



■ Old wurlie (dust storm shelter), near Lake Torrens, South Australia
Photo by Peter Ahrens

Heritage





Key findings

Our extraordinary and diverse natural and cultural heritage generally remains in good condition.

Australia is a complex, layered natural and cultural landscape in which unique geodiversity and biodiversity provide the palette for an ancient Indigenous culture and two centuries of post-colonial settlement history. Our heritage can be experienced at different levels and through different encounters: at grand and minute scales, in both tangible and intangible ways. The current condition and integrity of Australia's listed heritage generally appear to be good, with some deterioration evident over recent years. However, it is challenging to draw a single cohesive conclusion about the condition of Australia's natural and cultural heritage, given the diverse and fragmented nature of available information.

Australia is recognised internationally for leadership in heritage management.

We have a range of well-resolved processes for identification, protection, management and celebration of our heritage that should reduce pressures, minimise risk and retain those values that make our heritage places special.

Our heritage is being threatened by natural and human processes and a lack of public sector resourcing that does not reflect the true value of heritage to the Australian community.

The nation's protected natural and cultural resource does not include all the places with heritage value, nor is it truly representative. Management and protection of Australia's heritage is under-resourced and, despite our internationally recognised processes, the systems used to manage our heritage are cumbersome. This is out of line with community perceptions of heritage value. Consequently, our heritage is at great risk from the impacts of climate change, threats arising from development, and pressures that flow from population growth.

Improvement will require change.

The future for Australia's heritage will depend on government leadership in two key areas: undertaking thorough and comprehensive assessments that lead to adequate areas of protected land and comprehensive heritage inventories, and changing heritage management paradigms and resource allocation in response to emerging threats.

Contents



Introduction

697

1.1	Heritage listings	697
1.2	Types of heritage	700
1.2.1	Natural heritage	700
1.2.2	Indigenous heritage	701
1.2.3	Historic heritage	703
1.3	In this chapter	703



State and trends of heritage

704

2.1	Identification	705
2.1.1	World Heritage	705
2.1.2	National heritage	707
2.1.3	State heritage	708
2.1.4	Local heritage	709
2.1.5	Natural heritage	710
2.1.6	Indigenous heritage	715
2.1.7	Historic heritage	716

2.2	Condition and integrity	716
2.2.1	World Heritage	716
2.2.2	National heritage	717
2.2.3	State heritage	717
2.2.4	Local heritage	719
2.2.5	Natural heritage	719
2.2.6	Indigenous heritage	721
2.2.7	Historic heritage	724
■	Assessment summary 9.1—state and trends of heritage values	726



3 Pressures affecting heritage

728

3.1	Climate change	728
3.1.1	Rising temperatures	728
3.1.2	Changing rainfall	729
3.1.3	Rising sea levels	729
3.1.4	Altered fire regimes	729
3.1.5	More frequent extreme weather events	729
3.2	Population growth	729
3.2.1	Community perceptions of value	730
3.2.2	Population shift	731
3.3	Economic growth	731
3.3.1	Resource extraction	731
3.3.2	Development	732
3.3.3	Tourism	733
3.4	Pressures on natural heritage	733
3.4.1	Invasive species	733
3.4.2	Loss of habitat	734
3.4.3	Land use	734
3.4.4	Soil erosion	734
3.5	Pressures on Indigenous heritage	734
3.5.1	Loss of knowledge	734
3.5.2	Loss of traditional cultural practice and social connections	735
3.5.3	Incremental destruction	735
3.6	Pressures on historic heritage	736
■	Assessment summary 9.2—pressures affecting heritage values	738



4 Effectiveness of heritage management

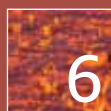
742

4.1	Understanding	743
4.1.1	Understanding values	743
4.1.2	Understanding threats	745
4.2	Planning	745
4.2.1	Leadership	745
4.2.2	Jurisdictional arrangements	748
4.2.3	Statutory protection	753
4.2.4	More flexible approaches	754
4.3	Inputs	756
4.3.1	Financial resources	756
4.3.2	Human resources	762
4.4	Processes	768
4.4.1	Statutory responses	768
4.4.2	Adaptive management	768
4.5	Outcomes	770
4.5.1	Natural heritage	771
4.5.2	Indigenous heritage	773
4.5.3	Historic heritage	773
■	Assessment summary 9.3—effectiveness of heritage management	774



Resilience of heritage 780

- 5.1 Approaches to resilience 780
- 5.2 Evidence of past resilience 781
- 5.3 Preparedness for future pressures 782
- 5.4 Factors affecting resilience capacity 783



Risks to heritage 784

- Assessment summary 9.4—current and emerging risks 785



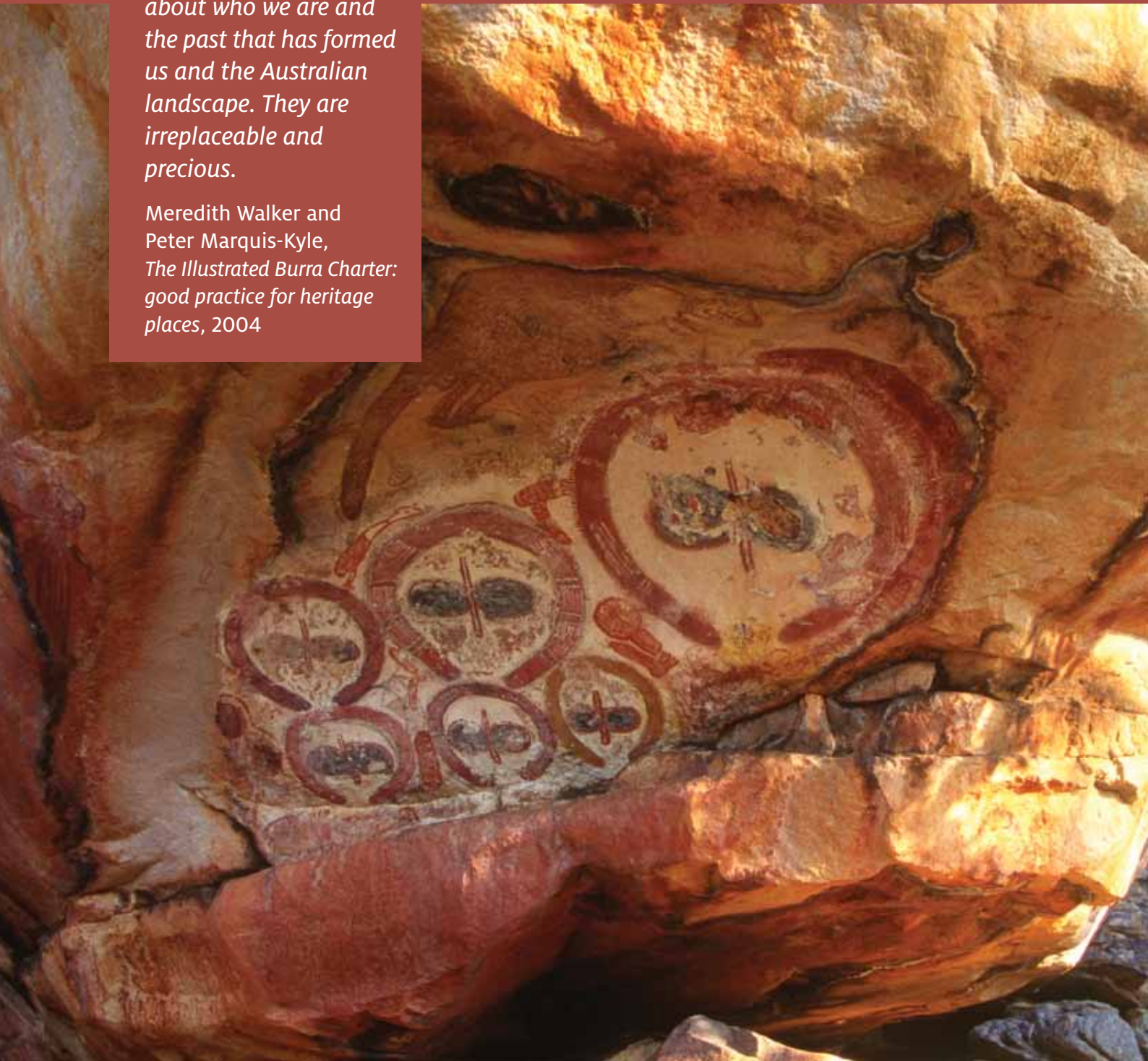
Outlook for heritage 787

- 7.1 Likely trends in key factors 788
 - 7.1.1 Climate change 788
 - 7.1.2 Population growth 788
 - 7.1.3 Economic growth 789
- 7.2 Natural heritage 789
- 7.3 Indigenous heritage 791
- 7.4 Historic heritage 791

References 793

Places of cultural significance reflect the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape. They are irreplaceable and precious.

Meredith Walker and Peter Marquis-Kyle,
The Illustrated Burra Charter: good practice for heritage places, 2004



■ Wandjina rock art figures, the Kimberley, Western Australia
Photo by Nick Rains



Introduction

Australia has a rich natural and cultural heritage that underpins our sense of place and national identity. Australia's heritage is an important element of the environment—the valued places that we have inherited and will pass on to future generations bridge natural and cultural boundaries. Our land features extraordinary geodiversity, with unique ecosystems and profound cultural traditions that extend back thousands of years. Layered across this ancient landscape is the evidence of more than two centuries of colonial and post-colonial history—young in global terms, but a vital part of our cultural environment. Some of this heritage has been recognised through land reservation or statutory listing, but many heritage places are not formally identified or protected. Indeed, some of the values of Australia's heritage places are intangible and relate to traditions, use or meaning, so they may be less evident in physical form.

Heritage can be most simply defined as those parts of the environment that have intergenerational value. Statutory definitions of heritage typically refer to 'aesthetic, historic, scientific, or social significance or other special value for future generations as well as for the present community'.¹ Our heritage comprises both natural and cultural places with tangible (physical) and intangible (associative) values.

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 chapter recognises

this complexity, but considers heritage in accordance with the statutory and bureaucratic listing and identification processes. Like the rest of this report, this chapter adopts a national perspective. However, it also recognises that local heritage items may be critical to a community's sense of place, and thus assessing the state of the nation's heritage demands an understanding of local heritage. In addition, at a national level, heritage is a broad construct that overlaps with other environmental components such as biodiversity, the land, inland waters, marine environments or urban areas, covered in other chapters in this report. Loss of condition or integrity in any of these areas would be a loss for Australia's heritage.

1.1 Heritage listings

In Australia, heritage is identified, assessed and listed through multilayered and overlapping statutory and bureaucratic processes that broadly parallel our multitiered systems of government. Heritage listing has a range of purposes and functions, including recognising and celebrating values, protecting heritage under the law, and informing management decisions and resource allocation. Heritage can be listed in a number of ways and by various authorities:

- **World Heritage List**—World Heritage sites are places that are important to and belong to everyone, irrespective of where they are. They have outstanding universal value that transcends the value they hold for a particular

Box 9.1 The National Heritage List—Lark Quarry dinosaur stampede

Palaeontology plays an important role in highlighting Australian geodiversity and evolutionary processes. The Dinosaur Stampede National Monument, in Lark Quarry Conservation Park in central Queensland, provides unparalleled evidence of a dinosaur stampede that took place 95 million years ago. Almost 4000 footprints have been preserved in the former mudflats and are visible over an area of 210 square metres. Palaeontologists interpret these footprints as being caused by approximately 150 bipedal dinosaurs who fled a carnivorous *Tyrannosauropus*.²



■ Dinosaur footprints, Lark Quarry, Queensland (photo by Jaime Rankin and the Australian Government Department of Sustainability, Environment, Water, Population and Communities)

nation. These qualities are expressed in the Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention).^a Australia's obligations under this convention are met through provisions in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

- **National Heritage List**—The National Heritage List, established under the EPBC Act, includes natural, historic and Indigenous places that are of outstanding national heritage value to Australia (see Box 9.1).
- **Commonwealth Heritage List**—The Commonwealth Heritage List, established under the EPBC Act, 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.
- **The Register of the National Estate**—The Register of the National Estate is a list of important natural, Indigenous and historic heritage places throughout Australia, originally established under the *Australian Heritage Commission Act 1975*. The Australian Heritage Commission entered more than 13 000 places in the Register of the National Estate. In 2004, responsibility for maintaining the register shifted to the Australian Heritage Council, under the *Australian Heritage Council Act 2003*. The register will only continue as a statutory register until February 2012.
- **The Australian National Shipwrecks Database**—The Australian National Shipwrecks Database was launched in December 2009 and includes all 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 by the Australian Government, in collaboration with the state and territory governments.

a <http://whc.unesco.org/en/conventiontext>

Box 9.2 The Freedom Ride—part of our national inheritance

In 1965, a group of students from the University of Sydney, led by Indigenous activist Charles Perkins, travelled through regional New South Wales to highlight the inequalities and racism experienced by the Aboriginal population.³ This protest and its consequences were of pivotal importance in the history of Australian race relations. The spirit of the Freedom Ride is clearly part of our national story; however, it is not listed on any statutory heritage register.

Many Australian heritage places have not been formally identified or listed. The route of the 1965 Freedom Ride embodies part of our rich social history—a history that helps us understand where we have come from and that we should transmit to future generations of Australians.



■ Students involved in the demonstration against discrimination against Indigenous people in Walgett, New South Wales, 1967 (photo reproduced with permission of Wendy Watson Epstein [nee Golding] and supplied by Ann Curthoys)

- **State heritage registers**—At the state and territory level, the process for listing heritage places is varied. All jurisdictions have dedicated national parks and reserves. Some jurisdictions establish additional registers of Indigenous sites, whereas others protect Indigenous heritage through blanket statutory control. Each state or territory also has a statutory list of historic places, but the criteria and threshold for listing vary, and these registers are generally acknowledged as incomplete.
 - **Local heritage**—Heritage identification at the local level varies between 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. There are many locally managed reserves, generally dedicated for reasons of natural heritage or amenity, but some of these also contain significant Indigenous places. Mostly, however, Indigenous heritage is neither identified nor protected at a local level, and comprehensive national data for local heritage listings are not available.
 - **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. While these lists have no direct statutory force, they are sometimes used to inform decision-making processes such as development consent or statutory listing.
- Heritage can also be unlisted. Our national inheritance includes vast areas and many places that have not been formally identified or listed, but nevertheless contribute to the nation's heritage, especially at the local level (see Box 9.2). 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 and cultural heritage resources are constantly changing. Effective heritage management requires an all-encompassing understanding and respect for both listed and unlisted heritage, so that change and development occur in a way that respects all heritage values.

1.2 Types of heritage

For the purposes of this State of the Environment (SoE) report, heritage has been categorised as natural, Indigenous or historic (consistent with the management framework used at the national level). Although movable objects, collections and records are widely recognised as ‘heritage’, they are excluded from this report, except where they form part of a heritage place.

1.2.1 Natural heritage

Natural heritage comprises the components of the natural environment that have aesthetic, historical, scientific or social significance, or other special value for the present community, as well as for future generations.⁴ One important factor that distinguishes natural heritage places from broader natural or social

values is that natural heritage places relate to definable and valued locations or areas of land.⁵ For example, the values of a particular national park can be identified and defined as heritage values by applying assessment criteria such as those used to assess places for the National Heritage List (see Box 9.3).

Another factor that distinguishes natural heritage from general natural resources is that 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, reserves, botanic gardens and private conservancies, as well as significant fauna and flora habitats or geological sites. Although our natural heritage includes both reserved and unreserved lands, and listed and unlisted places, this chapter focuses on natural heritage that has been identified and protected. Other aspects of the natural environment are addressed in other chapters of this report.

Box 9.3 Natural heritage—Porongurup National Park

Natural places can be listed as heritage items at the local, state, national or international level. In Western Australia, for example, Porongurup National Park was included on the National Heritage List in 2009 as a place of outstanding geological and natural value. The park contains distinctive granite domes that are remains of the ancient Porongurup pluton, a bubble of molten rock that rose from Earth’s core and pushed upward into the overlying base rock of the park.⁶ Located within the traditional lands of the Minang group of the Nyungar people, Porongurup is a living landscape of outstanding biological and ecological significance. As part of an internationally recognised biodiversity hot spot in the south-west region of Western Australia, the park contains an exceptionally high concentration of plants and animals in a relatively small area. Porongurup National Park is also significant for a number of invertebrates that have links to the Gondwana supercontinent, when Australia was joined to present-day Africa, South America and Antarctica before these land masses broke apart some 150 million years ago.⁷



■ Porongurup National Park, Western Australia (photo by Colin Totterdell and the Australian Government Department of Sustainability, Environment, Water, Population and Communities)

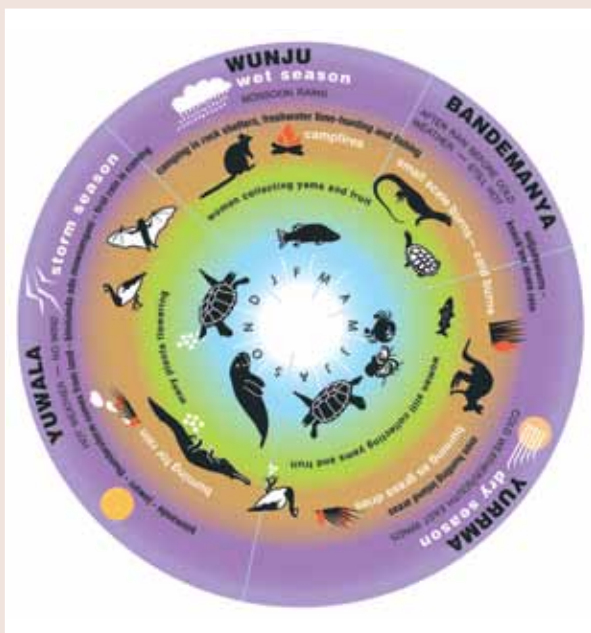
1.2.2 Indigenous heritage

Aboriginal and Torres Strait Islander heritage extends back over many tens of thousands of years and is of continuing significance, creating and maintaining links with the people and the land.⁴ 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 (Box 9.4).

Box 9.4 The Wunambal Gaambera Healthy Country Plan

For Indigenous people, the divide between the natural and cultural environment is artificial, because there is a continuing connection between people and country that requires ongoing nurturing and management through traditional cultural practices. This interrelationship is increasingly recognised through Indigenous land and sea management plans, as well as by specific management arrangements in particular places.



The Wunambal Gaambera Healthy Country Plan 2010–2020 was prepared through a collaborative, participative process at the instigation of traditional owners, building on work that started in the 1990s. The plan covers a huge area of around two million hectares in the northern part of the Kimberley, and provides a modern way to honour ancestors, share the story of how the land 'Uunguu' was made and look after the country in accordance with Wanjina Wunggurr law. The plan sets out how Wunambal Gaambera can live on country and make business, and use both traditional knowledge and western science to care for country and provide a healthy life to the place and to current and future generations.⁸

■ A seasonal calendar from the Wunambal Gaambera Healthy Country Plan 2010–2020, showing the integrated relationship between natural and cultural aspects of the environment and the consequent importance of traditional Indigenous land and sea management (graphic design by Lois Haywood, ECI Insitu Pty Ltd, and the Wunambal Gaambera Aboriginal Corporation)



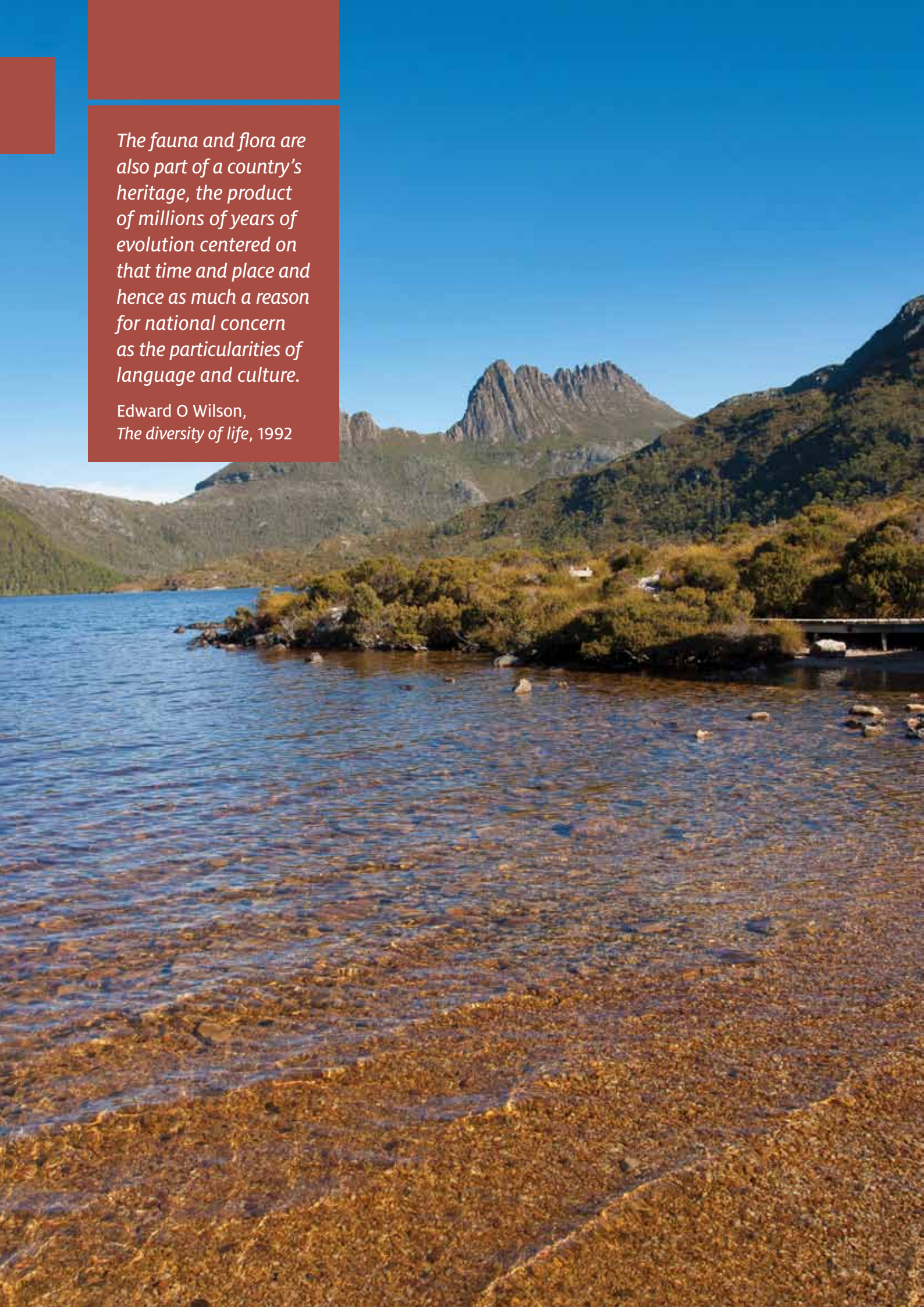
■ A planning workshop at Garmbemirri, from the Wunambal Gaambera Healthy Country Plan 2010–2020; the traditional owners used a conservation action planning process to involve relevant people (photo by the Wunambal Gaambera Aboriginal Corporation)



■ Uunguu Ranger Raphael Karadada on a freshwater turtle survey (photo by Robert Warren and the Wunambal Gaambera Aboriginal Corporation)

The fauna and flora are also part of a country's heritage, the product of millions of years of evolution centered on that time and place and hence as much a reason for national concern as the particularities of language and culture.

Edward O Wilson,
The diversity of life, 1992



1.2.3 Historic heritage

Historic sites 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 over the past two centuries, and provide a tangible link to past events, processes and people.⁴ The Australian environment includes rare remnants of early convict history, pastoral properties and small remote settlements, as well as large urban areas, engineering works, factories and defence facilities. 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. By its nature, it will continue to evolve to represent the flow of history and changing community perceptions.

1.3 In this chapter

Assessing the condition of Australia's heritage places is hampered by an incomplete and unrepresentative set of formally identified heritage places, and by the absence of a comprehensive body of reliable national data. Available information tends to relate 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.

However, some conclusions may be drawn from sample surveys, surrogate data and indicators. The SoE reports for 2001 and 2006 both relied on a set of natural and cultural heritage indicators, originally prepared in 1998, as the basis for summary assessment.⁹ The same approach has been used here, augmented by some selected case studies and additional information now available from the national data collection project of the former Environment Protection Heritage Council, and Heritage Chairs and Officials of Australia and New Zealand, which has provided some consistent information about heritage listings and human and financial resources.

It is recognised that this is a piecemeal approach that may not thoroughly address some of the complexities and subtleties in the heritage system, including multivalued cultural landscapes, regional perspectives

and unlisted sites. However, the approach uses the available data and offers relevant observations.

The assessments in this chapter were also informed by a series of workshops held with relevant stakeholder groups, including the Australian Heritage Council; Heritage Chairs and Officials of Australia and New Zealand; the heads of Australian, state and territory parks agencies; the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) Indigenous Advisory Committee; Australian representatives from the International Council on Monuments and Sites (Australia ICOMOS); and the Australian Committee of the International Union for Conservation of Nature (ACIUCN). Although these workshops cannot replace empirical evidence, they have allowed a high degree of confidence in assessment based on consensus. In addition to workshops and literature reviews, three specialist consulting projects were commissioned to evaluate the condition and integrity of a small sample of places with natural, Indigenous and historic values.¹⁰⁻¹² The information in this chapter presents a snapshot based on observation, rather than a longitudinal analysis based on comprehensive information.

■ Dove Lake, Cradle Mountain, Tasmania
Photo by Nick Rains

State and trends of heritage

The current condition and integrity of Australia's reserved and listed heritage are generally good, with some deterioration evident over recent years. However, the nation's protected natural and cultural resource is not adequately identified and protected, nor is its conservation adequately resourced.

Unlike other aspects of the Australian environment, heritage places are already a discrete subset, defined by having natural or cultural 'value'. Therefore, a description of the current state of Australian heritage cannot be a description of the resources themselves (as might occur with coasts, inland waters or land), but rather must be an assessment of what values have been identified and their current condition. Similarly, while it may be possible to measure the condition of other environmental aspects according to a nominal benchmark year of 1750 (representing European settlement), the appropriate benchmark for heritage places is not a particular former condition, but a measure of 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 our 'inheritance'.

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 of these frameworks. In reality, of course, such distinctions are arbitrary and often blurred, as heritage places and their values transcend jurisdictional boundaries and site types. Assessment components used in this section relate to natural and cultural heritage indicators (see Section 1.3).

At a glance

Australia's heritage listing structure is complex and reflects both land tenure and governance arrangements. 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 control.

Australia's listed natural heritage and reserved lands are in good condition but continue to face threats from invasive species, fire, erosion, use and impacts on threatened species. There are differences in condition according to land tenure and listing status. Available national information relates to a select sample and may not be truly representative.

Of the 85 bioregions in Australia, more than half have at least 10% of their area within reserved land. Although having 10% of each bioregion within reserved land is the current national target, it does not necessarily reflect the fine grain of significant ecosystems and habitats. The Convention on Biological Diversity suggests that a more appropriate target may be 17% of protected land (and 10% for inland waters). There may be merit in considering an even greater percentage, comprising both protected and privately held lands, which should be selected and managed as an interconnected system to help maintain large-scale landscapes and ecosystem processes.

Interest in Indigenous heritage in Australia has increased. There have been many positive developments, but also some trends that significantly undermine the protection of Indigenous heritage. Recognition of the role of Indigenous people in managing Indigenous heritage has expanded, but individual assessment and development decisions cause incremental destruction of the Indigenous cultural resource.

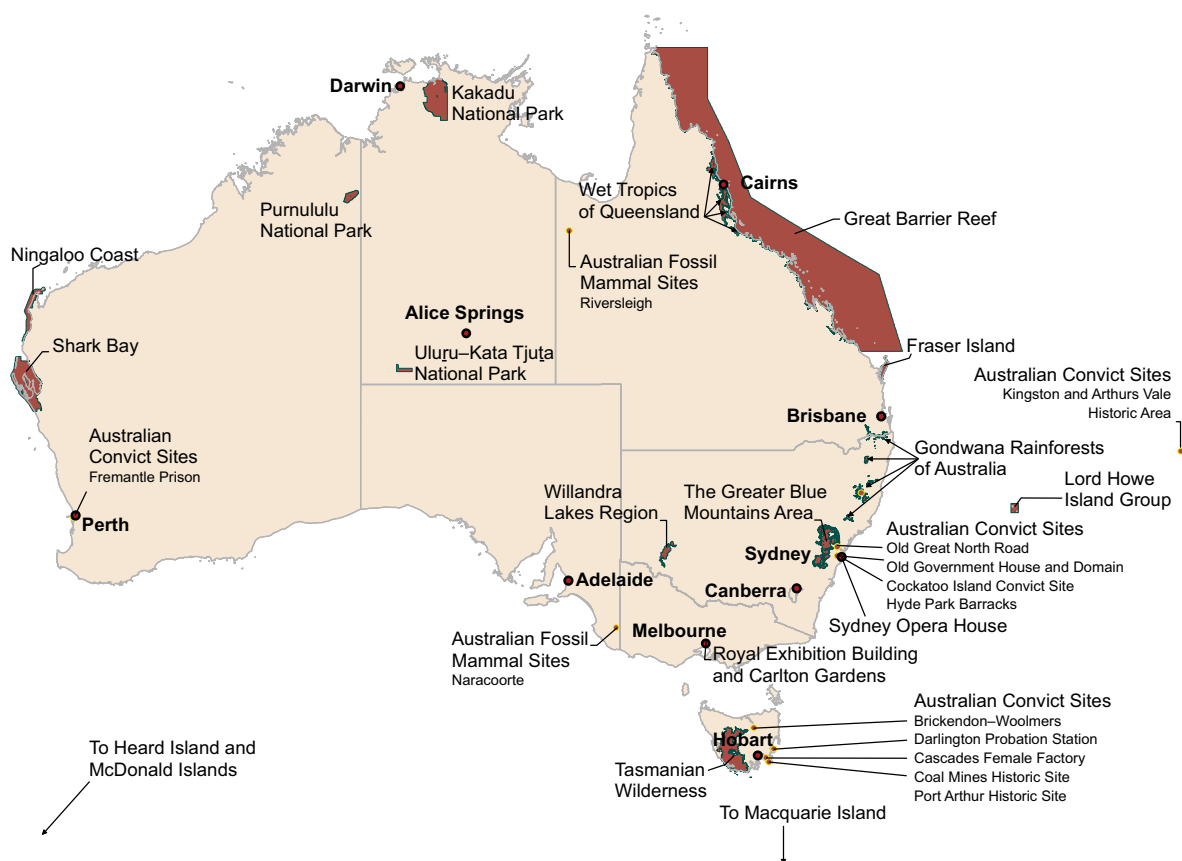
A survey of a national sample of historic heritage places indicates that the majority are in good condition and retain their identified values. Variation in the observed condition is likely to reflect maintenance and repair cycles. Places that are both vacant and in poor condition remain under threat.

2.1 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 that may also have layered multiple values. Nowhere is this tension more apparent than in the difference between a single Indigenous site and the broader Indigenous perspective of country.

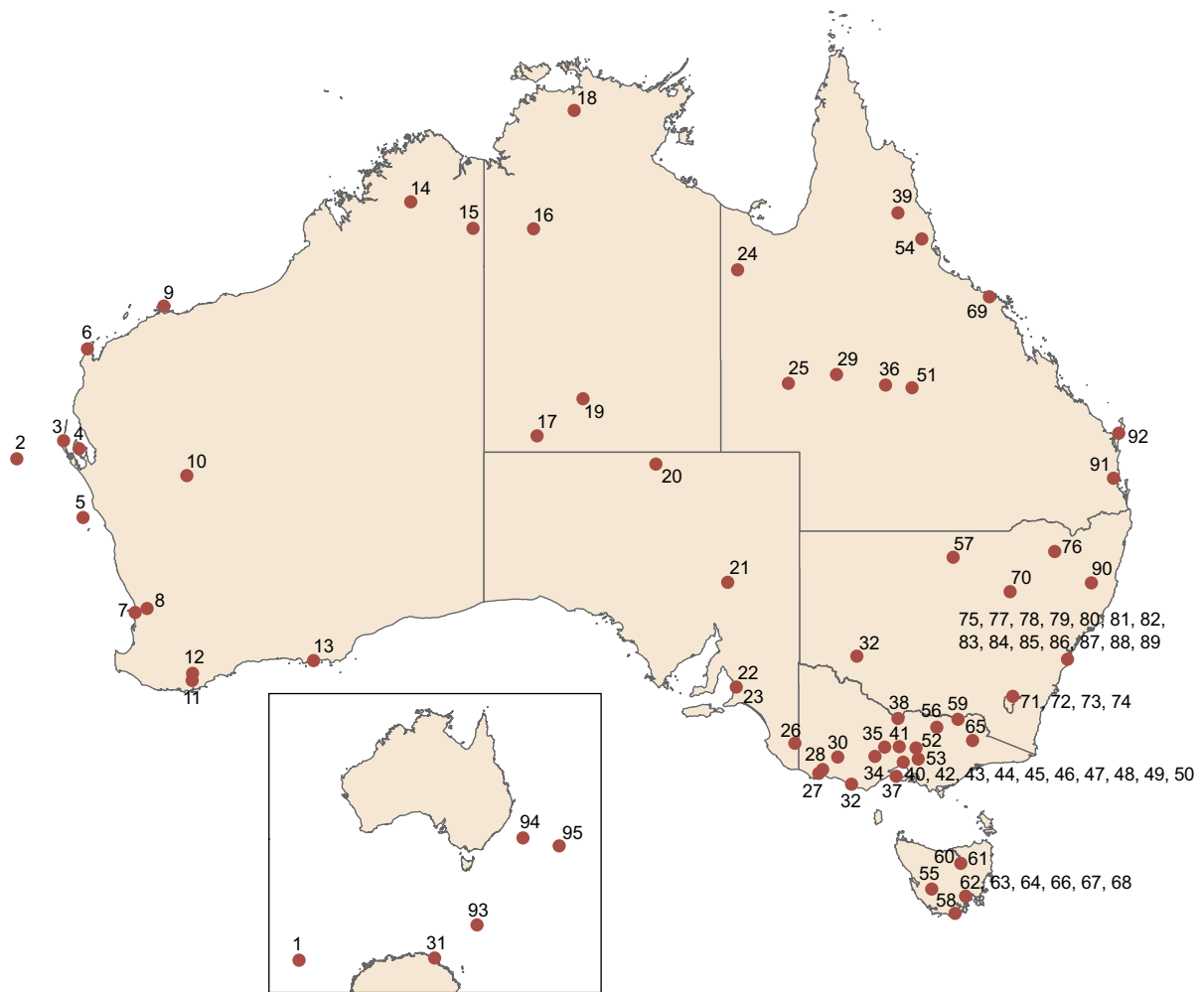
2.1.1 World Heritage

Australia has 19 World Heritage sites inscribed on the World Heritage List in accordance with the 1972 World Heritage Convention, to which Australia is a State Party. These places (some of which incorporate more than one land or sea area) are shown in Figure 9.1. Four of these places—the Sydney Opera House, Purnululu, the Australian Convict Sites and the Ningaloo Coast—were inscribed on the World Heritage List between 2006 and 2011, and the Gondwana Rainforests of Australia was renamed. Australian state and territory governments have been preparing a tentative list for future World Heritage nominations.



Source: World Heritage Areas, Australia (2011), Environmental Resources Information Network, Australian Government Department of Sustainability, Environment, Water, Population and Communities, based on Australian Coastline and State Borders 1:100 000 (1990), Geoscience Australia

Figure 9.1 Australian World Heritage sites



- | | | |
|--|---|---|
| 1 Heard and McDonald Islands | 32 Great Ocean Road and Scenic Environs | 65 Australian Alps National Parks and Reserves |
| 2 HMAS Sydney II and HSK Kormoran Shipwreck Sites | 33 Willandra Lakes Region | 66 Coal Mines Historic Site |
| 3 Dirk Hartog Landing Site 1616—Cape Inscription Area | 34 Eureka Stockade Gardens | 67 Port Arthur Historic Site |
| 4 Shark Bay, Western Australia | 35 Castlemaine Diggings National Heritage Park | 68 Darlington Probation Station |
| 5 Batavia Shipwreck Site and Survivor Camps Area 1629—Houtman Abrolhos | 36 QANTAS Hangar, Longreach | 69 Great Barrier Reef |
| 6 The Ningaloo Coast | 37 Point Nepean Defence Sites and Quarantine Station Area | 70 Warrumbungle National Park |
| 7 Fremantle Prison (former) | 38 Echuca Wharf | 71 Australian Academy of Science Building |
| 8 Goldfields Water Supply Scheme | 39 Ngarrabullgan | 72 Old Parliament House and curtilage |
| 9 Dampier Archipelago (including Burrup Peninsula) | 40 Point Cook Air Base | 73 High Court – National Gallery Precinct |
| 10 Wilgie Mia Aboriginal Ochre Mine | 41 Mount William Stone Hatchet Quarry | 74 Australian War Memorial and the Memorial Parade |
| 11 Porongurup National Park | 42 Flemington Racecourse | 75 The Greater Blue Mountains Area |
| 12 Stirling Range National Park | 43 High Court of Australia (former) | 76 Myall Creek Massacre and Memorial Site |
| 13 Cheetup Rock Shelter | 44 Newman College | 77 Old Great North Road |
| 14 The West Kimberley | 45 Royal Exhibition Building and Carlton Gardens | 78 Old Government House and the Government Domain |
| 15 Purnululu National Park | 46 ICI Building (former) | 79 Royal National Park and Garawarra State Conservation Area |
| 16 Wave Hill Walk Off Route | 47 Sidney Myer Music Bowl | 80 Cockatoo Island |
| 17 Uluru—Kata Tjuta National Park | 48 Melbourne Cricket Ground | 81 Cyprus Hellenic Club – Australian Hall |
| 18 Kakadu National Park | 49 Rippon Lea House and Garden | 82 Sydney Harbour Bridge |
| 19 Hermannsburg Historic Precinct | 50 HMVS Cerberus | 83 First Government House Site |
| 20 Great Artesian Basin Springs: Witjira—Dalhousie | 51 Tree of Knowledge and curtilage | 84 Hyde Park Barracks |
| 21 Ediacara Fossil Site | 52 Flora Fossil Site—Yea | 85 Sydney Opera House |
| 22 South Australian Old and New Parliament Houses | 53 Coranderrk | 86 Ku-ring-gai Chase National Park; Lion, Long and Spectacle Island nature reserves |
| 23 The Adelaide Park Lands and City Layout | 54 Wet Tropics of Queensland | 87 Kurnell Peninsula Headland |
| 24 Australian Fossil Mammal Sites (Riversleigh) | 55 Tasmanian Wilderness | 88 Bondi Beach |
| 25 Great Artesian Basin Springs: Elizabeth Springs | 56 Glenrowan Heritage Precinct | 89 North Head, Sydney |
| 26 Australian Fossil Mammal Sites (Naracoorte) | 57 Brewarrina Aboriginal Fish Traps (Baiames Ngunnhu) | 90 Gondwana Rainforests of Australia |
| 27 Budj Bim National Heritage Landscape—Tyrendarra Area | 58 Recherche Bay (North East Peninsula) Area | 91 Glass House Mountains National Landscape |
| 28 Budj Bim National Heritage Landscape—Mt Eccles Lake Condah Area | 59 Bonegilla Migrant Camp—Block 19 | 92 Fraser Island |
| 29 Dinosaur Stampede National Monument | 60 Brickendon Estate | 93 Macquarie Island |
| 30 Grampians National Park (Gariwerd) | 61 Woolmers Estate | 94 Lord Howe Island Group |
| 31 Mawson's Huts and Mawson's Huts Historic Site | 62 Cascades Female Factory | 95 Kingston and Arthurs Vale Historic Area |
| | 63 Cascades Female Factory Yard 4 North | |
| | 64 Richmond Bridge | |

Source: National Heritage Spatial Database (2011), Environmental Resources Information Network, Australian Government Department of Sustainability, Environment, Water, Population and Communities, based on Australian Coastline and State Borders 1:100 000 (1990), Geoscience Australia

Figure 9.2 Places on the National Heritage List

2.1.2 National heritage

The National Heritage List

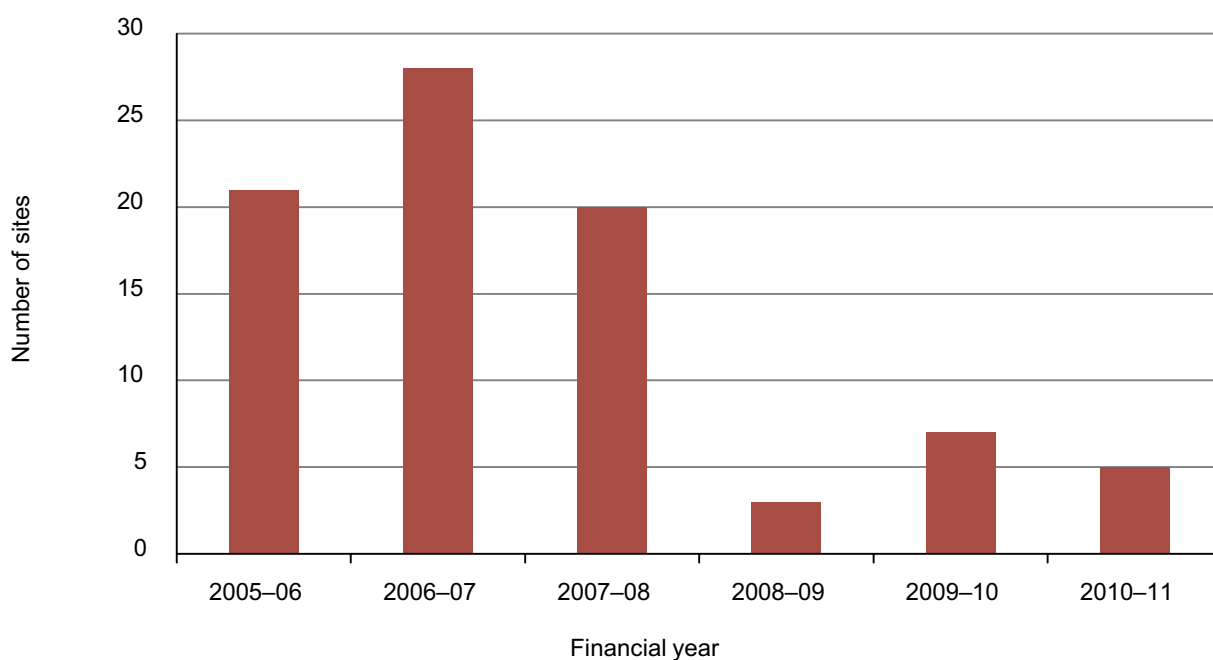
The National Heritage List includes natural, historic and Indigenous places throughout Australia (Figure 9.2).

The National Heritage List now contains 95 places, most of which were added between 2005 and 2008 (Figure 9.3). The most recent addition was the west Kimberley, added on 31 August 2011. Following amendments to the EPBC Act in 2007, the national heritage listing program is now confined to places on a 'priority assessment list' determined by the minister. In practice, this means that the majority of National Heritage List nominations received since 2007 have lapsed without being assessed. Although some exceedingly important places have been added to the list, the resources available for documentation and assessment, and the rate at which places are being added to the National Heritage List, are declining. Community enthusiasm for the national heritage

listing process has also declined as a result of the frustrating experience of seemingly comprehensive and credible nominations not being assessed. Further reductions to the resources available for national heritage listing announced in the 2011–12 Budget will continue this trend (see Section 4.3.1).

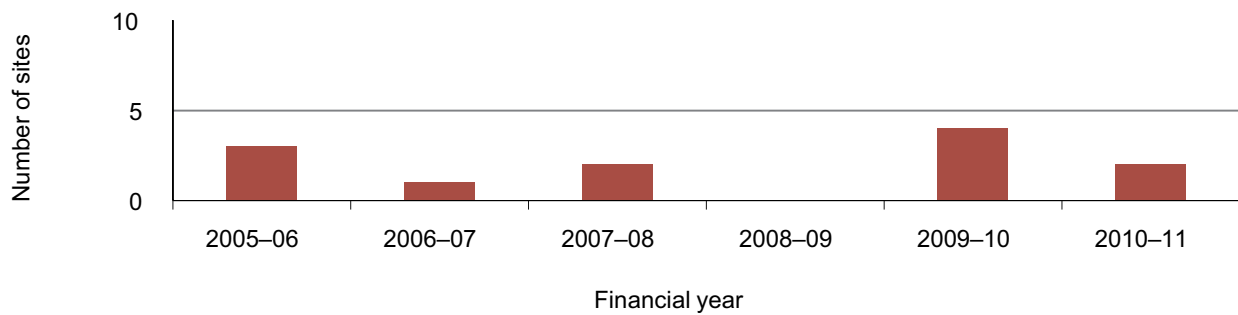
The Commonwealth Heritage List

The EPBC Act provides that heritage places under Commonwealth ownership should be included on the Commonwealth Heritage List and should have plans of management. There are currently 338 places on the Commonwealth Heritage List, of which only 10 were added between 2005–06 and 2010–11 (Figure 9.4). This small number of recent additions reflects the intensive initial listing phase after the list was established, as well as more recent declines in identification of Commonwealth heritage places by Australian Government agencies.



Source: Heritage Division, Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011

Figure 9.3 Number of places added to National Heritage List, 2005–06 to 2010–11



Source: Heritage Division, Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011

Figure 9.4 Number of places added to Commonwealth Heritage List, 2005-06 to 2010-11

The 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 can be added to or removed from the register. The register will cease to be a statutory register after February 2012 but will be maintained on a nonstatutory basis as a publicly available archive; until then, the minister is required to continue considering the register when making some decisions under the EPBC Act. This transition period was intended to allow governments across all jurisdictions to transfer places from the Register of the National Estate to appropriate heritage registers.¹³ However, this process has not been resourced and has not occurred.

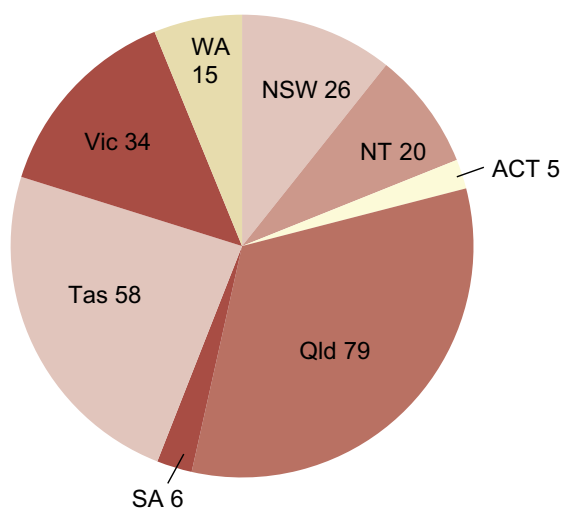
The pending demise of the statutory role of the Register of the National Estate will leave many 'listed' places without any statutory status. The discontinuation of active management of the register through assessment, addition and removal leaves a significant gap in the national perspective of Australia's heritage.

2.1.3 State heritage

Australian states and territories also maintain statutory heritage registers. In 2008, the former Environment Protection Heritage Council (the meeting of Australian, state and territory ministers responsible for heritage) agreed that a consistent set of criteria would be developed and used to assess places for inclusion in these registers. However, only the Australian and Victorian governments have adopted and commenced

using consistent heritage assessment criteria. Further, the coverage and thresholds vary greatly. Some registers (such as the Australian Capital Territory Heritage Register) 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, although the Tasmanian Heritage Register includes a vast array of locally significant places (see Box 9.20). There are also disparities in the listing programs between states; for example, in 2009-10, relatively high numbers of state listings occurred in both Queensland and Tasmania (Figure 9.5). These proportions may reflect specific assessment projects (see Box 9.6) or different resource allocations.

At the state and territory level, it is possible to examine the different values for which individual places have been listed. Figure 9.6 presents an overview of state and territory statutory registers according to assessment criteria. Care should be exercised in interpreting this chart (as places may be listed for more than one value and different criteria frequencies may apply to natural, Indigenous and historic places), but the data do suggest a skew towards criterion D (places that demonstrate principal characteristics) and criterion G (places that have strong or special association with community or cultural groups), and away from criterion F (places that demonstrate creative or technical achievement) and criterion C (places with significant research value). This pattern may reflect the underlying nature of the heritage resource or a particular focus in the current assessment and listing process. Ongoing collection of similar information and separate analysis of natural, Indigenous and historic places may provide useful insight into bias or gaps in current heritage listing programs.

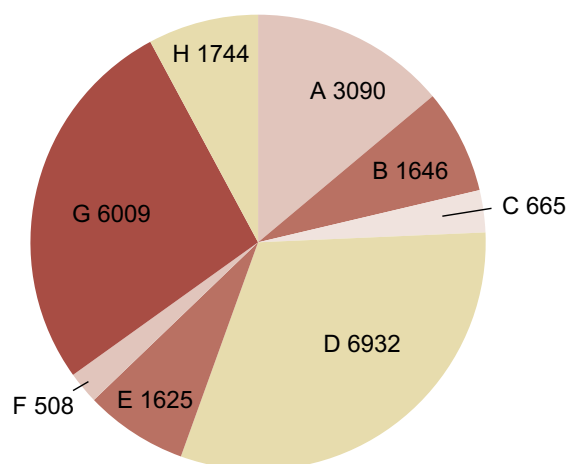


ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; Qld = Queensland; SA = South Australia; Tas = Tasmania; Vic = Victoria; WA = Western Australia
 Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities Heritage Division: Heritage Chairs and Officials of Australia and New Zealand National Data Collection Standards project, unpublished data

Figure 9.5 Places added to the state heritage registers, 2009–10

2.1.4 Local heritage

The vast majority of heritage listing in Australia occurs 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 are exclusively comprised of historic places. Local heritage places are included on the Tasmanian Heritage Register, but not on other state heritage registers. Victorian data relate to individual properties (a number of which may be incorporated in a single listing), whereas other state and territory data relate to listed places. A general picture of what is locally listed in Australia is provided in Figures 9.7 and 9.8.

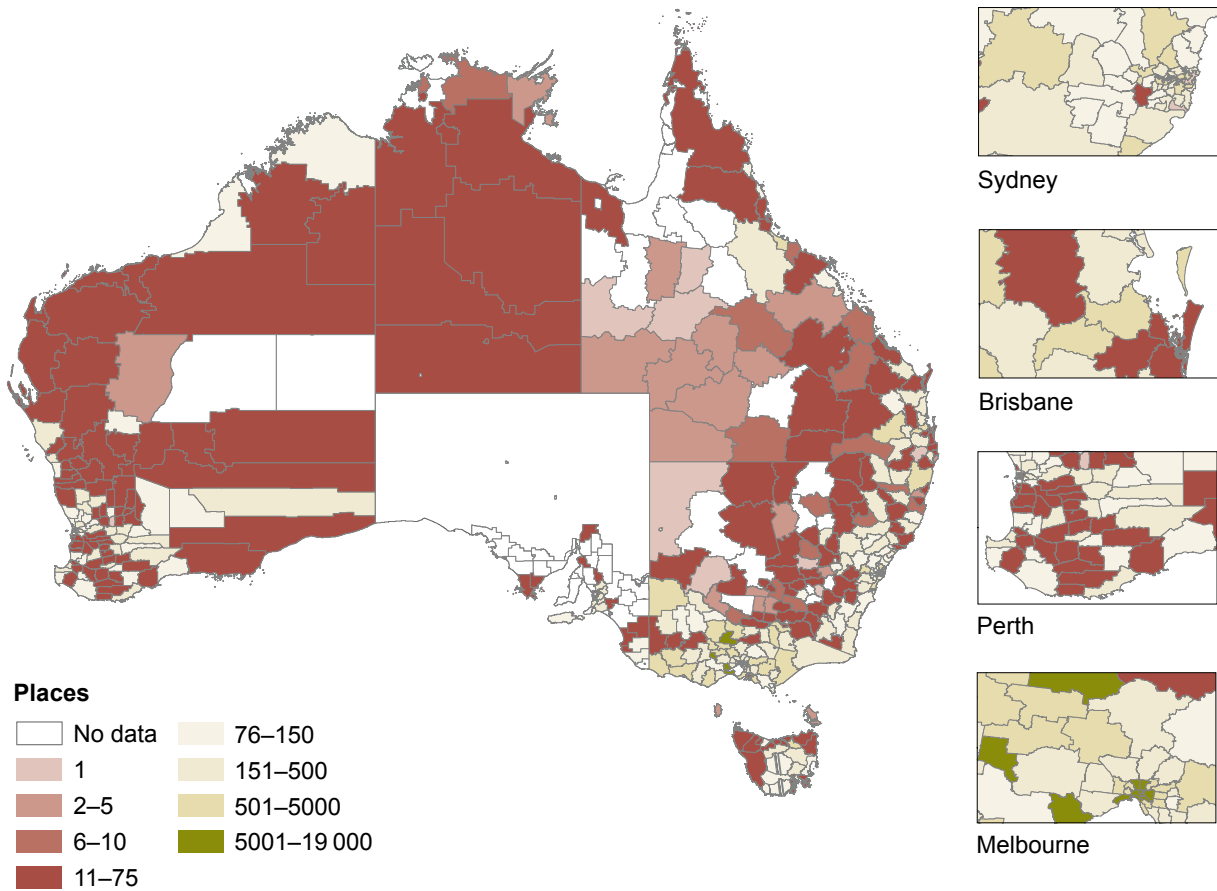


- A Importance in the course, or pattern, of Australia's natural or cultural history
- B Possession of uncommon, rare or endangered aspects of Australia's natural or cultural history
- C Potential to yield information that will contribute to an understanding of Australia's natural or cultural history
- D Importance in demonstrating the principal characteristics of a class of Australia's natural or cultural places, or a class of Australia's natural or cultural environments
- E Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group
- F Importance in demonstrating a high degree of creative or technical achievement at a particular period
- G Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- H Special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history

Source: Adapted from National Heritage List criteria (with removal of criterion I, as it is not used by state jurisdictions), Australian Government Department of Sustainability, Environment, Water, Population and Communities Heritage Division: Heritage Chairs and Officials of Australia and New Zealand National Data Collection Standards project, unpublished data

Figure 9.6 Criteria under which heritage places were added to the state heritage registers, 2009–10

The raw listing data illustrate several points. Not surprisingly, heritage listing is most intensive in coastal areas, and concentrated in and around urban centres. Very high densities in Victoria reflect the approach of measuring individual properties rather than heritage items. Blank areas are generally those for which reliable information has not been sourced, rather than an indication that nothing is listed. However, some parts of the nation seem severely under-represented.



Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011, using data from state and territory heritage agencies (2011) for places listed by local government area; PSMA Australia Ltd (2010) local government area boundaries; Australian Bureau of Statistics¹⁴

Figure 9.7 Number of heritage places listed by local government area

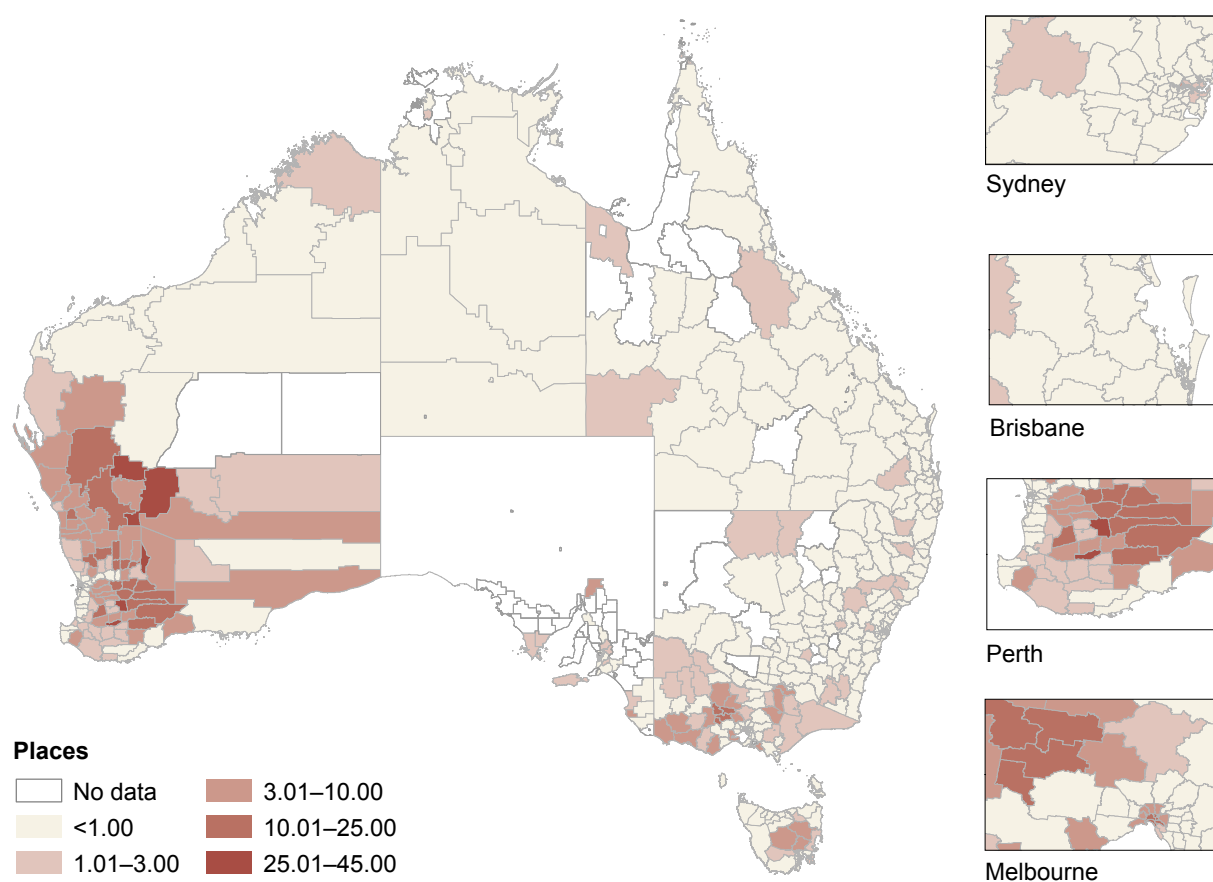
Data for New South Wales, Victoria, Queensland, South Australia and Western Australia are from local government planning mechanisms. Tasmanian data are from the Tasmanian Heritage Register, which includes places of local and state heritage significance. Data for the Northern Territory and the Australian Capital Territory are for places listed in territory registers. Data are not captured at the local government level.

Figure 9.8 presents the local listing data from Figure 9.7 adjusted to show heritage listing at the local level per hundred people. This adjustment provides an indicative relative measure that takes different population densities into account. The picture that emerges differs in some interesting respects from the raw information. The apparent density of listings in coastal and urban areas is reduced; the national spread of listings is more even and arguably does reflect the relative intensity of historical land use. It also emerges that particular rural areas in New South Wales, Queensland, South Australia and northern parts of Western Australia may be under-represented.

2.1.5 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 54 places that were predominantly included for natural heritage values. At the state and local level, information on



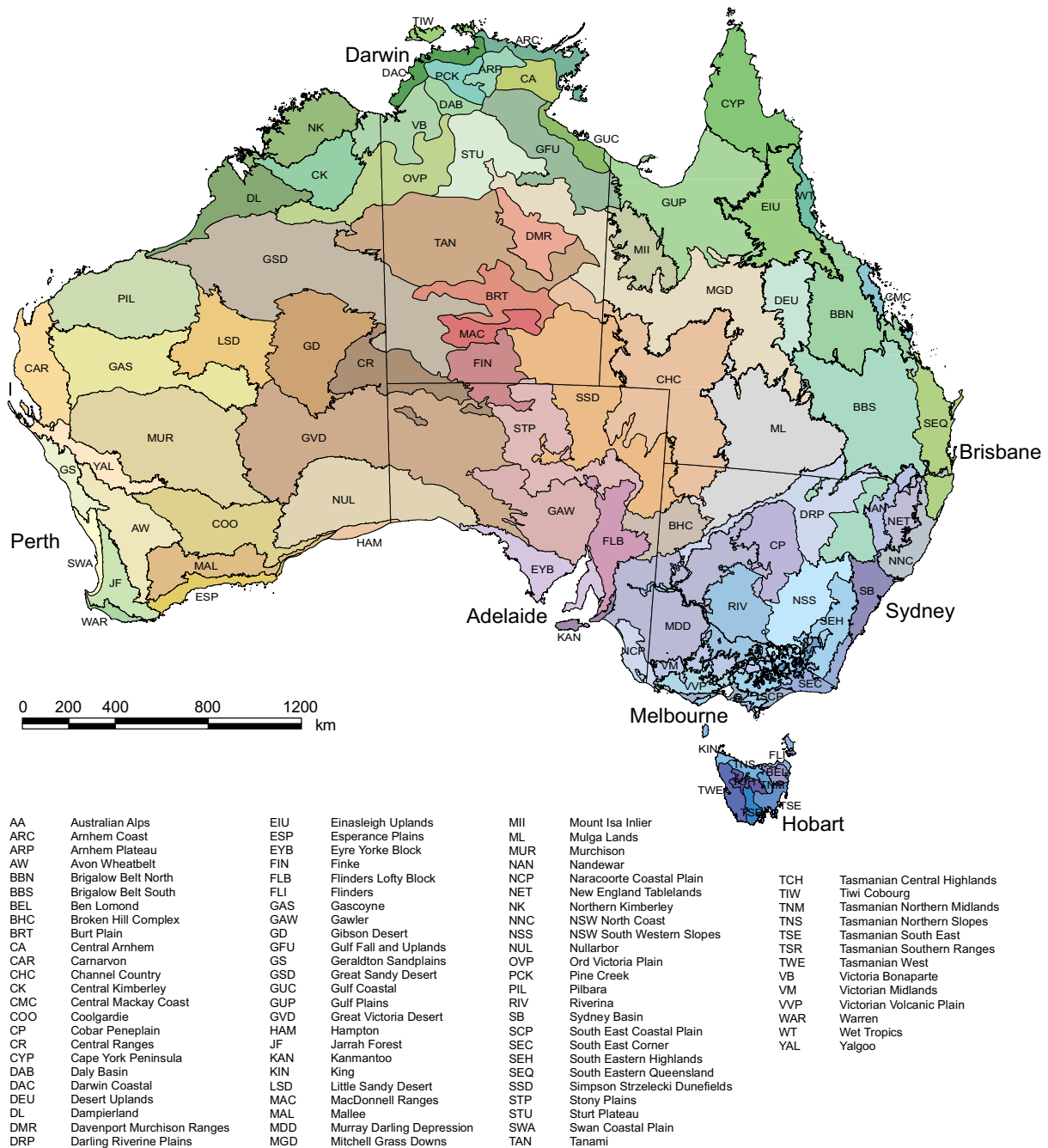
Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011, using data from state and territory heritage agencies (2011) for places listed by local government area; PSMA Australia Ltd (2010) local government area boundaries; Australian Bureau of Statistics¹⁴

Figure 9.8 Number of heritage places listed per hundred people by local government area

Data for New South Wales, Victoria, Queensland, South Australia and Western Australia are from local government planning mechanisms. Tasmanian data are from the Tasmanian Heritage Register, which includes places of local and state heritage significance. Data for the Northern Territory and the Australian Capital Territory are for places listed in territory registers. Data are not captured at the local government level.

places included in heritage lists for natural values is inconsistent between jurisdictions. Australia's National Reserve System includes Australian and state national parks, other lands reserved for conservation purposes, Indigenous protected areas, areas managed by conservation organisations and ecosystems protected by farmers on their private working properties—together comprising more than 9300 protected areas covering nearly 13% of Australia. The National Reserve System is being actively developed to reserve lands across 85 bioregions, each of which is a large, geographically distinct area of similar climate, geology,

landform, vegetation and animal communities. These bioregions are presented in a bioregional map: the Interim Biogeographic Regionalisation for Australia (IBRA) (Figure 9.9). The aim of the National Reserve System is to protect a comprehensive range of ecosystem and other important environmental values within each of the 85 bioregions. Priority is given to increasing the area that is protected in under-represented bioregions (less than 10% protected).¹⁵



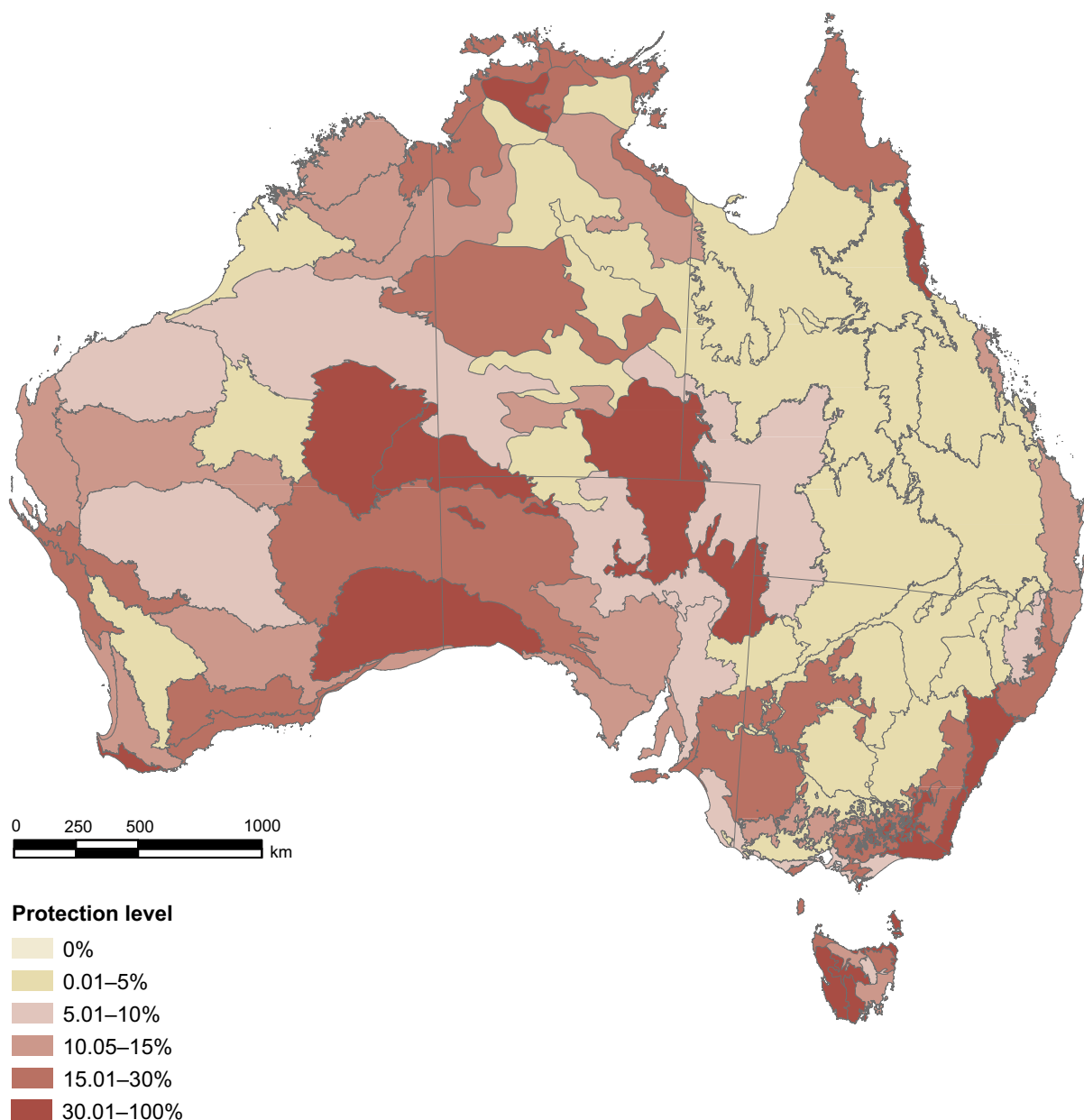
Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities;¹⁶ Interim Biogeographic Regionalisation of Australia (IBRA 6.1) (2004) compiled by the Environmental Resources Information Network, Australian Government Department of the Environment, Water, Heritage and the Arts (2005) with data provided by state and territory land-management agencies; Australian Coastline and State Borders 1:10 million (1989), Geoscience Australia

Figure 9.9 National Reserve System—Interim Biogeographic Regionalisation of Australia regions

All 85 bioregions are represented in Australian reserved lands; 51 regions already exceed the current 10% target, but 34 regions are not yet adequately represented (Figure 9.10). However, the size and resilience of reserved lands are also a relevant 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, 82% of the total area of public reserved lands occurs in blocks of more than 100 000 hectares.^b

^b Workshop discussion with the heads of national, state and territory parks agencies, 27 August 2010



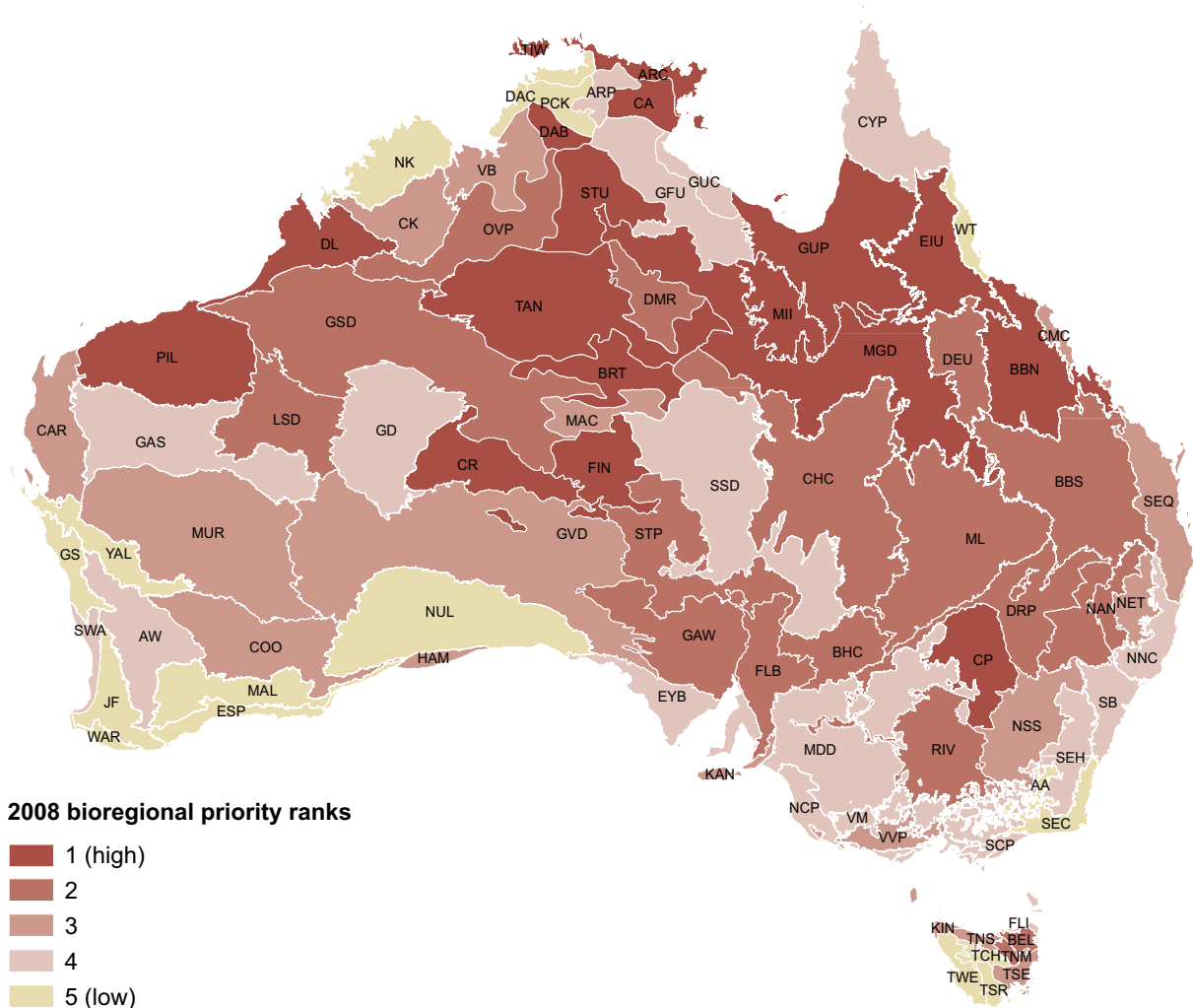
Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities;¹⁶ Collaborative Australian Protected Areas Database (CAPAD) (2008) and Interim Biogeographic Regionalisation of Australia (IBRA 6.1) (2005) compiled by the Environmental Resources Information Network, Australian Government Department of the Environment, Water, Heritage and the Arts (2010) with data provided by state and territory land-management agencies; Australian Coastline and State Borders 1:100 000 (1990), Geoscience Australia

Figure 9.10 National Reserve System—Interim Biogeographic Regionalisation of Australia regional protection level

Although the National Reserve System is recognised as the major current instrument for protection of intact ecosystems (see also Chapter 8: Biodiversity),¹⁷ issues arise in relation to what constitutes a comprehensive, adequate and representative

system.^c Protected lands need to support biodiversity conservation under current and future climatic conditions. The Convention on Biological

^c ACIUCN SoE 2011 workshop, 23 May 2011. Workshop notes are available on the SoE website, www.environment.gov.au/soe.



Source: Taylor et al.¹⁸

Figure 9.11 Proposed new priorities for bioregions, based on indicative combined gap for ecosystems and EPBC-listed species, expressed as a percentage of bioregion area

Diversity^d suggests a target of 17% of each kind of terrestrial ecosystem by area. Recent assessment by WWF-Australia¹⁸ takes a more fine-grained approach to individual ecosystems, based on consideration of vegetation communities as an indicator of ecosystems, and concludes that at present only approximately one-third of the required areas are reserved (Figure 9.11; see also Chapter 8: Biodiversity).

Areas of natural heritage occur in both publicly and privately owned and managed lands, and their heritage values may transcend ownership boundaries. Australia’s natural heritage would benefit from a whole-of-landscape approach that addresses management regimes across land tenure

and considers individual places, different land holdings and subregions within the National Reserve System as part of a broadly interconnected system. The need for linking landscape conservation across tenures is now widely recognised,¹⁹⁻²⁰ and there have been welcome initiatives, including the nomination of large-scale conservation areas, which, in conjunction with the National Reserve System, should help to maintain natural Australian landscapes and ecosystem processes.²⁰ Cross-tenure identification of values—coupled with management that is focused on the resource and its values, rather than its ownership—would be consistent with global trends in natural heritage management.^e

d www.cbd.int/convention

e ACIUCN SoE 2011 workshop, 23 May 2011. Workshop notes are available on the SoE website, www.environment.gov.au/soe.

Box 9.5 Victorian Indigenous heritage—listing and management of Aboriginal places

In Victoria, objects and places with Indigenous heritage value are protected through the *Aboriginal Heritage Act 2006*, which began in May 2007 and is administered by Aboriginal Affairs, Victoria. (Some post-contact places with Indigenous values may also be protected and managed under the *Heritage Act 1995*.)

The Aboriginal Heritage Act established the Victorian Aboriginal Heritage Register, which includes records of all known Aboriginal places in Victoria, as well as known private collections of Aboriginal objects. The register was established in the 1970s under the *Archaeological and Aboriginal Relics Preservation Act 1972*. As at June 2011, there were 32 599 registrations, with approximately 1000 new registrations being added each year. It is estimated that the existing records represent a survey of approximately 3% of the state's land area.

The Aboriginal Heritage Act includes a range of protective mechanisms. A key aspect of these provisions is the positive value placed on the protection of Aboriginal cultural heritage. Activities that may harm Aboriginal heritage can only be carried out in accordance with an approved cultural heritage management plan or a cultural heritage permit. A cultural heritage management plan is a written report containing the results of an assessment and recommendations for measures to be taken before, during and after an activity, to manage and protect Aboriginal cultural heritage. Cultural heritage management plans are prepared for projects subject to an 'environmental effects statement' process, if required by the minister responsible for the Act or under regulations that make them mandatory for listed high-impact activities.

A cultural heritage permit cannot be used if a cultural heritage management plan is mandated, so there has been a move away from permits since 2007. In this period, permits have been issued for excavating land (19 permits); carrying out an activity that will, or is likely to, harm Aboriginal cultural heritage (139); buying or selling an Aboriginal object (40); undertaking scientific research (7); and removing an Aboriginal object from Victoria (2). There has been one successful prosecution (for selling an Aboriginal object without a permit), and four stop orders were issued.

Between May 2007 and June 2011, approximately 4000 Aboriginal places were registered in Victoria, 1190 cultural heritage management plans were approved and 207 permits were issued.

Other initiatives taken to assist with conservation of the state's Indigenous heritage include establishment of the Aboriginal Cultural Heritage and Registry Information System, which provides real-time online access to the register for approved users, and a nationally accredited Certificate IV in Aboriginal Cultural Heritage Management course offered by La Trobe University.

Source: Aboriginal Affairs Victoria, 30 June 2011

2.1.6 Indigenous heritage

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 are inconsistent around Australia. Some Indigenous places are included separately on the National Heritage List, but many more are included within large areas of reserved lands—the Uluru–Kata Tjuta, Kakadu and Willandra Lakes World Heritage areas being prominent among these. In addition, almost all national parks include significant Indigenous heritage places (which are thereby afforded some statutory protection). At the state level, some jurisdictions proactively prepare registers or statutory lists of Indigenous sites

(Box 9.5), whereas others rely on 'blanket' protective provisions in legislation. The result is that there is no readily available national perspective on the nature and extent of the Indigenous resource—neither what is being listed nor what is potentially being destroyed.^f Survey and assessment programs for Indigenous heritage are often resourced and undertaken in response to threats from development projects. Overall, it is likely that the representation of Indigenous places within reserved lands and on major statutory heritage lists is inadequate. This is especially the case for the National Heritage List.

^f Australian Government Department of Sustainability, Environment, Water, Population and Communities, Indigenous Advisory Committee, SoE 2011 workshop, 10 November 2010. Workshop notes are available on the SoE website, www.environment.gov.au/soe.

Box 9.6 Rediscovering Queensland—how major improvement can be achieved by focusing resources on systematic survey and assessment

In 2005, the Queensland Environmental Protection Agency commissioned an overall methodology and historical context study as preparation for a statewide survey of heritage resources. The methodology was based on facilitating early and ongoing community engagement in identifying heritage. Techniques developed included exemplar communication and community consultation strategies, an electronic fieldwork recording system, and an analysis process to feed outcomes into local and state heritage protection mechanisms and celebrations.²¹ In 2006, regional studies began in far north Queensland. By providing resources and directly engaging local people in the process of heritage identification, the Queensland Government has encouraged communities to take greater responsibility for identifying, conserving and managing their heritage places.

A proactive approach to identifying places of heritage significance has given the community, local government and owners certainty around heritage issues and has provided an opportunity for constructive engagement about the management of heritage places with local government, owners and the community. *Fiona Gardiner, Director Heritage, Department of Environment and Resource Management, Queensland*

2.1.7 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 architectural focus 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, with increasing numbers of systematic survey and assessment programs, according to either geographic areas or historic theme. There has also been far greater direct involvement of local communities and incorporation of heritage lists within planning statutes (Box 9.6). Where applied, these approaches will lead towards more comprehensive and representative heritage lists and a more flexible system that can change in response to evolving community perceptions and needs.

2.2 Condition and integrity

This section examines the condition and integrity of Australian heritage places according to both jurisdiction and nature.

2.2.1 World Heritage

In 2011, the Australian Government, in consultation with state governments produced a periodic report on our World Heritage sites. An obligation of the World Heritage Convention, the report assesses whether the World Heritage values of our 19 properties inscribed on the World Heritage List are being maintained. Australia's report synthesised information and views provided by World Heritage property managers, Australian and state government agencies, consultative committees, Australian representatives from the International Council on Monuments and Sites, and the Australian Committee of the International Union for Conservation of Nature.

Australia's periodic report is generally very positive, acknowledging Australia's expertise in World Heritage management, available human and financial resources, and the legislative protection of the EPBC Act. Nonetheless, the report found that the three 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).

Management needs identified in the report include further work on indicators and monitoring, and improved education, information and awareness building.²²

In 2008, an Australian World Heritage Advisory Committee was appointed to provide a forum for liaison between the individual World Heritage area advisory committees and advice to the government on cross-cutting issues. The committee has met face to face on three occasions, and has provided advice and recommendations to Australian Government and state officials and to the Environment Protection and Heritage Ministerial Council (now abolished), but its activities are constrained by limited Australian Government staff support and other resources.

2.2.2 National heritage

National heritage is identified and managed by the Australian Government under the EPBC Act, in accordance with amendments made in 2003, which created the National Heritage List and the Commonwealth Heritage List. The first review report on these lists, covering the period from 1 January 2004 to 30 June 2008, was published in 2008.²³ In accordance with requirements specified in the EPBC Act, this report is highly focused on the processes followed and compliance with them, rather than providing an independent assessment of the condition and integrity of listed places.

Studies of natural, Indigenous and historic heritage completed for this SoE report suggest that identified places with national heritage values (including all of Australia's World Heritage places) are in good condition and retain 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 in many cases are specifically managed for conservation purposes.

However, there have been a number of instances of adverse impact on condition or heritage value, including, for example, the poisoning of the Tree of Knowledge in the central western Queensland town of Barcaldine, and damage to Indigenous rock art on the Burrup Peninsula. Incremental damage is also wrought by the continuing presence of threats, including site-specific issues such as rabbits and rodents on Macquarie Island, and more general challenges posed by climate change, population growth and economic development. Although, in theory, the Australian Government should be alerted to the prospect of adverse impacts on the condition and integrity of nationally significant places, the reality is that available

resources confine government activities to generally reactive processes and place limits on the national assessment and listing process.

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. Although a number of such plans and strategies are in place, reliable data—based on monitoring of the condition of Commonwealth heritage places—are not available, so the outcome of this management cannot be meaningfully assessed.

2.2.3 State heritage

At the state level, efforts and resources continue to focus on listing and impact assessment processes, rather than on monitoring and evaluating condition and integrity. There is also considerable variation in scope and approach to state SoE reporting. However, it is possible to glean some general understanding from individual state and territory SoE reports:

- The **Australian Capital Territory** regards its heritage as in good condition, but notes the need for adequate protection when changes are made to the responsibilities of the National Capital Authority, to ensure compliance with Australian Capital Territory heritage legislation.²⁴
- **New South Wales** notes that knowledge is increasing and information gathering is continuing, as are efforts to improve the protection of natural and cultural heritage assets and values through a range of related tools, including regulation, nonstatutory agreements and partnerships. There has been a significant increase in land protected for Aboriginal cultural values and continuing reliance on heritage listing as a major mechanism for managing heritage across the state.²⁵
- In **Queensland**, development pressures continue to degrade both natural and cultural heritage, in combination with more recent impacts of drought, fire, flood and major weather events. The majority of places identified as being endangered by the Australian Council of National Trusts in the early 2000s remain under threat, or are even damaged and destroyed. Initiatives such as Rediscovering Queensland (see Box 9.6) seek to address the challenges of managing and protecting heritage values posed by lack of knowledge and information about the condition of natural and cultural heritage places.²⁶

- In **South Australia**, measures of the state of heritage are strongly focused on the listing process, rather than monitoring condition and integrity. Available information shows a significant increase in the number of listed places and increased protection for Indigenous sites and objects, and shipwrecks, but decreasing documentation of geological heritage.²⁷
- **Tasmania** is in the process of major reviews for both Indigenous and historic heritage management, and state-level reporting acknowledges the need to develop clear indicators that can be used to measure condition, trends and changes. A range of environmental indicators have been suggested: knowledge of heritage places and objects, visual condition and integrity of heritage areas and objects, availability and distribution of skills, and community awareness and involvement.²⁸ (See Box 9.7.)
- In **Victoria**, heritage is covered through a separate 'state of heritage' report, which generally concludes that the state of heritage is good, with some significant deterioration in condition and integrity at particular places.²⁹

The correlation between good condition and high integrity is obvious, with public heritage places having noticeably the highest integrity. The places with poorest condition also have the lowest integrity, with privately owned places faring worse. Just over a third of rural places have good condition and condition deteriorates significantly as distance from Melbourne increases. *Marshall et al.*²⁹
- In **Western Australia**, reporting on the state of heritage acknowledges that government arrangements are fragmented, impeding adequate protection and management. There is no single list of heritage places, nor an adequate program for monitoring and reporting, which affects heritage management decisions. Anecdotal evidence suggests that the condition of a number of heritage places is declining, but there is no empirical data to support this observation.³⁰

Box 9.7 A government-funded conservation program improves the condition of a state-listed heritage place

Rotten Row, the married quarters of the Cascades Probation Station in south-east Tasmania, was a much-photographed ruin on the Tasman Peninsula. As an abandoned structure for more than 50 years, it was uneconomical to conserve or maintain as a ruin. However, the property owners decided to conserve and adapt the building for accommodation use. The underlying need was for access to appropriate expertise and funding. Expertise in conservation repairs was found locally, and funding from the National Heritage Investment Initiative was secured to allow the structure to be rebuilt. An enthusiastic owner, skilled tradespeople, professional advice and government funding combined to retain and recover the heritage values of this state-significant place from the convict period.



■ Rotten Row before (left) and after (right) conservation work (photos by Peter Rigozzi)

2.2.4 Local heritage

At the local level, comprehensive national data about the condition and integrity of Australia's heritage are not available. However, it is evident that 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.
- Processes for impact assessment and considerations of development consent are almost invariably framed in terms of one-off adverse effects on local heritage, with a likely (but unproven) cumulative adverse effect, potentially leading to progressive, incremental destruction.
- The establishment of clear up-front heritage policies and guidelines can foster outcomes for condition and integrity that are commensurate with the level of heritage significance, enabling better heritage outcomes.
- Many local and state authorities have instigated incentive programs, including access to information,

grants and award schemes, which improve the condition and values of some local heritage places (Box 9.8).

- 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.

2.2.5 Natural heritage

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

There is no 'central' picture of the condition and integrity of natural heritage places, although this is an issue that has been identified in Australia's Strategy for the National Reserve System 2009–30.¹⁷ An assessment of natural heritage places for this report focused on the current condition and integrity of 75 places located on public and private lands across Australia. Many of these places form part of the National Reserve System, which includes more than 9300 protected areas.¹⁰

Box 9.8 Heritage incentives at the local government level


The Shire of Busselton is committed to helping owners conserve heritage places wherever possible. Its Environment and Heritage Conservation Policy includes a range of incentives that can be offered to owners in return for a commitment to conservation of the heritage place. Incentives can be offered to owners of places on the Heritage List, on the Municipal Heritage Inventory or located in a heritage area.

Incentives take the form of relaxation or modification of one or more of the planning requirements for that place that would normally apply under Town Planning Scheme 20 or the Residential Design Codes. This includes but is not limited to:

- parking requirements
- plot ratio
- residential density
- use categories
- the requirement for only one dwelling on a rural lot (which can be relaxed if an owner wishes to construct a new dwelling and the existing dwelling is a listed heritage place).

The shire may, in certain circumstances, allow a reduction of rates in return for conservation works to a heritage place. This will apply in the year the work is carried out or a subsequent year and for the following four years (a total of five years), at the discretion of the shire.

In return for incentives, the shire may require the owner of a heritage place to enter into a heritage agreement under the *Heritage of Western Australia Act 1990* or a heritage agreement under the Local Town Planning Scheme with the Shire of Busselton. This policy was adopted in 2010. Proposals are considered on a case-by-case basis, with the Regional Heritage Adviser advising on and negotiating appropriate heritage outcomes.



*We Aboriginal people
have obligations to
care for our country,
to look after djang,
to communicate with
our ancestors when on
country and to teach
all of this to future
generations.*

Frontispiece to *Kakadu
National Park Plan of
Management 2007–2014*,
Director of National
Parks, 2007

The study analysed the condition and integrity of natural heritage places by reviewing specific factors, including their natural heritage values; effects such as erosion, climate change and weeds; presence of threatened species; place use (including recreational and other activities); documented management regimes; and wildfire and weather events. The limited sample size for the study means that, at best, it provides only an anecdotal indication of the natural heritage condition of the surveyed places. For many places, information was not readily available.

The study suggests that places on the World Heritage List and National Heritage List have great threats to their condition, mainly due to their higher use and associated impacts. Similarly, higher use meant that places in New South Wales and Victoria recorded a larger number of threats, reflecting population pressures and visitation. The places assessed also faced a range of threats from both natural and anthropogenic factors, including weather events, wildfires, invasive species, soil erosion, and deficiencies in general management frameworks or particular plans and resources for issues such as threatened species.¹⁰

2.2.6 Indigenous heritage

Traditional owners should have an unqualified right to refuse a cultural heritage management plan, permit or any other form of authorisation that relates to the protection or destruction of cultural heritage. *Schnierer*³¹

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

Indigenous heritage is managed through multiple jurisdictions, and a cohesive picture is difficult to achieve. This fragmented view has been exacerbated by the progressive demise of the Register of the National Estate.

The *State of Indigenous cultural heritage 2011* report considered two important indicators of the state of Indigenous heritage: the physical condition and integrity of Indigenous heritage places, and the use of Indigenous languages.¹² This report found that the trend towards an increasing interest in Indigenous heritage

in Australia has continued, and listing of Indigenous heritage places on the national and state heritage lists has continued to grow—in some jurisdictions, more strongly than other forms of heritage listing.

Overall, there have been a large number of positive developments, but also some trends that significantly undermine the protection of Indigenous heritage. Conflicts about destruction of Indigenous heritage by industry activities remain common, as do debates about whether the support available for Indigenous culture and heritage programs is adequate. One of the main threats to Indigenous heritage places is conscious destruction through government-approved development—that is, development for which decision-makers are aware of (or obliged to be informed about) Indigenous heritage impacts, yet choose to authorise the destruction of Indigenous heritage.¹² This widespread process, combined with a general lack of understanding of physical Indigenous heritage, means that individual decisions on assessment and development result in progressive, cumulative destruction of the Indigenous cultural resource.

The *State of Indigenous cultural heritage 2011* report particularly noted that increased regulation and reporting of Indigenous heritage, required as part of environmental assessment for development approvals, had not reduced the rate of approved destruction of significant Indigenous heritage sites, which is generally opposed by Indigenous communities.¹²

Indigenous people play an important role in managing Indigenous heritage and sustainably managing Australia's natural resources, including an increasing percentage of Australia's reserves. Indigenous traditional knowledge for environmental management is a growing area of research,³² with a number of partnership programs between Indigenous groups and governments. Policies are beginning to recognise the relationship between natural, cultural and historic heritage, and how these are integrated under Indigenous definitions of heritage. Some jurisdictions also recognise Indigenous people's rights to use, access and manage lands, waters and natural resources for cultural purposes.⁸

■ Bush tucker, Jatbula walking track, Katherine, Northern Territory
Photo by Nick Rains

g Australian Government Department of Sustainability, Environment, Water, Population and Communities, Indigenous Advisory Committee, SoE 2011 workshop, 10 November 2010. Workshop notes are available on the SoE website, www.environment.gov.au/soe.

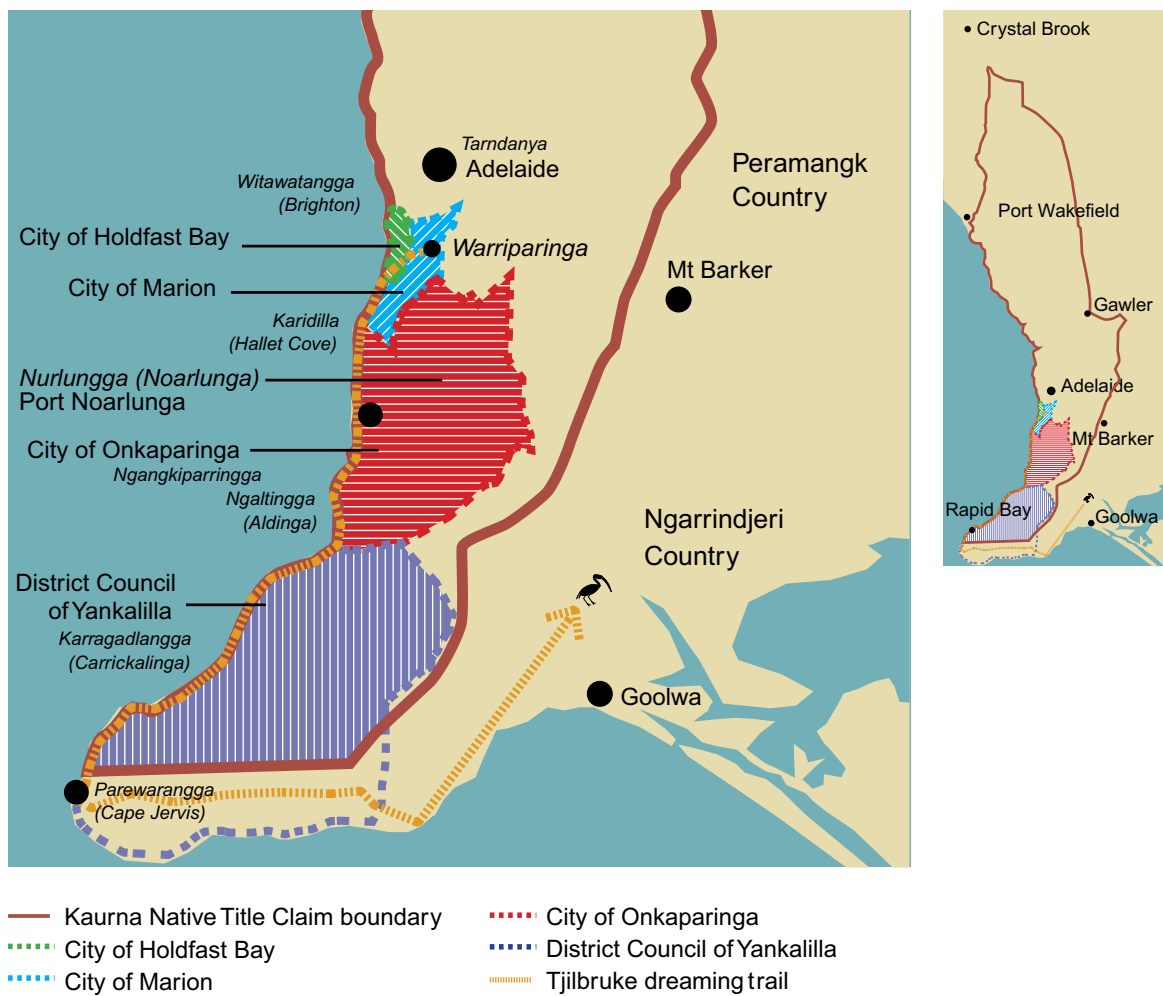
However, the involvement of Indigenous people in heritage management remains primarily in the form of consultants and advisers, rather than formal decision-makers. The capacity of Indigenous people to care for their own heritage, exercise responsibility

for country and transmit cultural practice to new generations also continues to be hindered by local government arrangements (Box 9.9), as well as social and economic disadvantage, as acknowledged in the Australian Government's Closing the Gap initiative.³³

Box 9.9 Tjilbruke dreaming trails, South Australia

The Tjilbruke dreaming trails are in the traditional lands of the Kurna nation in South Australia. Tjilbruke dreaming relates to the journey taken by Tjilbruke, ancestral creator being of the Kurna people, who shaped the land into the formation that people know today. Tjilbruke dreaming is the predominant dreaming of southern Kurna country. Among other things, the dreaming explains the creation of seven freshwater springs along the coast of the Fleurieu Peninsula between Crystal Brook in the north, through the Adelaide plains, to Parewarangga (Cape Jervis) in the south (Figure A). The dreaming is a complex story that speaks of creation, the law and human relationships for Kurna people.

The trails are spread over large tracts of public and privately owned lands, extending through four local government areas and some national parks.¹² The trails are managed by the four local councils along the trails, in some cases in partnership with the Kurna nation. The trails are widely regarded by non-Aboriginal South Australians as an important feature of the region.



Source: Kurna Tappa Iri Regional Agreement³⁴

Figure A Tjilbruke dreaming trails

Box 9.9 continued

The sites along the Tjilbruke dreaming trails are still used by local Kurna people today as part of their living culture, and the Kurna people have a customary responsibility to manage and maintain the trails. Although there is widespread recognition of the significance of the trails and the need for access for the Kurna to continue cultural practices, their ability to fulfil their responsibility to manage the sites is severely limited because the trails are located on public and private lands, none of which are Aboriginal owned or controlled. The traditional owners are therefore heavily reliant on landowners to manage and maintain the trails and sacred sites.

The trails are reportedly in fair physical condition overall, although some sections are in better condition than others. There is ongoing maintenance on some sections of the trails located on public land, but funding for site maintenance and upkeep is an ongoing issue. The integrity of the cultural practices associated with the trails is affected by the proximity of residential housing to some places used for secret men's and women's business.

Source: Schnierer et al.¹²

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

Indigenous language is an extraordinarily important indicator of the health of Indigenous culture and thus the condition of the nation's Indigenous heritage.^h

Reporting on Indigenous language has focused on numbers and proportions of speakers, using data collected by the Australian Bureau of Statistics and the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) and, more recently, from the National Indigenous Languages Survey, a comparative assessment of the endangerment status of individual Indigenous languages across the country (National Indigenous Languages Survey, as cited in Schnierer et al.¹²). Work for this report focuses on indicators of the vitality of Indigenous language, including:

- intergenerational language transmissions
- absolute number of speakers
- official attitudes and policies towards languages
- language programs
- proportion of Indigenous people whose main language spoken at home is an Indigenous language
- proportion of Indigenous people who speak an Indigenous language.

^h Australian Government Department of Sustainability, Environment, Water, Population and Communities, Indigenous Advisory Committee, SoE 2011 workshop, 10 November 2010. Workshop notes are available on the SoE website: www.environment.gov.au/soe.

Indigenous Australian languages have rapidly declined since European settlement and have been replaced by English or creoles. Today, Australian society is effectively monolingual. Although English is not officially recognised as the national language, it is the language of every societal institution, including government, legal and education systems.

At the time of European settlement, there were more than 250 Aboriginal languages. Today there are just 145 languages, most of which are no longer fully or fluently spoken. Only three to six languages are still spoken by all members of all generations in all domains (Table 9.1), although some Indigenous communities still use fragments of their language even when it is not fully spoken. The endangered status of Indigenous Australian languages is also illustrated by the slow but steady decline in the number of Indigenous people who speak an Indigenous language at home. In the 2008 NATSISS, 11.5% of Indigenous people aged 15 years or over spoke an Indigenous language at home, compared with 12% in 2002 (National Indigenous Languages Survey, as cited in Schnierer et al.¹²).

The majority of the widely spoken Indigenous languages are spoken in remote areas of Western Australia, the Northern Territory and Queensland, where it was difficult for the non-Indigenous colonists to establish settlements. 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 over the past five years.

Table 9.1 Endangerment status of Aboriginal and Torres Strait Islander languages

Rating	Endangerment description	Number of languages	Languages include
5	Safe	3–6	Alyawarr, Girramay, ^a Nyangumarta, Walmajarri, ^a Walpiri, Yanyuwa ^a
4	Unsafe	0	
3	Definitely endangered	2	Garrwa, Kuku Yalaji ^b
2	Severely endangered	9	Adnyamathanha, Kayardild, Kaytetye, Koko Bera, Mudburra, Rembarnga, Tainikuit, Waanyi, ^c Warlmanpa
1	Critically endangered	14	Alawa, Bardi, Kalaw Lagaw Ya, Kalaw Kawaw Ya, Lardil, Meriam Mir, Ngarlawangka, Tjungundji, Umbindhamu, Wajarri, Wambaya, Wangkatha, Wargamay, Yidiny
0	No longer fully spoken	155	

a These languages should have an ‘at least’ descriptor preceding their classification because the National Indigenous Languages Survey (NILS) places them in the ‘strong’ category, but this rating appears inaccurate according to other information provided during the NILS that suggests they are in fact more endangered.

b This language could also be given a 2 rating as severely endangered.

c This language could also be given a 1 rating as critically endangered.

Note: The NILS in 2005 was the first comprehensive national survey of Indigenous Australian languages, and assigned the following endangerment ratings:

‘Safe’ means the language is regularly used by all age groups, including children.

‘Unsafe’ means the language is used by 30–70% of the under-20 age group part of the time or in a partial fashion, and is used by the parental generation and upwards.

‘Definitely endangered’ means the language is most used by the parental generation (20+ years) and upwards.

‘Severely endangered’ means the language is mostly used by the grandparental generation (40+ years) and upwards.

‘Critically endangered’ means the language is known to very few speakers, in the great-grandparental (60+ years) generation.

‘No longer fully spoken’ means there are no speakers left.

Source: National Indigenous Languages Survey, as cited in Schnierer et al.¹²

In 2009, the Australian Government launched a new national Indigenous languages policy. This aims to maintain critically endangered languages and reclaim unspoken Indigenous languages by providing a framework for coordinated action among the bodies involved, including government, Indigenous language organisations, cultural institutions, and educational and research institutions.¹² However, the new national policy was not accompanied by a boost to the funding program that underpins it.

Ironically, at the same time as the Australian Government was launching its new Indigenous languages policy, the Northern Territory Government withdrew funding for bilingual education from the remaining bilingual schools, effectively ending bilingual education. The division between the national and territory policy is a major obstacle to implementing a coherent direction for Indigenous languages, especially in areas such as education.¹²

2.2.7 Historic heritage

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

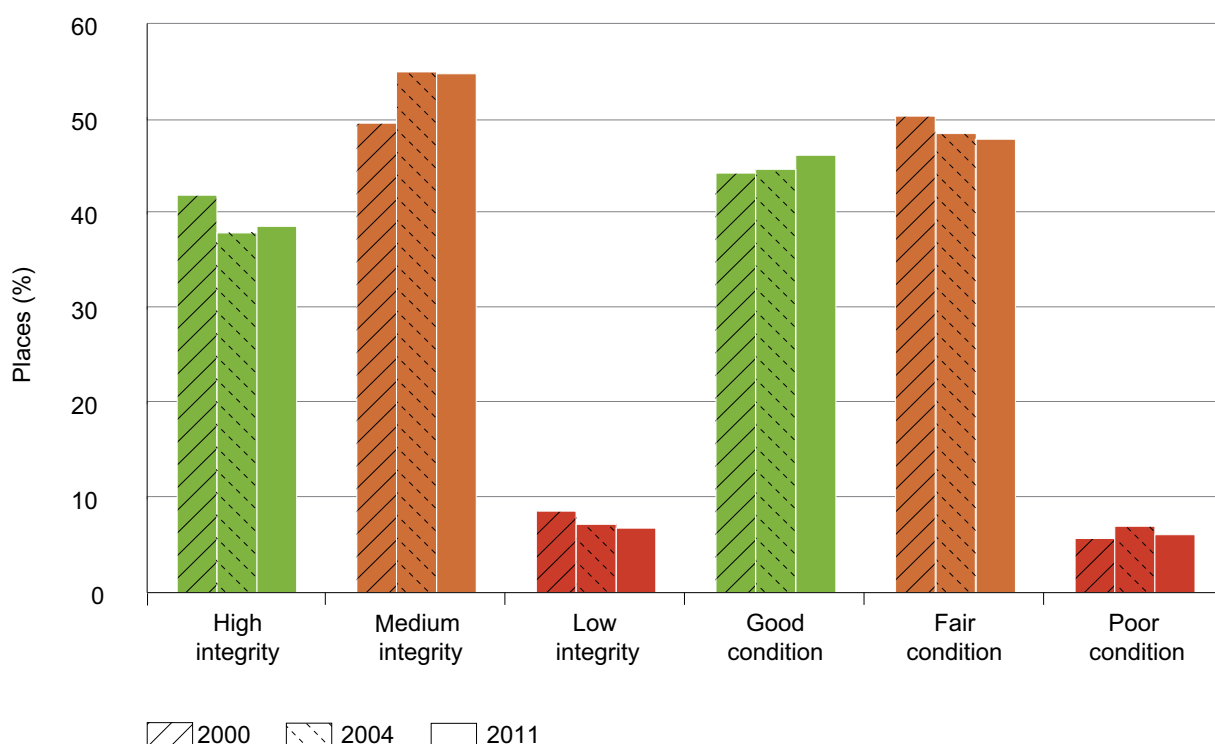
The study of condition and integrity of historic heritage places for this report took the form of a physical survey of a proportion of the places entered in the Register of the National Estate and, in some cases, the various state and territory heritage registers.¹¹ The survey covered every state and territory, and included as wide a regional coverage as the existing heritage registers allow, with a particular emphasis on an equal spread of places in rural and urban environments. The study recognised the importance of including local places, as these are often where the majority of Australians interact with heritage. The places included in the survey were predominantly buildings, with some other types of places, such as industrial sites.

Owing to resource limitations, the survey considered physical condition and integrity rather than intangible values.

The survey provides a simple overview of the continued existence, condition, integrity and use of a sample of the nation's historic heritage, and allows trends in the health of that heritage to be identified (Figure 9.12). The study repeated a survey first undertaken for the 2001 SoE report and repeated in 2004, and was therefore able to identify trends apparent over the intervening period. The study found that the majority of historic heritage places are in fair to good condition and retain integrity of their identified values, with relatively little change in the condition or integrity of the survey sample.

The report notes that there is a substantial gap in the process of monitoring the state of the historic environment, as the health of heritage in a huge area of the continent has not been included in samples used for SoE reporting. The authors note that this gap in the data might be addressed, or at least tested, by studying or surveying specific, selected nonurban and remote areas in each jurisdiction.¹¹

The authors also observe that natural cycles in heritage place maintenance might skew the observation of their condition. 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 that works cannot be deferred any longer, or a place may change ownership and deferred maintenance then takes place, with or without additional conservation works. The effect on the results of condition monitoring is that, if maintenance is deferred, the condition of the place is reported as deteriorating, when in fact it is part of a relatively normal cycle of maintenance. The authors suggest that more refined observation of this cycle and the drivers that lengthen or shorten the interval between maintenance events might help distinguish between monitoring of the normal cycle and identification of deterioration in the nation's historic environment. This in turn could lead to better targeted or better designed government conservation funding programs.¹¹



Source: Pearson & Marshall¹¹

Figure 9.12 Changes in integrity and condition of historic heritage places, 2000–11

9.1 Assessment summary

State and trends of heritage values

Component	Summary	Assessment grade				Confidence	
		Very poor	Poor	Good	Very good	In grade	In trend
Natural heritage							
Process of listing, area and distribution of identified natural heritage places	<p>Statutory heritage lists are inconsistent in coverage of natural heritage places, both between jurisdictions and across site types. Geodiversity is poorly represented</p> <p>The National Reserve System focuses on incorporating examples of the full range of ecosystems and other important environmental values across each of the 85 bioregions. Although there are known gaps and alternative targets that are greater and more refined, 51 of the 85 bioregions have more than 10% of their area protected in the reserve network</p>						
Physical condition and integrity of natural heritage places	<p>Data relating to natural heritage values, environmental threats and management plans for a sample of natural heritage places indicate 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. There are differences in condition according to land tenure and listing status</p> <p>Available national information relates to a select sample and may not be truly representative</p>						
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 most often resourced and undertaken in response to threats from development projects</p> <p>There is inadequate representation of Indigenous places within public sector reserved lands and on the major statutory heritage lists, particularly the National Heritage List</p>						
Physical condition and integrity of Indigenous heritage places	<p>Interest in Indigenous heritage in Australia has increased. There have been many positive developments, but also some trends that significantly undermine the protection of Indigenous heritage. Recognition of the role of Indigenous people in managing Indigenous heritage has expanded, but individual assessment and development decisions cause cumulative incremental destruction of the Indigenous cultural resource</p>						

Component	Summary	Assessment grade				Confidence	
		Very poor	Poor	Good	Very good	In grade	In trend
Indigenous heritage <i>continued</i>							
Use of Indigenous languages	Indigenous languages remain highly endangered, although there have been some improvements in the number of speakers and additional language revitalisation programs						
Historic heritage							
Process of listing, area and distribution of identified historic heritage places	Significant progress has been made in the collection of data relating to statutory listing processes for historic heritage at the national and state level. Although inconsistencies remain, the number of listed places has increased and there have been more systematic, thematic historic heritage assessment projects						
Physical condition and integrity of historic heritage places	Survey of a national sample of historic heritage places indicates that the majority are in good condition and retain integrity of their identified values. Variation in the observed condition, indicating minor improvement, is likely to reflect maintenance and repair cycles, although places that are both vacant and in poor condition remain under threat						

Recent trends	Improving Deteriorating Stable Unclear	Confidence	Adequate high-quality evidence and high level of consensus Limited evidence or limited consensus Evidence and consensus too low to make an assessment
Grades	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> Very good Good Poor Very poor </div> <div> <p>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</p> <p>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</p> <p>Places with heritage values have not been systematically identified. Heritage places are in poor condition and/or their values lack integrity</p> <p>Places with heritage values have not been identified. Heritage places are in degraded condition and their values lack integrity</p> </div> </div>		

Pressures affecting heritage

In this section, pressures on Australian heritage are categorised and considered, firstly according to their major drivers: climate change, population growth and economic growth. Resource-specific pressures that relate particularly to natural, Indigenous or historic heritage are considered separately.

3.1 Climate change

Climate change has potentially serious implications for Australia's heritage.³⁵ Heritage managers cannot alter climate change itself, but must respond to the symptoms

or pressures that arise. In particular, opportunities should be embraced to facilitate appropriate adaptation and increase resilience as a proactive response (see Section 5).

3.1.1 Rising temperatures

Rising temperatures will alter ecosystems, with potentially devastating effects on niche-adapted rare and endangered species. Changes include the arrival or range expansion of other native species that are likely to have negative effects on local species.

At a glance

Climate change, population growth and economic growth create a range of general pressures on Australia's heritage and some specific pressures on natural, Indigenous and historic heritage. Some of these pressures, such as those arising from our legacy of extensive land clearing, cannot readily 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. To understand the effects of pressures on our heritage resources, it is useful to distinguish between those that can be managed and those that cannot.

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, and additional damage and destruction from extreme weather events. These climate change-driven pressures have high impact and will irreversibly damage our heritage if unchecked.

Changes to our population can reduce resources for conservation in rural areas and create pressure for change and development in coastal and urban areas. Individual sites are also subject to neglect and vandalism or, conversely, damage from increased visitation.

Economic growth affects heritage through development projects that directly threaten heritage areas and sites, large-scale resource extraction or growing tourism associated with the heritage values themselves.

Pressures particular to natural heritage include the fast-growing number of invasive species, progressive loss of habitat, conflict in land use, and tension between the potential economic value of land and its dedication for conservation purposes.

Indigenous heritage in Australia is under pressure from loss of knowledge and tradition. This loss is manifest in social disconnection, extinction of language and discontinuation of cultural practices. Indigenous sites are also subject to an ongoing process of incremental destruction associated with urban and industrial development that is often approved despite the identification of heritage impacts.

Historic cultural heritage is particularly threatened by 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.

Higher air temperatures will cause deterioration of external finishes and building fabric, as well as changes to lifestyles and cultural practices. More frequent extreme temperature events may affect the population in some areas, leading to increased human pressure on heritage sites and places, including the negative effect of abandonment.³⁶

3.1.2 Changing rainfall

Higher rainfall in northern Australia may result in flooding and erosion of heritage places and archaeological sites, and possible destabilisation of historic buildings. Lower rainfall elsewhere in Australia will inevitably change vegetation communities and increase erosion, leading to destabilisation of structures and archaeological sites. It will also reduce economic viability as rural communities are abandoned because of drought.

3.1.3 Rising sea levels

Rising sea levels are expected to place major pressure on Australia's coastal heritage, not only on natural heritage places, but also on cultural sites such as Aboriginal middens, sea-cave deposits, archaeological sites, rock art and cave art sites. All of these are highly dependent on the maintenance and protection of their underlying landforms. Indirect pressures will arise from changes to settlement patterns, including loss of viability for some coastal areas. Changes to hydrology, soil migration and damage from storm washes may also affect historic coastal sites, such as the Sydney Opera House, as well as smaller coastal historic heritage places.³⁶

3.1.4 Altered fire regimes

Fire presents a major threat to reserved lands and their constituent species and ecosystems, but also to a wide variety of cultural heritage assets. Wildfire science is complex, and the pressures and impacts depend on a combination of management regimes and the responses of different plant groups.³⁷ These factors will be affected by climate change, which will change the nature, intensity and frequency of fires.

Climate change can lead to broadscale changes in vegetation. For example, a number of eucalypt species in the Greater Blue Mountains are adapted and specialised for different climate and habitat

niches.³⁷⁻³⁸ The silvertop ash (*Eucalyptus sieberi*) grows at altitudes from sea level to more than 1000 metres, as a tall forest tree on protected slopes or a short multistemmed tree on exposed ridges.^{37,39} The wide distribution of the species makes it resilient to wildfire impact. In contrast, eucalypts that have highly restricted distributions, such as the Faulconbridge mallee ash (*Eucalyptus burgessiana*), are more vulnerable.

Fire management regimes and emergency response procedures have become increasingly sophisticated and responsive to the complex issues involved. While focus understandably remains on protecting people and property, natural and cultural heritage values are increasingly recognised. Wildfire abatement programs arguably reduce pressure on biodiversity, and Indigenous and historic values. In western Arnhem Land, there is mounting evidence that patchy, more traditional fire regimes are likely to have far less impact on biodiversity—particularly for long-lived, obligate seeding plants that require fire to germinate and mature rapidly following a fire, such as cypress pine (*Callitris intratropica*)—than the frequent intense wildfires experienced in recent decades. It is recognised that reducing the frequency of wildfires in western Arnhem Land will also better protect globally significant rock art and bush food resources.⁴⁰

3.1.5 More frequent extreme weather events

Climate change is likely to increase the frequency of damaging extreme climatic events such as tropical cyclones, and affect droughts and floods by changing the intensity of El Niño (a periodic warming climate pattern). All these events will cause direct damage to natural and cultural heritage places. Damage and destruction may also result from rescue and clean-up activities. Some places will suffer further deterioration with a loss of economic viability, and some places and communities may be abandoned.

3.2 Population growth

Australia's population is increasing, and the distribution of people around the Australian landscape is changing. This will affect all aspects of the environment, including heritage.

Along with population growth, the increasing recognition and prominence of heritage places results in increased visitation to heritage places. Ironically,

this has the potential to lead to damage or vandalism. Pressures from damage are greatest in popular heritage areas, and pressures from vandalism are greatest in remote, unregulated areas and where there is poor communication about heritage values and appropriate visitor behaviour.

3.2.1 Community perceptions of value

Australia is a young nation, and we continue to grapple with our heritage and how it fits into the national narrative—our perception of who we are, and the places that create our national identity. Australia’s national heritage narrative is not well told. Indeed, despite strong community interest and support for heritage,⁴¹ it seldom becomes a major agenda item in national debate and suffers seriously from under-resourcing.

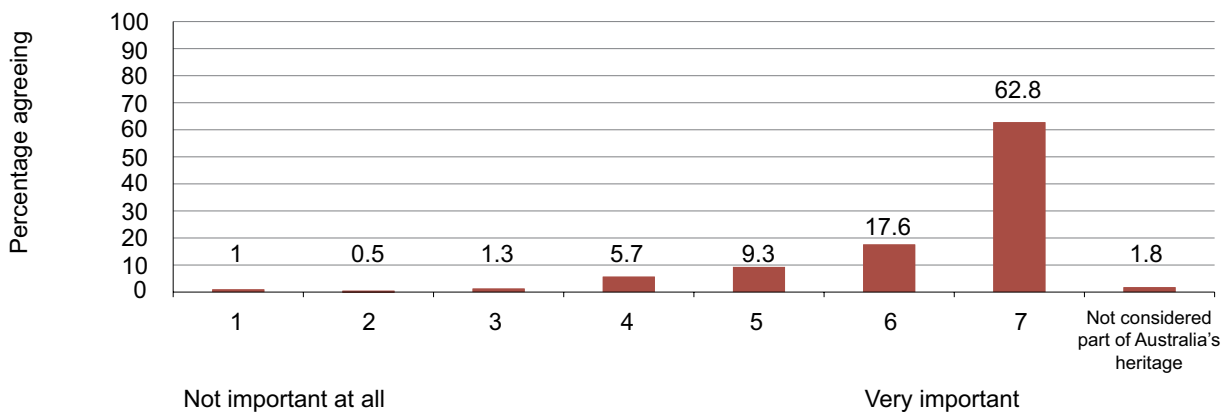
Value ... remains at the centre of all heritage practice; it is what justifies legal protection, funding or regulation; it is what inspires people to get involved with heritage. Indeed, in public value terms, something is only of value if citizens—either individually or collectively—are willing to give something up in return for it. *Kelly et al.*⁴²

Heritage places become neglected if they are not adequately identified and recognised, if they become redundant or if they are not directly connected with economic activity.

In 2006, a survey-based study of community interest and participation in Australian heritage by Deakin University found that interest in heritage is high, even though direct participation is not (Figures 9.13 and 9.14).⁴¹ The respondents saw heritage management as a shared responsibility, not solely a government function, and preferred broad, inclusive heritage management that retains the use and functionality of protected items.

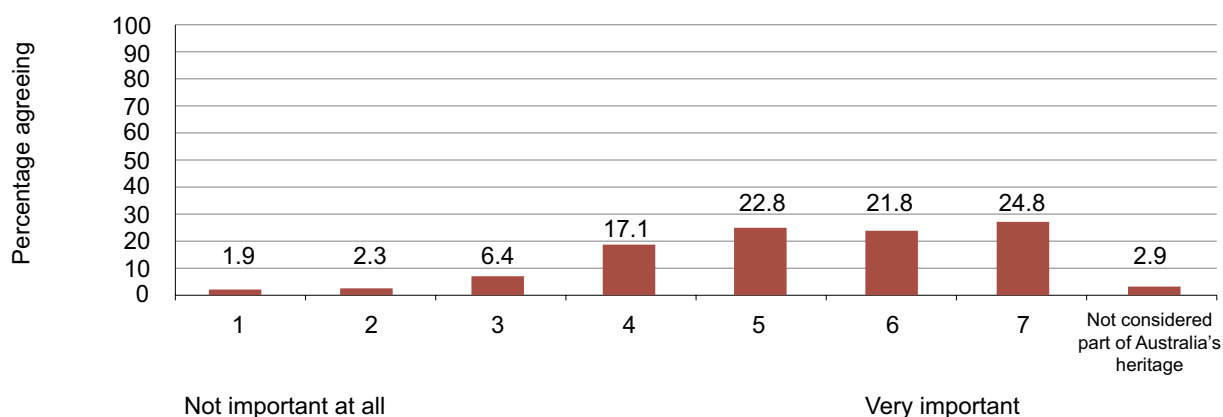
The review of heritage in the study went well beyond stereotypical colonial architecture to include natural items such as native animals, intangible concepts such as the contribution of immigration, experiences such as cultural festivals, and even very recent buildings and architecture. Elements rated as most important to protect and preserve, such as native fauna and waterways, were seen as being important to all Australians, as well as vulnerable and irreplaceable.

Despite the findings of this study and anecdotal evidence such as high levels of community participation in annual Heritage Week activities, regular media coverage of heritage issues or active opposition to developments that threaten heritage places, these opinions do not appear to translate into government policy or resources for heritage conservation.



Source: Deakin University,⁴¹ p. 12

Figure 9.13 Importance of preserving natural icons and landmarks



Source: Deakin University,⁴¹ p. 13

Figure 9.14 Importance of preserving human-made icons and landmarks

3.2.2 Population shift

The Australian population is not only growing, it is shifting away from rural centres and towards cities and coasts. This is causing significant pressures to which governments at all levels are seeking to respond. In Melbourne, for example, the Melbourne 2030 strategy supports steady population growth on an environmentally sustainable basis, recognising the uneven distribution of population growth and particularly the decline in rural areas.⁴³ Similar factors are at play in Sydney and throughout New South Wales.⁴⁴

Regional and rural [New South Wales] have experienced substantial changes in their population over recent years and further changes are anticipated. Regional centres are growing while many smaller towns are experiencing population losses. *New South Wales Department of Planning,*⁴⁴ p. 23

The growth of urban and coastal populations places direct pressure on existing cultural sites, particularly those in areas of open space and historic buildings. 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. Meanwhile,

in rural areas, significant heritage places become redundant or vacant, and local communities struggle to find resources to conserve them.

3.3 Economic growth

Economic growth involves changes, usually to create some type of product, which in turn leads to consumption and waste generation. Heritage places are susceptible to loss of values through inappropriate change, impact from production activities and damage from waste disposal. These pressures can be exacerbated or reduced by factors such as the adequacy of statutory protection and the allocation of financial resources.

3.3.1 Resource extraction

Resource extraction industries place pressure on heritage places directly and indirectly. Mining, gas exploration or logging may result in actual removal of features of heritage value, adverse change to geological substructures, erosion or changes to groundwater. These activities may also cause indirect pressures, such as loss of access to the heritage place for the people to whom it is important, visual scarring or loss of habitat corridors. Hunting and fishing can

affect individual species or create conflict in land use, but may also be a significant and appropriate part of Indigenous heritage. Resource extraction pressures apply to both listed and unlisted heritage places.

3.3.2 Development

Many heritage places are also valuable assets, and this underlying value can be a threat to conservation. Development at all scales exerts direct pressure on heritage places. 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. Development projects such as mining, forestry and substantial infrastructure may result in total destruction or removal of heritage resources. Pressures also arise where developments have an adverse effect on the heritage setting, or restrict access or use.

Box 9.10 Indigenous heritage in the Wet Tropics World Heritage Area, Queensland

Indigenous heritage faces multiple risks, such as loss of cultural and traditional knowledge, economic pressure, development and inadequate statutory frameworks. The Wet Tropics World Heritage Area provides an example. This is one of the largest rainforest areas in Australia, covering 8940 square kilometres of public and privately owned lands along the north-east coast of Queensland, including the oldest continually surviving tropical rainforests on Earth. The area is well known as a biodiversity hot spot and is home to 18 individual Aboriginal traditional owner groups with connections to land, collectively referred to as Rainforest Aboriginal people.

To Rainforest Aboriginal people, the Wet Tropics is a series of complex, living cultural landscapes, where natural features are interwoven with spirituality, economic use (including food, medicines and tools), and social and moral organisation. Rainforest Aboriginal people have customary obligations for managing their country under Aboriginal law. They are tied to their country through story places, birthing places, naming places (it is cultural practice to be named after significant sites), animals and plants. This connection to country is valued above all else.

There have been no formal or consent determinations of native title in the Wet Tropics, although there are 16 active native title claims. The area is managed by the Wet Tropics Management Authority in partnership with government agencies, land managers, land owners, Rainforest Aboriginal people, the tourism industry, conservation and community groups, and the broader community. However, the customary responsibility of Rainforest Aboriginal people to maintain and manage the Wet Tropics is a contentious issue. Nine individual Rainforest Aboriginal traditional owner groups are strongly represented by the Girringun Aboriginal Corporation, a land and sea management group. These groups enjoy fairly unrestricted access to, and use of, the rainforests, although they feel that acknowledgement of native title would give them more power to make decisions about access, use, maintenance and management of their country.

Rainforest Aboriginal people are particularly concerned about the lack of acknowledgement of shared values in the Wet Tropics, and have been pushing for many years to have the area listed on the World Heritage List and National Heritage List for its cultural values, as well as natural values. Recognition of cultural values would provide better protection of Rainforest Aboriginal cultures and ensure equal emphasis on managing the region for all its values.

Listing the Wet Tropics for its cultural value on the World Heritage List would send a clear message to the world that Aboriginal people are a really significant culture to the whole world. *Traditional owner*

Although access to, and use of, the rainforests by Rainforest Aboriginal people is largely unrestricted, it is increasingly affected by large-scale development. Rainforest Aboriginal people feel that economic interests always seem to outrank cultural interests, and little significance is given to the social impacts of development. For example, a proposed upgrade of the Bruce Highway will go through a culturally significant marine area and restrict access to a place used by generations of Rainforest Aboriginal people to hunt, and teach children to hunt, turtle and dugong.

How do you quantify that impact? How do you measure that? What's the dollar figure on that? The social impact is immense. If we can't go there anymore, if we can't teach our children to hunt there anymore, then part of our culture is gone. *Traditional owner*

Source: Schnierer et al.¹²

The pressures of development are compounded by two factors. Firstly, a major problem with the process used to approve new development in Australia is that consideration of heritage impact (and other environmental factors) is often reactive—the linear nature of the development consent process sees the project announced (based on a financial feasibility study) and only then is a heritage survey completed. At this point, heritage is perceived as ‘the problem’, even though the heritage was always there and always a relevant constraint.

The second factor is a prejudice against nature and culture in favour of perceived economic benefits. In addition to these major risks, local heritage places suffer risks from destruction to make way for new development projects and 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 act as a barrier to decisions based on culture rather than economics, with consequent adverse effects for the heritage value of the place (Box 9.10).

3.3.3 Tourism

Heritage conservation is widely recognised as including presentation, interpretation and celebration.⁴⁵⁻⁴⁶ Encouraging people to visit important places to learn stories and enjoy experiences connects them with their heritage. However, visitation and tourism have a downside—the additional pressure on the resource

itself. Tourism pressures can cause physical damage (from construction of visitor facilities, increased erosion, vandalism or simply excessive use), loss of amenity (noise, visual intrusion, pollution) or loss of intangible value (disconnection of local people or inappropriate visitor behaviour).

3.4 Pressures on natural heritage

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.

3.4.1 Invasive species

Invasive species and organisms that cause disease place major pressure on natural ecosystems and their natural heritage values. Australia has a considerable legacy of such invasions—some species, such as cane toads, mimosa and feral cats, have firmly established themselves over wide areas. Others, like myrtle rust or *Phytophthora*, pose very serious emerging threats. Government responses to invasive species are uncoordinated at the national level, reactive, focused on larger animals, biased towards potential impact on primary industry at the expense of the total ecosystem, and critically under-resourced. This is not only poor environmental and heritage management, but poor economics, as prevention and rapid response to new arrivals and incursions can save vast expense over time (Box 9.11).

Box 9.11 Response to invasive species—prevention is better than cure

As with preventative health in human society, relatively small interventions to address hazards in these areas, done soon, will be many times more cost-effective than if left until later. *Prime Minister’s Science, Engineering and Innovation Council*⁴⁷

Preventing major ecological damage is far less expensive than resolving the issues afterwards. The spread of invasive species can cause major, expensive environmental impacts. For example, fire ant infestations in Texas have cost the United States Government an estimated \$1.2 billion per year. Following the discovery of fire ant infestations in Queensland, the Natural Resource Management Ministerial Council undertook a major eradication program that cost close to \$150 million.⁴⁸ No other fire ant eradication program has obtained the level of success that has been observed in Queensland.

Another similar invasive species is also subject to a national eradication program. Electric ants are an aggressive environmental pest that have the potential to seriously affect Queensland ecological and agricultural systems. The government response to this ecological threat has been far smaller. Funding of only \$4.067 million for 2006–08 was agreed, with a review to follow to validate the continuation of the program.⁴⁹ In 2010, detection of electric ant infestations in new areas means that additional work will be required to ensure that the ants are eradicated.

3.4.2 Loss of habitat

Australia's extraordinary flora and fauna are directly threatened by progressive loss of habitat. Two major drivers of habitat are land clearing and climate change. Land clearing is a legacy pressure that represents past human activity. Climate change will continue to exert pressure and will increase the severity of fires, invasive species and other events, such as droughts, floods, coral bleaching and saltwater intrusion into coastal freshwater systems.¹⁸ All these pressures reduce habitat and expose our biodiversity to greater risk.

3.4.3 Land use

Changing land use places pressures on both natural and cultural heritage. Changes may reduce compatibility with reserve values and connectivity between different reserves, alter wildlife corridors or reduce critical mass for niche ecosystems. There may be physical impacts from resource extraction or indirect effects such as from run-off or subsidence. Even within reserves, changes to allow new recreation uses can lead to unintended pressures and damage to the resource if they are not well planned and carefully managed. The pressure from changing land use may be greatly reduced by strategic land-use planning and decision-making that is informed by thorough natural resource assessment and inventory.

3.4.4 Soil erosion

Erosion is the process by which the surface of the earth is worn away by the action of water, wind, vehicles and recreational activities. Natural heritage places are

affected by a variety of erosion forms: streambank, roadside, beach, track, gully, wind, mass movement and sheet erosion. Mass movement and sheet erosion have far greater potential adverse impacts on natural heritage values than other forms. Erosion is exacerbated by changing climate, especially desiccation and increased wind, but can also arise from economic factors such as development, changing land use and increased tourism.¹⁰

3.5 Pressures on Indigenous heritage

There is a recognised gap between Indigenous Australians and the wider Australian community across many areas of economic and social activity, including cultural heritage. Indigenous communities still need to fight for access to their heritage places, and permission to pursue traditional practices and prevent incremental damage.

Indigenous heritage faces two main pressures, both of which result from European settlement. One is a direct pressure on the Aboriginal community: disruption to Aboriginal knowledge and culture. The other is a pressure on Aboriginal heritage areas and country: the disturbance or destruction of sites due to urban or industrial development, including resource extraction.

3.5.1 Loss of knowledge

Indigenous heritage has not been comprehensively surveyed and assessed across any Australian jurisdiction. The assessments that have occurred tend to be development driven and localised, or occasionally part of academic or community research projects.

Box 9.12 National Indigenous Knowledge Project

Acknowledgement of the need for a national Indigenous knowledge centre arose from the Australia 2020 Summit held in 2008. An Indigenous knowledge centre (IKC) is envisaged as a place where Indigenous cultural knowledge is kept safe to pass on to future generations and showcase to the community—both a repository for community knowledge and a place for two-way cultural learning.

The Prime Minister announced the first steps towards an IKC by initiating the National IKC Project. This project will engage with Indigenous communities and organisations, the wider Australian community and cultural institutions to develop ideas to strengthen and support Indigenous culture and knowledge. Informed by the national consultation program and research findings into the world's best-practice initiatives, the project will report its findings to government for consideration, including a range of possible roles and models for a national IKC.

Source: National Indigenous Knowledge Centre⁵⁰

Knowledge of the nature and extent of Indigenous heritage resources is therefore incomplete, and decisions made on the basis of this incomplete, picture place pressure on an unknown but finite resource. Pressures related to knowledge also arise where the intangible values of Indigenous heritage places are directly degraded because the knowledge relating to associated belief and traditional practices has been lost. Loss of traditional knowledge poses a major and continuing threat to Australia's Indigenous cultural heritage (Box 9.12).

3.5.2 Loss of traditional cultural practice and social connections

Traditional land and sea management practices are crucial to the wellbeing of Indigenous people and maintaining the values of their country. Traditional ecological knowledge is also increasingly recognised for its potential contribution to contemporary natural resource management.³² Where people are disconnected from country or prevented from pursuing traditional practice, or where the knowledge of place, spirit or traditional practice is not passed on, the Indigenous values of the place diminish. Traditional practice can range from special ceremonies for a few individuals to wider land management:

Aboriginal people burn to hunt, to promote new grass which attracts game, to make the Country easier to travel through, to clear Country of spiritual pollution after death, to create fire breaks for later in the dry season and a variety of other reasons which overall 'bring the Country alive again'. *Yibarbuk*⁵¹

One consideration, sometimes overlooked in relation to Indigenous land and sea management, is that traditional Indigenous practices may not be relevant to new post-colonial pressures such as invasive species, because they were not developed in response to these types of threats. Effective traditional management must therefore adapt and evolve by using and incorporating new knowledge and techniques if it is to cope with these new pressures:

Caring for Country is when Indigenous people use their rights and carry out their responsibilities to manage their Country and the environment through their Traditional Knowledge systems, cultural values, working together with Western science, integrating expertise and technological knowledge. *Grant*,⁵² p. 1

3.5.3 Incremental destruction

... heritage, once destroyed or sullied, can rarely be recovered. As well, it is important for avoiding the tyranny of little decisions, whereby incremental developments—perhaps done under the aegis of improving access—end up destroying the attractions for which the place was set up in the first place. *Australian Senate Committee, cited in Lennon*⁵³

Destruction of Indigenous sites occurs through:

- lack of listing or recognition
- conscious, informed decisions by development consent authorities
- prioritisation of economic considerations over heritage protection
- little to no assessment or public reporting of the cumulative impact of development—that is, how much of the Indigenous heritage estate has already been destroyed through past activities in the region
- insufficient consultation with Indigenous communities.

The high level of approved destruction remains a major threat to Indigenous heritage. Although nearly all jurisdictions have introduced stronger requirements to assess Indigenous heritage and consult with Indigenous people about development, there is little evidence that this has led to improved protection for Indigenous heritage sites.

The past five years have been remarkable for the number of 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 (Box 9.13). A number of recent legal challenges by Indigenous people have highlighted the lack of legal avenues or formal rights for Indigenous people seeking to enforce protection of their heritage.¹²

The economic imperatives of development and infrastructure delivery can place enormous pressure on sensitive Indigenous heritage sites. Regional planning is often done by commercial industries seeking to undertake activities that will affect Indigenous heritage. Although in-principle support for cultural landscape planning exists, it has not been resourced or actively implemented by policy makers. If sites are not listed and identified before developments are proposed,

Box 9.13 Brighton bypass

There has been ongoing action by the Aboriginal community in Tasmania regarding the construction of the Brighton bypass over the Jordan Levee. The project is a \$176-million investment upgrading the Midland Highway to the north of Hobart. However, a highly significant archaeological site has been identified in the path of the roadworks. Archaeological investigation suggests that it is possibly the oldest known Aboriginal site in Tasmania, and among the oldest in Australia.⁵⁴ Although the original design of the highway was modified to mitigate some of the impacts of the highway construction, irreparable damage will be done to the site.



The Tasmanian Aboriginal community, through the Tasmanian Aboriginal Centre (TAC) and Aboriginal heritage officers, has imposed a ban on all survey work for Aboriginal heritage in Tasmania, thereby blocking informed development consent. The TAC has said that the moratorium 'will remain in place until such time as decent legislation protecting Aboriginal heritage is put in place and the new protection has Aboriginal community support'.⁵⁵

■ Proposed Brighton bypass construction site over the Jordan Levee (photo by Rochelle Johnston, Australian Government Department of Sustainability, Environment, Water, Population and Communities)

consideration of their cultural value is relegated to reactive impact assessment. Despite an increase in recording and listing of Indigenous heritage sites, it is desirable that this process is more proactive.

The procedures published in *Ask first*⁵⁶ are the best-practice guidelines for addressing Indigenous heritage issues. They assert that sensitive consultation and negotiation with Indigenous stakeholders is the best means of addressing Indigenous heritage issues. Failure to engage in this process can deny traditional owners their right to informed consent. 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 their incremental destruction (Box 9.14). The Burrup Peninsula in Western Australia (see Box 9.17) is one example among many of the needs of the resources industry placing enormous pressure on the local Indigenous community and the cultural landscape.

3.6 Pressures on historic heritage

Particular pressures on historic heritage include changing use and economic values. Poor management practices (including loss of skills and expertise) that can also threaten historic heritage are dealt with in Section 4 of this chapter.

For many historic sites, the current use of the site may itself be significant in a heritage context. Churches, war memorials, community halls and post offices fall into this category. Pressures for change of use may arise in response to altered economic conditions, changing demographics, new commercial opportunities or other factors. Sometimes a new use is compatible with the heritage value of a place, but sometimes it is not. For some historic sites, direct tension arises between cultural and economic values, with likely prejudice being to favour economics over culture. The recent sale of many Australian post offices and their replacement by smaller agency postal outlets, often in the same suburb or town, is a case in point.

Box 9.14 Incremental destruction of Indigenous places

The rapid rate of development activity in Western Australia has threatened many sites of significance to Aboriginal people. The cumulative impacts on Aboriginal heritage in Western Australia are of immense concern, especially where mining and infrastructure development in remote areas like the Pilbara takes precedence over the preservation of Aboriginal heritage. The Woodstock Abydos experience is perhaps one of the most striking examples of development incrementally disturbing an area of recognised outstanding heritage significance.

Woodstock Abydos is a protected area under Western Australia's *Aboriginal Heritage Act 1972*. More than 500 Aboriginal sites within the Woodstock Abydos Protected Area are listed with the Department of Indigenous Affairs. Only 57% of the reserve area has been surveyed, so there are potentially many more sites not yet recorded. These sites include mythological and ceremonial sites, engraved rock art, painted rock art, stone artefacts, stone quarry sites, stone arrangements, grinding patches, rock shelters, water sources, modified trees, built structures, camps and many others.

Woodstock Abydos Reserve was initially vested with the Western Australian Museum for the preservation of Aboriginal cultural materials and historic buildings from the impacts of mining and infrastructure development. The Western Australian Governor at the time made particular reference to a 'rock art and occupation site complex of outstanding significance'. The reserve was declared a protected area in 1979 and added to the Register of the National Estate in 1980.

In the 1960s, the mining company BHP applied for and was granted an excision from the reserve for a rail infrastructure corridor. In 2006, Fortescue Metals Group was granted an excision for a 200-metre rail infrastructure corridor, and a third company, Hancock Prospecting, applied for and was granted an excision from the reserve for a rail infrastructure corridor in 2010. There are now three separate railroads operating through this protected area.



























These developments have a range of cumulative impacts on heritage sites in the area. There are many sites very close to rail tracks and maintenance roads, so dust accumulation on rock art poses an ongoing, serious threat. Sites suffer from neglect, poor fencing and lack of protective measures. There is no program of monitoring of the sites or individual images, and there have been reports that additional rail corridors are planned in the years ahead.

Woodstock Abydos shows that even the highest form of protection available for Aboriginal heritage sites under Western Australian law may not be a guarantee of protection, and that individual approvals can have a serious cumulative adverse effect.

■ The Woodstock Abydos landscape, illustrating typical boulder outcrops that are covered with engravings (photo by Liam M Brady, University of Western Australia)

9.2 Assessment summary

Pressures affecting heritage values

Component	Summary	Assessment grade				Confidence	
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend
Driver	Climate change						
Rising temperatures	Rising temperatures will cause loss of habitat, species extinction, changes to traditional lifestyles and physical damage to historic places						
Changing rainfall	Rainfall is increasing in northern Australia and decreasing elsewhere, resulting in changes to habitat, flooding (which causes loss of and damage to sites), erosion, destabilisation and desiccation						
Rising sea level	Sea level rise is predicted to cause loss of coastal habitats and sites, and changes to traditional lifestyles and historic settlement patterns, and give rise to indirect impacts through local economic effects						
Altered fire regimes	Wildfires are increasing in frequency and intensity, causing loss of biodiversity and habitat, and damage to or destruction of sites and landscapes						
More frequent extreme weather events	Damage and destruction is wrought by increases in the frequency and severity of events such as floods, cyclones and hail storms, as well as collateral damage caused by rescue or clean-up activities and loss of financial and human resources due to effects on local economic activity						
Driver	Population growth						
Community perceptions of value	The majority of Australians value both natural and cultural heritage; however, this perception is disconnected from the allocation of public resources. For some places, heritage values are perceived as expendable						
Population shift	Decline in rural population reduces demand for facilities and infrastructure, thereby placing pressure on redundant built assets and reducing resources available for all heritage conservation activities						
	Urban and coastal population increase creates more intensive land uses and pressures from increasing land values and infrastructure demand. These factors lead to the destruction of heritage places to make way for new development, inappropriate changes to heritage places and impacts on their setting						

Component	Summary	Assessment grade				Confidence	
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend
Driver	Economic growth						
Resource extraction	Major resource extraction industries, such as mining and forestry, create pressure on both natural and cultural heritage places whose conservation would limit resource extraction activity. The disparity in perceived value between exploitable resources and heritage resources exacerbates this pressure						
Development	Large and small developments can threaten the survival of heritage places or jeopardise their natural and cultural values through inappropriate changes or impact on their setting. Particular issues arise in relation to development consent processes, which often characterise heritage as a barrier						
Tourism	There is tension between the inherent values of some heritage places and their important role as tourist attractions. Although interpretation and experience of heritage is an important conservation activity, overvisitation or inappropriate visitor behaviour can harm the very values that make the place worth visiting						
Pressures on natural heritage							
Invasive species	Invasive species and pathogens directly affect natural heritage values. Despite Australia's active management, the number of invasive species and the intensity of their effects are increasing						
Loss of habitat	Impacts from climate change, land clearing and land management continue to affect ecosystems, especially those represented by small remnants within larger cleared areas						
Land use	Australian land suffers from the relict impact of extensive land clearing. Use of land for development, urbanisation, agriculture and resource extraction may conflict with natural values						

Continued next page

Pressures affecting heritage values *continued*

Component	Summary	Assessment grade				Confidence	
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend
Pressures on natural heritage <i>continued</i>							
Soil erosion	Examination of a small sample of natural heritage places suggests that they are at high risk from severe erosion types such as mass soil movement and sheet and gully erosion, and moderate risk from other erosion types. Reliable trend data are not available						
Pressures on Indigenous heritage							
Loss of knowledge	Indigenous heritage has not been comprehensively surveyed and assessed, so knowledge of the resource is incomplete. The intangible values of Indigenous heritage places are directly degraded when the knowledge relating to associated belief and traditional practices is lost. Loss of traditional knowledge poses a major and continuing threat to Australia's Indigenous cultural heritage						
Loss of traditional cultural practice and social connections	Indigenous communities in Australia continue to suffer disconnection from country or face significant challenges in pursuing traditional land and sea management or other cultural practices; however, some significant improvements have been made that both recognise and improve management arrangements for Indigenous heritage						
Incremental destruction	A major pressure on Indigenous heritage is the continuing incremental destruction of sites through an accumulation of one-off decisions associated with particular developments. The pressure is created by a combination of inadequate inventory and consent processes that identify impacts, but seldom give primacy to Indigenous site conservation						

Component	Summary	Assessment grade				Confidence	
		Very high impact	High impact	Low impact	Very low impact	In grade	In trend
Pressures on historic heritage							
Changing use and economic values	Many historic heritage items are, by their nature, 'old' and therefore may be perceived as redundant or incapable of new use. This perception, particularly when coupled with changes in underlying asset value, creates pressures to redevelop, sometimes through demolition. There is, however, an emerging tendency to consider retaining and adapting historic structures						
Lack of skills and expertise	The continuing decline in availability of specialist heritage tradespeople and a looming skills shortage will place major pressures on historic heritage conservation in the immediate future						

Recent trends	Improving Stable Deteriorating Unclear	Confidence	Adequate high-quality evidence and high level of consensus Limited evidence or limited consensus Evidence and consensus too low to make an assessment
Grades	Very low impact Current and predicted impacts may have some effect on the heritage values of individual places Low impact Current and predicted impacts are likely to have some effect on the heritage values of individual places and some landscapes High impact 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 Very high impact 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		

Effectiveness of heritage management

And yet the Australian community continues to celebrate its heritage. National Parks are visited; Traditional Owners play a greater role in presenting Country and enthusiastic owners of historic buildings undertake private conservation projects. These positive trends underpin the importance of heritage and the need for ongoing improvement in heritage management effectiveness.

A vigorous heritage and cultural sector has significantly increased Australians' understanding, participation in and enjoyment of our cultural and heritage assets. *Australian Heritage Council*⁵⁷

Managing Australia's heritage involves taking action to protect heritage places from pressures, to retain their values. Effective heritage management requires a holistic approach across the spectrum of pressures identified in this chapter (and elsewhere in this report), rather than individual responses for every pressure. There is a simple, logical process for effective management: understand the place and its values, identify the issues (i.e. the pressures) and then manage the place in response to the issues. This process is set out in key documents such as the Burra Charter,⁵⁸ the *Ask first* guidelines⁵⁶ and the Australian Natural Heritage Charter,⁵⁹ but is not always reflected in statutory requirements. The outcomes actually achieved by these processes will also depend on the resources available.

In this discussion and analysis, Australian heritage management is considered according to the components of the management process: understanding, planning, inputs, processes and outcomes. The summary table at the end of this section addresses natural, Indigenous and historic heritage according to this framework, using the current DSEWPaC heritage management themes of identification, management, protection, leadership and celebration.⁶⁰ These themes broadly encapsulate the logic and process of key Australian heritage management charters such as the Burra Charter, the *Ask first* guidelines and the Australian Natural Heritage Charter.

At a glance

Australia is recognised internationally for leadership in heritage management. We have a range of systems and processes for identifying, protecting, managing and celebrating our heritage that should lead to reduced pressures, minimised risk and retention of those values that make our heritage places special. However, despite our excellent understanding of the context for heritage management and good planning processes, the resources allocated to heritage identification and protection are insufficient and fall well short of what is needed to achieve effective outcomes.

Identification processes for Australian heritage are erratic. The National Reserve System offers a proactive approach to identifying a representative system of natural heritage places. By contrast, there is no national picture for Indigenous heritage (either tangible or intangible), and reliance is placed on 'blanket' provisions in legislation, leading to ill-informed decisions. Many historic heritage places have been identified, but the ad hoc approach of heritage registers means that they are skewed towards particular aspects of history and a select group of values.

Heritage places in public ownership are often supported by well-prepared, values-based management plans. For nonpublic heritage places, planning systems, land zonings and related regulations do not necessarily help to achieve conservation outcomes, and some building codes and standards create pressure for demolition or inappropriate change. Decisions about development impact usually consider stakeholder perspectives, especially for Indigenous places, but the reactive nature of the process and an inadequate knowledge of the total resource tend to militate against conservation outcomes.

Resources available for heritage conservation are declining in real terms, as evidenced by the erosion of core budget funding for heritage in the 2011–12 Budget. Although some programs, such as the recent Jobs Fund initiative, have targeted heritage conservation with excellent outcomes, a combination of dwindling public sector resources (both human and financial) and the progressive erosion of the specialist skill set required for heritage management has placed cultural heritage on a precipice. An underlying cause of this resource erosion is that community perceptions of the value of heritage as public good are not reflected in public sector resourcing or incentives for private owners.



■ Early Cambrian fossil trilobite (*Redlichia takoensis*), Emu Bay Shale, Kangaroo Island, South Australia
Photo by John Cancalosi

4.1 Understanding

The effectiveness of heritage management is determined by decision-makers' understanding of the broader environmental and socioeconomic significance of heritage values and the current and emerging threats to those values. A basic issue is, therefore, the extent to which the heritage values themselves are understood.

4.1.1 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. Systematic heritage assessment programs undertaken both geographically and according to theme—across both natural and cultural environments—are needed to provide the foundation for effective heritage management. The absence of such knowledge places additional pressure on natural and cultural heritage (Box 9.15).

Inadequacies in understanding the heritage resource extend across the full spectrum of places, at all levels of jurisdiction and government. In 2004, the International Council on Monuments and Sites (ICOMOS) analysed the World Heritage List and national tentative lists to contribute to a global strategy for a credible, balanced

and representative World Heritage List. The ICOMOS report, *The World Heritage List: filling the gaps—an action plan for the future*,⁶² identified two main reasons for gaps in our knowledge of heritage resources: structural (such as lack of technical capacity or management frameworks) and qualitative (such as missing themes and under-represented regions).

The analysis found that religious properties, historic towns, and architectural monuments and ensembles comprised 57% of the sites listed, while other site types (such as modern heritage) made up less than 1% of the total. When the properties included on national tentative lists were added, a shift in trends became evident, and the proportion of religious properties, historic towns and architectural monuments was reduced to 32%.

Heritage listings have not yet been analysed for Australia, but it would be a timely and valuable exercise. It is reasonable to anticipate a similar distribution of past levels of heritage identification, with 'our glorious past' dominating and less visible cultural, modern and Indigenous sites, cultural landscapes and industrial heritage being poorly identified, and thus poorly protected (Box 9.16). At the time the National Heritage List was established, a number of thematic and typological studies were planned. Some have been completed and published (e.g. Pearson & Lennon⁶³), but the resources and commitment to this process appear to have waned.

Box 9.15 Inadequate understanding—the National Heritage List Priority Assessment List

One of the first listings under the new *Environment Protection and Biodiversity Conservation Act 1999* Priority Assessment List system was the Adelaide Park Lands and City Layout. The city was nominated as a historic landscape because it reflects the original 1837 planned layout of Adelaide by the surveyor Colonel William Light. The city is configured as it was originally planned, as a metropolitan city surrounded by parklands, with wide streets, town squares and the Torrens River separating the city areas. The city of Adelaide is now the most extensive and intact 19th century urban green landscape in Australia.⁶¹ Much of the city is now owned by various levels of government, who seek approval for development through the Australian Government. Although this nomination resulted in the inclusion of this highly significant site on the National Heritage List, between 2007 and mid-2011 approximately 80 nominations were excluded and will not even be assessed (DSEWPaC, Heritage Division, pers. comm., July 2011).



Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities

Figure A The Adelaide Park Lands and City Layout, showing listed places in green

Box 9.16 20th century survey—proactive management of a low-visibility resource

From 1981 to 2000, South Australia pursued a systematic program of regional heritage surveys to identify and record all the non-Aboriginal heritage of the state, on a regional basis. In 1981, the South Australian Heritage Register included approximately 1800 pre-20th century places, but only around 400 places representing the 20th century and less than 40 places of the era after World War 1. A survey concentrating on the post-war era was initiated in 2003–05, beginning with historical research for 1946–59, to establish the principal events and themes that characterised the physical, cultural and social development of that period.

Building on the initial model, ongoing studies in South Australia have developed surveys over 20-year periods, which involved both survey work and thematic analyses. In 2009, the 1928–45 survey identified 31 items for the state heritage register.

4.1.2 Understanding threats

A range of substantial threats to Australia's heritage emerge from the drivers of climate change, population growth and economic growth. Many of these threats are well understood and are being addressed through management responses. Some threats, however, 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 extremely unlikely to reverse the degradation of heritage places that they cause.

Climate change itself is beyond the control of heritage place managers, but they can respond to the pressures that it causes. Altered wildfire management, active erosion control, and dune and midden stabilisation all demonstrate awareness and response to climate change threats. Awareness of population pressures and emerging threats is also high—SoE assessment workshop participants across the public and private sectors were quick to identify the impact of rural decline and urban intensification.ⁱ

The majority of participants in the Australian heritage sector readily recognise the threats posed by development. Despite this, regulators fail to enforce protective provisions, even when seemingly obvious breaches of legislation and substantial impacts to highly significant places occur (Box 9.17).

i Heritage Chairs and Officials of Australia and New Zealand SoE 2011 workshop, 5 August 2010; Australian Heritage Council SoE 2011 workshop, 9 December 2010; Australia ICOMOS SoE 2011 workshop, 25 February 2010. Workshop notes are available on the SoE website, www.environment.gov.au/soe.

4.2 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.

4.2.1 Leadership

Australia lacks leadership in heritage management at a national level, partly through statutory limitations on the role of the Australian Heritage Council, and partly through diminution of resources and responsibilities and, in a conceptual sense, from the absence of a national heritage strategy.^{j,68}

This latter challenge may soon be addressed, as the portfolio budget statements for DSEWPac for 2011–12⁶⁹ indicate that the department will 'develop an Australian Heritage Strategy, which provides national leadership in heritage management, conservation and celebration'. The related key performance indicators suggest that the proposed Australian Heritage Strategy will be launched by June 2012.

j Australia ICOMOS SoE 2011 workshop, 25 February 2011. Workshop notes are available on the SoE website, www.environment.gov.au/soe.

Box 9.17 Burrup Peninsula National Heritage Place

The Dampier Archipelago was formed 6000–8000 years ago when rising sea levels flooded what were once coastal plains. The underlying rocks are among the oldest on Earth, and the archipelago is a sacred place, home to Indigenous Australians for tens of thousands of years. Ngarda-Ngarlie people say ancestral beings created the land during the Dreamtime, and the spirits of Ngkurr, Bardi and Gardi continue to live in the area. The Indigenous people of this area have left their mark in one of the most exciting collections of rock art in Australia. The richness and diversity of this art are remarkable, with sites ranging from small scatters to valleys with literally thousands of engravings.⁶⁴

In early December 2008, a mining company undertook a range of clearing, blasting and quarrying activities outside the identified mining tenement, within the Dampier Archipelago (including Burrup Peninsula) National Heritage Place (NHP). The affected area is approximately 50 metres × 200 metres, adjacent to the edge of a quarry pit and extending well into the defined NHP.

The clearing, blasting and quarrying are likely to have destroyed a number of archaeological sites in an area with generally high site density. Calculations based on the number of sites found in the immediate vicinity indicate that as many as three sites may have been in the cleared and bulldozed areas, although the exact nature and contents of these can now never be known.

An audit, systematic survey and recording of the impact area identified six new sites in the NHP.⁶⁵ Archaeological sites were located around the margins of the disturbed areas, where intact landscapes were still visible. Sites found in the immediate vicinity of the disturbed areas included petroglyphs, a standing stone, an artefact cache and a quarry complex.⁶⁶⁻⁶⁷ The clearing, blasting and quarrying were assessed as having affected a contiguous high-density but relatively low-intensity archaeological landscape.

In attempting to prosecute this action within the NHP, the Australian Government Department of the Environment, Water, Heritage and the Arts was constrained by the fact that the exact nature of the affected sites was not known, as they had not been archaeologically documented.⁶⁵

In 2008, the Western Australian Government commissioned a heritage inventory methodology report, which recommended that 20% of the representative landscapes within the NHP be recorded systematically and intensively, and that a plan of management be written for petroglyph and stone structure sites (and the broader archaeological record) within the NHP. The absence of a general inventory of sites within the NHP (with the exception of a single 2 kilometre × 200 metre transect in Deep Gorge) creates a significant impediment to the implementation of the *Environment Protection and Biodiversity Conservation Act 1999* because the nature of the resource within the NHP has not been thoroughly documented, and therefore the occurrence or extent of any damage cannot be assessed.



■ A petroglyph in the immediate vicinity of the area affected by clearing, blasting and quarrying works, Dampier Archipelago National Heritage Place, showing a small, complex, engraved panel (arrowed) among disturbed boulders, and an engraved lizard visible on the right-hand side (see photo at right) (photos by Jo McDonald, Jo McDonald Cultural Heritage Management)

Box 9.18 Queensland Heritage Strategy—embedding heritage in mainstream planning and policy

The Queensland Heritage Strategy was launched in 2009, establishing a framework for managing Queensland's heritage over the next 10 years. 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 five key directions for heritage at state, regional and local levels:

- improving the way Queensland understands and values its heritage
- embedding heritage in mainstream policy and planning
- strengthening Queensland's investment in managing and conserving its heritage
- leading and partnering with government, community and industry to conserve Queensland's heritage
- building the capacity of government, community and industry to conserve Queensland's heritage.

One outcome of the strategy is a strengthened relationship between heritage conservation and sustainability in Queensland. This includes investigating the environmental performance of heritage buildings, determining how heritage buildings can be made more energy efficient and contributing to the design of green rating tools to ensure that heritage conservation issues are addressed effectively.⁷¹

The current federal role, however, is very limited:

... it is doubtful that the Commonwealth is currently fulfilling its obligations under the COAG [Council of Australian Governments] agreement to protect the nationally significant places it has accepted onto the NHL [National Heritage List]. *Australian Heritage Council*,⁷⁹ p. 27

Council believes that to make the legislation effective the Commonwealth should lead and set standards in management and care of NHL places. *Australian Heritage Council*,⁷⁹ p. 28

There has been to date a significant gap between the obligations the Commonwealth Government takes on through listing and its capacity to fulfil those obligations. *Australian Heritage Council*,⁷⁹ p. 44

While these observations are particularly directed towards National Heritage List places, the Australian Government has a potentially instrumental role in setting standards and coordinating matters of common interest and practice, in line with the principles of the Council of Australian Governments. An extremely important issue will be the inclusion of heritage within our national narrative, whether by presentation and celebration, support for projects that have national relevance (such as heritage trades training) or encouragement of proactive strategic processes that lead to better integration of natural and cultural inheritance into future planning.

The 2009–10 annual report of the then Department of the Environment, Water, Heritage and the Arts suggests that, among other responsibilities, the department will:

... develop and implement the Government's policies, programs and legislation to identify, protect, conserve and celebrate natural, Indigenous and historic assets. *Australian Government Department of the Environment, Water, Heritage and the Arts*⁷⁰

Unfortunately, although there is recognition and support for such national leadership,^k there is a distinct absence of corresponding public sector resources. The limited resources available to the department and the limits on the statutory coverage provided by the EPBC Act mean that federal efforts focus on managing federal lands and agencies, places on the National Heritage List and Commonwealth Heritage List, associated processes for listing, and EPBC Act referrals and approvals. The department undertakes very few broader actions, especially in relation to local or state heritage, and some states have initiated their own heritage strategies (Box 9.18).

Even with respect to national heritage listing, action is curtailed by both resourcing and statutory processes. For example, amendments to the EPBC Act in 2007 provide that items are assessed for

k Australian Heritage Council SoE 2011 workshop, 9 December 2010. Workshop notes are available on the SoE website, www.environment.gov.au/soe.

national listing only if they are placed on the Priority Assessment List after their initial nomination by the community or government. This amendment was considered necessary to cope with the volume of nominations received by the Australian Heritage Council. Nominations that are excluded from the Priority Assessment List do not proceed at all, which restricts the extent, coverage and effectiveness of the National Heritage List. From 1 January 2007 to 31 December 2010, only 23 places were added to the National Heritage List, 20 were under assessment, and 80 nominations had lapsed and were not being considered (DSEWPac Heritage Division, pers. comm., July 2011).

The National Reserve System is an important program with an important aim, although there is debate about the size and selection of the target for a truly representative set of reserved lands. One of the major barriers to achieving the aim of the National Reserve System is the economic value of nonreserved lands that have potential high-yield uses such as extractive industry or development. This is partly due to deficiencies in accounting for the 'ecosystem service' value of reserved lands as the lungs of urban areas, major water catchments or recreational spaces, which provide both tourism income and contribute to the psychological health of communities (Box 9.19).

4.2.2 Jurisdictional arrangements

A broad range of Australian legislation includes provisions to list, protect and manage heritage places. However, our federal network of jurisdictional arrangements for heritage management creates overlap, inconsistencies and challenges for governments, public officials and owners. This report cannot offer a comprehensive analysis of the effectiveness of jurisdictional arrangements, but does provide observations about particular statutes and policies.

Coordinated programs at the national level include the Intergovernmental Agreement on the Environment (1992)⁷⁷ and a forthcoming Intergovernmental Agreement on World Heritage (which has been agreed but not yet ratified by all jurisdictions). Coordination also occurs through the Environment and Water Ministerial Council, and the Heritage Chairs and Officials of Australia and New Zealand (for historic places). There are no such national bodies for reserved lands and other forms of natural heritage that is not within a reserved park, nor for Indigenous heritage.

There are a range of important statutes, national policy documents and strategies that provide an excellent foundation for holistic heritage management. 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 curricula 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*,⁷⁸ p. 38

This national policy accords with Australia's ratification of the United Nations Convention on Biological Diversity (as adopted at the 1992 Rio Earth Summit),^l which among other requirements specifies:

Each Contracting Party shall, as far as possible and as appropriate:

Article 8 (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices,

Article 10 (c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

The policy also accords in part with Australia's recent signing of the United Nations Declaration on the Rights of Indigenous Peoples (as adopted by United Nations General Assembly Resolution 61/295 on 13 September 2007),^m which specifies that:

Article 11 Indigenous peoples have the right to practise and revitalise their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historic sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature.

l www.cbd.int/convention

m www.un.org/esa/socdev/unpfi/documents/DRIPS_en.pdf

Box 9.19 Reservation systems—the benefits of ecosystem services and tourism

‘Ecosystem services’ can be defined as the benefits people and companies derive from ecosystems. They are the delivery mechanisms arising from nature’s capital and can cover everything from access to fresh water to climate regulation and the enjoyment of a view. *Environmental Resource Management, Australia*⁷²

The ecosystem services offered by Australia’s parks underpin the welfare and wellbeing of Australian people. Parks provide clean water catchments, vital carbon sinks and open green space, and are the lungs of the community. These values are rarely taken into account in economic terms when land acquisition or park resourcing decisions are made. They are not necessarily taken into account in determining biodiversity strategies either, although such an approach was recommended at the Nagoya meeting of the Conference of the Parties to the Convention on Biological Diversity in October 2010.⁷²

An example of ecosystem services is the Australian Alps. The alps are extremely important for their outstanding biodiversity, remarkable geodiversity, and historic, Indigenous, landscape and scenic values. They are an iconic part of Australia and are on the National Heritage List. The high-quality water from the Australian Alps is also of national economic importance.⁷³ In 2005, the 3980 gegalitres (GL) of Victorian Alps waters that flow to the Murray–Darling Basin every year were conservatively estimated to be worth \$4 billion to Australia’s economy. The average annual 9600 GL in the Australian Alps catchments could now be worth as much as \$9.6 billion per year to the national economy. The alps waters help generate \$15 billion worth of Australia’s agricultural produce each year, including 45% of Australia’s irrigated production (\$5.5 billion), 56% of the grape crop, 42% of other fruit and nuts, and 32% of total dairy production. The water also helps support many of the 2.1 million Australians living in the Murray–Darling Basin, including Adelaide and many towns of South Australia.

Our reserves also provide indirect economic and social benefits. Nature-based tourism in Australia is valued at more than \$33 billion per year.⁷⁴ Healthy Parks Healthy People, a Victorian Government program, stresses the connection between people’s health and the viability of natural reserves and ecosystems. The program advocates that reserves should continue to be set aside and protected, not only to conserve natural heritage, but also to protect the health of the population and the tourism industry.⁷⁵

Kangaroo Island is renowned for its extraordinary natural heritage resources, which are fundamental to the island’s major role in both regional and national tourism. In 2009, for example, there were approximately 162 000 overnight visitors to Kangaroo Island, who stayed for more than 707 000 nights. Spending by domestic overnight visitors to the region has been estimated at approximately \$100 million or an average \$168 per visitor night. Activities by visitors include sightseeing (52%), visiting national or state parks (42%), going on bushwalks (28%) and other similar activities related to enjoying natural heritage.⁷⁶



■ Lake Albina, Kosciuszko National Park, New South Wales (photo by Andrew Hutchinson and the Australian Government Department of Sustainability, Environment, Water, Population and Communities)



■ Tourists at Remarkable Rocks, Kangaroo Island, South Australia (photo by Geoff Ashley)

However, Australia has not yet ratified the United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention for the Safeguarding of the Intangible Cultural Heritage.ⁿ

Substantial gaps remain in the legislative protective regime for Australian heritage. In particular, protection of natural and Indigenous places and values in a number of jurisdictions remains inadequate. Some jurisdictions offer little protection for natural places of significance outside the reserve system. Indigenous heritage protection continues to face significant issues relating to the recognition of 'traditional' 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, or sites where continuing tradition is expressed in intangible attributes rather than physical evidence.

This Act [*National Parks and Wildlife Act 1974* (NSW)] protects Aboriginal objects as a class, but not places and landscapes of special significance to Aboriginal people unless they are specifically gazetted. A good aspect of this legislation is that it does require permits for the destruction of Aboriginal objects (which are mostly archaeological sites), but it is very hard to assess whether the intangible aspects of the significance of these places are taken into account as part of the decision making process. *Prof Sharon Sullivan, AO, former Manager of Cultural Heritage for the New South Wales National Parks and Wildlife Service (and current member of the Australian Heritage Council), commenting on the National Parks and Wildlife Act 1974 (NSW), pers. comm., July 2011)*

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) enables Aboriginal and Torres Strait Islander people to ask the Australian Government to protect areas and objects, including human remains, from injury or desecration. In response, the Australian Government can make declarations to protect areas and objects that are of particular significance in Indigenous tradition from threats of injury or desecration.

However, states and territories bear the primary responsibility for protecting traditionally significant areas and objects. The Australian Government cannot make a declaration if a state or territory law has, in effect, already protected the area or object from

the threat. A declaration operates for a defined period and must be revoked if state or territory protection takes effect.

The ATSIHP Act has proven to be problematic:

The ATSIHP Act has not proven to be an effective means of protecting traditional areas and objects. Few declarations have been made: 93 per cent of approximately 320 valid applications received since the Act commenced in 1984 have not resulted in declarations. Also Federal Court decisions overturned two of the five long term declarations that have been made for areas. *Australian Government Department of the Environment, Water, Heritage and the Arts*,⁸⁰ p. 4

A comparison of the numbers of applications and ministerial declarations suggests that the ATSIHP Act is consuming public resources with little obvious benefit (Figure 9.15).

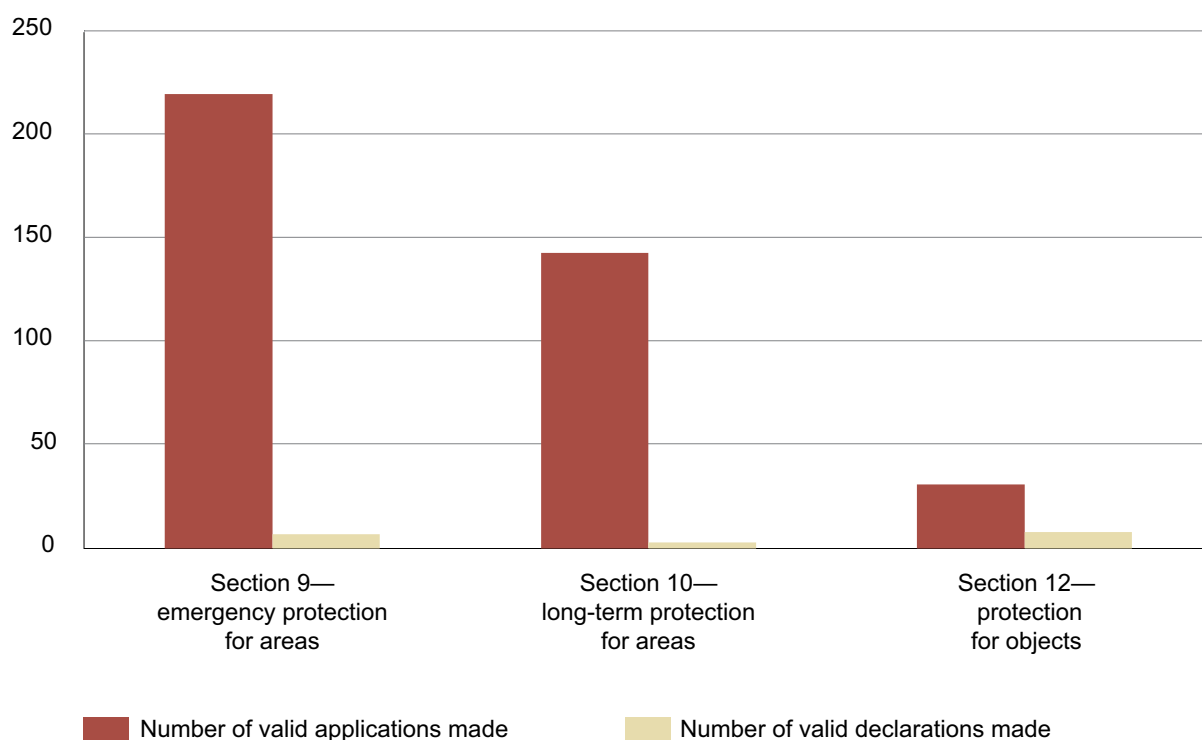
The ATSIHP Act was a temporary measure to encourage the states to protect sacred sites as part of a plan to introduce national land rights legislation. When the plan failed, the Act was made permanent, largely in its original form. It was not repealed or amended following the recognition of native title in Australian law.

In 2009, the Australian Government released a discussion paper on proposed reforms to the ATSIHP Act.⁸⁰ The reforms aim to improve the protection of the traditional heritage of Indigenous Australians in all jurisdictions through accreditation of state and territory laws that meet a set of rigorous standards. This would enable the Australian Government to take a more active and coordinated approach in the protection of sacred sites and objects. However, the delay in reforming the Act is prolonging uncertainty, especially for the states and territories, most of which are reviewing their Indigenous heritage legislation.

Other gaps and inconsistencies in statutory administrative and jurisdictional arrangements also threaten heritage. For example, the *Australian Heritage Council periodic report 2007–10* notes that:

In the natural environment risks are posed by feral animals or ecosystems out of balance, the effects of climate change and urban incursion. Each of these is being addressed in various ways but it is difficult to see longer term improvements that will mitigate risks at the scale needed. The exclusion of natural heritage from regional forestry agreements is an ongoing concern. *Australian Heritage Council*,⁷⁹ p. 51

ⁿ http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html



Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011

Figure 9.15 Applications and ministerial declarations under each section of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* as at 9 August 2011

Data may be inconsistent or incomplete as they are derived from records maintained by different agencies over more than two decades and have not been checked against the original records.

Even measuring federal achievements alone, the results are disappointing. For example, in 2009–10, DSEWPaC commented on only three management plans for places on the National Heritage List. Of the Australian Government agencies that are required to prepare written heritage strategies for managing places with listed or potential Commonwealth heritage values, less than half have done so.

Planning processes for heritage management would benefit from a more coordinated national approach that supports heritage conservation and management across all three levels of government. This need has been previously identified and well articulated. In 2007, a report to the Queensland Government on the lack of intergovernmental coordination and inadequate resources recommended a range of innovative incentives, including establishing a national heritage fund.⁵³ State coordination of heritage is improving (Box 9.20).

One significant initiative during this SoE reporting period was progress towards ratifying the UNESCO 2001 Convention for the Protection of the Underwater Cultural Heritage.^o A meeting of the former Environment Protection Heritage Council in November 2009 endorsed Australia pursuing ratification, and the Australian Government is currently consulting with the states and territories. The convention aims to assist countries in managing and preserving their unique underwater cultural heritage. The convention came into force on 2 January 2009 following ratification by 20 member states, and requires all signatories to enact legislation that protects and manages underwater cultural heritage (Box 9.21).

^o http://portal.unesco.org/culture/en/ev.php-URL_ID=34114&URL_DO=DO_TOPIC&URL_SECTION=201.html

Box 9.20 The Tasmanian Heritage Register—subsidiarity in heritage management

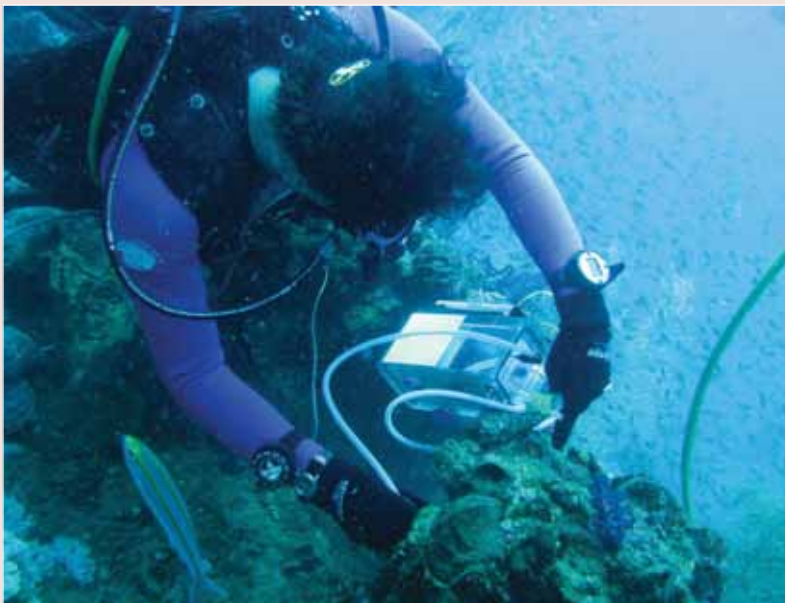
The Tasmanian Heritage Register (THR) was established by the *Tasmanian Heritage Act 1995*. In accordance with the transitional provisions of that legislation, the Tasmanian Heritage Council (THC) transferred thousands of historic sites directly to the THR from existing schedules and lists compiled by local government and the National Trust of Australia (Tasmania). Among other implications, this action immediately made the THR the most heavily populated state heritage register in Australia and made the THC the consent authority for all THR-listed places.

Historic heritage is one of Tasmania's most important cultural resources—a special characteristic that is valued by most Tasmanians and a major contributor to the state's economy through its role in tourism. The involvement of the state heritage agency as a regular source of expert advice was widely welcomed, but the THC Works Approvals Committee quickly became overloaded, and there were several highly contentious cases in which the decision of the THC differed from approvals issued by local authorities under the *Land Use Planning and Approvals Act 1993* (Tas.). There was also an unusual 'upward delegation' of heritage referrals (in contrast with the use of local heritage advisers in other states) and little incentive for accumulation of heritage expertise by local government (with the exception of Hobart and Launceston City councils).

A review of the Tasmanian Heritage Act recommended a major shift in the regulatory roles for historic heritage in Tasmania, with local government to be responsible for heritage regulation, advice and decision-making at the local level, and state government to be responsible for places of state significance.²¹ Under this model, local authorities could not override heritage decisions made by the state body. This approach is driven by the principle of subsidiarity (where action is taken by the most appropriate level of government) and has worked successfully in other jurisdictions. The principle has now become statute in New South Wales through recent amendments to the *Heritage Act 1977* (NSW).

Box 9.21 Yongala shipwreck site—protection under the *Historic Shipwrecks Act 1976*

The *Yongala* was an early 20th century interstate coastal steamer that sank during cyclonic weather in March 1911 near Townsville, Queensland. It provides a snapshot of Edwardian life in Australia and is now one of Australia's most highly regarded and popular wreck dives. The site was protected under the *Historic Shipwrecks Act 1976* in 1981 and has been actively managed since 1983 with a declared protected zone around the site and entry only by permit. The wreck remains the final resting place of the 122 passengers and crew who were aboard the *Yongala* on her 99th and final journey.



■ Andrew Viduka undertaking a corrosion survey of SS *Yongala*, near Townsville, 2008 (photo by James Monkivitch)

Box 9.22 Recognition of inheritance value of local heritage within the planning system

In Western Australia, heritage conservation incentives allow small-lot rural subdivision where this would otherwise not be permitted, provided there is a link to a long-term conservation outcome. In some cases, owners sell the remainder of the land and use part of the income to achieve the long-term conservation requirements for a heritage property that they want to retain. In others, an owner may build a new house on the property and sell the heritage place (with an appropriate area of land) to someone who fully understands the up-front heritage constraints and opportunities (and pays an amount that reflects the additional funding required to achieve the conservation requirements). The Heritage Agreements that underpin this incentive arrangement are managed through the Western Australian Office of Heritage.

Source: Western Australian Planning Commission Development Control Policy 3.4: Subdivision of rural land, Clause 4.7: Conservation of heritage buildings and places

4.2.3 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. However, the planning system does not serve historic cultural heritage well in three areas, thereby increasing pressure on the resource:

- The notions of inheritance and public good could be better integrated within strategic planning frameworks and processes. Historic sites 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, cherished 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.
- 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. These owners deliver the public good but are expected to accept the implications (such as cost or restricted development opportunities).

Conflicts and poor heritage outcomes are often linked to misconceptions about the implications of heritage listing and lack of clear heritage policies and guidelines to assist owners, developers and decision-makers. When appropriate statutes, policies and guidelines are integrated with incentives and are well communicated, the system is far more robust (see Box 9.22).

The linear nature of our development assessment and consent processes places great reliance on existing reserved lands and statutory heritage lists. In Australia, the majority of cultural heritage places are only protected if they are formally identified and listed, whether at local, state or national level. (Exceptions include Aboriginal objects and rare and endangered species habitat in some 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. The National Reserve System contains significant gaps itself, but is also lacking in other important areas, such as landscape connectivity, adequacy of reserve sizes and configuration, the quality of reserved habitat and the complementarity of surrounding land uses.¹⁸

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. *Australia ICOMOS and Australian Council of National Trusts Workshop*⁸¹

No such review has taken place, despite the pending demise of the Register of the National Estate.



■ Browns Shaft, Line of Lode mine, Broken Hill, New South Wales

Photo by Richard Mackay

4.2.4 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 to restore or reconstruct it to an intact state. This attitude militates against more innovative (and often more realistic) outcomes, such as allowing places to become ruins within the landscape, or recording them in archives before they are demolished.

The pressures of inflexible approaches are nowhere more evident than in the features of the Line of Lode mine at Broken Hill, where a century of mining provides an evocative reminder of our heritage, but which is largely beyond physical conservation.

This issue has been addressed for at least two Australian World Heritage areas. In Kakadu National Park:

The level of available resources and practicalities imposed by the location and condition of many historic sites means that all cannot be conserved and interpreted to a high standard; nor indeed is this necessarily desirable. However, it is considered essential that places relating to the major themes of the park are retained and managed so that they survive in a meaningful way in the long term and are accessible to and understood by visitors. *Mackay*,⁸² p. 32

The statutory management plan for Heard Island goes even further, providing an overt management policy where ‘the reserve’s cultural heritage is conserved through a process of managed decay’.⁸³ However, in both these cases, the specific heritage places proposed for management in this way are not part of the outstanding universal values that support the World Heritage listing.

Heritage as ruins is a topical and contested issue that Australian heritage managers are only now beginning to grapple with.^p The ruins approach is only one possible solution and needs to be considered carefully; there is a potential danger in creating the perception that it is desirable to allow places to become ruins. This approach may work where heritage places are redundant and in remote areas, or where they are ruinous already (Box 9.23). There is also an important difference between active management as a ruin (which might involve, for example, clearing of invasive vegetation) and complete abandonment. For some places, changed circumstances (such as a new owner) may lead to unforeseen conservation opportunities.

Similarly, understanding how modern needs and statutory guidelines can interact with heritage places can foster creative solutions to protect heritage values (Box 9.24).

p Challenges presented by heritage-listed dilapidated structures and ruins; Heritage Chairs and Officials of Australia and New Zealand workshop, April 2011

Box 9.23 Rural ruins—Mount Perry Powder Magazine

The Mount Perry Powder Magazine, built by the Queensland Government in 1874, is an important reminder of the first copper mining boom period at Mount Perry during the 1870s, and is also the oldest known surviving government powder magazine in Queensland. The brick and stone magazine is located in a paddock approximately 3.5 kilometres north of the town. The solidly constructed walls of the Mount Perry Powder Magazine, its narrow windows and remnant copper fittings are all standard features of Queensland Government powder magazines of the 19th century, and its isolated location demonstrates the practice of locating gunpowder at a safe distance from population centres.

However, by virtue of its location and condition, this building does not lend itself to traditional restoration or reconstruction, which would be likely to obscure its significance and integrity and prove uneconomical. As a managed ruin in the rural landscape, the former Mount Perry Powder Magazine is an evocative structure, standing alone in a grassy field; the peace and solitude of the site provide a contrast with the hectic activity that would have accompanied copper mining at Mount Perry.



■ Mount Perry Powder Magazine, Queensland (photo by the Department of Environment and Resource Management, statewide heritage survey, 19 November 2008)

Box 9.24 Sustainability vs cultural heritage

In Tasmania, increasing interest in sustainability has resulted in a growing number of applications for the installation of solar panels and heat pumps in heritage-listed properties. To address the issue, the Tasmanian Heritage Council has released guidelines on the installation of services such as solar panels, water tanks and heat pumps. The aim is to encourage owners to think about balancing new technologies with heritage values and features, with the full knowledge that any modern services have the potential to be intrusive on heritage places. It is hoped that these guidelines, the first of their kind in Australia, will help generate greater discussion among the community, architects and planners, so that good community outcomes can be achieved.

Source: Heritage Tasmania

4.3 Inputs

Inputs to heritage management can be assessed by considering the financial, human and other resources that are available for management programs to address pressures and risks to heritage values.

4.3.1 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.

Heritage Victoria has considered the basis for heritage valuation from a cost–benefit perspective:

The economic case for government intervention in heritage lies in the communitywide nature of many of these benefits. The aesthetic quality of a building’s heritage facade, for example, will be of value to passers-by as well as to the building’s owner. *Gard’ner*,⁸⁴ p. 2

The intangible nature of many of the benefits associated with heritage means they cannot be captured by the market. As a result they cannot be valued using normal market valuation (pricing) techniques. *Gard’ner*,⁸⁴ p. 3

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 other resources, either directly with funding or indirectly through incentives. However, in reality, public funding for heritage in Australia is very low. Comparison with international data suggests that the low level of funding allocated for Australian heritage may be compounded by the extent of the heritage resource and by the relative ability of owners and governments to provide resources for its conservation (Box 9.25).

Heritage is available to all, but funded by some. 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*,⁹⁰ p. xxviii

Although many of the Productivity Commission’s findings and recommendations have been disputed, the above citations highlight the important role of government in providing the resource capacity for heritage conservation and the major contribution already made by private owners—a contribution that deserves greater support and improved incentives (Boxes 9.26 and 9.27).

In 2011, federal funding for heritage at the national level was dramatically cut from \$34 242 000 in 2010–11 to \$26 675 000 in 2011–12: a reduction of more than 22%. The heritage budget for DSEWPAC will be reduced by more than 31%, limiting the extent and effectiveness of current programs and leading inevitably to lack of federal leadership in managing Australian heritage. These cuts require downscaling of fundamental elements of the EPBC Act model for heritage management, such as National Heritage List assessments, and leave little or no ability to instigate effective monitoring or evaluation. The resulting reduction in staff support and other resources will also reduce the effectiveness of groups that rely on federal support, such as the Australian Heritage Council, the Heritage Chairs and Officials of Australia and New Zealand, and the Australian World Heritage Advisory Committee.

Box 9.25 Resources for heritage conservation

An emerging issue for Australia is an apparent disparity between the extent of our rich heritage and the financial resources available for its conservation and management. One way to consider this pressure is by benchmarking against other countries; however, this is challenging because of a lack of readily available and comparable data.

Figures A to D show heritage listing data for several countries. Figure A shows that the number of listed places in Australia is comparable to England and China, but far below the United States. However, when measured relative to country area, the picture is different; Figure B shows that Australia's listed historic sites are highly dispersed. Figure C suggests that Australia lists more sites per person than the other selected nations. This may be a reflection of the underlying resource, or simply a byproduct of multiple jurisdictions and inconsistent approaches to listing. Figure D shows the gross domestic product of each nation per listed site as a measure of ability to pay.

This information is partial and arbitrary, but it does suggest that Australia needs to consider more ways to resource heritage conservation, perhaps by offering incentives for private heritage owners or allowing greater flexibility for change and adaptation.

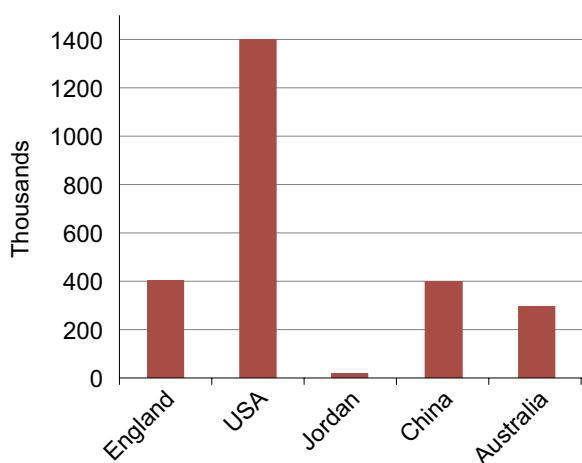


Figure A Number of listed historic sites

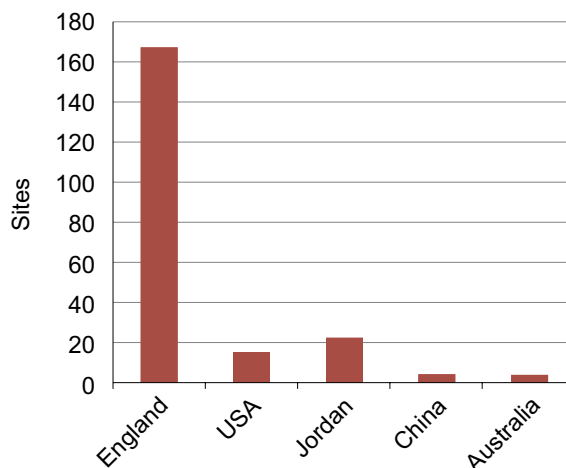


Figure B Number of listed historic sites per 100 square kilometres

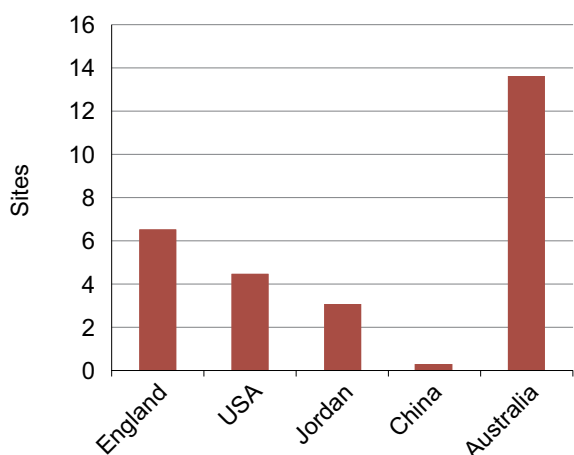


Figure C Number of listed historic sites per 1000 people

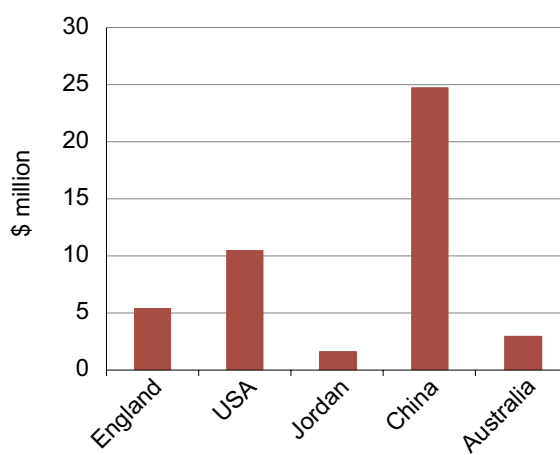


Figure D Gross domestic product per listed historic site

Source: Central Intelligence Agency;⁸⁵ English Heritage;⁸⁶ United States National Parks Service;⁸⁷ China Ministry of Culture;⁸⁸ Department of Antiquities of Jordan⁸⁹

Box 9.26 Braidwood—economic impact of heritage listing

Braidwood in New South Wales is an excellent example of a surviving planned town from the Georgian period. The layout of Braidwood dates to the 1830s and reflects Governor Darling's desire for planned towns and the imposition of the English county system in the colony of New South Wales. The town of Braidwood and its immediate surrounds were listed on the New South Wales Heritage Register in April 2006 to preserve its character and setting and to boost tourism and jobs in the area. The listing of a town as a whole was unprecedented on the east coast of Australia. Of the town residents, 50% believed that the listing had a positive influence on the town, and 31% believed that the listing was detrimental to the future of Braidwood. Despite these perceptions, the overall economic impact of the heritage listing on Braidwood was neutral.



■ Braidwood Museum, New South Wales (photo by Claire Baker and the Australian Government Department of Sustainability, Environment, Water, Population and Communities)

Source: Western Research Institute⁹¹

Australian and state budget allocations and project grants for natural heritage are modest and not proportional to the scale of the resources and their natural and ecosystem service value. Cultural heritage is even more poorly funded:

There is a stark contrast between the funding provided by governments in Australia for the conservation of natural and historic heritage. For example, the \$2.7 billion Natural Heritage Trust (NHT) represents the biggest financial commitment to environmental action by any Australian government. Yet the Act which established the Trust in 1997 specifically excluded historic heritage from being considered ...
Lennon,⁵³ p. 25

In 2007, Heritage Victoria commissioned a useful review of the Victorian heritage grants scheme.⁹² The review report notes that the grant allocation criteria accept that appropriately recognised heritage places are equally valuable and deserve to be protected, so there is no prioritisation of grant

applications based on subjective assessment of comparative heritage value. As a result, the growing demand and reducing pool of funding has tended to reduce the amount provided by individual grants. While understandable, this has arguably resulted in larger and more iconic places not receiving funding, or not having optimal works programs.

There is a strong case for establishing a national cultural heritage funding program, equivalent to the Natural Heritage Trust or Caring for our Country initiatives.⁵³

The natural and cultural heritage indicators used in the 2001 and 2006 SoE reports included a series of financial and human input measures. Unfortunately, comparable trend data for financial and human inputs are not easily gathered because the relevant information is often amalgamated within larger agency figures or affected by administrative changes. For some jurisdictions, only partial information is available.

Box 9.27 New South Wales National Trust Heritage Awards

The New South Wales National Trust Heritage Awards illustrate the benefits of incentive programs and recognition for the owners and managers of heritage places. The awards have been running for around 20 years. In 2011, 49 entries were received, representing a total project value of more than \$70 million; the majority of entries were building works. Approximately 50% of the entries were from regional New South Wales, and many had a strong educational component, including supporting heritage trades training and educating heritage property owners. Community development and tourism benefits were also demonstrated in the award-winning projects.

The award entries came from projects supported by government, business and the community and demonstrate that heritage is a significant industry that affects all levels of the community.

The National Trust is planning to extend this award program across Australia, giving the whole country the opportunity to celebrate the value and benefits of heritage.

Protecting Australia's heritage is part of the character and identity of this country, and it's outstanding to see the level of commitment to protecting and conserving heritage in this state by large corporations, small companies, government bodies and individuals. *William Holmes à Court, CEO of the National Trust of Australia (NSW)*⁹³



■ Exeter Farm comprises a pair of rare, substantially intact mid-19th century vernacular timber-slab cottage buildings set within the remains of their original rural context. The structures were conserved and repaired as part of the NSW Historic Houses Trust Endangered Houses scheme. The project demonstrates how good conservation outcomes can be achieved through public open days and trades training workshops for heritage and trade professionals (photo by Alan Croker, Design 5 Architects).



■ A group of winners from the New South Wales National Trust Heritage Awards (photo courtesy of Daniel Griffiths Photography)

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

Funding for survey and assessment of natural values appears to be declining. Reservation of lands with conservation value continues to depend on public sector budget allocations and opportunistic acquisition. However, additional land continues to be reserved without proportional increases in public sector resourcing. The sparse, partial figures available indicate that operational funding for Australian reserved land

management may have increased in amount between 2006 and 2011 but may have declined relative to the dollar value and extent of managed lands.⁹⁴ The majority of 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.

q DSEWPac summary analysis of natural and cultural heritage indicator data, July 2011

Table 9.2 World Heritage area funding (\$) from the Natural Heritage Trust (NHT) and Caring for our Country, 2006–07 to 2010–11

Figures are based on approvals per financial year and include funding delivered through regional natural resource management bodies and, in some cases, funding for cultural heritage. No funding to Australian Government–managed World Heritage areas is included (i.e. Great Barrier Reef Marine Park, Kakadu National Park, Uluru-Kata Tjuta National Park).

Funding source	NHT2		Caring for our Country			Total
	2006–07	2007–08	2008–09	2009–10	2010–11	
Queensland	3 663 139	3 350 232	2 924 000	5 496 810	2 458 600	17 892 781
New South Wales	709 168	796 875	1 153 397	2 055 451	2 182 200	6 897 091
Tasmania	3 469 500	5 015 500	5 170 000	8 329 855	4 003 982	25 988 837
South Australia	110 000	74 250	–	–	135 000	319 250
Western Australia	283 503	465 230	425 346	299 700	822 530	2 296 309
Commonwealth	1 200 000	500 000	–	–	–	1 700 000
Total	9 435 310	10 202 087	9 672 743	16 181 816	9 602 312	55 094 268

– = no data available

Source: Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011

Nevertheless, some specific public sector funding programs such as Natural Heritage Trust 2, Caring for our Country and the Jobs Fund initiative have made major positive contributions to particular natural heritage programs (see Table 9.2). However, there are currently no similar forward commitments for ongoing public sector funding of heritage conservation at this scale.

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

Funding for surveying and assessing historic values is difficult to measure on a national basis, but is declining for the National Heritage List. Although the dollar amount has increased, when adjusted for inflation and the number of listed places, the available funding for historic heritage decreased between 2006 and 2011.

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. Grant funding, though substantial during the Jobs Fund initiative, is now in decline.

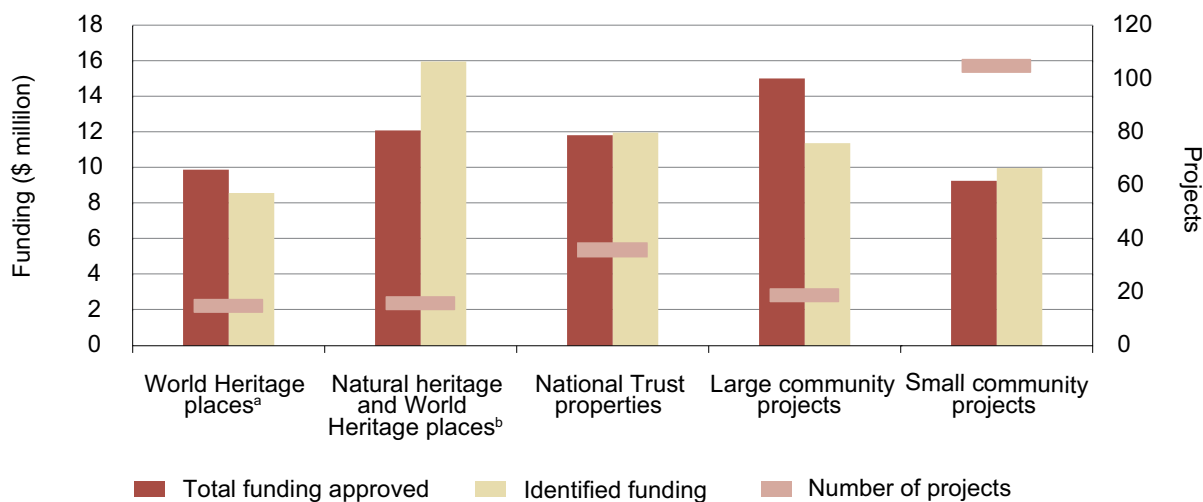
Natural and cultural heritage indicator 11 considers funding provided to heritage and other agencies for Indigenous heritage places

Resources for listing and protecting Indigenous heritage places are inadequate, and their allocation is often a post-event reaction to adverse impacts. Insufficient attention is paid to intangible values and effective means of protection other than listing or reservation.

Australia's listed Indigenous sites do not allocate adequate resources to address major conservation priorities, nor do land-management programs such as Caring for our Country. Conservation programs for intangible heritage are severely constrained by limits on available resources.

Funding for heritage: Jobs Fund (heritage projects)

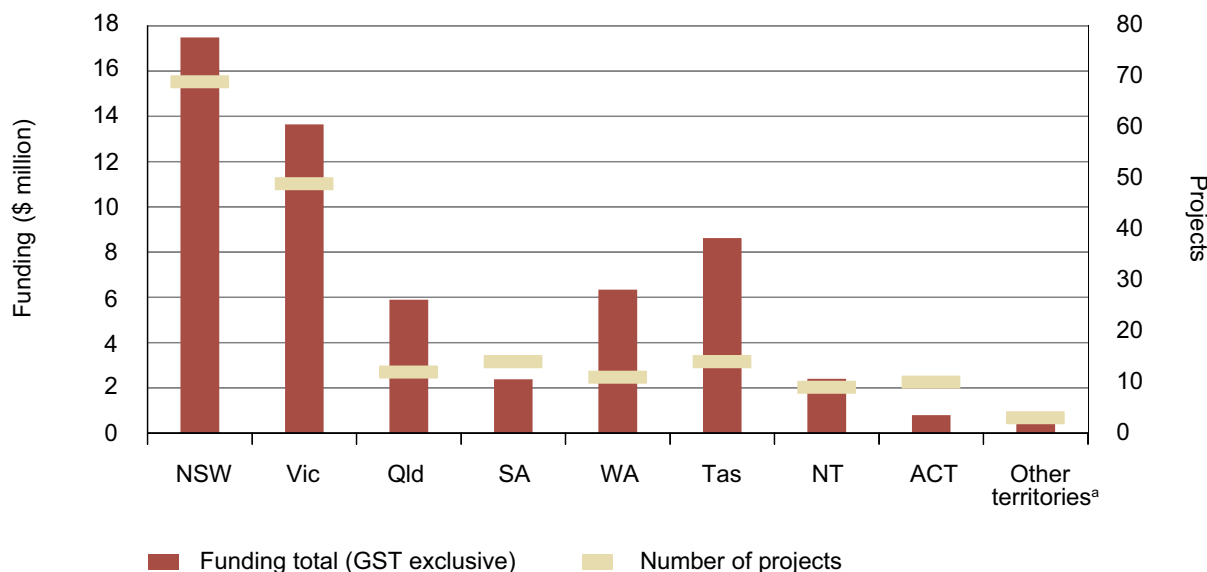
In April 2009, the Prime Minister announced a \$650-million economic stimulus package (the Jobs Fund), to support local jobs, build skills and improve facilities in local communities. This included \$60 million for heritage projects.⁹⁴ The Jobs Fund program is by far the largest public sector funding initiative for heritage during the SoE 2011 reporting period. Funding of \$58.2 million across 2008–09 and 2009–10 was approved for 191 projects (Figures 9.16 and 9.17).⁹⁵



a Primarily natural values
 b Primarily historic values

Source: Adapted from Jobs Fund data, Heritage Division, Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011

Figure 9.16 Jobs Fund heritage projects



ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; Qld = Queensland; SA = South Australia; Tas = Tasmania; Vic = Victoria; WA = Western Australia

a Australian Antarctic Territory \$486 726 and Norfolk Island \$156 363

Source: Adapted from Jobs Fund data, Heritage Division, Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011

Figure 9.17 Jobs Fund funding allocated by states and territories

An assessment process identified which projects met Jobs Fund 'gateway' and heritage criteria, and independent expert assessment review was provided by the Australian Heritage Council and the minister's

Heritage Working Group. Approximately 180 further projects (with a value of \$173 million) were assessed as suitable, but were not funded.

Box 9.28 Conservation of Brennan and Geraghty's Store and residences

Brennan and Geraghty's Store in Maryborough, Queensland, is a rare and extremely significant example of a late-19th century store, which still contains an in situ collection of merchandise and records dating from the early 1900s.

The store was constructed in 1871 by Irish immigrants and brothers-in-law Patrick Brennan and Martin Geraghty, adapting a cottage they had built in 1861. The 1880s saw the peak of Brennan and Geraghty's business empire in a boom period for Maryborough and Queensland. The store was operated for 100 years by descendants of the Geraghty family, closing in 1971. It was purchased by the National Trust of Queensland in 1975 and opened to the public in 1990.

Funding of \$250 000 was made available to the National Trust to replace guttering; investigate the downpipe and stormwater system for blockages; replace the rear stairs, three panels of pine awning and rotted cladding on the outhouse, front fences and gates; repair loose mouldings; and repaint the awning, main building, outhouse and stables.

The project employed local consultants, builders and tradespeople because heritage skills and materials were readily available locally. The project made a valuable contribution to sustaining heritage skills in a regional centre that prides itself on being a heritage tourism destination.



Upgrading the two cottages on either side of the store will help diversify and increase the income of the complex in the future, and will improve the protection and care of the store's valuable collection of artefacts and documents.

Photo by Mark Mohell and the Australian Government Department of Sustainability, Environment, Water, Population and Communities

In addition to achieving some outstanding heritage outcomes (Box 9.28), the heritage component of the Jobs Fund created 2423 jobs, 231 work-experience positions and 116 traineeships. Thirteen projects were located in Indigenous communities or had particular focus on Indigenous employment, contributing to Closing the Gap targets through economic stimulus.

Like previous major funding programs (such as the Bicentennial and Centenary of Federation funding programs leading up to 1988 and 2001), the Jobs Fund represents a 'spike' in funding levels for heritage conservation. Such spikes are typically interspaced with lean periods. This funding pattern may contribute to cyclical patterns observed in the condition and integrity of our heritage (see Section 2.2.7).

4.3.2 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

Conservation of the vast array of culturally significant buildings and places in Australia and New Zealand relies on a body of heritage professionals and tradespeople with relevant specialist skills. These skills are acquired through both formal and 'on the job' training. The number

Table 9.3 Professional historic heritage training courses offered in Australia (degree, diploma, certificate and short courses), 2010

State	Physical conservation	Recording	Management	Consultation	Interpretation	Archaeology	Historic landscape management	Legislation and policy	Total
ACT	4	6	11	1	6	8	7	8	51
NSW	3	9	4		1	2		5	24
NT					1				1
Qld			3			4		2	9
SA		10	12		8	15		12	57
Tas					1				1
Vic	10	8	10	4	5	1	2	8	48
WA			4		5	3		4	16
	17	33	44	5	27	33	9	39	207

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; Qld = Queensland; SA = South Australia; Tas = Tasmania; Vic = Victoria; WA = Western Australia

Note: Empty cells are where no courses have been identified.

Source: Godden Mackay Logan²¹

of practitioners with these skills has declined in recent years and the population of appropriately skilled practitioners is ageing—leading to a looming crisis in cultural heritage conservation. Godden Mackay Logan,²¹ p. 131

There was a net increase in the number of professional heritage-related courses between 2006 and 2011. However, available courses are concentrated in eastern Australia and major cities. The focus for courses is on general professional heritage management, whereas opportunities for more specific training in heritage trades have declined (Table 9.3).²¹

Practice standards in heritage professional practice and trades practice rely on skilled practitioners. A particularly challenging problem for practice standards in historic heritage is an apparent skills erosion (Box 9.29).

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 data (such as membership of Australia ICOMOS) suggest a substantial increase in membership of professional heritage associations of around 20% between 2006 and 2011 (Figure 9.18).

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

Comprehensive, reliable longitudinal data are not available for the heritage volunteer sector. Surrogate data indicate that volunteer participation has declined. For example, information provided by the Australian Council of National Trusts shows some variation from state to state, but overall a general decrease of 2.7% over 2006–2011 and a decrease of 14.1% since 1998. Actual membership numbers and participation in heritage training or conservation activities may vary depending on state-specific processes for managing membership records, particular advocacy campaigns or membership drives. While National Trust membership can be regarded as indicative only, the figures suggest that, despite some growth in numbers between 2006 and 2008, volunteerism in the heritage sector may generally be declining (Figure 9.19).

However, there are many positive stories about contributions made to heritage conservation by volunteers (Box 9.30).

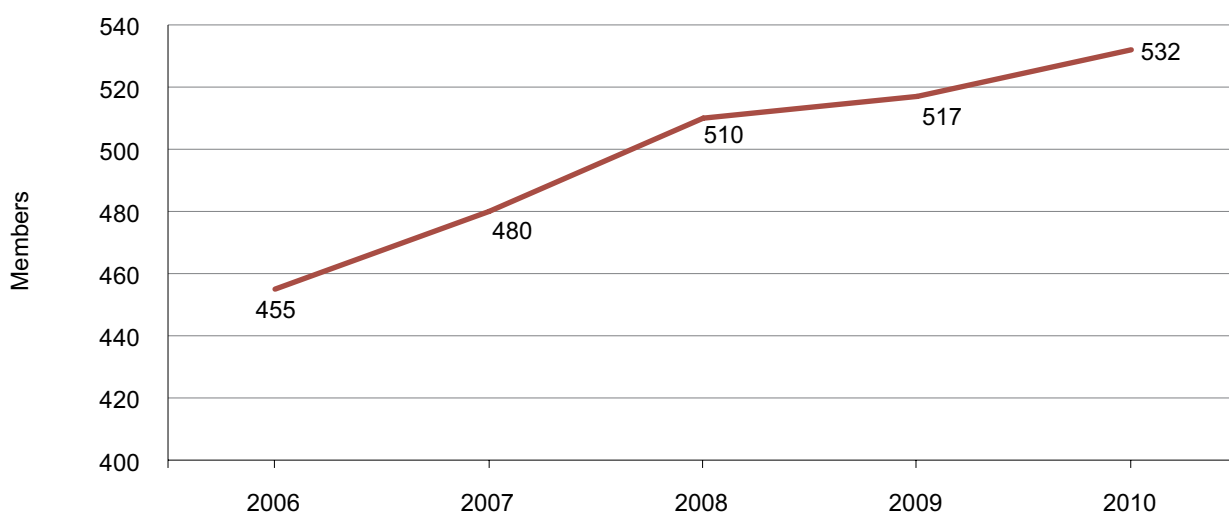
Box 9.29 Loss of traditional heritage trade skills

During 2009 and 2010, the Heritage Chairs and Officials of Australia and New Zealand commissioned a study of heritage trades and professional training in Australia and New Zealand.²¹ The project report assessed demand for a variety of heritage professional and trade skills and considered this need in relation to available training and expertise.

The study highlighted the ageing population of specialist tradespeople, a declining skills and knowledge base and, particularly, an emerging generation of practitioners who had completed general rather than specialist training but still considered that they could undertake specialist trades work—they ‘did not know what they did not know’. The report identifies that the amount of specialist heritage trade work available in Australia and New Zealand is barely adequate for existing (generally older) specialist practitioners, which means that there are limited opportunities for new apprentices as funding levels confine the available specialist work to the small number of longstanding, well-established practitioners. However, the situation is fast approaching a precipice, beyond which current experts will have retired without a new generation to take their place. This emerging skills shortage poses a potentially major risk for historic heritage conservation.

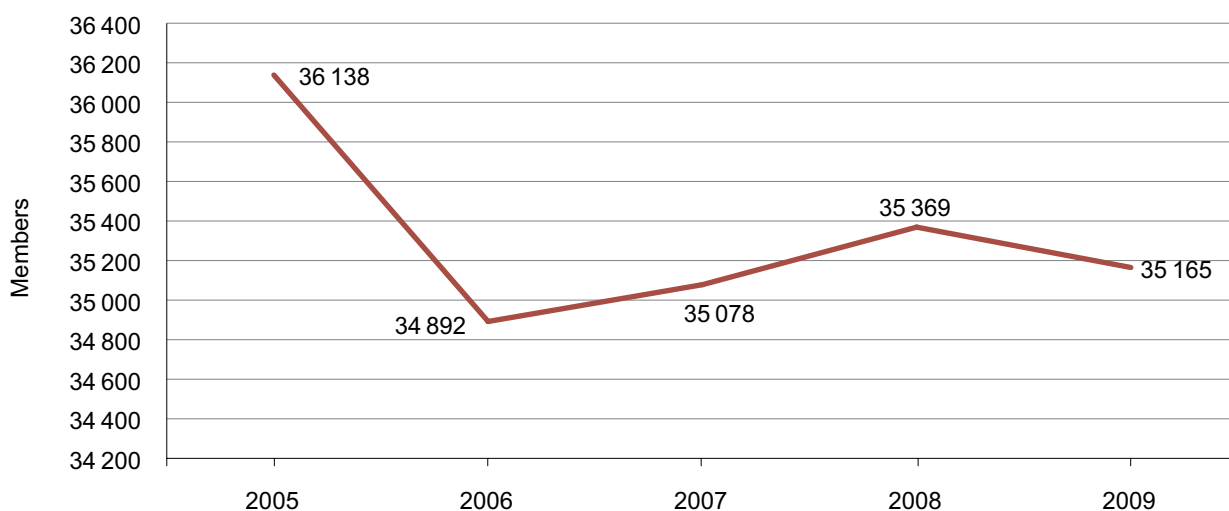


Photos by Godden Mackay Logan



Source: Australia ICOMOS

Figure 9.18 Membership of the International Council on Monuments and Sites, Australia, 2006–10



Source: Australian Council of National Trusts

Figure 9.19 National Trust membership, 2005–09

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

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

Insufficient data are available to provide an accurate assessment of this indicator.

Box 9.30 Heritagecare

Heritage Victoria supported the Heritagecare program between 2006 and 2010. The program was delivered by a nongovernment organisation through an annual grant of \$385 000. The grant provided funding for:

- Hands on Heritage, which facilitated short-term volunteering. This program was required to deliver a minimum of twenty 5-day projects (i.e. a total of 100 project-days) per year, with five volunteers per project
- Community Stewardship, which comprised six-month projects that were required to deliver a minimum of fifteen 26-week projects per year (i.e. 390 volunteer-days per year).

Over the four years, 167 Community Stewardship projects were undertaken, with a total of 17 329 volunteer-days; and 62 Hands on Heritage project sites (including multiple projects at the same site) were delivered, with a total of 2934 volunteer-days.⁹⁶



■ As part of Heritage Victoria's Heritagecare program, volunteers at the Sir Reginald Ansett Transport Museum, Hamilton, sorted material to enable archival storage and cataloguing of the collection (photo by Julie Millowik, courtesy of Heritage Victoria, Department of Planning and Community Development, Victoria)

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

Anecdotal evidence suggests that national parks in Australia suffer from a systemic lack of direct resourcing. Budgets and grant programs are never regarded as sufficient to achieve basic values management and respond to emerging issues. The implications include loss of skilled staff, and management having to omit some activities and programs, leading to further pressures and impacts.

At the national level, Australian Government departmental funding was reduced from \$15 million to \$13 million between 2006–07 and 2011–12.⁹⁷ This reduction is even greater when adjusted to reflect actual employment costs, and has resulted in a drop in heritage staffing levels. The reduction adversely affects listing programs, and reduces capacity for delivery of advice, proactive planning and reactive monitoring of heritage places.⁶⁸

At the state level, comparable trend data for staffing levels within heritage agencies are not available: the relevant information is subsumed within summary figures for larger agencies, or compromised by changes to government structures or differences between jurisdictions. However, a snapshot view as at June 2011 (Table 9.4) shows significant variation in staffing levels between jurisdictions, even taking anomalies into account and adjusting for population or numbers of places listed on state heritage registers. There is an obvious correlation between higher staffing levels and a greater number of listed places; it is not clear whether this correlation occurs because greater staff resourcing enables more places to be assessed, or because greater numbers of listed places require more regulators, or both.

Along with national and state heritage staff, local heritage advisers are highly valued (Box 9.31).

Table 9.4 State and territory heritage office full-time equivalent (FTE) staff numbers, June 2011

Jurisdiction	FTEs internal	FTEs external	FTEs total	Population (million)	FTE/million people	Number of places on state register	Number of places on state register/FTE	Notes
ACT	12.0	0.0	12.0	0.36	33.3	470	39.2	Includes Indigenous heritage
NSW	35.0	2.0	37.0	7.24	5.1	1 570	42.4	
NT	7.0	0.0	7.0	0.23	30.4	250	35.7	Includes Indigenous heritage
Qld	25.0	11.6	36.6	4.52	8.1	1 670	45.6	
SA	16.9	0.0	16.9	1.64	10.3	2 210	130.8	
Tas	16.5	0.0	16.5	0.51	32.4	5 520	334.6	
Vic	42.2	0.0	42.2	5.55	7.6	2 240	53.1	
WA	28.3	0.0	28.3	2.30	12.3	1 300	45.9	
Total	182.9	13.6	196.5	22.35		21 160		Excludes Australian Government
Mean	22.9	1.7	24.6	–	17.4	–	107.7	

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; Qld = Queensland; SA = South Australia; Tas = Tasmania; Vic = Victoria; WA = Western Australia

Source: Heritage Victoria, gathered on behalf of Heritage Chairs and Officials of Australia and New Zealand, unpublished

Box 9.31 Local heritage—the difference made by local heritage advisers

Local heritage advisers are invaluable in providing targeted and specialist advice to home and business owners to help them manage their heritage properties. Through local councils, heritage advisers provide advice to residents and property owners who want to alter, extend or demolish privately owned buildings.

For example, positive and proactive heritage management improved the facade of a commercial building in Geelong, Victoria. The local heritage adviser assisted the owner in reaching a cost-effective solution that improved the appearance and amenity of the building. The heritage adviser used the Geelong Verandah Study to suggest a design that would have a positive effect on the heritage values of the building.⁹⁸



■ 231 Moorabool St, Geelong, before verandah reconstruction (photo by Michael Bell, Manifest Architects, Geelong)



■ 231 Moorabool St, Geelong, after verandah reconstruction (photo by David Rowe, Authentic Heritage Services Pty Ltd, Heritage Adviser, City of Geelong)

4.4 Processes

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

4.4.1 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 in jurisdictions where political intervention overrides heritage controls and values-based heritage decision-making. Particular current challenges arise from land zoning, building regulations and development standards that place major pressure on heritage places. Inappropriate zonings 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.

Unexpected adverse pressure on historic buildings has come from growing interest in sustainability and the green building agenda (Box 9.32). Balancing heritage conservation and sustainable development can be challenging, particularly in commercial contexts. Wasted embodied energy (i.e. the energy used to produce the building, including all materials) is an emerging issue. While a whole-of-lifecycle assessment would seem to be an obvious and appropriate approach, current standards and rules almost totally neglect embodied energy and focus on operational energy performance.

The sustainability agenda may also promote inappropriate changes that have adverse effects on individual heritage places if they are not sensitively handled. For example, prioritising native vegetation over exotic species can cause adverse outcomes for significant cultural plantings and gardens.

4.4.2 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, then feeding the results of monitoring back into new goals, priorities, strategies and actions.¹⁰³⁻¹⁰⁴

One well-known adaptive management methodology is the conservation action planning approach of The Nature Conservancy. This process assesses context (values and threats) and outcomes (conservation status), then integrates this into development and implementation of conservation strategies that can be applied to any conservation site.¹⁰⁴ Other approaches include the Australian Natural Heritage Charter processes, including the cycle of monitoring and review in preparing a conservation plan.⁵⁹

Some Australian national parks already embrace adaptive management.¹⁰⁵ Management systems in most national parks go some way towards this aim by identifying conservation needs and making well-informed decisions about management goals, resource allocation and impact assessment. However, formal monitoring and evaluation occurs in relatively few jurisdictions. Australia provides periodic reporting to UNESCO on its World Heritage properties (see Section 2.2.1), and both New South Wales and Victoria prepare reports on the state of their parks. Good systems are generally in place for assessing specific development-driven impacts on other off-park natural heritage places, but there are relatively few proactive and comprehensive conservation management programs.

Indigenous heritage places within reserved lands usually have management systems that identify conservation needs, involve traditional owners and make well-informed 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. Little formal monitoring and evaluation or adaptive management of Indigenous heritage occurs.

Box 9.32 The green building agenda

The green building agenda being embraced and promoted by many agencies is refocusing attention on responsible building and development, and directing resources to general upgrading of the built environment. This was thought to have benefits for heritage conservation, but instead the green building agenda is placing significant pressure on heritage buildings. The threats can be grouped into two categories: the impact of sustainability legislation, and the characteristics of heritage buildings themselves.

The Commonwealth Scientific and Industrial Research Organisation (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.⁹⁹ However, sustainability legislation measures only the operational efficiencies of buildings, with the aim of achieving immediate greenhouse gas savings by increasing efficiencies in heating, cooling and ventilation, saving water and minimising waste. 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, nor the cultural value of the building to the community.

Wasted embodied energy is a growing issue, and a lifecycle assessment approach is appropriate. Better recognition could be paid to the potential for improvement of the environmental performance of existing buildings.¹⁰⁰

The risk 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 the Green Star rating categories do not award points for heritage and do not adequately recognise the value in retaining existing materials. Points are awarded for replacing existing fabric with recycled material, even if the removed fabric is trucked off to landfill. Few, if any, points may be earned for retaining existing fabric; none for ensuring the 'integrity' of the original is maintained. Yet if the full lifecycle is considered, 'upgrading and maintaining an existing building to a 4.5 Green Star rating is 2.5 times more efficient than demolishing to build an equivalent 5 Green Star building measured at year 30 in the building cycle'.¹⁰¹ However, 'a refurbished building will not have new concrete poured and therefore cannot achieve the credit for use of recycled content in structural concrete'.¹⁰²

The requirement for commercial building disclosure now ensures that the National Australian Built Environment Rating System (NABERS) energy ratings are available for large commercial buildings (soon to be extended to residential buildings). As the NABERS rating tool only rates energy efficiency, there is a great danger that heritage buildings will become even less desirable to owners and tenants who seek higher energy ratings. This pressure is already well demonstrated by government policies that require government business to be done from buildings with high NABERS ratings (e.g. the John Gorton Building that houses the Canberra offices of the Australian Government Department of Sustainability, Environment, Water, Population and Communities).

The physical characteristics of a heritage building may also pose difficulties for achieving high energy ratings. Higher star ratings under the current rating tools require significant investment in innovative technologies, and significant additional plant area for capturing water, recycling greywater and installing cogeneration or trigeneration plans. Heritage buildings often have smaller floorplates, sit on smaller sites and may be constrained by the inability to excavate for additional plant area, or to add this to the roof area. These characteristics affect the ability of heritage structures to compete in the current rating system.



Several organisations are working to redress the imbalance of the current rating tools in a number of different spheres. Organisations include the Green Building Council of Australia, which is developing a rating tool for existing buildings; the Australian Tax Office, which is proposing a green investment tax incentive for retrofitting; and RMIT University and Heritage Victoria, which are researching the embodied energy of various heritage building typologies. The CSIRO is developing the Australian Life Cycle Inventory materials database for eventual incorporation into the Nationwide House Energy Rating Scheme, and organisations such as the Property Council of Australia run seminars on retrofitting existing buildings.¹⁰¹

■ The Cleland Bond is a historic warehouse in Sydney's Rocks district that has recently been adapted for commercial use, with a new lift, stairs, lighting and services, all of which improve energy efficiency and are clearly differentiated from the historic fabric. The adaptation makes use of the thermal properties and embodied energy of the existing structure (owned by Sydney Harbour Foreshore Authority, architect Tanner Architects; photo by Tyrone Branigan, courtesy Tanner Architects).

Box 9.33 Innovative approach—being mindful of operational needs and heritage values

The Lake Margaret Power Station on the west coast of Tasmania is one of the state's earliest hydro power stations. In 2006, the upper station was decommissioned and a proposal was lodged to demolish the unusual 2.2-kilometre woodstave pipeline that fed water to the station. The 70-year-old King Billy pipeline had reached the end of its effective life, and demolition was the only pragmatic option. However, the high heritage value of the site was a major consideration for future options. A collaborative approach between Hydro Tasmania, the Tasmanian Heritage Council, local government and community representatives ensured the preservation of the heritage values of the area. Hydro Tasmania's engineers found an economical solution to reconstruct the pipeline using ash cedar. The project blended modern and traditional construction techniques and incorporated elements of the original works dating from 1914. Three sections of the original King Billy pine woodstave pipeline have been preserved onsite, and a further three were donated to museums. The power station recommenced operations in October 2009.



■ Section of the woodstave pipeline, Lake Margaret Power Station, Tasmania (photo by David Scott, Heritage Tasmania)

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 (Box 9.33). 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 in Kerr¹⁰⁶ and the Burra Charter,⁴⁶ an approach that includes setting goals, determining priorities, developing strategies and taking action, but places less emphasis on feeding the results of evaluation and monitoring back into management. For privately owned, listed historic places, the systems for impact assessment and resource allocation vary greatly across jurisdictions, owners and site types.

4.5 Outcomes

Assessing heritage management outcomes requires informed evaluation of the way in which current pressures and emerging risks to heritage values are being reduced and the resilience of heritage is being improved to retain values. In short, this is an assessment of whether management objectives are being met.

A nationwide lack of monitoring and evaluation programs makes these assessments challenging and highly reliant on individual examples, anecdotal evidence and phenomenological data. Therefore, the judgements presented in this section are based on opinions expressed during the workshops held as part of the SoE 2011 reporting process (as outlined in Chapter 1).

Box 9.34 Evaluation of heritage management effectiveness in Yuraygir National Park

Yuraygir National Park protects 65 kilometres of undeveloped coastline, the longest such stretch in New South Wales. Its rainforest, dry eucalypt forest, heathland and wetlands contain threatened species, including the ground parrot, spotted-tailed quoll and sand spurge. A major fire in a remote section of the coastline in October 2009 led to an expansion of weeds in the park, with negative effects on reserve values. However, the thinned understorey presented an opportunity for weed control, with a focus on bitou bush and lantana.

After careful planning, approximately 95% of a 5-kilometre stretch of coastline had ground-based and aerial weed control of post-fire weed growth. Following this intense control, regenerating natural vegetation has flourished. The work has protected three newly discovered populations of endangered sand spurge and two populations of sea bindweed, a priority species within the Bitou Threat Abatement Program.

The accumulated weed seedbank will need ongoing attention, as will exposed dunes because of their slower natural regeneration. The outcomes will continue to be monitored through on-ground surveys, and subsequent actions will continue to support recovery of native vegetation.

In New South Wales, the results of programs like this are captured annually through regional operational plans and the triennial management effectiveness survey called State of the Parks. The survey provides a standard framework for assessing all parks in the New South Wales reserve system and brings together multiple sources of evidence to contribute to evaluations, such as staff and specialist experience, planning documents, research and monitoring results, community information and corporate data. After a comprehensive review, this information is used to determine the overall effectiveness of management for issues across the reserve system and support ongoing planning and decision-making.



■ Jones Point before (left) and after (right) bitou bush control (photos by Jeff Thomas, New South Wales National Parks and Wildlife Service)

Source: Donna Quinn and Andrew Growcock, New South Wales National Parks and Wildlife Service

4.5.1 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, there is a strong focus on the National Reserve

System, whose targets provide one way to assess the outcome for Australia's reserved lands. Judged in this way, our reserved lands include a sample of more than 10% of 51 of the nation's 85 bioregions. However, taking other factors into account, such as subregions determined by vegetation communities, habitat and whole-of-landscape connectivity, reserved lands possibly cover as little as one-third of an adequate selection.¹⁸

Limited information is available on the conservation outcomes for natural heritage in Australian national parks, as only New South Wales and Victoria undertake

Box 9.35 Effective Indigenous land and sea management— Magamarra, Arnhem Land coast, Northern Territory

Magamarra is a marine sacred site within the estuarine waters of the Blyth River on the Northern Territory Arnhem Land coast. The site is within the custodial waters of the Guwowura and Mareang A-Jirra groups, upstream from the Blyth River mouth, between the townships of Maningrida and Ramingining.

Magamarra is a significant site to the Guwowura and Mareang A-Jirra people of northern Arnhem Land, and is used mainly for cultural burial ceremonies related to commemorating the dead. It is a place for renewal, reflection and commemoration. It is the final resting place for all Guwowura and Mareang A-Jirra people and where the spirits of their ancestors chose to base themselves for eternity.

When we die, our spirits come here to rest in the mermaids' castle. Our spirits join those of our ancestors. This is where we are reincarnated in the waters. *Traditional custodian*

Magamarra encompasses objects within the Blyth River waters such as the Barala (sand sculpture), stone statues and other objects that embody ancestral spiritual beings. The site was created by ancestral beings in the dreaming. The physical condition and integrity of this site are vital to the cultural wellbeing of the Guwowura and Mareang A-Jirra people. Magamarra is also part of daily life for approximately 40 people living at remote outstations or on country. The Magamarra site is in the custodial waters of the Guwowura and Mareang A-Jirra clans, but may be used by other groups with shared boundaries. The site is also intrinsically linked to the surrounding cultural landscape that incorporates many other marine and terrestrial sacred sites.

Magamarra is a registered sacred site under the *Northern Territory Aboriginal Sacred Sites Act 1989*, and access to the site is restricted. The mouth of the Blyth River is registered as a sacred site and is demarcated by signage and a closing line, which is designed to prevent people (especially fishermen) from entering the sacred site. The traditional custodians of Magamarra have unrestricted access to the site as it is situated on Aboriginal land.

In 2009, after many years of consultation and negotiation, the lands around Magamarra were declared Australia's 33rd Indigenous protected area (IPA). The Djelk IPA is managed by the Bawinanga Aboriginal Corporation, based in Maningrida, and is serviced by a large team of rangers known as the Djelk Men's and Women's Rangers.

Magamarra has a high level of protection compared with other Indigenous heritage sites—it is located on Aboriginal lands within an IPA managed by Aboriginal rangers and is registered as a sacred site. Unlike traditional custodians of sacred sites in other parts of Australia, traditional custodians of Magamarra have the legal right to control access to the site and to enforce customary laws associated with the site through offences such as trespass and desecration of sacred sites. Nevertheless, the effectiveness of Magamarra's legal protection is questioned by traditional custodians who have customary responsibility for its protection.

The Blyth River is also a well-known place for recreational and commercial barramundi fishers. Traditional custodians perceive illegal fishing activities at Magamarra as the most significant threat to the site's condition and integrity. Traditional custodians report ongoing problems with commercial fishers not respecting Aboriginal law or culture and entering the site at night.

The Djelk rangers who manage the whole protected area support the traditional custodians. The rangers mainly deal with environmental issues relating to the area, but are also called in when people are destroying or desecrating sites. However, the long distances from fisheries enforcement officers often mean that offenders cannot be apprehended and prosecuted. There would be merit in exploring the possibility of Indigenous rangers becoming fully-fledged fisheries officers with enforcement powers.

Source: Schnierer et al.¹²

substantive formal monitoring and evaluation of the state of parks (Box 9.34). Australia's Strategy for the National Reserve System 2009–2030 proposes that the states and territories standardise approaches to data collection and evaluation of management effectiveness.¹⁷ The sparse data that are available suggest that heritage values are generally being retained, although some decline in habitat and species loss is evident. Virtually no reliable national data are available to make objective judgements about natural heritage outside the parks system. The data we have relate primarily to inputs—many natural heritage areas have management measures in place to address threats within the bounds of available resources.

4.5.2 Indigenous heritage

There is no cohesive national picture for Indigenous heritage and no adequate action by government agencies to coordinate management of Indigenous heritage resources and share information. Assessing outcomes for Australia's Indigenous heritage is therefore severely hampered by lack of comparable data and the absence of formal monitoring and evaluation programs.

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 the tendency of consent agencies to permit site destruction continue to place Indigenous heritage sites at risk.

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 (Box 9.35).

4.5.3 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.

Through the Historic 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 database¹⁸ 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, as very little monitoring and evaluation takes place. However, select sampling of a small set of historic places suggests that the heritage values of our listed historic sites are generally being retained.¹¹

¹⁸ www.environment.gov.au/heritage/ahdb/index.html

9.3 Assessment summary

Effectiveness of heritage management

Summary

Assessment grade

Ineffective Partially effective Effective Very effective

Confidence

In grade In trend

Natural heritage

Identification

Context: Australian park managers have a good understanding of Australia's bioregions and subregions. The specific heritage values of most reserved lands are understood. Discussion and debate continue on matters such as what constitutes an adequate sample, how to create landscape connectivity, the size and configuration of reserves, and how to account for habitat, resilience and recovery



Planning: There is a clear aim to include 10% of each of Australia's bioregions within the National Reserve System



Natural heritage should be better represented on statutory heritage registers

Inputs: Funding for survey and assessment of natural values is declining. Reservation of additional lands of conservation value continues to be substantially dependent on public sector budget allocations and opportunistic acquisition



Processes: The National Reserve System provides an overall framework for assessments, which generally take place at the state or local level



Outcomes: Australia's reserved lands include a sample of more than 10% for 51 of the nation's 85 bioregions; however, taking other factors like habitat and connectivity into account, the reserved lands may only cover one-third of an adequate selection



Management

Context: Management needs and processes are well understood by Australian park managers



Planning: Many, but not all, major national parks and reserved lands have management plans, with well-resolved provisions and appropriate regulatory controls. Responses to pressures and management responsibilities are clearly identified



Inputs: The majority of Australian parks are understaffed and lack adequate resources to address major conservation priorities, including emerging urgent pressures. Conservation programs are constrained by available resources



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 few jurisdictions



Outcomes: Limited information is available on the state of parks, as only New South Wales and Victoria undertake substantive monitoring and evaluation of outcomes. Available data suggest that heritage values are generally being retained, with some decline evident



Summary

Assessment grade
 Ineffective Partially effective Effective Very effective

Confidence
 In grade In trend

Protection

Context: Statutory controls for listed natural heritage places and the reservation system are well understood by park and place managers



Planning: The National Reserve System program 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



Inputs: 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, and is declining



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



Outcomes: Natural heritage areas have management measures in place to address threats within the bounds of available resources. Natural heritage values of parks and listed natural heritage sites are generally being retained



Leadership

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

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



Continued next page

Effectiveness of heritage management *continued*

Summary

Assessment grade

Ineffective Partially effective Effective Very effective

Confidence

In grade In trend

Indigenous heritage

Identification

Context: Understanding of the nature and extent of Australia's Indigenous heritage, both tangible and intangible, is inadequate. Indigenous places are also typically seen as individual physical sites rather than part of the rich cultural landscape that is country



Planning: There is a clear need for nationally coordinated policies and programs that proactively document and assess Indigenous heritage, rather than reactively responding to threats



Inputs: Funding for survey and assessment of Indigenous heritage values is usually directly proportional to the threat posed by a particular development. Resources available for documenting intangible heritage and country are inadequate



Processes: The Australian Government provides little leadership or coordination in Indigenous heritage assessment. Most assessments occur at the state level in response to threats. Some state jurisdictions are significantly improving assessment processes



Outcomes: It is not possible to ascertain whether identified, listed and protected Indigenous heritage places provide a representative or adequate sample



Management

Context: Managers and decision-makers do not always fully understand the needs and processes that apply to Indigenous heritage, especially the role of traditional land and sea management. However, there has been significant recent improvement, including an increasing role for Indigenous people



Planning: Management plans for reserved lands usually include provisions for Indigenous heritage management, with well-resolved provisions that have been prepared in consultation with traditional owners. Stand-alone Indigenous land and sea management plans are also being prepared. Unlisted Indigenous heritage places suffer from lack of planning processes



Inputs: Australia's listed Indigenous sites (and even land-management programs such as Caring for our Country) do not allocate adequate resources to address major conservation priorities. Conservation programs for intangible heritage are severely constrained by limits on available resources



Processes: Management systems for Indigenous heritage do not always make well-informed decisions about impact assessment and resource allocation, especially in the case of development-driven impact assessment in the absence of knowledge of the total resource
Little if any formal monitoring and evaluation occurs



Summary

Assessment grade

Confidence

Ineffective Partially effective Effective Very effective

In grade In trend

Management *continued*

Outcomes: Very limited, partial information is available on the effects of management action on the values of Australia's Indigenous heritage
There is no evidence of formal evaluation of outcomes



Protection

Context: Statutory controls for Indigenous heritage places are generally understood, despite jurisdictional inconsistencies



Planning: Indigenous heritage is under-represented on statutory heritage lists and registers and is not effectively supported by statutes that claim to provide blanket protection, but also allow progressive site destruction



Inputs: Resources allocated for listing and protection of Indigenous heritage places are inadequate and often 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



Processes: Management systems for Indigenous heritage places within reserved lands identify conservation needs, involve traditional owners and make generally well-informed decisions about impact assessment and resource allocation. However, outside the reserved lands system, Indigenous heritage decisions are less consultative and often reactive to threats



Outcomes: The heritage values of Indigenous places in reserved lands or under Indigenous management are being retained. However, our incomplete understanding of the resource and the current processes used to respond to development pressures mean that other Indigenous heritage sites continue to be at risk



Leadership

There is no cohesive national picture for Indigenous heritage, and no adequate action by government agencies to coordinate management of Indigenous heritage resources and share information. Each jurisdiction has a separate statutory basis and different structures and processes for Indigenous heritage management



Celebration

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



Continued next page

Effectiveness of heritage management *continued*

Summary

Assessment grade
 Ineffective Partially effective Effective Very effective

Confidence
 In grade In trend

Historic heritage

Identification

Context: Statutory lists and registers have grown in an ad hoc manner and provide a partial understanding of the extent of Australia's historic heritage. In some areas, systematic thematic survey and assessment provides more thorough coverage, but this is the exception. Historic places are also typically seen as individual sites rather than part of a cultural landscape



Planning: While the assessment and listing process might be improved, most Australian jurisdictions include identification and listing of historic heritage items at all levels of government



Inputs: Funding for surveying and assessing historic values is difficult to measure on a national basis, but is declining for the National Heritage List



Processes: The Australian Government provides leadership in historic heritage assessment through the Heritage Chairs and Officials of Australia and New Zealand, which has identified a range of relevant standards and consistent assessment criteria



Most assessments take place at the state or local level

Outcomes: Australia's listed historic sites are numerous, but are protected in an ad hoc manner that does not facilitate judgement of total adequacy or representativeness



Management

Context: Management needs and processes are well understood by Australian historic heritage managers



Planning: Many, but not all, 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



Inputs: Many Australian historic sites in public ownership are understaffed and 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. Grant funding, though substantial during the Jobs Fund initiative, is now in decline

Processes: Management systems at all levels of government generally facilitate well-informed decisions about impact assessment and resource allocation for historic heritage; however, formal monitoring and evaluation occurs in few jurisdictions



Outcomes: Limited information is available on the effectiveness of historic heritage management, as there is only partial monitoring and evaluation of outcomes



Available data suggest that heritage values are generally being retained

Summary

Assessment grade

Ineffective Partially effective Effective Very effective

Confidence

In grade In trend

Protection

Context: Statutory controls for historic heritage places are generally understood, despite inconsistencies and overlap both within and between jurisdictions



Planning: Historic sites receive a high degree of statutory protection once they are identified and included in statutory heritage lists



Inputs: Some historic heritage places are allocated resources for conservation, but rarely at a level that will ensure heritage values are retained across the nation. Private owners in particular could be better supported, especially through indirect means (such as tax or rates relief)



Processes: Management systems for listed historic places in public ownership identify conservation needs and generally make well-informed decisions about impact assessment and resource allocation; however, formal monitoring and evaluation occurs in few jurisdictions



For privately owned, listed historic places, the systems for assessing impact and resource allocation vary across jurisdictions but usually consider heritage value and stakeholder opinion

Outcomes: Many historic heritage places, especially those in public ownership, have management measures in place to address threats within the bounds of available resources. The values of listed historic heritage sites are generally being retained



Leadership

Through the Historic Heritage Chairs and Officials of Australia and New Zealand, a structure is in place to coordinate management of historic heritage resources and share information, despite the separate statutory basis and different structures in each jurisdiction. However, recent funding cuts at the national level pose a direct threat to the Australian Government's important leadership role



Celebration

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



Recent trends



Improving



Stable



Deteriorating



Unclear

Confidence

● Adequate high-quality evidence and high level of consensus

◐ Limited evidence or limited consensus

○ Evidence and consensus too low to make an assessment

Grades



Very effective



Effective



Partially effective



Ineffective

Resilience of heritage

Resilience is defined in this report as:

... the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, integrity, and feedbacks. *Walker et al.*,¹⁰⁷ p. 1

In the case of heritage, attributes such as function, structure and integrity are fundamental to the identified values of the place that give rise to its designation as a heritage item. Therefore, with respect to heritage, resilience 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 an aspect of the nature of its value, and partly a function of the manner in which it is managed. For example, the resilience of a large natural landscape will be vastly different from the resilience of a small archaeological deposit. In addition, physical change will affect heritage values in some places, while intangible qualities such as use or beliefs are 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, while influenced by drivers such as climate change, 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, but the total natural or cultural resource base may be sufficiently robust to withstand the loss of individual places without substantive overall loss of value.

5.1 Approaches to resilience

Resilience is a concept that is yet to be widely applied in Australian heritage management. However, a range of approaches to both natural and cultural heritage do consider the notion of managing change. In national park and reserved land management, the 'limits of acceptable change' model¹⁰⁸ recognises that places are inevitably altered by both natural and human pressures,

At a glance

Australia's heritage is a highly valued but fragile resource that is susceptible to changes brought about by external shocks. 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 tolerance to change. Although management actions, including regular maintenance, can remove or reduce threats to the value of individual places, the resilience of the overall heritage system is directly related to what is known, what has been identified as heritage and 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, specific risk-preparedness and disaster planning, and engagement of communities so that they are ready to respond.

and seeks to align management practice with a level of change that does not alter the fundamental integrity of the place. Lennon has suggested useful indicators for this approach and has illustrated practical application of a values-based management approach in the Tasmanian Wilderness World Heritage Area.⁵³ Environmental impact assessments also try to quantify the impact of specific development proposals and imply that there is an acceptable level of impact. Neither of these models relates specifically to shocks, but they both establish a framework for judging the impact of particular changes.

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 fundamentally affects identified heritage values.¹⁰⁹ This process also recognises that heritage is dynamic and that the primary issue is how much change can reasonably occur. In recent times, this concept has been



■ Regrowth after bushfire, Blue Mountains, New South Wales

Photo by Mark Mohell and the Australian Government Department of Sustainability, Environment, Water, Population and Communities

extended through a ‘tolerance for change’ model,¹¹⁰ which analyses heritage significance according to specific attributes: form, fabric, function, location and intangible values. This framework encourages proponents and consent agencies to consider the differential ability of each component to be altered without affecting heritage values. This is an important distinction between heritage places and other parts of the environment—the resilience of a heritage place or resource is directly tied to its specific heritage attributes and their robustness in the face of change.

5.2 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 will be at risk and susceptible.

Indigenous places may be both fragile and resilient, depending on the circumstance. Tangible Indigenous heritage has been incrementally eroded since 1788 through a repetitive process of one-off decisions that allow individual sites to be destroyed (with or without investigation or recording). Sites 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 9.36).

Box 9.36 Recovery of Indigenous tradition

At the 2010 National Indigenous Land and Sea Management Conference in Broken Hill, delegates were told of the return of Aboriginal elders to the Bunya Mountains, north of Brisbane, to revitalise their continuous cultural and spiritual connection to country. The area, which is home to the nut-bearing bunya pines, used to be the focus for gatherings to share stories, song, dance, knowledge and law, but is no longer owned by Aboriginal people. The Bunya Mountains Elders Council has developed a long-term strategy for developing a Bunya Caring for Country Trust, which will help address the issues that arise for Aboriginal communities without tenure, thereby reasserting their rights and obligations to country, re-establishing traditional practices and recovering some of the lost heritage value of the country.¹¹¹

The values of individual historic sites are usually part of the fabric of the place, which, if damaged or destroyed, may be gone forever. Individual historic sites may be made more resilient through protection from external shocks (through maintenance, repairs, archival recording or other management techniques), but have less intrinsic ability to recover. Examples of recovery of heritage value following major damage or physical destruction are very rare, but do exist. In such cases, the intangible associative value of the heritage item is its resilient attribute.

The resilience of Australia's historic heritage may also usefully be considered in relation to the total of listed historic places and 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, there is a strong case to be made that multiple listings of similar sites are a prudent and desirable measure. For example, the loss arising from destruction of huts by bushfires in Kosciuszko National Park in 2003 was tempered by the continuing presence of the huts that were not burnt. This loss was also mitigated by select reconstruction.



■ The Broken Dam Hut re-opening, December 2007, Kosciuszko National Park, New South Wales
Photo by Geoff Ashley

5.3 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 most susceptible to the 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 pose risks to natural areas and resources. In the case of natural heritage, preparedness at the national scale involves statutory or voluntary protection for individual natural heritage sites and a truly representative reserved lands system. For individual places or resources, local management responses are determinative. These include research to facilitate understanding of potential adaptive responses to threats and more specific management actions directly targeted at avoiding or minimising risk.

Maintenance has a critical role in building resilience in individual cultural heritage places, both Indigenous and historic.¹¹² Access to, and ongoing use of, Indigenous heritage places by Indigenous communities are also important resilience-building factors.¹²

Development activity and land use place major pressures on Indigenous heritage. These threaten physical sites and traditional practice. Therefore, a key to preparedness is knowledge—both the identification of significant Indigenous places and management of the traditional knowledge that is part of their heritage value.

The preparedness of historic places for pressures and shocks is also largely a matter of management arrangements and risk preparedness, rather than the innate qualities of the places themselves. Australia ICOMOS, in responding to the pressure of climate change on Australian cultural places, has recognised the need for action to:¹¹³

- identify the cultural heritage places and landscapes at greatest risk
- monitor and collect data
- establish standards of conservation planning and practice
- improve risk preparedness and disaster planning
- underscore the indivisible relationship between tangible and intangible cultural heritage and between communities and their heritage places in planning processes
- engage communities in these processes so they are prepared and able to respond.

Although these actions were prepared in response to climate change, they have a general applicability for a broad range of external pressures.

Historic sites are also particularly at risk from economic impacts, especially resource extraction and other intensive forms of development. There is a trend in Australia to regard impact assessment processes as a step on an inevitable journey towards project approval, rather than a true evaluation of the project impact and a decision as to whether or not it should proceed. As with natural and Indigenous heritage, proactive identification is critical to resilience, so that heritage is seen as a genuine existing constraint, rather than as a problem requiring a reactive response.

5.4 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. To this end, the place of our heritage in our national psyche—the narratives, community understanding and affection for our heritage—affects its perceived value and therefore the priority it is afforded and the resources it attracts (see Section 3.2.1).

The resilience of Australia's natural heritage is particularly a function of the underlying spectrum of geodiversity and biodiversity represented in heritage lists and reserved lands. Management activities ranging 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 our Indigenous heritage is a critical component of its resilience; the more we know, the more we can manage. Involvement of associated communities on country also increases resilience capacity—for both the place itself and the Indigenous community, as cultural safekeeping of traditional knowledge and intergenerational story telling can have direct benefits for Indigenous people's sense of wellness.¹¹⁴

Historic places too are highly susceptible to shocks, but can be better prepared by ensuring that they have an ongoing, relevant and viable use, and by proactive management, including data collection, good conservation standards, regular maintenance and basic disaster planning (Box 9.37).

Box 9.37 Resilience based on understanding values

The Tharwa Bridge across the Murrumbidgee River in the Australian Capital Territory (ACT) remains in functional public use after major conservation works were undertaken between 2005 and 2011. Built in 1895 using an Allan truss, Tharwa Bridge is highly valued by the local community and is associated with 19th century European settlement and development of the region. It is also the oldest standing bridge in the ACT.¹¹⁵ The bridge had suffered extensive termite damage and was determined to be unsuitable for public use. It was scheduled to be replaced by a new concrete bridge. However, in light of community representations, a major reconstruction and repair project was undertaken and the conserved Tharwa Bridge reopened to the public in June 2011. This case study highlights that the heritage value of historic structures may attach to intangible attributes (such as local community esteem), as well as to historic fabric (such as the old bridge timbers). The bridge also demonstrates that innovative approaches based on a thorough understanding of heritage values can make heritage places more resilient and give them ongoing contemporary roles.



■ Tharwa Bridge, 30 April 2011
(photo by Lynette Sebo, Australian Government Department of Sustainability, Environment, Water, Population and Communities)

Risks to heritage

Australia's heritage is a complex network of interrelated places with both tangible and intangible values. This complexity creates a mosaic of different risks. Some types of place and some values are well represented in reserved lands and statutory lists; they are generally more resilient to major pressures. Other places may be unique and irreplaceable. Sometimes it is the setting or context of the place or the fundamental associated knowledge (as well as the place itself) that may be at risk. The risk of irreversible harm occurring to a heritage place is therefore a function of the nature of the place itself and its particular heritage values.

Risks to Australia's heritage are assessed here in terms of incidents, rather than effects. The pressures identified in Section 3 may lead to incidents, but not all pressures do so. Some risks arise from a combination of more than one pressure. In a management context, while the relationship between pressures, resilience and risk is relevant, questions of likelihood (taking into account management actions taken to address those pressures, and the resilience of the particular heritage resource), impact on values and consequent priority are arguably more important. The evaluation therefore considers risks according to severity rather than according to the underlying pressure or the nature of the heritage resource.

For the purposes of this evaluation, catastrophic risks are regarded as 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 (in a national context). Only those risks that apply to unidentified places of local significance could be viewed as minor. No risk to Australia's heritage is insignificant.

At a glance

Australia's heritage is under-resourced and at risk from both natural and human factors. Although some events, such as the removal of statutory protection, large-scale resource extraction from reserved lands and unmanaged fires, would have catastrophic impact, these are generally unlikely. However, major risks do arise from the effects of climate change, such as damage from extreme weather events, managed fires, loss of habitat and increases in invasive species. Indigenous cultural heritage is particularly at risk from loss of traditional knowledge and incremental destruction of Indigenous places. Development consent is often granted in the knowledge of site-specific heritage impact, but in the absence of adequate knowledge about the total extent of the Indigenous heritage resource. Resourcing is also a major risk factor, including limited funding, lack of incentives, neglect arising from rural population decline and the impending loss of specialist heritage trade skills. Development and resource extraction projects directly threaten the nation's heritage at both a landscape and individual site scale; the impacts are exacerbated by inadequate survey and assessment, duplicate and inconsistent statutory processes, and a perception of heritage as expendable. Lack of national leadership increases the overall risk to Australia's heritage.

9.4 Assessment summary

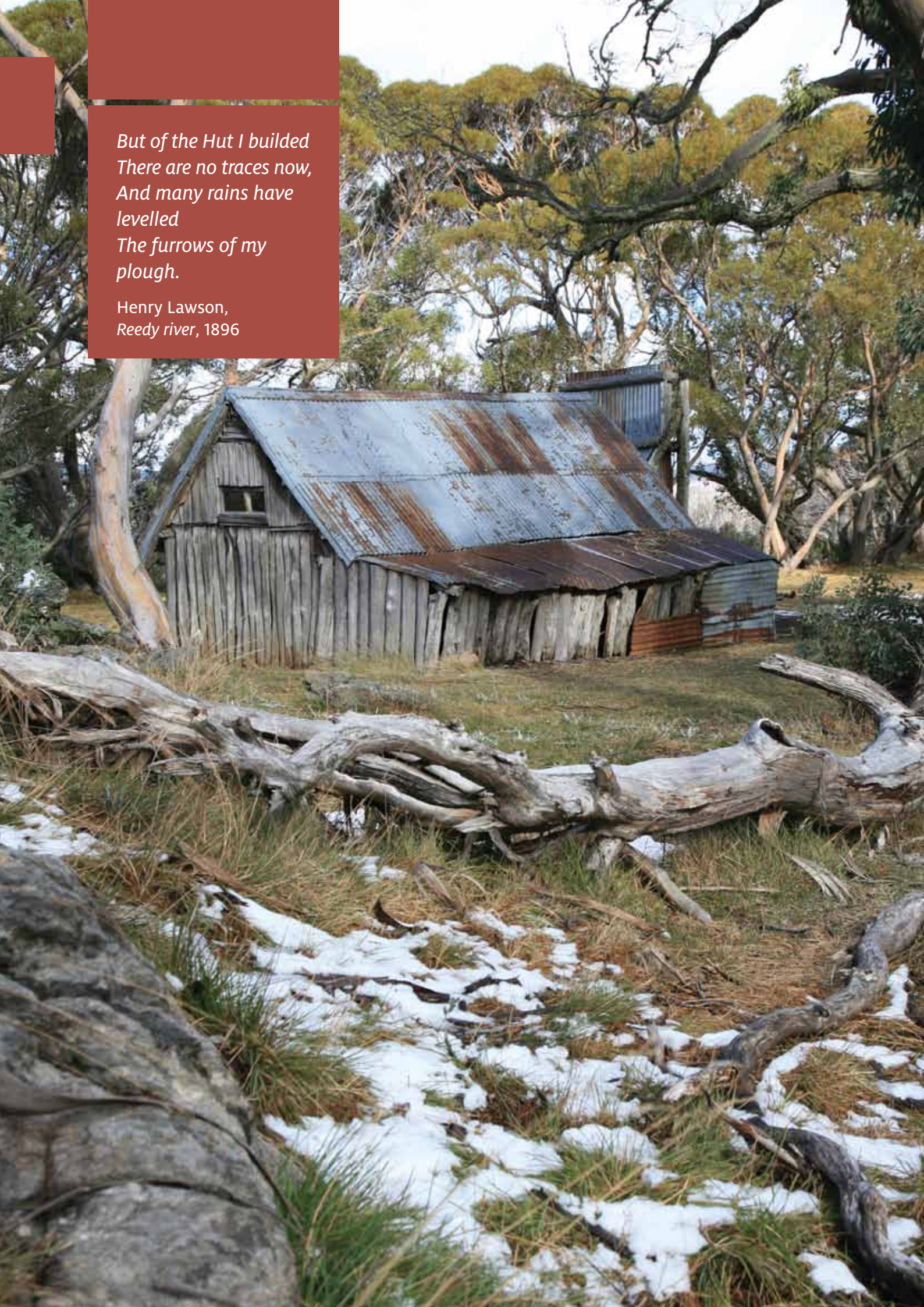
Current and emerging risks to heritage

	Catastrophic	Major	Moderate	Minor	Insignificant
Almost certain		<ul style="list-style-type: none"> Inadequate resources for physical conservation Destruction of heritage places to facilitate new development Neglect resulting from rural population decline 	<ul style="list-style-type: none"> Lack of incentives for private sector heritage conservation Duplicate and inconsistent statutory processes 	<ul style="list-style-type: none"> Loss of unidentified local heritage places 	
Likely		<ul style="list-style-type: none"> Loss of rare species habitat Invasive species in reserved lands Inadequate land-use and planning controls Incremental destruction of Indigenous places Loss of Indigenous traditional knowledge Resource extraction, leading to destruction or disturbance of heritage values Loss of specialist heritage skills Managed fire 	<ul style="list-style-type: none"> Change of land use, leading to habitat disturbance Perception of heritage as expendable Development, leading to destruction or disturbance of heritage values Inadequate survey and assessment, leaving heritage open to development threats 		
Possible	<ul style="list-style-type: none"> Unmanaged fire, leading to destruction of heritage values 	<ul style="list-style-type: none"> Damage from extreme weather event 	<ul style="list-style-type: none"> Green building agenda encouraging replacement, not conservation 		
Unlikely	<ul style="list-style-type: none"> Large-scale resource extraction from reserved lands, with destruction or disturbance of heritage values Removal of statutory protection 				
Rare					

Not considered

*But of the Hut I builded
There are no traces now,
And many rains have
levelled
The furrows of my
plough.*

Henry Lawson,
Reedy river, 1896



7

Outlook for heritage

This section focuses on the pressures, threats and risks arising from Australia's major environmental drivers—climate change, population growth and economic growth. Observations on these are followed

by more specific consideration of the key factors that may influence outcomes and outlooks for natural, Indigenous and historic heritage.

At a glance

Our heritage includes places that we have inherited and want to pass on to future generations, so the notion of outlook is a fundamental concept for heritage. Heritage provides an important context for our perception of ourselves as Australians, and is part of the 'social glue' that binds communities together and expresses identity. Heritage provides the distinct character that underpins the economic future of regional Australia. Australians see natural and cultural heritage as important and vulnerable, but these sentiments are not reflected in the resources devoted to heritage assessment and conservation.

The systems we use to manage our heritage are cumbersome: land reserves, inventories and statutes. These structures do not adequately identify, protect, manage, resource or celebrate the integrated nature of our nation's cultural landscape. Consequently, our heritage is at great risk from the impacts of climate change, the threats arising from development, and the resource implications of population growth. The outlook for Australia's heritage will depend on government leadership in two key areas: undertaking thorough assessments that lead to comprehensive natural and cultural heritage inventories and truly representative areas of protected land; and changing management paradigms and resource allocation in response to emerging threats, and responding strategically, based on integrated use of traditional and scientific knowledge.

Neither private nor public natural heritage places are adequately protected. The National Reserve System continues to improve, but statutory listing of natural heritage places and reservation of a truly representative set of landholdings are hampered by factors such as perceived economic values. Climate change poses massive risks to natural heritage, and this heritage is also threatened by inappropriate land use, development pressures, loss of habitat and invasive species. The ultimate impact of these will depend on the ability of scientists and managers to work proactively together, and on the commitment of government to well-resourced, proactive management rather than belated reaction to crises. Adverse effects can be minimised through thorough understanding of the natural heritage resources, recognition of the benefits of public-private partnerships and a whole-of-landscape approach to conservation and management.

There is increasing recognition of the importance of Australia's Indigenous heritage by all Australians. However, Indigenous heritage in Australia is inadequately documented and protected, and incremental destruction continues. The inclusion of Indigenous heritage places within protected reserved lands is therefore particularly important. Closing the Gap is a welcome initiative, as is the increasing involvement of Indigenous people in sustainable land and sea management. However, loss of language, knowledge and traditional practices, and informed destruction all continue to erode Indigenous cultural traditions and connections to country.

There are many well-managed Australian historic heritage places that remain in good condition. However, statutory lists and registers are inconsistent and incomplete. Historic heritage conservation is not well supported by planning and assessment systems and is directly threatened by development, often because heritage is identified only after a project is proposed and is therefore perceived as a problem. Population shift and inadequate incentives for private owners also threaten historic heritage. A wider range of management approaches would improve the place of historic heritage in the community and facilitate effective conservation.

■ Wallace's Hut, Falls Creek, Victoria

Photo by Michael Boniwell

7.1 Likely trends in key factors

Australia's heritage includes a diverse array of places with a wide spectrum of natural and cultural heritage values. Different types of place and different heritage values will vary in their resilience and response to current and future pressures, giving rise to a range of potential outlooks. Although some factors, such as existing land clearance, species extinction and climate change, are beyond the scope of management responses, leadership in two key areas will ultimately determine the future condition and integrity of Australia's heritage:

- the willingness of governments to undertake thorough and comprehensive assessments that lead to truly representative areas of protected land and comprehensive heritage inventories
- the ability of governments, heritage place owners and communities to adaptively manage our extensive heritage places with limited resources and in response to continuing pressures and emerging threats by adopting a strategic response based on integrated use of both traditional and scientific knowledge.

7.1.1 Climate change

The impacts of climate change will be an important issue to be addressed as part of any future heritage management plan or national heritage strategy—at present, heritage is almost invisible in the climate change debate.

Climate change is causing rising temperatures, alteration to rainfall patterns (with more rainfall in the north of the country and less in the south), and greater frequency and intensity of storms, wind, run-off, floods, droughts, fires and heatwaves. These changes directly affect many biological processes, increasing the risk from invasive species and loss of habitat. It is inevitable that natural heritage areas will be affected by these processes. The ability of natural heritage places to retain their key values will depend on adaptive responses by species and appropriate management responses that prevent, minimise or repair environmental damage, assist in habitat migration, or manage or prevent the arrival of new species that may have negative effects.

Altered rainfall, higher sea and land surface temperatures, more severe storm events, altered fire regimes, ocean acidification and rising sea levels

are all likely to significantly affect the values of both natural and cultural heritage places. The effect on natural values is largely self-evident, but cultural sites such as Indigenous middens, sea-cave deposits, archaeological sites and rock art are also highly dependent on the maintenance and protection of their underlying landforms from climate change impacts. Other cultural values, such as architectural heritage, may also be affected by climate change but to a lesser extent, at least in the short term. Without management intervention, altered fire regimes are likely to lead to additional impacts on biodiversity and Indigenous cultural values.

7.1.2 Population growth

Pressure on natural and cultural heritage arises from population growth and the uneven distribution of people around the country.

In rural centres, for example, population decline arising from new land uses and technology 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. One potential approach to this dilemma (apart from funding subsidies) is to adopt a more flexible approach to conservation by encouraging greater change and adaptation, or accepting that some places may be managed as ruins.

In contrast, in urban areas and parts of the coast that are experiencing residential and commercial intensification, heritage is under pressure from associated development that seeks land uses with higher economic return. In this context, while available community resources are greater (and flexible approaches to adaptation and change are to be encouraged), good conservation outcomes are more likely to depend on early identification of natural and cultural heritage resources so that the expectations of owners and potential developers can be reasonably managed.

Knowledge of the heritage resource through systematic and comprehensive survey and assessment is an essential precursor to values-based heritage conservation and management. At present, although there is a large number of entries and registers spread across multiple jurisdictions, there is no longer a national picture (as was previously provided by the Register of the National Estate). The absence of comprehensive heritage data continually gives rise to conflict with development.

Public sector resourcing for heritage or any other environmental consideration is often a question of community perception. The outlook for the nation's heritage may therefore rely on the ability of community groups and advocates to communicate their message effectively. Heritage is clearly perceived as a public good, yet this value is not reflected in public sector support. Indeed, in 2011, core funding for heritage management by the Australian Government was reduced by 30%, yet:

The majority of the community believes that inadequate support is provided to heritage conservation. In essence, the majority of the community believes that there are benefits from additional government commitment to heritage conservation. *The Allen Consulting Group*,¹¹⁶ p. viii

Community perception is also manifest in the way we treat our heritage places. In remote and rural areas particularly, 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 and resource extraction. Management of these community impacts will depend on a combination of regulation, enforcement and effective communication about heritage values.

7.1.3 Economic growth

Economic growth has multiple environmental effects, particularly arising from increased consumption and waste generation. For heritage, economic growth increases the threat posed by new development and resource extraction. To a lesser extent, economic growth may also lead to impacts from changing land use, or increased activity in heritage places from tourism.

Development is a major threat to all aspects of heritage. This is particularly so because of the reactive nature of the heritage and environmental impact assessment system in most Australian jurisdictions. All too often, significant heritage assets are identified late in the planning and assessment process, with the inevitable result that heritage is damaged or destroyed, although usually accompanied by some form of mitigating action. However, this need not always be the case. Initiatives such as the Australian Regional Forest Assessments¹ clearly demonstrate the benefits of proactive survey and identification of both heritage

places and available resources. The main obstacle to such a rational and proactive process is government (and to a lesser extent industry) reluctance to allocate substantial up-front resources for surveys.

For example, the Kimberley is known as a place of outstanding natural and cultural value, but it also contains vast bauxite deposits. How will this intersection of potentially conflicting economic and heritage values be addressed in the future? Early proactive assessment of all resources—including natural and cultural heritage—maximises the chance of well-informed decision-making and appropriate conservation outcomes. Reactive approaches that pitch natural and cultural resources head-on against potential economic benefits are likely to spiral downward into conflict and adverse impact.

Parallel issues arise in urban areas where underlying land values and development potential collide with history and heritage; but this also need not necessarily be the case. Early consideration of all types of heritage place within land-zoning, planning and development processes has potential to reduce conflict and increase both heritage and economic value. Whether or not this can become standard practice on a national scale depends on leadership and coordination at a national level.

7.2 Natural heritage

Australia's natural heritage includes lands that are reserved in parks and other places, both listed and unlisted. Although the ongoing addition of examples of the full range of ecosystems within each of the 85 bioregions to the National Reserve System is important, broader considerations such as conservation of geological sites, ecosystems and habitats and a national whole-of-landscape approach to natural heritage protection will foster values-based management and build resilience. Environmental conditions across the continent are highly variable, so selection of places for listing or reservation should consider individual place values as well as wider landscapes and ecosystems. Major barriers to a genuinely representative reserve system include scarce remnants of some ecosystems, the economic value of land that can be used for other purposes and political will. The current National Reserve System target of 10% is commendable (but yet to be achieved), but there are strong arguments that a greater sample of the natural environment should fall within reserved protected lands or be recognised as heritage, irrespective of tenure.

^s www.daff.gov.au/rfa



Habitat loss and invasive species represent major and continuing threats to natural heritage values. The landscape is changing metaphorically and literally. The outlook for habitats will depend on a combination of natural adaptive management and thoughtful intervention—the latter is highly dependent on proactive research and cooperation between scientists and managers. The situation is mixed in relation to invasive species. Some, like mimosa and cane toads, are well beyond eradication and can only be continually managed. Others, like myrtle rust and *Phytophthora*, could respond to well-resourced eradication programs.

Natural heritage resources are also subject to continuing threats from a variety of external factors. These include inappropriate development on adjacent lands, impacts from over-visitation or inappropriate visitor behaviour, inadequate expertise and technical skills, and the perpetual problem of insufficient resources relative to expectations for managing land with natural heritage values. One potentially useful approach to this resourcing question is to place greater value on the ecosystem services of reserved lands and their role in carbon sequestration, water catchments and benefits to society (see Chapter 8: Biodiversity).

7.3 Indigenous heritage

The connection between people and country is a fundamental aspect of Indigenous cultural heritage. Understanding that there is no conceptual divide between nature and culture is a precursor to any informed appreciation of the requirements for Indigenous heritage conservation. Adequate knowledge of both the physical manifestation of Indigenous heritage in individual sites and wider landscapes, and its intangible manifestation in traditional knowledge and cultural practices and ongoing use of heritage places by Indigenous people is also critical. The outlook for Indigenous heritage is therefore highly dependent on the processes that are available to document physical sites, to record and transmit traditional knowledge and to provide access to them for Indigenous communities. Loss of knowledge, including loss of language, erodes and degrades Indigenous cultural heritage, leading to an undesirable combination of social impacts on Indigenous communities and loss of heritage values.

■ The Grand Column, River Cave, Jenolan, New South Wales
Photo by Brett Gregory

Indigenous heritage is at serious risk from ongoing incremental destruction. This arises in part from a lack of formally protected sites, but also from our linear statutory assessment and development consent systems, and a pattern of conscious destruction arising from informed development consent. If the current practice continues of announcing proposed developments and only then undertaking survey and assessment as part of environmental impact evaluation, Indigenous heritage will continue to be perceived as a problem and will also continue to suffer a gradual process of erosion and destruction without a clear understanding of the extent to which the total resource is being destroyed. Indigenous communities have been vociferous in their expression of concern about this issue generally, and in their opposition to specific development projects.

In other contexts, our nation has a well-developed approach for involving Indigenous people in the management of their heritage. The *Ask first* guidelines⁵⁶ represent best practice for Indigenous heritage, and widespread adoption of these guidelines would represent a major step forward in Indigenous heritage management.

7.4 Historic heritage

There are extensive lists and registers of historic heritage items in all Australian jurisdictions, but the listed places do not present a cohesive, comprehensive or representative selection. Some lists, such as the National Heritage List, are incomplete because they are relatively recent and require additional resources. Other longstanding lists may include more places, but have usually been compiled in an ad hoc manner with particular focus on history and aesthetics, rather than a comprehensive values-based and representative approach. The incomplete list of statutory registers gives rise to a number of anomalies and undesirable outcomes, including a reactive approach when major developments occur, and inconsistency in regulation between local, state and national governments.

Many aspects of our planning system, building codes and standards affect historic heritage management and could be improved. There is a compelling argument to provide substantial resources for sustained and systematic assessment, because in the long term this can lead to better decision-making, incorporation of heritage values into strategic planning processes and improved heritage conservation outcomes.

The outlook for historic heritage is likely to be greatly improved if governments at all levels implement common criteria and consistent development assessment standards. Perhaps the most anomalous contemporary standard relates to sustainability and the notion that Green Star rating points are not awarded for heritage conservation outcomes. The current sustainability guidelines are prejudiced towards removing historic buildings and fabric and replacing them with recycled materials and new energy-efficient structures, rather than retaining significant existing building materials and upgrading existing structures to make them more energy efficient. This ignores both the embodied energy in the existing materials and structures, and the heritage values of the buildings. Greater adaptation and flexibility in guidelines may reduce pressure for demolition and replacement of historic buildings.

In a similar vein, the outlook for historic heritage would improve if governments were to provide better incentives for private owners of historic heritage places. While recognising the value of historic heritage and the fact that most historic places are privately owned, the Productivity Commission took the negative view in its 2006 report that places should not be listed where owners object.⁹⁰ Alternatively, a positive response that recognises the contribution made by private owners and seeks to increase available incentives, such as advisory services, development concessions, tax relief or advantageous land valuations, would reinforce the community value of heritage and might stimulate even greater private sector conservation efforts.

Better outcomes require some fundamental rethinking and recognition that our nation has a vast historic heritage that cannot all be retained and maintained in pristine condition. Perhaps if major physical changes or even regression to ruins were recognised as part of normal historic processes for some places, there may be a more positive outlook.

Historic heritage in Australia faces resourcing challenges because the number of listed and unlisted places is high relative to our land area, our population and the purchasing power available to fund heritage conservation. There is also a marked and accelerating downward trend in the skills base and specialist expertise available in historic heritage.

However, many of the human threats to historic heritage are matters of perception. Changing perception will change outlook. Where places are valued for their non-economic contribution as well as financial performance, the value of heritage will be more highly regarded.

References

- 1 Commonwealth of Australia. *Australian Heritage Commission Act 1975*.
- 2 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Dinosaur Stampede National Monument, Lark Quarry, Queensland, National Heritage Place. Canberra: DSEWPaC, 2008, viewed 11 August 2011, www.environment.gov.au/heritage/places/national/dinosaur-stampede/index.html.
- 3 Howie-Wills I. Freedom riders. Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies, 2011, viewed 21 September 2011, www1.aiatsis.gov.au/exhibitions/freedomride/start.htm.
- 4 Australian Government Department of Sustainability, Environment, Water, Population and Communities. About Australia's heritage. Canberra: DSEWPaC, 2010, viewed 3 September 2011, www.environment.gov.au/heritage/about/index.html.
- 5 State of the Environment 2001 Committee. Australian state of the environment 2001. Independent report to the Commonwealth Minister for the Environment and Heritage. Canberra: Australian Government Department of the Environment and Heritage, 2001, viewed 6 September 2011, www.environment.gov.au/soe/2001/index.html.
- 6 Western Australia Department of Environment and Conservation. Porongurup National Park information and recreational guide. Perth: DEC, 2009.
- 7 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Porongurup National Park, Mount Barker Porongurup Rd, Mount Barker, WA, Australia. Australian Heritage Database. Canberra: DSEWPaC, 2009, viewed 11 August 2011, www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105982.
- 8 Wunambal Gaambera Aboriginal Corporation. Wunambal Gaambera Healthy Country Plan 2010–2020. Darwin: Wunambal Gaambera Aboriginal Corporation, 2010.
- 9 Pearson M, Johnston D, Lennon J, McBryde I, Marshal D, Nash D, Wellington B. Environmental indicators for national state of the environment reporting: natural and cultural heritage. Canberra: Department of the Environment, 1998.
- 10 Environmental Resources Management, Australia. Condition and integrity assessment of natural heritage places. Report prepared for the Australian Government Department of Sustainability, Environment, Water, Population and Communities on behalf of the State of the Environment 2011 Committee. Canberra: DSEWPaC, 2011.
- 11 Pearson M, Marshall D. Study of condition and integrity of historic heritage places for the 2011 State of the Environment report. Report prepared for the Australian Government Department of Sustainability, Environment, Water, Population and Communities on behalf of the State of the Environment 2011 Committee. Canberra: DSEWPaC, 2011.
- 12 Schnierer E, Ellsmore S, Schnierer S. State of Indigenous cultural heritage 2011. Report prepared for the Australian Government Department of Sustainability, Environment, Water, Population and Communities on behalf of the State of the Environment 2011 Committee. Canberra: DSEWPaC, 2011.
- 13 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Register of the National Estate. Canberra: DSEWPaC, 2008, viewed 21 September 2011, www.environment.gov.au/heritage/places/rne/index.html.
- 14 Australian Bureau of Statistics. Regional population growth, Australia, 2009–10. Cat. no. 3218. Canberra: ABS, 2011.
- 15 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Australia's bioregions. Canberra: DSEWPaC, 2011, viewed 3 September 2011, www.environment.gov.au/parks/nrs/science/bioregion-framework/index.html.
- 16 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Maps: Australia's bioregions (IBRA). Canberra: DSEWPaC, 2011, viewed 11 August 2011, www.environment.gov.au/parks/nrs/science/bioregion-framework/ibra/index.html.
- 17 Natural Resource Management Ministerial Council. Australia's Strategy for the National Reserve System 2009–2030. Canberra: NRMCC, 2009, viewed 27 October 2011, www.environment.gov.au/parks/publications/nrs/pubs/nrsstrat.pdf.
- 18 Taylor MFJ, Sattler PS, Fitzsimons J, Curnow C, Beaver J, Gibson L, Llewellyn G. Building nature's safety net 2011: the state of protected areas for Australia's ecosystems and wildlife. Sydney: WWF-Australia, 2011.
- 19 Linking Landscapes Collaboration. Aiken Hill communiqué. Aiken Hill, Victoria: Linking Landscapes Collaboration, 2011.
- 20 Worboys G, Pulsford I. Connectivity conservation in Australian landscapes. Canberra: Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011.
- 21 Godden Mackay Logan. Heritage trades and professional training project. Melbourne: Heritage Victoria, on behalf of Heritage Chairs and Officials of Australia and New Zealand, 2010.

- 22 Australian Government Department of Sustainability, Environment, Water, Population and Communities. World heritage periodic reporting data, April 2011. Heritage Division, unpublished data.
- 23 Australian Government Department of the Environment, Water, Heritage and the Arts. The National and Commonwealth Heritage Lists. Canberra: DEWHA, 2008.
- 24 Office of the Commissioner for Sustainability and the Environment. ACT state of the environment 2007/08. Canberra: OCSE, 2008, viewed 10 August 2011, www.environmentcommissioner.act.gov.au/publications/soe/2007actreport.
- 25 New South Wales Department of Environment, Climate Change and Water. New South Wales state of the environment 2009. Sydney: DECCW, 2009.
- 26 Queensland Environmental Protection Agency. State of the environment Queensland 2007. Brisbane: Queensland EPA, 2007.
- 27 South Australia Environment Protection Authority. The state of our environment: state of the environment report for South Australia 2008. Adelaide: SA EPA, 2008.
- 28 Tasmanian Planning Commission. State of the environment Tasmania 2009. Hobart: TPC, 2009.
- 29 Marshall D, Ellsmore D, McKenzie J, Lennon J, Pearson M. Victorian state of the historic environment survey, analysis and report. Melbourne: Heritage Victoria, 2008.
- 30 Western Australia Environmental Protection Authority. State of the environment report: Western Australia 2007. Perth: WA EPA, 2007.
- 31 Schnierer E. Caring for culture: perspectives on the effectiveness of Aboriginal cultural heritage legislation in Victoria, Queensland and South Australia. Parramatta: New South Wales Aboriginal Land Council, 2010.
- 32 Prober SM, O'Connor M, Walsh F. Australian Aboriginal peoples' seasonal knowledge: a potential basis for shared understanding in environmental management. *Ecology and Society* 2011;16(2):article 12.
- 33 Australian Government Department of Families, Housing, Community Services and Indigenous Affairs. Closing the gap. Canberra: FaHCSIA, 2011, viewed 25 July 2011, www.fahcsia.gov.au/sa/indigenous/progserv/ctg/Pages/default.aspx.
- 34 Kurna Tappa Iri Reconciliation Working Group. Kurna Tappa Iri regional agreement: heritage, culture and business development 2005–2008. Adelaide: Kurna Tappa Iri Reconciliation Working Group, 2005.
- 35 Australian National University. Implications of climate change for Australia's World Heritage properties: a preliminary assessment. Report to the Department of Climate Change and the Department of the Environment, Water, Heritage and the Arts by the Fenner School of Environment and Society, the Australian National University. Canberra: DEWHA, 2009.
- 36 Philips P. Heritage in a warming world. Hangzhou Forum on World Heritage Conservation, Hangzhou, China, 12–13 June 2008.
- 37 Hammill K, Tasker L. Vegetation, fire and climate change in the Greater Blue Mountains World Heritage Area. Sydney: New South Wales Department of Environment, Climate Change and Water, 2010.
- 38 Hager T, Benson J. The eucalypts of the Greater Blue Mountains World Heritage Area: distribution, classification and habitats of the species of *Eucalyptus*, *Angophora* and *Corymbia* (family Myrtaceae) recorded in its eight conservation reserves. *Cunninghamia* 2010;10(4):425–44.
- 39 Boland DJ, Brooker MIH, Chippendale GM, Hall N, Hyland BPM, Johnston RD, Kleinig DA, Turner JD. Forest trees of Australia. Collingwood: CSIRO Publishing, 1994.
- 40 Tropical Savannas Cooperative Research Centre. The West Arnhem Land fire abatement project (WALFA). Darwin: Tropical Savannas CRC, 2011, viewed 21 September 2011, http://savanna.cdu.edu.au/information/arnhem_fire_project.html.
- 41 Deakin University. National survey of public attitudes to Australian heritage. Unpublished report prepared for the Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2010.
- 42 Kelly G, Mulgan G, Muers S. Creating public value: an analytical framework for public service reform. London: Strategy Unit, Cabinet Office, 2002.
- 43 Victorian Department of Planning and Community Development. Melbourne 2030: planning for sustainable growth. Melbourne: DPCD, 2002, viewed 17 August 2011, www.melbourne2030.vic.gov.au.
- 44 New South Wales Department of Planning. City of cities: a plan for Sydney's future. Sydney: Department of Planning, 2005.
- 45 Australian Heritage Commission. Australian historic themes: framework for use in heritage assessment and management. Canberra: Australian Heritage Council, 2001, viewed 17 August 2011, www.environment.gov.au/heritage/ahc/publications/commission/books/australian-historic-themes.html.
- 46 Walker M, Marquis-Kyle P. The illustrated Burra Charter: good practice for heritage places. Burwood: ICOMOS Australia, 2004.
- 47 Prime Minister's Science, Engineering and Innovation Council. Sustaining our natural systems and biodiversity. Canberra: PMSEIC, 2002, viewed 11 August 2011, www.dest.gov.au/NR/rdonlyres/1A2626EF-11E3-48F2-9A7D-A44D21CECA07/2013/Sustaining_our_Natural_Systems_and_Biodiversity_Wo.doc.
- 48 Natural Resource Management Ministerial Council. Resolution 15.6. Record and resolutions of the 15th meeting, Hobart, 21 May 2009. Canberra: NRMCC, 2009, viewed 6 September 2011, www.mincos.gov.au/__data/assets/pdf_file/0009/1890378/nrmcc15.pdf.
- 49 Primary Industries Ministerial Council. Resolution 12.8. Record and resolutions of the 12th meeting and joint meeting with the Natural Resource Management Ministerial Council, Brisbane, 20 April 2007. Canberra: PIMC, 2007, viewed 6 September 2011, www.mincos.gov.au/__data/assets/pdf_file/0017/750104/pimc-12.pdf.

- 50 National Indigenous Knowledge Centre. National Indigenous knowledge project. Brisbane: NIKC, 2010, viewed 29 April 2011, <http://nikc.org.au/home>.
- 51 Yibarbuk D, quoted in Schultz D, ed. *Fire on the savannas: voices from the landscape*. Darwin: Tropical Savannas Cooperative Research Centre, 1998.
- 52 Grant C. *National Caring for Country strategy: discussion paper*. Australian Government Department of Sustainability, Environment, Water, Population and Communities Indigenous Advisory Committee. Canberra: Australian Government, 1998.
- 53 Lennon J. *A coordinated national approach to support heritage conservation and management across all three levels of government*. Brisbane: Queensland Heritage Council, 2007.
- 54 Tasmanian Department of Infrastructure, Energy and Resources. *Brighton bypass*. Hobart: DIER, 2011, viewed 15 September 2011, www.transport.tas.gov.au/infrastructure_projects/brighton_transport_projects/brighton_bypass.
- 55 Robert Paton Archaeological Studies Pty Ltd. *Draft final archaeology report on the test excavations of the Jordan River levee site southern Tasmania*. Sandy Bay, Tasmania: Robert Paton Archaeological Studies Pty Ltd, 2010, viewed 15 September 2011, www.transport.tas.gov.au/__data/assets/pdf_file/0005/52088/JRL_DRAFT_FINAL.pdf.
- 56 Australian Heritage Commission. *Ask first: a guide to respecting Indigenous heritage places and values*. Canberra: AHC, 2002, viewed 10 August 2011, www.environment.gov.au/heritage/ahc/publications/commission/books/ask-first.html.
- 57 Australian Heritage Council. *The Australian Heritage Council*. Canberra: AHC, 2011, viewed 11 April 2011, www.environment.gov.au/heritage/ahc/index.html.
- 58 Australia ICOMOS. *The Burra Charter. The Australia ICOMOS charter for places of cultural significance 1999, with associated guidelines and code on the ethics of co-existence*. Melbourne: Australia ICOMOS, 2000.
- 59 Australian Heritage Commission. *Australian Natural Heritage Charter for the conservation of places of natural heritage significance*. 2nd edn. Canberra: AHC, 2002.
- 60 Australian Government Department of Sustainability, Environment, Water, Population and Communities. *Draft Heritage and Wildlife Division business plan 2011–12*. Canberra: DSEWPaC, August 2011.
- 61 Australian Government Department of Sustainability, Environment, Water, Population and Communities. *The Adelaide park lands and city layout, South Tce, Adelaide, SA, Australia*. Australian Heritage Database. Canberra: DSEWPaC, 2008, viewed 11 August 2011, www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name%3DAdelaide%3Blist_code%3DNL%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=105758.
- 62 International Council on Monuments and Sites. *The World Heritage List: filling the gaps—an action plan for the future. An analysis by ICOMOS*. Paris: ICOMOS, 2004, <http://whc.unesco.org/uploads/activities/documents/activity-590-1.pdf>.
- 63 Pearson M, Lennon J. *Pastoral Australia: fortunes, failures and hard yakka: a historical overview 1788–1967*. Collingwood: CSIRO Publishing, 2010.
- 64 Australian Government Department of Sustainability, Environment, Water, Population and Communities. *Dampier Archipelago more information*. Canberra: DSEWPaC, 2008, viewed 25 July 2011, www.environment.gov.au/heritage/places/national/dampier-archipelago/information.html.
- 65 Jo McDonald Cultural Heritage Management. *Archaeological baseline survey within the Dampier Archipelago (including Burrup Peninsula) National Heritage Place: lands within and adjacent to the Cemex Nickol Bay quarry*. Report to the Australian Government Department of the Environment, Water, Heritage and the Arts. Canberra: DEWHA, 2009.
- 66 McDonald J, Veth P. *Dampier Archipelago petroglyphs: archaeology, scientific values and national heritage listing*. *Archaeology in Oceania* 2009;44(suppl.):49–69.
- 67 Jo McDonald Cultural Heritage Management. *Desktop assessment of scientific values for Indigenous cultural heritage on the Dampier Archipelago, Western Australia*. Report to the Heritage Division of the Australian Government Department of Environment and Heritage. Canberra: DEH, 2005.
- 68 Johnson C. *Heritage funds cut, 30 jobs to go*. Canberra: Canberra Times, 23 March 2011.
- 69 Australian Treasury. *Sustainability, Environment, Water, Population and Communities portfolio Budget statements 2011–12. Budget related paper no 1.17*. Canberra: Australian Government, 2011, viewed 11 August 2011, www.environment.gov.au/about/publications/budget/2011/pubs/pbs-2011-12.pdf.
- 70 Australian Government Department of the Environment, Water, Heritage and the Arts. *Annual report 2009–2010*. Canberra: DEWHA, 2010.
- 71 Queensland Department of Environment and Resource Management. *Queensland Heritage Strategy: a ten-year plan*. Brisbane: DERM, 2009, viewed 15 September 2011, www.derm.qld.gov.au/heritage/heritage_strategy.html.
- 72 Environmental Resource Management, Australia. *Putting a price on nature, an ERM guide to ecosystem services*. ERM, 2011, viewed 15 September 2011, www.erm.com/Analysis-and-Insight/ERM-Publications/Putting-a-price-on-nature-An-ERM-guide-to-ecosystem-services.
- 73 Worboys G, Good R. *Caring for our Australian Alps catchments: summary report for policy makers*. Summary of a 2011 technical report prepared for the Alps Liaison Committee and the Department of Climate Change and Energy Efficiency: *Caring for our Australian Alps catchments—a climate change action strategy for the Australian Alps to conserve the natural condition of the catchments and to help minimise threats to high quality water yields*. Canberra: Department of Climate Change and Energy Efficiency, 2011.

- 74 Australian Government Department of Resources, Energy and Tourism, Tourism Research Australia. Snapshot 2009: nature tourism in Australia. Canberra: DRET & TRA, 2009, viewed 6 September 2011, www.ret.gov.au/tourism/Documents/tra/Snapshots%20and%20Factsheets/nature_09_FINAL.pdf.
- 75 Chairman and Congress Committee of the Healthy Parks Healthy People International Congress. Melbourne communiqué. International Healthy Parks Healthy People Congress, Melbourne, 2010.
- 76 South Australian Tourism Commission. Kangaroo Island regional tourism profile 2009. Adelaide: SATC, 2009, viewed 19 September 2011, www.tourism.sa.gov.au/WebFiles/publications/ResearchReports-RegionalProfiles/PDFDocument/Kangaroo%20Island_Profile09.pdf.
- 77 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Intergovernmental Agreement on the Environment. Canberra: DSEWPaC, 1992, viewed 21 September 2011, www.environment.gov.au/about/esd/publications/igae/index.html.
- 78 National Biodiversity Strategy Review Task Group. Australia's Biodiversity Conservation Strategy 2010–2020. Consultation draft. Canberra: Australian Government Department of the Environment, Water, Heritage and the Arts, 2009.
- 79 Australian Heritage Council. Australian Heritage Council periodic report 2007–2010. Canberra: AHC, 2010, viewed 10 August 2011, www.environment.gov.au/heritage/ahc/publications/ahc-periodic-report.html.
- 80 Australian Government Department of the Environment, Water, Heritage and the Arts. Indigenous heritage law reform discussion paper. Canberra: DEWHA, 2009, viewed 22 July 2011, www.environment.gov.au/heritage/laws/indigenous/lawreform/pubs/discussion-paper/index.html.
- 81 Australia ICOMOS and Australian Council of National Trusts Workshop. Australia's heritage and the EPBC Act: consideration of the Interim Review report. Unpublished report, 2009.
- 82 Mackay R. 'Censory' perceptions: editing the final chapter of Kakadu history. *Historic Environment* 1995;11(2&3):27–33.
- 83 Australian Antarctic Division. Heard and McDonald Islands Marine Reserve management plan. Kingston, Tasmania: AAD, 2005.
- 84 Gard'ner J. The economics of heritage: integrating the costs and benefits of heritage into government decision-making. Melbourne: Heritage Victoria, 2007.
- 85 Central Intelligence Agency. The world factbook. Washington, DC: CIA, 2011, viewed 19 September 2011, <https://www.cia.gov/library/publications/the-world-factbook/index.html>.
- 86 English Heritage. Listed buildings. London: English Heritage, 2011, viewed 19 September 2011, www.english-heritage.org.uk/caring/listing/listed-buildings.
- 87 National Park Service. National Register of Historic Places. Washington, DC: United States Department of the Interior, 2011, viewed 19 September 2011, www.nps.gov/nr/research.
- 88 Ministry of Culture. Protection of cultural heritage in China. Beijing: China Development Gateway, 2006, viewed 19 September 2011, <http://en.chinagate.cn/english/reports/48279.htm>.
- 89 The Department of Antiquities of Jordan. The Department of Antiquities of Jordan. Amman: DoA, 2004, viewed 19 September 2011, www.doa.jo/doa1.htm.
- 90 Productivity Commission. Conservation of Australia's historic heritage places. Productivity Commission inquiry report no. 37. Canberra: Productivity Commission, 2006, viewed 21 September 2011, <http://ssrn.com/abstract=925774>.
- 91 Western Research Institute. Braidwood business performance survey 2006 to 2010. Report to NSW Heritage Office. Bathurst: Charles Sturt University, 2011, viewed 21 September 2011, www.wri.org.au/images/stories/Braidwood_Presentation_26.08.11.pdf.
- 92 Sinclair Knight Merz. Heritage grants review. Armadale: Sinclair Knight Merz, 2007.
- 93 National Trust of Australia (NSW). National Trust Heritage Awards 2011. Sydney: National Trust, 2011, viewed 1 June 2011, www.nationaltrust.com.au/about/media/files/2011%20Heritage%20Award%20winners.pdf.
- 94 Australian Government. Fund to support jobs, build skills and community infrastructure. The Hon. Julia Gillard MP, joint media release with Prime Minister Kevin Rudd and the Hon. Brendan O'Connor MP, Minister for Employment Participation. Canberra: Australian Government, 5 April 2009.
- 95 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Heritage Division funding for heritage, Jobs Fund data. Canberra: DSEWPaC, February 2011.
- 96 Heritage Council of Victoria. Annual report 2009/10. Melbourne: Heritage Council of Victoria, 2010, viewed 19 September 2011, www.dpcd.vic.gov.au/_data/assets/pdf_file/0015/50541/Heritage-Council-Annual-Report-2010_grey.pdf.
- 97 Australian Government Department of Sustainability, Environment, Water, Population and Communities. Heritage Division departmental funding data, 2006–2011. Canberra: DSEWPaC, July 2011.
- 98 Rowe D, Jacobs W. Geelong verandah study. Report prepared for the City of Greater Geelong. Melbourne: Victorian Department of Planning and Community Development, 2006.
- 99 Commonwealth Scientific and Industrial Research Organisation. Embodied energy. Canberra: Department of Materials Science and Engineering, CSIRO, 2008.
- 100 Jackson R. Heritage buildings and sustainability forum. *Architecture Bulletin* 2011;March–April:12.
- 101 Faddy J. Sustainable heritage ... as ratings tools improve, the case for conservation could outweigh demolition. *Architecture Bulletin* 2011;March–April:13–4.

- 102 Green Building Council of Australia. Green Star rating calculation. Sydney: GBCA, 2008, viewed 6 September 2011, www.gbca.org.au/green-star/green-star-overview/green-star-rating-calculation/1542.htm.
- 103 The Nature Conservancy. Conservation by design: a strategic framework for mission success. Arlington: The Nature Conservancy, 2006, viewed 6 September 2011, www.conservationgateway.org/sites/default/files/CbD%20Brochure-English%208-28-0.pdf.
- 104 The Nature Conservancy. Conservation action planning: developing strategies, taking action, and measuring success at any scale. Overview of basic practices. Version: February 2007. Arlington: The Nature Conservancy, 2007, viewed 6 September 2011, www.wdpa.org/me/PDF/CAP.pdf.
- 105 Parks and Wildlife Service Tasmania. Tasmanian Wilderness World Heritage Area management plan. Hobart: Parks and Wildlife Service Tasmania, 1999, viewed 6 September 2011, www.parks.tas.gov.au/index.aspx?base=6158.
- 106 Kerr J. The conservation plan. Sydney: National Trust of Australia (NSW), 2000.
- 107 Walker B, Holling C, Carpenter S, Kinzig A. Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* 2004;9(2):article 5.
- 108 Stankey GH, Cole DN, Lucas RC, Petersen ME, Frissell SS. The limits of acceptable change (LAC) system for wilderness planning. General technical report no. INT-176. Ogden: United States Department of Agriculture, Forest Service, Intermountain Forest & Range Experiment Station, 1985.
- 109 NSW Heritage Office. Statements of heritage impact. In: NSW heritage manual. Sydney: NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996.
- 110 Burke S. Integrity and authenticity in the Sydney Opera House nomination. In: Integrity and authenticity in modern movement architecture. Proceedings of the international expert seminar, Salastie R, ed. Helsinki: ICOMOS Finnish National Committee, 2010;52–75.
- 111 Collinge M, Markwell K. Bunya Mountains: a unique story of people, place and nuts! Third National Indigenous Land and Sea Management Conference, Broken Hill, 2–5 November 2010.
- 112 McIntyre-Tamwoy S. The impact of global climate change: grasping the issues, defining the problem. *Historic Environment* 2008;21(1):2–9.
- 113 Australia ICOMOS. Climate change and heritage working group. Burwood, Victoria: Australia ICOMOS, 2011, viewed 1 August 2011, <http://australia.icomos.org/get-involved/working-reference-groups/climate-change-and-cultural-heritage-working-group>.
- 114 The Lowitja Institute. Cooperative Research Centre for Aboriginal and Torres Strait Islander Health. Melbourne: Lowitja Institute, 2011, viewed 19 September 2011, www.lowitja.org.au/crcatsih.
- 115 ACT Heritage Council. Tharwa bridge: entry to the ACT Heritage Register. Canberra: ACT Government, 2003, viewed 21 September 2011, www.cmd.act.gov.au/__data/assets/pdf_file/0006/148506/20036_TharwaBridge.pdf.
- 116 The Allen Consulting Group. Valuing the priceless: the value of heritage protection in Australia. Unpublished report prepared for the Heritage Chairs and Officials of Australia and New Zealand. Sydney: Allen Consulting Group, 2005, viewed 21 September 2011, www.dpcd.vic.gov.au/__data/assets/pdf_file/0003/36885/allens_rpt2_pt1.pdf.