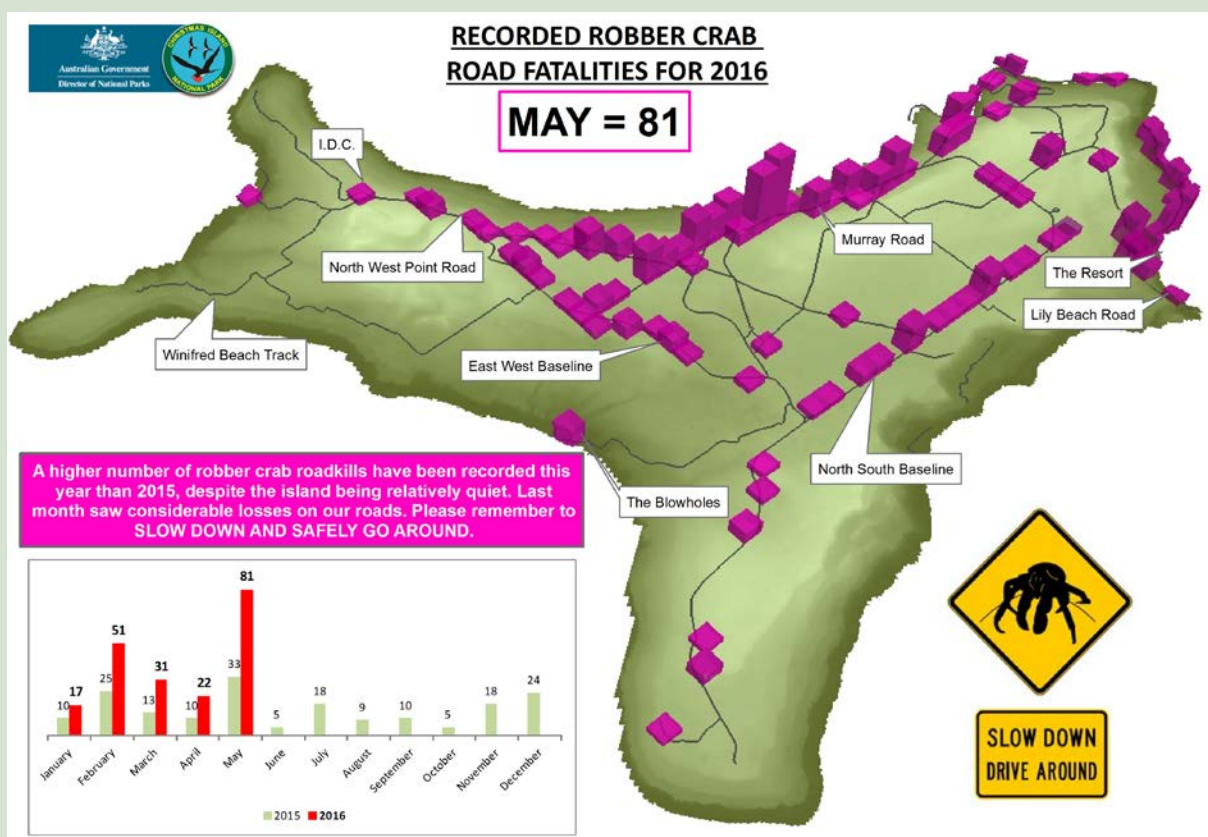
Parks Australia pursues a range of applied research projects and is publishing its long-term ecological monitoring datasets through the Australian Ecological Knowledge and Observation System (AEKOS)—a national data repository and search portal. AEKOS is specifically designed to deal with plot-based ecological data and is funded through the National Collaborative Research Infrastructure Strategy (NCRIS) and the Education Investment Fund Super Science Initiative. The Long-Term Ecological Research Network (LTERN) maintains long-term ecological monitoring plots in several national parks (and elsewhere), and has a separate website and data portal.

AEKOS–LTERN and NCRIS follow the principles of open access, acknowledging that the outputs of publicly funded research should be made available, discoverable and usable by the broader scientific community. There are 44 long-term monitoring datasets from across the Commonwealth parks that have been identified for metadata publishing, 8 of which are available through the [AEKOS portal](#).



Road traffic is a threat to Christmas Island’s unique robber crabs (or coconut crabs, *Birgus latro*). National park staff mark the location of road kills and record basic data to identify key areas for targeted management. The data for recorded kills between 2010 and 2014 are available via the [AEKOS portal](#)

Photo by Parks Australia



Mortality distribution maps are generated to raise awareness within the local community  
Image by Parks Australia



### Box HER37 Applied research supporting heritage management

A participatory approach to research in northern Australia supports Indigenous people's strong cultural links to the environment.

Collaborating with Indigenous communities and ranger groups, researchers undertook 3 case studies to develop tools for improved land and sea Country management. Partnering Indigenous ecological knowledge with scientific methods and facilitating access to specialist data were significant steps in monitoring and managing biodiversity in remote areas of northern Australia.

Funded through the Australian Government's National Environmental Research Program, the Northern Australia Hub's successful participatory approach highlights the need for meaningful linkages between local priorities and scientific research where Indigenous people have ownership and/or management authority for the landscape. Community involvement, using traditional and local knowledge, drawing on the professional capabilities within existing Indigenous ranger programs and sharing case-study outcomes across communities, has supported sustainable and long-term environmental monitoring by and for local Indigenous communities. The result is improved information and management of natural heritage at local, regional and national levels (NAERP 2016).

Building on the I-Tracker program undertaken by the North Australian Indigenous Land and Sea Management Alliance (NAILSMA), the Nyul Nyul freshwater monitoring project developed data collection applications, and mapping and reporting capabilities using CyberTracker™ software.

*We manage our land and sea. We work with our Traditional Owners. We protect our cultural sites and heritage. We maintain our springs and coastline.*  
—Nyul Nyul Rangers

A partnership between the Nyul Nyul Rangers, NAILSMA, Griffith University and the University of Western Australia's Waterways Education Program enabled the community to introduce the research team to their unique Kimberley region freshwater systems. Rangers

expressed an interest in obtaining support for freshwater research, and wanted to better understand, manage and monitor fresh water on Nyul Nyul Country. The partnership approach combined scientific sampling and Nyul Nyul Indigenous ecological knowledge gathered during the project, to provide a broader understanding of the biodiversity in, and pressures and threats to, these systems. Collaboration and sharing of knowledge resulted in a management plan that incorporates natural, cultural and social values, and recommends using both western science and traditional techniques for managing freshwater ecosystems (Dobbs et al. 2015).

This case study highlights the benefits of high-level public-sector funding, and the importance of applied research to traditional land and sea management for natural and cultural heritage places.



Rangers and researchers collect aquatic macroinvertebrates for wetland health assessments—part of a community-led project to build a clearer picture of the condition of ecologically and culturally important freshwater habitats on Nyul Nyul Country

Photo by North Australian Indigenous Land and Sea Management Alliance Ltd

The Australian Research Council (ARC) also supports research that contributes to heritage conservation. In 2011–16, there have been at least 2 substantial ARC heritage projects in Australia, funded to a total value of \$704,000. The first project, which involves collaboration between the University of Queensland and the University of Southern Queensland, is investigating the difference between the intention and actual delivery of outcomes for Indigenous people in the World Heritage system. The project seeks to develop innovative methods that integrate western and Indigenous knowledge, in an evidence-based model that integrates UNESCO's universal approach with the particular interests of Indigenous communities (Project ID: DP140100360). The second project, which is based in the Australian National University and led by Yolngu Elder and researcher Joseph Gumbula, seeks to develop a cloud-based database engine and networked applications for streaming digitised heritage resources in ways that are appropriate for Indigenous people, particularly those in remote communities (Project ID: IN13010001).

## Processes

Heritage management processes are assessed by considering the governance systems in place that provide appropriate statutory responses, adaptive management practices based on effective monitoring systems, and adequate resources.

## Statutory responses

The overwhelming majority of heritage listing processes and impact assessments occur at the state or local level, often as a reactive response to threats. In many cases, the multilevel and cross-jurisdictional rules cause duplication and inconsistent (sometimes contradictory) outcomes. This is especially the case where political intervention overrides heritage controls and values-based heritage decision-making. Challenges arise from land zoning, building regulations and development standards that place major pressure on heritage places. Inappropriate zoning and regulations may lead to unrealistic expectations of development potential. Development standards can create a perception that every site should be developed to its maximum potential, irrespective of the effect on heritage items on the site or nearby. Local regulations and guidelines can be extremely influential in this regard, because they

represent the interface between the place, its owners or developers, and the authorities. These regulations and guidelines need to align with heritage values.

## Environmental rating tools

Pressure on some historic buildings arises from growing interest in sustainability and the sustainable building agenda. Balancing heritage conservation and sustainable development can be challenging, particularly in commercial contexts. Embodied energy (i.e. the energy used to produce the building, including all materials) is an emerging issue. CSIRO has determined that the energy embodied in existing buildings in Australia is equivalent to 10 years of the total energy consumption of the entire nation (CSIRO 2008). However, sustainability legislation typically measures only the operational efficiencies of buildings, with the aim of saving water, minimising waste, and achieving immediate greenhouse gas savings by increasing efficiencies in heating, cooling and ventilation. Rating tools generally do not provide any recognition of the sustainability benefits of conserving existing buildings, and do not acknowledge the embodied energy inherent in these structures. They also do not consider the contribution that the inherent quality of materials makes to the lifecycle of a structure.

The implication of the current approach is that, rather than being conserved and refurbished, historic buildings will be demolished because they do not meet the contemporary green standards sought by industry and consumers. This risk will continue while rating categories do not award points for heritage and do not adequately recognise the value in retaining existing building fabric, in preference to incorporating renewable or recycled materials. However, appropriate approaches to assessing existing structures are being considered by a number of agencies, including, for example, the Green Building Council of Australia (GBCA 2015).

The requirement for commercial building disclosure ensures that the National Australian Built Environment Rating System (NABERS) for energy is available for large commercial buildings (soon to be extended to residential buildings). Because NABERS only rates energy efficiency, there is the potential for heritage buildings to become even less desirable to owners and tenants who seek higher energy ratings.

Sustainability objectives may also promote inappropriate changes that have adverse effects on individual heritage places. For example, using recycled, rather than traditional, materials may not provide an appropriate physical conservation outcome, and prioritising native vegetation over exotic species can cause adverse

outcomes for significant cultural plantings and gardens. There are currently only very limited opportunities for incorporating cultural heritage values within assessed sustainable practice, with rare examples of successful practice (see Box HER38).

### Box HER38 Sustainable innovative urban design and Aboriginal heritage, East Leppington

Sydney's recent greenfield land releases have seen former agricultural land released for housing development. The innovative approach taken for the East Leppington precinct (also known as Willowdale) involved Aboriginal cultural heritage management undertaken in line with the New South Wales Government policy, the Burra Charter's key principles (Australia ICOMOS 2013), and [Green Star rating systems](#) associated with culture, heritage and identity (Owen 2015a).

The process of cultural assessment and management was proactive and engaged the local Aboriginal community in the decision-making process (GML Heritage 2012). Archaeological research and test excavation were combined with stakeholder consultation to identify social and intangible values connected with the local and regional Aboriginal cultural landscape (Owen 2015b). The resulting mapping of cultural values identified a cultural landscape, with specific places, walking routes, view corridors and other aspects of high cultural value that may not otherwise have been afforded statutory protection or considered during the planning process.

The resulting urban design included key Aboriginal heritage values associated with specific landforms, such as:

- a lookout knoll, conserving intangible values and expansive view corridors to the Blue Mountains
- important archaeological sites, through the movement of urban infrastructure and riparian corridors

- an Aboriginal conservation area, which had been the focus for local conservation efforts in the late 20th century.

The process and outcomes showcase proactive cultural heritage conservation at a landscape scale, responding to emerging innovation challenges and concepts that address matters such as culture, heritage, identity and reconciliation as part of the sustainability agenda and evaluation system.



Aboriginal representatives and officers from the NSW Office of Environment and Heritage inspect the archaeological excavation of Aboriginal cultural heritage features at East Leppington, New South Wales

Photo by GML Heritage

Source: Dr Tim Owen, GML Heritage Pty Ltd, in association with Stockland

## Adaptive management

Adaptive management is an important technique for effective heritage conservation. Developed for natural areas, adaptive management can be applied to both natural and cultural heritage places. It involves a continuous cycle of improvement based on setting goals and priorities, developing strategies, taking action and measuring results, and then feeding the results of monitoring back into new goals, priorities, strategies and actions.

Management systems in many national parks identify conservation needs and have well-informed decisions about management goals, resource allocation and impact assessment. However, formal monitoring and evaluation occurs in few jurisdictions. Australia provides periodic reporting to UNESCO on its World Heritage properties, and New South Wales and Victoria prepare reports on the state of their parks. The development-driven effects on off-park natural heritage places are addressed through the development-consent process. There are few proactive and comprehensive conservation management programs outside the national parks estate.

Indigenous heritage places within reserved lands usually have management systems that identify conservation needs, and involve traditional owners in decisions about impact assessment and resource allocation. However, outside the reserved lands system, Indigenous heritage decisions are typically reactive and not always well informed, particularly development-driven impact assessment, which may occur without knowledge of the total resource. There is little formal monitoring and evaluation or adaptive management of Indigenous heritage.

Management systems at all levels of government generally facilitate well-informed decisions about resource allocation and impact assessment for historic heritage.

There are some excellent examples of innovative, values-based decisions leading to good outcomes (see Boxes HER38 and HER39). However, formal monitoring and evaluation rarely occurs. Management systems for listed historic places in public ownership identify conservation needs and generally adopt the methodology advocated by the Burra Charter (Australia ICOMOS 2013). For privately owned listed historic places, the systems for impact assessment and resource allocation vary greatly across jurisdictions, owners and site types.

The Burra Charter was revised in 2013, and Australia ICOMOS is developing a series of practice notes to

supplement and provide more specific guidance on its application. These notes cover a wide variety of topics, including assessment of cultural significance, policy development, ethics, archaeology, Indigenous cultural heritage management, interpretation and new works (Australia ICOMOS 2016a).

## Education

An important, but sometimes neglected, aspect of heritage conservation is the obligation to transmit or convey the attributes and values of heritage places to the general community. At the site-specific level, this may be achieved through interpretation initiatives and events. More broadly, it is also important that heritage is included within education curriculums and programs (see Box HER40). The inclusion of themes and content related to natural and cultural heritage within the Australian curriculum, across both individual subject areas (such as geography and history) and more generally, makes an important contribution to this process. Related programs and initiatives, which are linked to the curriculum, include education kits or school programs that allow students to connect with heritage places and support the desired learning outcomes.

## Outcomes

The importance of assessing management effectiveness is well recognised for protected areas, but less so for other types of heritage (Leverington et al. 2010). Evaluating the outcomes for heritage requires informed evaluation of the way in which current pressures and emerging risks to heritage values are being reduced, and how the resilience of heritage is being improved to retain values.

A nationwide lack of monitoring and evaluation programs makes these assessments challenging and highly reliant on individual examples, anecdotal evidence and phenomenological data (see Box HER41). The judgements presented in this section are based on opinions expressed during workshops with peak expert, government and stakeholder groups (as outlined in [Introduction](#)), and the 2016 National Heritage place monitoring survey (WHAM 2017).

The Australian Heritage Strategy supports regular, long-term monitoring, evaluation and reporting of World Heritage and National Heritage value conditions (Australian Government 2015a).



### Box HER39 Promoting ecological connectivity in the Wet Tropics World Heritage Area through collaboration, solutions-based research and statutory processes

Under the *Operational guidelines for the implementation of the World Heritage Convention*, 'to be deemed of outstanding universal value, a property must also meet the conditions of integrity and/or authenticity and must have an adequate protection and management system to ensure its safeguarding' (UNESCO WHC 2013).

The 2 key statutory instruments that the Wet Tropics Management Authority uses to protect and manage the Wet Tropics World Heritage Area are the *Wet Tropics World Heritage Protection and Management Act 1993* and the *Wet Tropics Management Plan 1998*. The plan regulates activities inside the area that have the potential to affect its integrity, and comprises:

- a zoning scheme
- a permit system
- principles and guidelines against which a permit application must be assessed and decided.

The principles and guidelines recognise that the most important consideration in deciding an application is the likely impact of the proposed activity on the integrity of the area. The authority must decide an application in a way that minimises the likely impact of the proposed activity on the outstanding universal value of the area.

One of the main ongoing impacts on the integrity of the area is ecological fragmentation arising from linear infrastructure corridors, such as roads (1200 kilometres) and electricity transmission lines (160 kilometres). Research has shown that these infrastructure corridors can severely impede or even prevent wildlife crossings. In recent years, the authority has collaborated with the Queensland Department of Transport and Main Roads, and researchers from James Cook University to design and install wildlife overpasses and underpasses at key locations along roads to promote wildlife movement. The authority uses the findings from this collaboration

and encourages the installation of wildlife 'bridges' to promote connectivity when assessing permit applications and setting permit conditions for maintenance or upgrade of infrastructure corridors.

These successful collaborative efforts of a management agency, government department and university exemplify how the statutory planning process for heritage places can combine with applied research to deliver practical and effective conservation outcomes.



A purpose-built wildlife underpass with ecological furniture at East Evelyn Road, Millaa Millaa, helps to connect 2 sections of the Wet Tropics World Heritage Area. The banks of the road have been planted with native seedlings to enhance connectivity with the native forest either side of the road

Photo by Jonathan Munro

Source: Max Chappell, Manager Planning and Conservation, Wet Tropics Management Authority

### Box HER40 National Trust of Australia—national education programs

Education and interpretation of our nation's rich heritage are essential elements of conservation. One of the roles for the National Trust of Australia is to provide leadership in community recognition of the importance of Australia's heritage (natural, Indigenous and historic) at all levels and across all age ranges.

Through the National Trusts Partnership Program during the past 5 years, the National Trust in Australia has developed, resourced and implemented education programs that are delivered at National Trust places, schools and other Australian heritage places or at significant events. With the generic theme of 'valuing heritage', educational school programs have been implemented in the Australian curriculum, initially through history (now humanities and social sciences) and other cross-curriculum learning areas. These programs reinforce the recognition of natural, Indigenous and historic values as core elements of our heritage.

There are currently more than 40 primary heritage education programs, 10 secondary programs and 30 public programs coordinated by the National Trust in Western Australia. The National Trust of Australia has also expanded education programs to include online interactive programs for all age ranges, including seniors. In 2015, there were more than 70,000 participants in National Trust of Australia education programs.

Through school, public and online education programs, the National Trust of Australia hopes to inspire the next generation to continue to recognise the value, significance, richness and diversity of Australia's heritage.

Source: Enzo Sirna, AM, Deputy Chief Executive, National Trust of Australia (WA)



Students in colonial costume visiting Peninsula Farm, one of the earliest farms in the Swan River Colony, and the centre for a popular Year 5 program

Photo by National Trust of Australia (WA)



### Box HER41 The ACT state of the environment report—heritage

Every 4 years, an independent state of the environment (SoE) report is prepared for the Australian Capital Territory (ACT) in accordance with the *ACT Commissioner for Sustainability and the Environment Act 1993*, by the Office of the Commissioner for Sustainability and the Environment, assisted by a range of experts.

The 2015 ACT SoE report parallels the approach and structure of the 2011 national SoE report, providing an assessment of the state and trends of the key environmental indicators, the pressures on the environment, and the drivers of those pressures and their impacts. In relation to heritage, the ACT report provides generally comprehensive information about registered places, but recognises that accurate understanding of the state of heritage is incomplete because the condition of ACT heritage places is not monitored.

There are structures and policies in place to protect and manage heritage, as well as events and programs to

support community understanding and appreciation. Heritage listings have increased and the nomination backlog has decreased since the previous ACT report in 2011. Land use and development are recognised as the most significant pressures on heritage. In addition, although there are processes in place to recover Aboriginal artefacts from development sites, Aboriginal people do not consider the link between the artefact and place to be properly understood, managed or protected.

A major achievement and potential benefit of the approach to heritage in the ACT SoE report is the approach to ‘assessment summaries’, which parallels that in the national SoE 2011 and SoE 2016. If a similar approach were to be adopted in other jurisdictions, the opportunity may arise to generate a national understanding of the state, trend and condition of Australia’s heritage based on aggregate comparable data from state and territory reporting (OCSE 2015).



Creative and engaging interpretation of the ACT Valley Ruin, one of the sites included in the What Still Remains project, which was a feature of the 2012 Canberra and Region Heritage Festival

Photo by Mary Gleeson

## Natural heritage

Australian national parks and other recognised natural heritage places are accessible to the community, strongly promoted both within Australia and overseas, presented to visitors in engaging ways, and often important elements in community identity and sense of place.

Each Australian jurisdiction has a separate statutory basis, and different structures and processes for natural heritage place management. At a national level, the National Reserve System has a strong focus, and its targets provide one way to assess the outcome for Australia's reserved lands. Forty-eight of Australia's 89 bioregions have more than 10 per cent of their area in reserved lands. However, taking other factors into account, such as subregions determined by vegetation communities, habitat and whole-of-landscape connectivity, reserved lands do not yet comprise an adequate selection. By contrast, Commonwealth marine reserves, and state and territory marine reserves, include more than 30 per cent of marine bioregions.

Limited information is available on the totality of conservation outcomes for natural heritage in Australian national parks, as only New South Wales (NSW OEH 2016a) and Victoria (Parks Victoria 2016) undertake substantive formal monitoring and evaluation of the state of parks. Australia's Strategy for the National Reserve System 2009–2030 (NRSTG 2010) proposes that the states and territories standardise approaches to data collection and evaluation of management effectiveness. The predominantly anecdotal information that is available suggests that heritage values are generally being retained, despite some decline in habitat and some species loss. Comprehensive national data are not available to make objective judgements about natural heritage outside the parks system. However, Australian Government environmental biosecurity work (pre-border, at border and post-border) is improving protection from the introduction of new invasive species and diseases.

## Indigenous heritage

Differences between jurisdictional systems prevent reliable conclusions being drawn about the coverage of listed and protected Indigenous heritage places. However, the heritage values of Indigenous places in reserved lands or under Indigenous management

are being retained. Little information is available on the effects of management action on the values of other parts of Australia's Indigenous heritage. Incomplete understanding of the resource, the current processes used to respond to development pressures and incremental site destruction continue to place Indigenous heritage sites at risk. There is no cohesive national picture for Indigenous heritage, or adequate action by government agencies to coordinate management of Indigenous heritage resources and share information at a national level. Assessing outcomes for Australia's Indigenous heritage is therefore hampered by lack of comparable data, and the absence of formal monitoring and evaluation programs.

Despite these shortcomings, Australia's Indigenous heritage is celebrated by Indigenous people, often accessible to the wider community, strongly promoted within Australia and overseas, and increasingly presented by Indigenous people in accordance with relevant cultural practices.

## Historic heritage

Historic heritage places are usually accessible, often cherished, increasingly presented to visitors in engaging ways, and recognised as important elements in community identity and sense of place (see Box HER42).

Through the Heritage Chairs and Officials of Australia and New Zealand, there is some national coordination of the management of Australia's historic heritage resources, despite the separate statutes and different government structures in each jurisdiction.

Australia's listed historic sites are numerous, but have been assessed, listed and protected in an ad hoc manner. Although the [Australian Heritage Database](#) offers a convenient portal to information about more than 20,000 natural, historic and Indigenous heritage places, it does not include all the statutory heritage lists and is difficult to use. There are no readily available national data that allow assessment of the representativeness of the national set of listed historic places. Limited information is available on the effectiveness of historic heritage management, because very little long-term monitoring and evaluation takes place within state and territory or local jurisdictions.



## Box HER42 Western Australian Goldfields Water Supply Scheme—conserving and interpreting a National Heritage place

The Goldfields Water Supply Scheme—which runs for 560 kilometres in Western Australia, extending from Mundaring Weir in the west to Mount Charlotte Reservoir at Kalgoorlie in the east—was branded as ‘audacious’ when the project was proposed more than 120 years ago. In the same way, many considered the National Trust of Australia Golden Pipeline project in Western Australia, and particularly the 650 kilometre heritage drive trail, overly ambitious.

The success of O’Connor’s 1890s vision was because, in part, of its simplicity. Similarly, the National Trust constructed an award-winning project around 2 straightforward objectives: to conserve and interpret the Goldfields Water Supply Scheme, and to bring tangible benefits to the associated communities. Built with state and Australian Government funding, the Golden Pipeline continues to deliver on these original objectives, as the water supply scheme, albeit updated, still supplies water to the wheatbelt and goldfields of Western Australia.

In 2011, the Goldfields Water Supply Scheme was inscribed on Australia’s National Heritage List. This recognition provides access to the Australian Government’s Protecting National Historic Sites grant program, as well as increasing the National Trust’s ability to attract corporate and community funding. Importantly, Australian Government funding recognises the crucial role of interpretation in the management of

heritage places. One of the intended outcomes of the program is to improve awareness of, and engagement with, National Heritage places. This is achieved through interpretation.

Interpretation is key to the Golden Pipeline Heritage Trail experience and, along with the active conservation of heritage places, sets it apart from many drive trail experiences. Twenty-five sites between Mundaring Weir and Mount Charlotte tell stories connected to this engineering feat, as well as explaining the context for its construction at the turn of the 20th century. Aboriginal people had lived on this land for thousands of years, but, when Western Australia’s population quadrupled in a few short years following the rush for gold, Premier John Forrest, ambitious for the development of his state, needed a solution to the resulting water crisis. His foresight resulted in the development of what is reputedly the richest square mile on earth. The gold rush, the coming of the railway and schemes to provide water pre-pipeline all feature in the project’s multifaceted interpretation.

Now, 13 years after the Golden Pipeline project was launched, funding from the Australian Government has allowed the National Trust to respond to changing travel and information delivery options, mitigate risk, continue ongoing conservation works, and refresh the marketing and promotion of this nationally important heritage place.



Now known as the Goldfields and Agricultural Region Water Supply Scheme, the Golden Pipeline has been delivering water more than 560 kilometres from its source for more than 110 years

Photo by Gary Peters, National Trust of Australia (WA), [CC BY-NC 4.0](https://creativecommons.org/licenses/by-nc/4.0/)

## Box HER42 (continued)



No. 1 Pump Station interpretation is as much about understanding the building as an artefact as it is about telling the story of the scheme. A Engine (in situ), B Engine (removed) and C Engine (now the interpretation machine) can be easily 'read'

Photo by Robert Frith/Acorn Photo, National Trust of Australia (WA), CC BY NC 4.0

Source: Anne Brake, Community Engagement Manager, National Trust of Australia (WA)

## Assessment of effectiveness of heritage management

In SoE 2011, the framework and structure for the management effectiveness assessment summaries were arranged to align with the business plan of the Heritage and Wildlife Division of the then Australian Government Department of Sustainability, Environment, Water, Population and Communities. The approach involved assessing identification, management and protection within each of the components that

were standardised across different SoE 2011 themes (understanding, planning, inputs, processes and outcomes). The assessment summaries here do not use the same breakdown, as they no longer link directly to the department's business plan. This means that the majority of the management effectiveness assessments are not directly comparable with those in SoE 2011. The exceptions are leadership and celebration, which are generally somewhat comparable.



# Assessment summary 3

## Effectiveness of heritage management

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

### Natural heritage

**Understanding:** Australian park managers have a good understanding of statutory controls, management needs, and processes of Australia’s bioregions and subregions. The natural heritage values of most reserved lands are understood. Discussion and debate continue about matters such as what constitutes an adequate sample; how to create ecological connectivity; the size and configuration of reserves; and how to account for habitat, resilience and recovery



**Planning:** The National Reserve System has a clear aim to include 10% of each of Australia’s bioregions, and is seeking to include bioregions that are poorly represented in reserved lands. However, additional work on related factors, such as habitat and connectivity, is needed to understand what constitutes an adequate sample of reserved lands



Natural heritage should be better represented on statutory heritage registers

Many, but not all, major national parks and reserved lands have management plans, with well-resolved provisions and appropriate regulatory controls

**Inputs:** Funding for reservation of additional lands of conservation value continues to be substantially dependent on public-sector budget allocations and opportunistic acquisition

Additional land reservation occurs without proportional increases in public-sector resourcing. Resourcing for survey and assessment is modest compared with the size and significance of the resource



Staffing levels in national park agencies have remained relatively static, but have declined in proportion to the significantly increased extent of reserved national park lands

Australian parks and Indigenous Protected Areas are understaffed, and lack adequate resources to address major conservation priorities, including emerging urgent pressures



## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Natural heritage (continued)

**Processes:** Management systems in parks identify conservation needs and make well-informed decisions about impact assessment and resource allocation. However, formal monitoring and evaluation occurs in only some jurisdictions

The National Reserve System offers a coordinated response to the need for a nationwide reserve system. Listing processes for other aspects of natural heritage, such as geological heritage, are less well coordinated and transparent. National, state and territory, and local protective measures and controls are less well understood by the general community



**Outcomes:** Australia's reserves include a sample of more than 10% for 48 of the nation's 89 bioregions, and more than 30% of marine areas. However, when considering other factors such as habitat and connectivity, there is still work to be done to improve the representativeness of terrestrial reserves

Limited information is available about the state of parks, but available data suggest that heritage values are generally being retained, with some decline evident. Natural heritage areas have management measures in place to address threats within the bounds of available resources. The natural heritage values of parks and listed natural heritage sites are generally being retained



**Leadership:** The Australian Heritage Strategy provides a strong vision and clear set of target outcomes for the future of Australia's heritage. At a national level, there is a strong focus on the National Reserve System, and a structure is in place to facilitate information sharing. However, each jurisdiction has a separate statutory basis, and different structures and processes for natural heritage management



**Celebration:** The Australian Heritage Strategy strongly supports the celebration of Australia's heritage. Australian national parks and other recognised natural heritage places remain accessible to the community, are strongly promoted within Australia and overseas, are presented to visitors in engaging ways, and are often important elements in community identity and sense of place







## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Indigenous heritage

**Understanding:** Understanding of the nature and extent of Australia's Indigenous heritage, both tangible and intangible, is inadequate. Indigenous places are often considered as individual sites, rather than part of the rich cultural landscape that is Country. Although Indigenous people have an increasing role, the principles and practices of traditional land and sea management need to be more widely applied. Statutory controls for Indigenous heritage places are generally understood, despite jurisdictional inconsistencies.



**Planning:** Indigenous heritage requires nationally coordinated policies and processes that proactively identify and protect significant sites and places. Very substantial increases in the number and extent of Indigenous Protected Areas have been seen. Indigenous heritage remains under-represented on statutory heritage lists and registers, owing to lack of survey in many areas, but is also supported by statutes that provide blanket protection. Unlisted Indigenous heritage places suffer from lack of planning processes. Statutory provisions for Indigenous heritage increasingly provide inclusive roles for traditional owners, but also permit ongoing incremental destruction of Indigenous heritage. Management plans for reserved lands usually include provisions for Indigenous heritage management, which have been prepared in consultation with traditional owners. Standalone Indigenous land and sea management plans are also being prepared. However, many significant Indigenous places lack management plans.





## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Indigenous heritage (continued)

**Inputs:** Resources available for documenting intangible Indigenous heritage and country are inadequate. Funding for survey and assessment is often available only in response to development threats

The staffing levels of Indigenous heritage agencies appear to have remained steady, but it is not possible to ascertain a definitive picture in the absence of national coordination and consistently gathered data

The resources allocated for conservation of Indigenous heritage places and intangible heritage have increased, but remain inadequate and are often allocated as a post-event reaction to adverse impacts

Insufficient attention is paid to intangible values and places, and to effective means of providing protection in ways other than listing or reservation within reserved lands



**Processes:** The Australian Government is seeking to provide leadership in Indigenous heritage management, through nationally coordinated guidelines and standards. However, there is no national mechanism for coordinating Indigenous heritage

Management systems for Indigenous heritage places within jointly managed parks identify conservation needs, involve traditional owners and make generally well-informed decisions

Outside the reserved lands system, some Indigenous heritage decisions involve traditional owners and facilitate good conservation outcomes

In some jurisdictions, the process for assessment and decision-making about impact on Indigenous heritage is less consultative and more development driven





## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Indigenous heritage (continued)

**Outcomes:** It is not possible to ascertain whether the number of identified, listed and protected Indigenous heritage places is adequate, owing to lack of national coordination and data sharing. However, the significant increase in the number and extent of Indigenous Protected Areas is encouraging

Very limited, partial information is available on the effects of management action on the values of Australia's Indigenous heritage. Initiatives such as 'Working on Country' are positive

The heritage values of Indigenous places in reserved lands or under Indigenous management are being retained. However, incomplete understanding of the resource and the current processes used to respond to development pressures means that other Indigenous heritage sites continue to be at risk



**Leadership:** Although the Australian Heritage Strategy provides a strong vision and a clear set of target outcomes, the national picture for Indigenous heritage is not cohesive. Australian governments neither coordinate management of Indigenous heritage resources nor adequately share information

The Australian Heritage Strategy emphasises the need for a consistent approach to the recognition, protection and management of Indigenous heritage sites across all levels of government

Capacity building, leadership and succession planning for Australian Indigenous heritage management are needed



**Celebration:** The Australian Heritage Strategy strongly supports the celebration of Australia's heritage. Australia's Indigenous heritage is celebrated by Indigenous people, and increasingly presented by Indigenous people in accordance with relevant cultural practices, but could be more accessible to the wider community, and more strongly promoted within Australia and overseas

Untapped opportunities exist for greater engagement between other business sectors and Indigenous communities





## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Historic heritage

**Understanding:** Statutory lists and registers provide only a partial understanding of the extent of Australia's historic heritage. In some areas, systematic thematic survey and assessment do provide thorough coverage. Historic places are also typically seen as individual sites rather than part of cultural landscapes

Australia's heritage-listed historic places are numerous, but heritage registers were not populated in a systematic manner. Increasing attention is now being given to addressing this legacy issue, and greater attention is being given to the integrity of registers and representative lists

Management needs and processes are well understood by Australian historic heritage managers, but statutory processes, roles and responsibilities for historic heritage places are not well understood by the wider Australian community, owing to inconsistencies and overlap both within and between jurisdictions

**Planning:** Australian jurisdictions include identification and listing of historic heritage items at all levels of government

Many major listed historic sites have conservation management plans, with well-resolved provisions and appropriate regulatory controls. However, other significant sites lack such plans, or their plans are outdated or have inappropriate content

Historic sites receive statutory protection once they are included in statutory heritage lists, but continue to be threatened if they are seen to obstruct major development projects

In some jurisdictions, there has been a reduction in the extent of statutory heritage protection







## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Historic heritage (continued)

**Inputs:** Resources allocated to survey, assess and list historic heritage are not consistent, but historic places continue to be added to statutory lists and registers. The staffing levels of historic heritage agencies generally appear to have remained steady, but there are gaps and inconsistencies in available data. There has been considerable variation in allocation of grant funding for heritage conservation projects at the state and territory level. Many publicly owned Australian historic sites lack adequate resources to address major conservation priorities, including emerging urgent pressures. Private owners of historic sites do not receive incentives that are proportional to the public value of the places they own and manage. Some historic heritage places have been allocated substantial resources for conservation, but grant funding has declined across national, state and territory jurisdictions. The Australian Heritage Strategy places strong emphasis on the need to 'explore' a wider funding base for Australia's heritage.



**Processes:** Australian Heritage Chairs and Officials of Australia and New Zealand has identified a range of relevant standards and consistent assessment criteria to identify and manage historic heritage. However, not all jurisdictions have adopted the agreed consistent criteria after more than a decade. Consideration is being given to nationally consistent approaches to state of the environment assessment and reporting. Management systems at all levels of government generally facilitate well-informed decisions about impact assessment and resource allocation for historic heritage; however, relatively few formal monitoring and evaluation programs are in place.





## Assessment summary 3 (continued)

### Summary

### Assessment grade

### Confidence Comparability

Ineffective Partially effective Effective Very effective

In grade In trend To 2011 assessment

#### Historic heritage (continued)

**Outcomes:** Australia's historic sites are listed and protected in an ad hoc, unrepresentative manner. Limited information is available about the effectiveness of historic heritage management, as there is only partial monitoring and evaluation of outcomes. Limited available data suggest that most historic heritage values are being retained. In some jurisdictions, the effectiveness of heritage legislation has been reduced through reliance on planning and other legislation, which affords greater priority to facilitating development. Many historic heritage places, especially those in public ownership, have management measures in place to address threats, but there is a trend by state governments to override such measures to facilitate major infrastructure and other public-sector projects.



**Leadership:** The Australian Heritage Strategy provides a strong vision and clear set of target outcomes for the future of Australia's heritage. The lack of a ministerial council with responsibility for heritage is regrettable, as there is no national coordination mechanism for leadership in heritage management. The Heritage Chairs and Officials of Australia and New Zealand provides a national structure to coordinate management of historic heritage resources and share information. However, continuing resource reductions threaten both Australian Government leadership and the prospects for effective implementation of the Australian Heritage Strategy.



**Celebration:** The Australian Heritage Strategy strongly supports the celebration of Australia's heritage. Historic heritage places are usually accessible, increasingly presented to visitors in engaging ways, and recognised as important elements in community identity and sense of place.



## Assessment summary 3 (continued)

<b>Recent trends</b> Improving Deteriorating Stable Unclear	<b>Confidence</b> <b>Adequate:</b> Adequate high-quality evidence <b>and</b> high level of consensus <b>Somewhat adequate:</b> Adequate high-quality evidence <b>or</b> high level of consensus <b>Limited:</b> Limited evidence <b>or</b> limited consensus <b>Very limited:</b> Limited evidence <b>and</b> limited consensus <b>Low:</b> Evidence and consensus too low to make an assessment	<b>Comparability</b> <b>Comparable:</b> Grade and trend are comparable to the previous assessment <b>Somewhat comparable:</b> Grade and trend are somewhat comparable to the previous assessment <b>Not comparable:</b> Grade and trend are not comparable to the previous assessment <b>Not previously assessed</b>
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Management context (understanding of environmental issues; adequacy of regulatory control mechanisms and policy coverage)	
Elements of management effectiveness and assessment criteria	Grades
<b>Understanding of context</b> Decision-makers and environmental managers have a good understanding of: <ul style="list-style-type: none"> <li>• environmental and socio-economic significance of environmental values, including ecosystem functions and cultural importance</li> <li>• current and emerging threats to values.</li> </ul> Environmental considerations and information have a significant impact on national policy decisions across the broad range of government responsibilities	<b>Very effective:</b> Understanding of environmental and cultural systems, and factors affecting them is good for most management issues <b>Effective:</b> Understanding of environmental and cultural systems, and factors affecting them is generally good, but there is some variability across management issues <b>Partially effective:</b> Understanding of environmental and cultural systems, and factors affecting them is only fair for most management issues <b>Ineffective:</b> Understanding of environmental and cultural systems, and factors affecting them is poor for most management issues
<b>Planning</b> Policies and plans are in place that provide clarity on: <ul style="list-style-type: none"> <li>• objectives for management actions that address major pressures and risks to environmental values</li> <li>• roles and responsibilities for managing environmental issues</li> <li>• operational procedures, and a framework for integration and consistency of planning and management across sectors and jurisdictions</li> </ul>	<b>Very effective:</b> Effective legislation, policies and plans are in place for addressing all or most significant issues. Policies and plans clearly establish management objectives and operations targeted at major risks. Responsibility for managing issues is clearly and appropriately allocated <b>Effective:</b> Effective legislation, policies and plans are in place, and management responsibilities are allocated appropriately, for addressing many significant issues. Policies and plans clearly establish management objectives and priorities for addressing major risks, but may not specify implementation procedures <b>Partially effective:</b> Legislation, policies and planning systems are deficient, and/or there is lack of clarity about who has management responsibility, for several significant issues <b>Ineffective:</b> Legislation, policies and planning systems have not been developed to address significant issues

## Assessment summary 3 (continued)

### Management capacity

(adequacy of resources, appropriateness of governance arrangements and efficiency of management processes)

#### Inputs

Resources are available to implement plans and policies, including:

- financial resources
- human resources
- information

- **Very effective:** Financial and staffing resources are largely adequate to address management issues. Biophysical and socio-economic information is available to inform management decisions
- **Effective:** Financial and staffing resources are mostly adequate to address management issues, but may not be secure. Biophysical and socio-economic information is available to inform decisions, although there may be deficiencies in some areas
- **Partially effective:** Financial and staffing resources are unable to address management issues in some important areas. Biophysical and socio-economic information is available to inform management decisions, although there are significant deficiencies in some areas
- **Ineffective:** Financial and staffing resources are unable to address management issues in many areas. Biophysical and socio-economic information to support decisions is deficient in many areas

#### Processes

A governance system is in place that provides for:

- appropriate stakeholder engagement in decisions and implementation of management activities
- adaptive management for longer-term initiatives
- transparency and accountability

- **Very effective:** Well-designed management systems are being implemented for effective delivery of planned management actions, including clear governance arrangements, appropriate stakeholder engagement, active adaptive management and adequate reporting against goals
- **Effective:** Well-designed management systems are in place, but are not yet being fully implemented
- **Partially effective:** Management systems provide some guidance, but are not consistently delivering on implementation of management actions, stakeholder engagement, adaptive management or reporting
- **Ineffective:** Adequate management systems are not in place. Lack of consistency and integration of management activities across jurisdictions is a problem for many issues



## Assessment summary 3 (continued)

Achievements (delivery of expected products, services and impacts)	
Elements of management effectiveness and assessment criteria	Grades
<p><b>Outputs</b> Management objectives are being met with regard to:</p> <ul style="list-style-type: none"> <li>timely delivery of products and services</li> <li>reduction of current pressures and emerging risks to environmental values</li> </ul>	<p><b>Very effective:</b> Management responses are mostly progressing in accordance with planned programs and are achieving their desired objectives. Targeted threats are being demonstrably reduced</p> <p><b>Effective:</b> Management responses are mostly progressing in accordance with planned programs and are achieving their desired objectives. Targeted threats are understood, and measures are in place to manage them</p> <p><b>Partially effective:</b> Management responses are progressing and showing signs of achieving some objectives. Targeted threats are understood, and measures are being developed to manage them</p> <p><b>Ineffective:</b> Management responses are either not progressing in accordance with planned programs (significant delays or incomplete actions) or the actions undertaken are not achieving their objectives. Threats are not actively being addressed</p>
<p><b>Outcomes</b> Management objectives are being met with regard to improvements to resilience of environmental values</p>	<p><b>Very effective:</b> Resilience of environmental values is being maintained or improving. Values are considered secured against known threats</p> <p><b>Effective:</b> Resilience of environmental values is improving, but threats remain as significant factors affecting environmental systems</p> <p><b>Partially effective:</b> The expected impacts of management measures on improving resilience of environmental values are yet to be seen. Managed threats remain as significant factors influencing environmental systems</p> <p><b>Ineffective:</b> Resilience of environmental values is still low or continuing to decline. Unmitigated threats remain as significant factors influencing environmental systems</p>



# Resilience of Australia's heritage

## At a glance

The resilience of Australia's heritage can be considered in relation to both individual heritage places and the total heritage resource.

The ability of individual places or wider resources to withstand shocks depends on the nature of specific heritage values and their susceptibility to change. The resilience of the overall heritage resource is a function of what is protected through the reserved lands system or individual heritage lists and registers.

The current resilience of Australia's heritage cannot be readily assessed based on available information. However, there are opportunities to improve the resilience of Australia's heritage through better data gathering, regular maintenance, specific risk preparedness and disaster planning.

In this report, resilience is:

*... the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks.* (Walker et al. 2004)

In the case of heritage, both tangible and intangible attributes—such as fabric, function or use—may contribute to heritage values. Values are what distinguish heritage places from other places. Therefore, the resilience of heritage places may be understood as the ability to experience shocks while retaining heritage values.

Resilience is partly an aspect of the nature of the place itself, partly the nature of its value and partly a function of the way it is managed. For example, the resilience of a large natural landscape will be vastly different from the resilience of a small archaeological deposit. Physical change will affect heritage values in some places, whereas intangible qualities such as use or beliefs may be more important in other places.

Loss of knowledge may therefore have a greater adverse effect on heritage values than changes to the physical aspects of a place. The resilience of Australian heritage—although influenced by drivers such as population growth and economic development—is also strongly affected by governance arrangements, resources and community attitudes.

Heritage resilience may be considered and managed at different levels. For example, individual heritage places may be very susceptible to shocks such as fire, flood, demolition or loss of traditional knowledge. However, the total natural or cultural resource base may be sufficiently robust to withstand the loss of individual places without substantive overall loss of value to the total heritage resource.

## Factors affecting resilience capacity

A major systemic threat to Australia's heritage is its relative priority in planning, land use and development decision-making. Heritage is often determined to be expendable in the name of a greater community or economic good. The perceived value of heritage directly influences the priority it is afforded and the resources allocated for heritage conservation.

The resilience of Australia's natural heritage (as opposed to the resilience of the natural environment) is particularly a function of the underlying spectrum of geodiversity and biodiversity represented in heritage lists and reserved lands. In addition, the resources allocated to risk management activities, which range from fire reduction to control of invasive species, also contribute to natural area resilience.

Understanding and identifying the physical extent, and tangible and intangible values of Indigenous heritage is a critical component of its resilience. Involvement of associated communities on Country increases resilience capacity—for both the place itself and the Indigenous community—because safeguarding and transmission of traditional knowledge influence the value of places and the wellbeing of communities.

Historic places are highly susceptible to shocks, but can be better prepared by ensuring that they have an ongoing, relevant and viable use, and by managing them proactively, including collecting data, having good conservation standards, performing regular maintenance and planning for disasters.

## Approaches to resilience

The concept of resilience has not been widely applied in Australian heritage management (see 'Resilience' in the SoE 2011 'Heritage' chapter; SoE Committee 2011). However, a range of approaches to both natural and cultural heritage do consider the notion of managing change. In national parks and reserved lands, adaptive management recognises that places are altered by both natural and human pressures, and seeks to respond in a manner that recognises changes, but does not alter the fundamental integrity of the place. Environmental impact assessments and heritage impact assessments also try to evaluate the impact of specific development proposals, and often conclude that there is an acceptable level of impact. In the cultural environment, assessing impacts on heritage has become a common technique for evaluating and managing change, the test usually being whether a proposal unacceptably affects heritage values.

## Evidence of past resilience

The resilience of heritage places depends on the nature of their values and the extent of the total resource. Australian bioregions that are well represented in the reserved lands system are much more resilient as a whole than under-represented bioregions. Ecosystems and species that are fire dependent will be more resilient to an increase in fire frequency brought about by climate change; conversely, species that are highly dependent on ecological niches may be at risk and susceptible.

Indigenous places may be both fragile and resilient, depending on the circumstance. Indigenous heritage places have been progressively damaged and destroyed through a repetitive process of one-off decisions. Indigenous places whose value is in physical form are not resilient to damage or destruction. However, some Indigenous places with intangible value have demonstrated an ability to recover through re-engagement of traditional owners, transmission of stories and re-establishment of traditions (Box HER43).

The values of historic sites often vest (at least in part) in the fabric of the place, which, if damaged or destroyed, may be gone forever. Historic places may be made resilient through actions such as maintenance, repairs or archival recording, but have limited intrinsic ability to recover from damaging events. Examples of recovery of heritage value following major physical destruction are rare, but do exist (see Box HER44). In such cases, interpretation of information or historical association can create resilience by allowing some values to be recovered.

The resilience of Australia's historic heritage may also be evaluated by considering whether a sufficiently representative set of site types has been identified and protected. Although such an approach can never replace the specific characteristics or value of an individual site that is damaged or destroyed, multiple listing and protection of a representative set of similar site types is prudent.

### Box HER43 Resilience and reconnection with Country—The Gully, Greater Blue Mountains

There is a strong continuing connection between the people of the 6 Aboriginal language groups of the Greater Blue Mountains—Darkinjung, Darug, Gundungurra, Dharawal, Wanaruah and Wiradjuri—and the places they call Country. These Aboriginal communities are resilient, vibrant and involved, having continued, adapted or re-established their connections with Country.

Some Indigenous people in the Greater Blue Mountains were displaced during the 19th century, but have subsequently returned to their ancestral places. The Gully in Katoomba was a fringe camp established on the upper slopes of the Kedumba Valley. Before 1788, this area was used as a meeting and camping place. Gundungurra and Darug people re-established settlement here around 1894, when it was outside the jurisdiction of

the Aboriginal Protection Board. However, the residents of the area were subjected to forcible eviction in 1957—an event that reminds us of the ongoing impact of European settlement on culture and Aboriginal people, even into the second half of the 20th century.

Traditional owners have returned and re-established connection with The Gully, which is now managed for its cultural values. It has recently been the venue for a Living Country Culture Camp and a gathering of global Indigenous people held in conjunction with the World Parks Congress in 2014.

The Gully is now recognised—both culturally and legally—as an Aboriginal Place (NSW OEH 2016b).



Indigenous people's gathering at The Gully—World Parks Congress 2014

Photo by Richard Mackay



## Box HER44 Mount Stromlo director's residence—stabilisation and interpretation

Natural disasters can be devastating to heritage places, and the 2003 Canberra bushfires were no exception. Most of the Commonwealth Heritage-listed Mount Stromlo Observatory site was razed by the fires. The site owner, the Australian National University (ANU), was left with few surviving buildings and a haphazard collection of masonry shells.

The iconic director's residence (completed in 1928) was one of the many built casualties of the fire. The 2-storey structure was deemed unstable and unsafe, and was surrounded by a fence for more than 10 years.

Although the building's heritage values were still apparent, its inaccessibility, lack of interpretation and condition meant that these values had been diminished, and were at further risk with continued deterioration of the structure.

During Canberra's centenary year (2013), the ANU was fortunate to receive a generous Australian Government heritage grant, which was matched by the ANU. The project saw the building decontaminated, stabilised, weatherproofed and made accessible to the public for the first time in its almost 90-year history.

The residence's fabric became its most powerful interpretive tool, with a stark contrast between the restored exterior and the untouched interior. The interior bears scars of the fires while clearly displaying the structural stabilisation measures. State-of-the-art interpretation, including oral history soundscapes and large-scale projections, were installed within the building, and an interpreted landscape setting was established outside. It is now a feature of the Mt Stromlo Heritage Trail (ANU 2016).

Although the building has only been partially restored, this project was able to recover and safeguard some of the heritage values of the residence, and enhance the public appreciation of, and connection to, this important site. In 2015, the project received an ACT National Trust Heritage Award for its significant contribution to heritage conservation (National Trust 2015).

Source: Amy Jarvis, Australian National University Heritage Officer



Mount Stromlo director's residence following the 2003 Canberra fires

Photo by Tim Borough, courtesy of Mount Stromlo Archives



Mount Stromlo director's residence interior details and display, 2015

Photo by Stuart Hay, courtesy of Mount Stromlo Archives

## Preparedness for future pressures

The drivers and pressures that threaten Australia's heritage do so in different ways, leading to different opportunities to prepare for future pressures or shocks.

Natural heritage is particularly susceptible to pressures that arise from climate change, including altered fire regimes, shifting ecosystems and traumatic natural disasters. Development pressures arising from population growth and changing land use also threaten natural areas and resources. Risk preparedness for natural heritage requires adequate protection for significant sites; a complete, representative reserved lands system; and management of identified pressures (see Box HER45).

Maintenance is crucial to building resilience for both Indigenous and historic cultural heritage places. Access to, and ongoing use of, cultural places is also an important resilience-building factor (Mackay 2014).

Development activity and changes in land use continue to exert pressure on Indigenous heritage, threatening both physical sites and traditional practice. Therefore, a key to risk preparedness is knowledge management, which requires the initial identification of significant Indigenous places and then appropriate guardianship and transmission of the associated traditional knowledge. There is also evidence to suggest that, for some Indigenous communities, understanding of threats posed by pressures such as climate change can directly influence both the vulnerability and the resilience of cultural heritage (McIntyre-Tamwoy et al. 2013).

Management arrangements for historic places directly influence risk preparedness. Historic places are particularly threatened by economic pressures, especially resource extraction and other intensive development. A resilient historic heritage resource would include listing and protection of multiple similar places so that damage to, or demolition of, one place does not affect the resource disproportionately. These actions could allow well-informed, values-based development-consent decisions to be made.

### Box HER45 Macquarie Island pest-eradication project—recovery of significance at a natural heritage place

Between 2006 and 2014, the Tasmanian Parks and Wildlife Service, in collaboration with the Australian Government, successfully undertook one of the world's most extensive rabbit and rodent eradication programs on Macquarie Island (Tasmanian PWS 2016b).

Macquarie Island is included on the World Heritage and National Heritage lists for its unique natural diversity. Introduced rabbits, black rats and house mice have caused devastating impacts on the island's natural wildlife and ecology, through overgrazing, preying on seabird chicks, changing nutrient levels and increasing erosion.

The overall goal of the pest-eradication project was to eradicate rabbits, rats and mice from Macquarie Island, thereby enabling restoration of the island's natural ecological processes, including the recovery of plant and animal communities affected by these feral species.

The project, which cost about \$25 million, was undertaken in accordance with a management plan, approved by the Australian Government Minister for the Environment. The nature of the site and challenge made the logistical and operational components of the project extremely challenging, and the project took approximately 8 years to complete. Key elements included:

- introducing rabbit calicivirus (which is estimated to have killed more than 80 per cent of the rabbit population)
- aerial baiting of rabbits, rats and mice
- ground activities, which comprised shooting (including spotlighting), fumigating burrows, using specially trained hunting dogs and trapping
- collecting poisoned carcasses
- monitoring of the inevitable incidental mortality of nontarget seabirds.

### Box HER45 (continued)

The project has eradicated rabbits and rodents on the island, allowed vegetation communities to recover, increased populations of native birds (especially burrowing petrels) and invertebrates, and improved biosecurity measures for Macquarie Island. The project has also developed pest-eradication techniques that, potentially, will benefit similar projects worldwide (Tasmanian PWS 2016b).

The project is a good example of natural heritage resilience and the ability of an ecosystem to respond to management intervention in a way that recovers the integrity of natural heritage values. (See also Box ANT1 of the *Antarctic environment* report)



Vegetation monitoring photo sequence at Sandy Bay boardwalk—healthy vegetation cover was present in 1990 following 20 years of effective rabbit control using myxoma virus

Photo by Jenny Scott and Tasmanian Parks and Wildlife Service



Vegetation monitoring photo sequence at Sandy Bay boardwalk—by 2010, the grazing impact of rabbits is evident by the denuded tussock cover replaced with lichen and algae. High rabbit numbers resulted from developed resistance to, and cessation of control by, myxomatosis. The differential impact of rabbit grazing on vegetation can also be seen in the small rabbit enclosure

Photo by Dave Dowie and Tasmanian Parks and Wildlife Service



Vegetation monitoring photo sequence at Sandy Bay boardwalk—2014 sees tussock regrowth following the eradication program

Photo by Jenny Scott and Tasmanian Parks and Wildlife Service





# Risks to heritage

## At a glance

Australia's heritage continues to be under-resourced, and at risk from both natural and human factors.

Some risks, such as catastrophic fire or extreme weather events, may not be easily mitigated, and instead may require post-event response. Events such as the removal of statutory protection or large-scale resource extraction from reserved lands could have catastrophic impact, but would arise from deliberate decisions and are unlikely. However, major risks arise from the effects of climate change, such as damage from extreme weather events, more frequent fires, loss of habitat or increases in invasive species. Indigenous cultural heritage continues to be at risk from some loss of traditional knowledge and incremental destruction, because development approval affords priority to site-specific heritage impact, rather than cumulative incremental impact. Resourcing is also a major risk factor, including lack of data to inform decision-making, limited funding, lack of incentives, neglect arising from rural population decline, or the loss of specialist heritage trade skills. Development and resource extraction projects continue to threaten the nation's heritage at both a landscape and individual site scale. Development impacts are at risk of being exacerbated by inadequate pre-existing survey, assessment and statutory protection.

The commitment to national leadership in the Australian Heritage Strategy should reduce the overall risk to Australia's heritage. However, continuing reduction in the public-sector resources allocated for heritage presents a growing risk to long-term conservation of heritage values.

Understanding the risks to both natural and cultural heritage is fundamental to both risk preparedness (Australia ICOMOS 2016b) and well-informed decision-making, including resource allocation.

Australia's heritage is a complex network of interrelated places with both tangible and intangible values. The risk of irreversible harm occurring to a heritage place is affected by the nature of the place and its heritage values. Some types of place and some values are well represented in reserved lands and statutory lists, so their values are generally more resilient to pressures. Other places are unique and irreplaceable. Sometimes the risk to the values of a place arises from threats to its setting, or to intangible factors such as traditional knowledge or significant use.

Some risks, such as catastrophic fire or extreme weather events, cannot readily be mitigated, other than by post-event response and pre-event recording of values, and more generally by ensuring that multiple places with similar values are identified and protected. However, other risks, such as invasive species, inappropriate land uses or loss of heritage trade skills, can be minimised and managed proactively through programs that respond directly to the nature of the risk. Risks such as the emerging trend to replace historic building stock with new buildings that are perceived as 'green' (and therefore more environmentally friendly) can be addressed by well-considered policy or statutory change. Some risks, such as development and resource extraction, are related directly to wider economic conditions; reduced development generally lessens the risk posed to heritage, but paradoxically means that there may be less wealth in the economy—which may in turn lead to reduced resources for heritage conservation and management. The end of the resources boom has had precisely this effect—there was less direct threat to heritage places from large-scale mining activity, but fewer survey and assessment projects, coupled with declining heritage agency budgets.



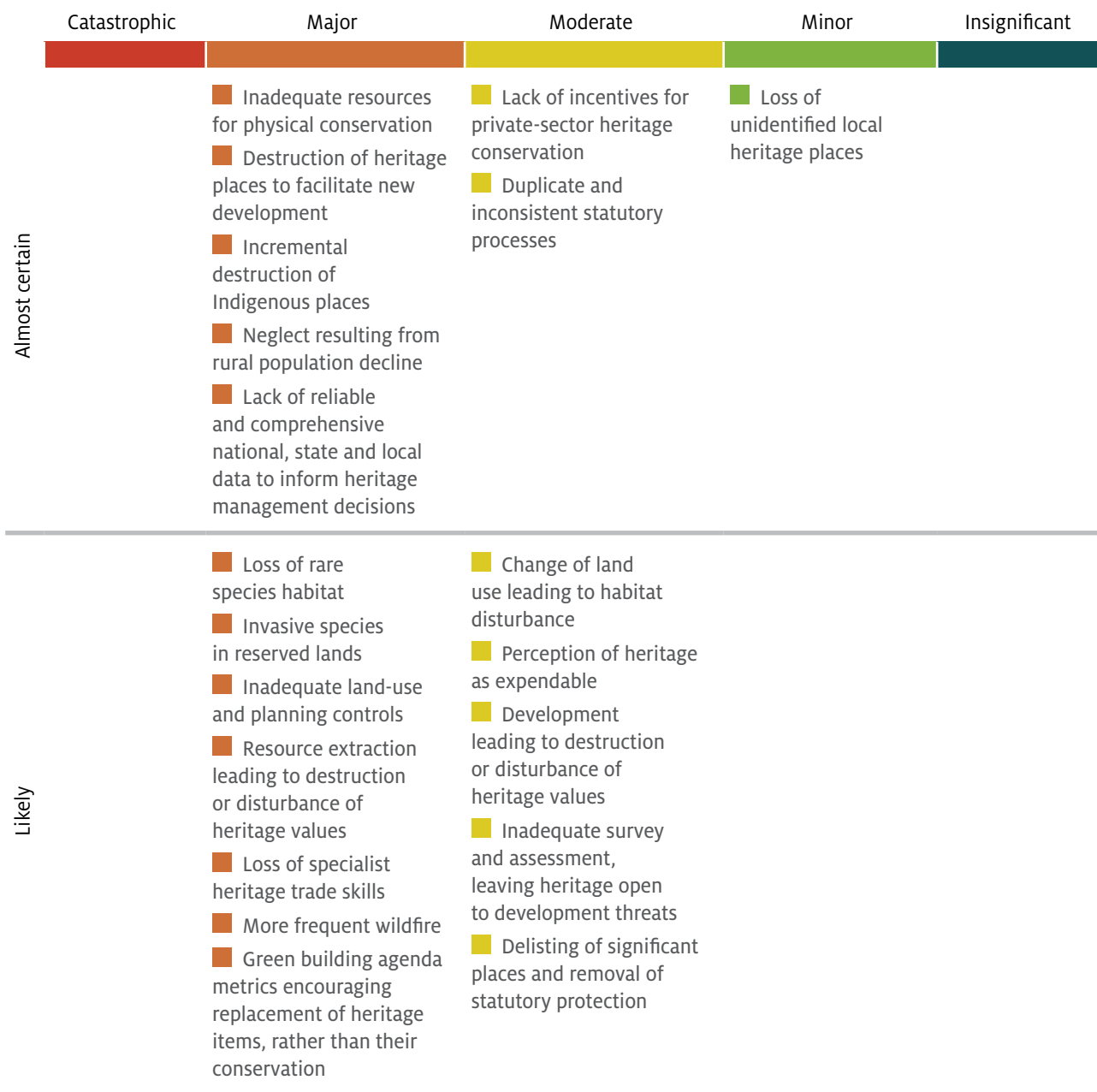
The national leadership shown in the preparation and launch of the Australian Heritage Strategy has the potential to reduce the overall risk to Australia's heritage, depending on the commitment to its implementation. Although the strategy particularly mentions and emphasises iconic places of national significance, its outcomes and programs are more widely directed at the totality of Australia's heritage. The success of the strategy will depend on the commitment of governments at all levels and the resources allocated for implementation of the strategy actions, at a time when there has been a period of reduction in the public-sector resources allocated for heritage and ongoing inadequate incentives for private owners of listed heritage places.

In the following assessment summary, risk is assessed on the basis that mitigative management responses have occurred—that is, risk evaluation assumes that management responses to the pressures and threats identified in this report are occurring. Therefore, if management responses (e.g. current statutory protection and impact assessment procedures, programs for managing fire or invasive species) were to change, then the likelihood and consequence of particular risks may similarly change. The following assessments are opinions, informed by the assessment summaries in this report; as the assessments are based on variable datasets with differing degrees of confidence, the risk assessments are also varied and open to alternative points of view.

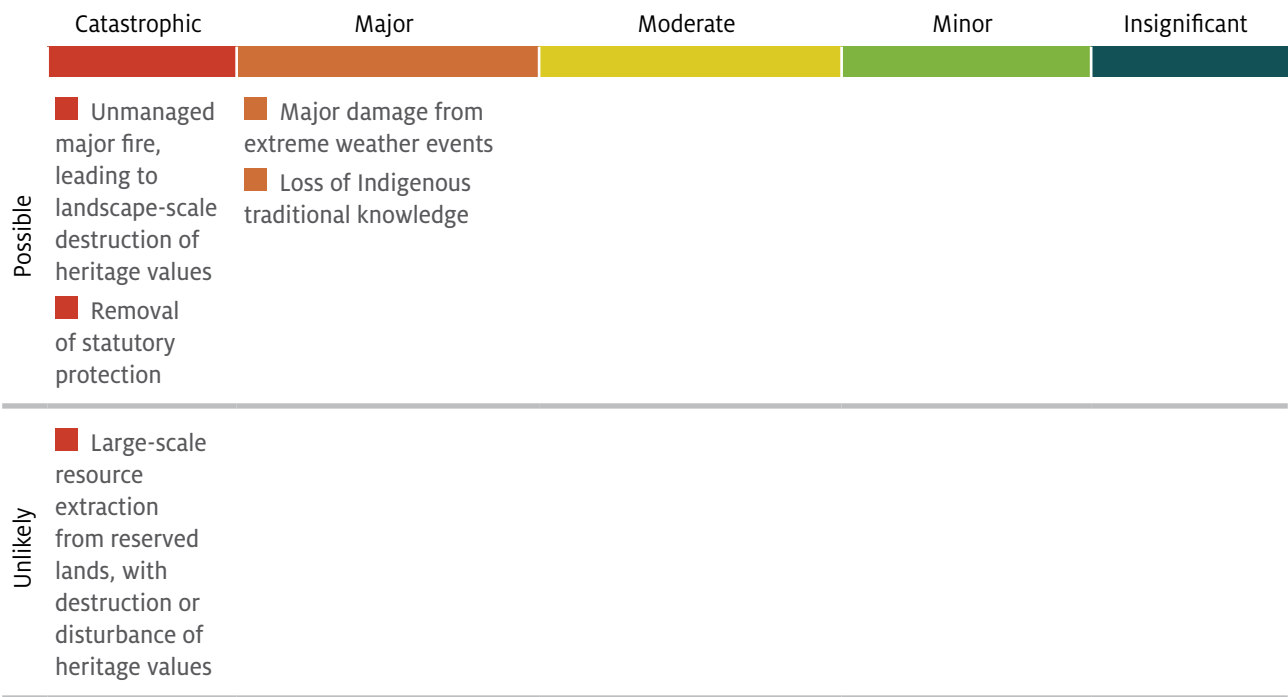
Catastrophic risks are those with the potential to destroy a class or collection of places on a large scale. Risks that would adversely affect the heritage values of a number of places or destroy individual places of great significance are considered major, whereas more localised risks—typically specific to individual heritage places—are characterised as moderate. Only those risks that apply to unidentified places of local significance are minor. No risk to Australia's heritage is insignificant.

## Assessment summary 4

### Current and emerging risks to Australia's heritage



## Assessment summary 4 (continued)





# Outlook for heritage

## At a glance

If our heritage includes those places that we have ‘inherited’ and want to pass on to future generations, then the notion of ‘outlook’ is an essential element of heritage. The outlook for Australia’s heritage will depend on the manner in which the Australian Heritage Strategy is embraced, resourced and implemented, not only by the Australian Government, but particularly by the other partners on which the success of the strategy relies.

The Australian Heritage Strategy, which was launched in December 2015, establishes a new outlook for heritage conservation and management in Australia. Responding to many of the issues raised in *Australia: state of the environment 2011*, the strategy positions the Australian Government to lead major change and foster innovative approaches in partnership with the states, territories, private owners and community groups.

Since 2011, several factors have significantly influenced the context for Australia’s heritage. There has been a growing understanding and acceptance that climate change poses a major threat to both natural and cultural heritage places. Indigenous involvement in land and sea management has expanded, although the fragmented jurisdictional approach to Indigenous heritage remains. There have been some significant investments through the National Environmental Research Program (and subsequent National Environmental Science Programme), Protecting National Historic Sites, Your Community Heritage, Community Heritage and Icons, and other Australian Government and state and territory programs. However, overall, the public-sector resources allocated for heritage management have remained steady or declined. Limited resources have been available to assess the state and condition of Australia’s heritage through the state of the environment process. The Australian Heritage Strategy acknowledges the importance of additional funding sources, and offers some truly innovative approaches, such as a promise to explore a heritage lottery.

The systems used to manage Australian heritage continue to be cumbersome: land reserves, inventories and statutes. These structures do not yet adequately identify, protect, manage, resource or celebrate the integrated nature of our nation’s cultural landscape. Our heritage remains at risk from the impacts of climate change, the threats arising from development and the resource implications of population growth.

The National Reserve System continues to improve, particularly through the addition of substantial Indigenous Protected Areas, but it is not yet comprehensive, nor adequately representative. Declining funding for parks agencies, relative to the increasing extent of the National Reserve System, increases the risk of less effective management in the future. Statutory listing of natural heritage places and reservation of an appropriate set of landholdings are hampered by factors such as conflicting perceptions of value. Climate change poses major risks to natural heritage, which also continues to be threatened by inappropriate land use, development pressures, wildfires, loss of habitat and invasive species. The ultimate impact of these pressures will depend on the ability of scientists and managers to work together, and on commitment to well-resourced, proactive management rather than belated reaction to crises. Adverse effects can be minimised through thorough understanding of natural heritage resources, recognition of the benefits of public-private partnerships and a whole-of-landscape approach, which fosters ecological connectivity.

Australia’s Indigenous heritage remains inadequately documented and protected, and incremental destruction continues. The continued inclusion of additional Indigenous heritage places within protected reserved lands is therefore particularly important, as is increasing involvement of Indigenous people in sustainable land and sea management. Although declining Indigenous language is a cause for concern (insofar as language is



### At a glance (continued)

an indicator of traditional culture), there are noteworthy improvements in knowledge and practices, which support Indigenous cultural traditions and connections to Country.

Many Australian historic heritage places remain in good condition. However, despite some focus on improving the calibre of statutory lists and registers, they remain inconsistent and incomplete. Historic heritage conservation could be better supported by planning and assessment systems, and continues to be threatened by development, often because heritage is identified during impact assessment processes, rather than proactively. There has been little progress in providing improved incentives for private owners of heritage places.

The Australian Heritage Strategy strongly emphasises the need for effective communication and commitment to best practice, through partnership with professional and community groups, such as Australia ICOMOS, the Australian Committee for IUCN, and the National Trust of Australia.

There is strong national leadership expressed in the Australian Heritage Strategy, but the commitments to implement that strategy are not yet commensurate with the asserted value of Australian heritage that ‘underpins our sense of place and national identity, and makes a positive contribution to the nation’s wellbeing’ (Australian Government 2015a:7).



Kingston and Arthurs Vale Historic Area, Norfolk Island—1 of the 11 places that comprise the World Heritage-listed and National Heritage-listed Australian Convict Sites. Heritage places are important to the sense of identity of many Australian communities

Photo by Richard Mackay, courtesy GML Heritage Pty Ltd

## Likely trends in key factors

The vision of the Australian Heritage Strategy is that:

*Our natural, historic and Indigenous heritage places are valued by Australians, protected for future generations and cared for by the community.* (Australian Government 2015a:3)

This vision is to be achieved through a structured program of high-level objectives, framed by national leadership, strong partnerships and engaged communities. The approach and vision of the Australian Heritage Strategy are clear, as is the intent to rely on partnerships with government, professional and community groups at all levels.

Australia's heritage includes a diverse array of places, with a wide spectrum of natural and cultural heritage values. Different places and values vary in their resilience and response to current and future pressures, giving rise to a range of potential outlooks. Some factors, such as the legacy of former land clearance, species extinction or destruction of historic sites, are now beyond the scope of management responses. Other factors can be managed. The future condition and integrity of Australia's heritage will therefore depend on how governments, heritage place owners and communities adaptively manage heritage places with limited resources, in response to continuing pressures and emerging threats, using both traditional and scientific knowledge.

The Australian Government has been proactive in heritage management in the past 5 years. In addition to the preparation of the Australian Heritage Strategy, the Australian Government has played an active role in World Heritage, partly through actions to address international concern about the Great Barrier Reef, but also by continuing to support the improved implementation of the World Heritage operational guidelines and a commitment to review the Australian World Heritage Tentative List. There have been significant allocations of project and program funding for World Heritage and National Heritage properties. Against this must be balanced the declining core staff resources, an overall reduction in grant funding and the relatively narrow focus of some programs, such as Protecting National Sites of Historic Significance. Although there have been some large and complex places included on the National Heritage List, the resources available for new assessments continue to decline overall across

national, state and territory jurisdictions. There are opportunities for future focus on World Heritage and National Heritage sites through programs such as the National Environmental Science Programme. Several Australian Government agencies are yet to establish compliant and appropriate management arrangements for Commonwealth Heritage places. Greater resources and better data will be needed in the future if there is to be any improvement in the calibre and reliability of national assessments provided through the SoE reporting process.

The Australian Heritage Strategy presents an improved trajectory for Australian heritage, structured around programs and promises 'to explore' opportunities. The future will depend on sustained national leadership and the success of the Australian Government in involving other partners. The likely trend for Australia's heritage will depend on whether policy-makers and legislators, stakeholders and the broader community become engaged and invest in implementing the strategy.

## Climate change

Responding to the impacts of climate change is a major issue for heritage for the current generation. Climate change is causing rising temperatures; alteration to rainfall; and greater frequency and intensity of storms, wind, run-off, floods, droughts, bushfires and heatwaves. The consequences of climate change affect biological processes, increasing the risk from invasive species and loss of habitat. Altered rainfall, higher sea and land surface temperatures, more severe storm events, altered fire regimes, ocean acidification and rising sea levels can all affect the values of natural and cultural heritage places. Some significant heritage places have already been directly affected. The ability of natural areas to retain heritage values in the face of these changes will depend on adaptive management responses that avoid, minimise or repair environmental damage; assist in habitat migration; and manage or prevent the arrival of new species that may have negative effects.

Climate change also affects cultural sites such as Indigenous middens, sea cave deposits, archaeological sites and rock art, which depend on underlying landforms. Natural and cultural effects can be interconnected—for example, changes in species distribution wrought by climate change effects can affect cultural traditions, such as food gathering.

Other cultural values, such as the condition and integrity of historic heritage, may also be affected by weather events or environmental changes. Without management intervention, altered fire regimes are particularly likely to lead to additional impacts on both biodiversity and cultural values.

Many major natural sites, such as the Great Barrier Reef, are threatened by climate change impacts. Substantial programs to address these impacts are in place and are appropriate, but there is a danger that focus on climate change impacts at iconic places may leave other significant, but less prominent, heritage places relatively under-resourced and exposed to long-term climate change threats.

## Population growth

Pressures on natural and cultural heritage arise from both population changes and from the uneven distribution of people around the country.

In the more intensively developed coastal and urban areas, residential and commercial intensification presents heritage with development threats related to potential land use. In areas with more buoyant, development-focused economies, the identification of natural and cultural heritage resources, and their incorporation into planning schemes and development-consent conditions offers the optimal outcome for retention of heritage values. It is particularly desirable that the reasonable expectations of property owners or potential developers are managed by identifying heritage issues proactively, rather than reactively. Knowledge of the heritage resource through systematic and comprehensive survey and assessment is an essential precursor to values-based heritage conservation and management.

Population decline in rural areas, arising from changed land uses and developing technologies, has a compounding negative effect. The demand for services decreases, and historic assets can become redundant. At the same time, the community has fewer resources to conserve heritage places. The outlook for rural heritage may therefore depend on more flexible approaches, which allow greater change, more viable heritage outcomes or even acceptance that, ultimately, some heritage places are best managed as ruins.

Recognition that there is value in the 'inheritance' of nature and culture may also influence heritage outcomes. The current community interest in 'sustainability' is obviously praiseworthy. Environmental ratings tools and measures of sustainability remain focused on renewable and/or recycled resources, and efficient energy performance, but recognition of the sustainable value of embodied energy and the intergenerational transmission of cultural values is growing.

Public-sector resourcing for heritage is directly affected by community perception of its value. Community perceptions are manifest in the way that heritage places are treated. In remote and rural areas, for example, historic sites may be damaged through vandalism or neglect. Indigenous places may be affected by deliberate acts of damage or culturally inappropriate behaviour. Natural areas can be degraded through community actions, such as dumping of invasive weeds, inappropriate use of vehicles, shooting or resource extraction. Management of these community impacts will depend on effective communication and values, as well as on regulation and enforcement.

The outlook for Australia's heritage may therefore rely on how well heritage is understood, appreciated and celebrated, both by the broad community and by those who make decisions about development consent, zoning and land use, statutory listing and grant funding. The Australian Heritage Strategy recognises that:

*Interpretation, celebration and commemoration of our heritage places provides opportunities for communities to recognise, understand and be part of Australia's stories. (Australian Government 2015a:7)*

## Economic growth

Economic growth presents threats to heritage through new development and resource extraction. Contemporary technology involved in these processes enables physical change on a scale that could not have been imagined by previous generations. In densely developed areas, there is increased pressure for greater urban density, including replacing significant heritage-listed buildings with new buildings. Extractive industries continue to pose threats to entire landscapes, which may be removed or highly modified to allow access to mineral resources. Change on this scale directly affects natural heritage values and often affects cultural heritage, particularly where Country and associated traditional practices are significant, rather than individual sites.

The declining resources boom in Australia has diminished the direct physical threats to sites and landscapes that hold extensive valuable mineral resources, but has also led to wider economic consequences and reduced resources, particularly in the public sector. Because heritage is seen by government as a 'discretionary' spend, the impact on public heritage programs may be proportionately greater. There are also fewer opportunities for funded site survey and assessment, reduced cultural programs undertaken as mitigation and fewer employment opportunities, particularly for remote Indigenous communities.

Natural and cultural tourism are increasingly recognised for their important contribution to the Australian economy. For example, the Australian Heritage Strategy notes that many Australian heritage places attract domestic and international tourists, and that the economic impact of iconic World Heritage places amounts to billions of dollars (Australian Government 2015a). As natural and cultural tourism continue to grow, it is important that the direct impact of increased visitation is managed, and that some of the resources generated by this tourism are reinvested in conservation and management.

Development potentially threatens all aspects of heritage. This is particularly so because of the reactive nature of the impact assessment system in Australian jurisdictions. Where heritage resources have not been previously included in reserved lands or statutory lists, they may be identified during the planning and assessment process for projects that have already been announced. This invariably results in heritage being conceptualised as a 'problem' and consciously damaged or destroyed, albeit in conjunction with some form of mitigating action. Issues may also arise in urban areas where underlying land values and development potential create conflict with heritage values. Early consideration of all types of heritage place within land zoning, planning and development processes has the potential to reduce such conflict, and thereby increase both heritage and economic value.

However, development may also provide opportunities for heritage conservation. Effective strategic planning, appropriate incentives and removal of obstacles to achieving good heritage outcomes are all important. Although heritage protection mechanisms remain reliant on proactive identification of heritage places,

the long-term impact of development will depend on the importance placed by all levels of governments on the allocation of resources to dedicate appropriate representative areas of reserved lands, and to undertake comprehensive surveys and prepare comprehensive statutory heritage lists. Development pressures may also be reduced if industry and private owners of heritage places are provided with better conservation incentives.

## Natural heritage

Australia's natural heritage includes lands that are reserved in parks and other places, both listed and unlisted. Although continued addition to the National Reserve System (particularly to under-represented bioregions) is important, broader considerations such as identification and protection of geological sites, ecosystem connectivity and a national whole-of-landscape approach to natural heritage protection can help to build long-term resilience. Environmental conditions across the continent are highly variable, so it is important that selection of places for listing or reservation considers individual place values as well as wider landscapes and interconnected ecosystems. Major barriers to a comprehensive National Reserve System include the potential economic value of desirable land, and the fact that some ecosystems are only represented by scarce remnants. Although Australia now has more than 17 per cent of terrestrial lands and 36 per cent of marine areas reserved, the National Reserve System target of 10 per cent per bioregion is yet to be achieved.

Habitat loss and invasive species continue to threaten natural heritage values. The outlook for habitats depends on both adaptive management and thoughtful intervention—the latter is highly dependent on proactive research and cooperation between scientists and managers. Many invasive species, such as mimosa, carp and cane toads, have now invaded well beyond the threshold for feasible eradication and can only be managed. Others, like the Macquarie Island rodents, have responded well to well-resourced eradication programs. The challenges presented by invasive species are being addressed through the [Intergovernmental Agreement on Biosecurity](#) and allocation of additional resources, which are particularly focused on managing risks to agriculture.





Walls of China, Mungo National Park, Willandra Lakes World Heritage Area. Natural and cultural values, pressures and issues are interrelated  
Photo by Richard Mackay

The National Environmental Research Program and its successor, the National Environmental Science Programme (NESP), both include substantial applied science projects with direct application to natural heritage. The broad program areas covered include important issues such as threatened coastal environments, arid lands and invasive species. Although approximately 27 per cent of currently funded NESP projects support relevant applied research work in the Great Barrier Reef and Kakadu National Park, there are opportunities to afford future priority to a broader range of applied heritage research.

## Indigenous heritage

SoE 2011 (SoE Committee 2011) recognised that the connection between people and Country is a fundamental aspect of Indigenous cultural heritage. Adequate knowledge of tangible individual sites and landscapes, and intangible traditional knowledge, cultural practices and ongoing use of heritage places by Indigenous people help to retain identity and sense

of place, and build self-esteem within Indigenous communities (Productivity Commission 2010).

Involving Indigenous people in the management of their heritage may take many forms. For archaeological sites, such involvement may include consultation or more—and more proactive—engagement and community-based cultural heritage management. In some jurisdictions, traditional owners are accorded decision-making powers or influential advisory roles. There are increasing examples of productive, collaborative and empowering approaches to Indigenous heritage management in recent years (Myles et al. 2013).

The outlook for Indigenous heritage depends on the processes that are available to document physical sites and transmit traditional knowledge within Indigenous communities. Since SoE 2011, there have been some significant improvements, including dedication of an additional 42 IPAs, covering more than 35 million additional hectares (DoEE n.d.[j]), and creating employment opportunities and cultural connections for additional Indigenous rangers. Australia hosted a [World Indigenous Network gathering](#) in 2013. There have been

more Indigenous places added to the National Heritage List and protected through land reservation or statutory listing. Blanket provisions in some state and territory statutes provide important protection for unidentified or unknown Indigenous heritage places. A net loss of Indigenous language in the past 5 years is a significant concern and adverse trend, but traditional knowledge, and land and sea management are increasing.

Indigenous heritage remains at risk from incremental destruction. This arises in part from a lack of formally protected sites, but also from reactive statutory assessment and development-consent systems, and a pattern of conscious lawful destruction arising from informed development consent. Indigenous communities continue to express concern about this issue generally, and through opposition to specific development projects. The Australian Government has not convened a national forum of Indigenous heritage managers, and does not directly propose to do so as part of the Australian Heritage Strategy. The strategy does, however, recognise the need for a ‘consistent approach to the recognition, protection and management of Indigenous heritage sites across all levels of government and other organisations’. The strategy proposes the publication and promotion of a new edition of *Ask first: a guide to respecting Indigenous heritage places and values* (Australian Government 2015a; Objective 9).

## Historic heritage

The major mechanism for managing historic heritage in Australia is through statutory lists and registers, which are neither cohesive nor comprehensive. Many heritage places in Australia are not heritage listed, but they continue to be well managed and cared for by their owners and managers. This augments and complements formal statutory places and reinforces the importance that Australians place on heritage.

The Australian Heritage Strategy recognises that the National Heritage List and the Commonwealth Heritage List both require additional resources—for listing and for associated management and monitoring. Other heritage lists, including state and territory registers, and local schedules and overlays, include more places, but may still not necessarily reflect the extent of historic heritage that is valued by the community. Several jurisdictions are focusing on improving the coverage and integrity of their heritage registers. Meanwhile, incomplete statutory

registers may result in undesirable outcomes, including a reactive approach when major developments occur, and inconsistency between local, state and national governments.

Planning provisions, and building codes and standards that affect historic heritage management could be improved. The Australian Heritage Strategy focuses on partnership-based programs, new funding sources and improved best-practice guidelines for existing listed historic heritage. The need remains for more thorough systematic assessment, because, in the long term, comprehensive heritage registers can lead to better decision-making and incorporation of heritage values into strategic planning processes, and improved heritage conservation outcomes. Nevertheless, the outlook for heritage can be greatly improved through development, communication and implementation of consistent best-practice standards and guidelines for heritage conservation and management, such as the practice notes that Australia ICOMOS has prepared on aspects of the Burra Charter and its application (Australia ICOMOS 2016a). There is also a continuing downward trend in the skills base and specialist expertise available in historic heritage, which would best be remedied through government intervention.

Historic heritage in Australia continues to face resourcing challenges, because the number of listed and unlisted places is high relative to our land area, our population and the consequent relative resources that are available to fund heritage conservation. Recognition of the contribution made by private owners through initiatives such as advisory services, development concessions, tax relief or advantageous land valuations would reinforce the community value of heritage, and might stimulate future private-sector conservation efforts. Although the Australian Heritage Strategy recognises the vital role of private owners in the conservation and management of heritage places (Australian Government 2015a), no direct incentives are proposed.

The outlook for historic heritage might also be considerably improved if government and industry committed to a process that acknowledged and rewarded conservation of embodied energy and transmission of cultural values of historic heritage places. This would be in addition to renewable and recycled building materials and energy efficiency, under the banner of ‘sustainability’.





The Glen Helen Meat House, Northern Territory, features unusual thatching, using local reeds. The loss of traditional heritage trades knowledge directly affects capacity for physical conservation of some historic heritage places

Photo by Richard Mackay

The Australian Heritage Strategy commits to exploring innovative additional funding sources (Australian Government 2015a; Objective 7), but, as already observed in SoE 2011 (SoE Committee 2011), further rethinking of the national approach to heritage may be warranted. This may involve greater flexibility about

the amount of change that may occur as ‘conservation’, different approaches that give heritage a life in the Australian community, or simply improved awareness programs that create wider community interest in our common heritage (Australian Government 2015a; Objective 10).



# Acronyms and abbreviations

Acronym or abbreviation	Definition
ATSIHP Act	<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ICOMOS	International Council on Monuments and Sites
IPA	Indigenous Protected Area
IUCN	International Union for Conservation of Nature
NERP	National Environmental Research Program
NESP	National Environmental Science Programme
NRSMPA	National Representative System of Marine Protected Areas
SoE	state of the environment
UNESCO	United Nations Educational, Scientific and Cultural Organization





# Glossary

Term	Definition
adaptation	Shifts (e.g. in behaviour, management practices, biology) in response to change that support survival; responses that decrease the negative effects of change and capitalise on opportunities.
adaptive management	A systematic process for continually improving policies and practices by learning from the outcome of previously used policies and practices.
anthropogenic	Caused by human factors or actions.
asset	Parts or features of the natural environment that provide environmental functions or services.
biodiversity	The variety of all life forms. There are three levels of biodiversity: <ul style="list-style-type: none"> <li>• species diversity—the variety of species</li> <li>• genetic diversity—the variety of genetic information contained in individual plants, animals and microorganisms</li> <li>• ecosystem diversity—the variety of habitats, ecological communities and ecological processes.</li> </ul>
bioregion	A large geographically distinct area that has a similar climate, geology, landform, and vegetation and animal communities.  The Australian land mass is divided into 89 bioregions under the Interim Biogeographic Regionalisation for Australia. Australia’s marine area is divided into 41 provincial bioregions under the Interim Marine and Coastal Regionalisation for Australia.
biosecurity	Processes, programs and structures to prevent entry by, or to protect people and animals from the adverse impacts of, invasive species and pathogens.
The Burra Charter	The Australia ICOMOS Charter for Places of Cultural Significance, which provides standards and guidelines for cultural heritage management; Australia ICOMOS Inc. is the national chapter of the International Council on Monuments and Sites.
Caring for our Country	The Australian Government’s central environment program since 2008, which funds environmental management, protection and restoration.
climate change	A change of climate attributed directly or indirectly to human activity that alters the composition of the global atmosphere and is additional to natural climate variability observed over comparable time periods (under the terms of the United Nations Framework Convention on Climate Change).

Term	Definition
community	A naturally occurring group of species inhabiting a particular area and interacting with each other, especially through food relationships, relatively independently of other communities. Also, a group of people associated with a particular place.
condition	The 'health' of a species or community, which includes factors such as the level of disturbance from a natural state, population size, genetic diversity, and interaction with invasive species and diseases.
connectivity	Linkages between habitat areas; the extent to which particular ecosystems are joined with others; the ease with which organisms can move across the landscape.
connectivity conservation	Conserving or re-establishing interconnected areas and corridors of vegetation to protect linked ecosystems and the species within them.
conservation	Protection and management of living species, communities, ecosystems or heritage places; protection of a site to allow ongoing ecosystem function or to retain natural or cultural significance (or both) and to maximise resilience to threatening processes.
coral bleaching	When the coral host expels its zooxanthellae (marine algae living in symbiosis with the coral) in response to increased water temperatures, often resulting in the death of the coral.
corridor	A linear landscape structure that links habitats and helps movement of, and genetic exchange among, organisms between these habitats.
decline	When the condition of an ecosystem, species or community has decreased to a point where its long-term viability is in question. It usually represents more than just a decrease in numbers of individuals, and describes the result of several interacting factors (e.g. decreasing numbers, decreasing quality or extent of habitat, increasing pressures). In this report, the use of the term is generally prompted by reports that a substantial number of species within a group or community are classified as threatened and there is a high likelihood that more species are likely to qualify for a threatened classification if trends continue. Where 'decline' is applied to elements of environments (e.g. condition of vegetation as habitat), it means that changes have been sufficient to potentially affect the viability of species relying on those elements.
disturbance	A temporary change in average environmental conditions that disrupts an ecosystem, community or population, causing short-term or long-term effects. Disturbances include naturally occurring events such as fires and floods, as well as anthropogenic disturbances such as land clearing and the introduction of invasive species.
drivers	Overarching causes that can drive change in the environment; this report identifies climate change, population growth and economic growth as the main drivers of environmental change.
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>	The Australian Government's main environmental legislation; it provides the legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places.
feedback	Where the outputs of a process affect the process itself.
fire regime	Frequency, intensity and timing of bushfires.

Term	Definition
fragmentation	Isolation and reduction of areas of habitat, and associated ecosystems and species, often due to land clearing.
general resilience	Resilience to unknown or unidentified pressures, disturbances or shocks.
habitat	The environment where a plant or animal normally lives and reproduces.
Interim Biogeographic Regionalisation for Australia	A set of 85 bioregions within the Australian landmass, used as the basis for the National Reserve System's planning framework to identify land for conservation.
invasive species	Non-native plants or animals that have adverse environmental or economic effects on the regions they invade; species that dominate a region as a result of loss of natural predators or controls.
jurisdiction	An Australian state or territory, or under the control of the Australian Government.
landscape	An area of land comprising land forms and interacting ecosystems; an expanse of land, usually extensive, that can be seen from a single viewpoint.
mitigation	Actions intended to reduce the likelihood of change or to reduce the impacts of change.
National Reserve System	Australia's network of protected areas that conserve examples of natural landscapes, and native plants and animals. The system has more than 9300 protected areas, including national, state and territory reserves, Indigenous lands, and protected areas run by conservation organisations or individuals.
natural resource management	The management of natural resources such as land, water, soil, plants and animals, with a focus on sustainable practices.
pressures	Events, conditions or processes that result in degradation of the environment.
resilience	Capacity of a system to experience shocks while retaining essentially the same function, structure and feedbacks, and therefore identity.
run-off	Movement of water from the land into streams.
species	A group of organisms capable of interbreeding and producing fertile offspring.
specific resilience	Resilience to identified pressures, disturbances or shocks.
sustainability, sustainable	Using 'natural resources within their capacity to sustain natural processes while maintaining the life-support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations' ( <i>Environment Protection and Biodiversity Conservation Act 1999</i> :815). 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (United Nations Brundtland Commission).
urban footprint	The extent of area taken up by urban buildings and constructions.

Term	Definition
value	<p>The worth of environmental assets. Categories of environmental values include:</p> <ul style="list-style-type: none"><li>• indirect-use values—indirect benefits arising from ecological systems (e.g. climate regulation)</li><li>• direct-use values—goods and services directly consumed by users (e.g. food or medicinal products)</li><li>• non-use values (e.g. benevolence)</li><li>• intrinsic value (i.e. environmental assets have a worth of their own regardless of usefulness to humans).</li></ul>
wildfire	<p>An unplanned fire, whether accidentally or deliberately lit (in contrast to a planned or managed fire lit for specific purposes such as fuel reduction).</p>





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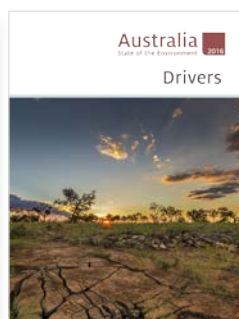
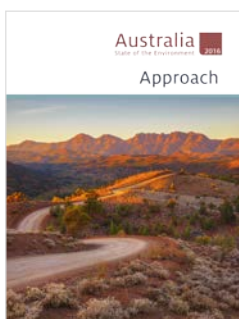
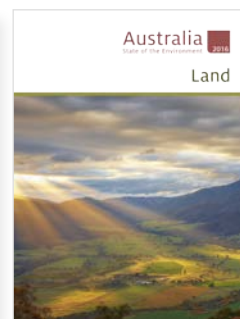
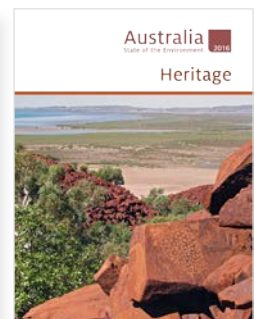
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# Australia

## State of the Environment

2016

*Australia state of the environment 2016* (SoE 2016) is an independent national assessment of the state of the Australian environment. It includes 9 thematic reports on atmosphere, built environment, heritage, biodiversity, land, inland water, coasts, marine environment and Antarctic environment. It also includes a synopsis of the detailed theme assessments (*Overview*), highlighting what they mean for the outlook for the Australian environment; a report on the drivers of change in the Australian environment (*Drivers*); and a report detailing the approach to SoE 2016 (*Approach*).



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State of the Environment



2016

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