# **Environmental Indicators**

# For National State of the Environment Reporting

# natural and cultural heritage

# Australia: State of the Environment Environmental Indicator Report

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### PREFACE

The Commonwealth State of the Environment Reporting system supports the National Strategy for Ecologically Sustainable Development and helps Australia meet its international obligations, such as those under Agenda 21 and the OECD environmental performance reviews. The first independent and comprehensive assessment of Australia's environment, Australia: State of the Environment 1996 was released by the Commonwealth Environment Minister in September of that year.

The next step in the evolution of the reporting system is to develop a set of environmental indicators that, properly monitored, will help us track the condition of Australia's environment and the human activities that affect it. To help develop these indicators, Environment Australia has commissioned reports recommending indicators for each of the seven major themes around which Commonwealth state of the environment reporting is based. The themes are:

- human settlements
- biodiversity
- the atmosphere
- the land
- inland waters
- estuaries and the sea
- natural and cultural heritage.

An eighth report deals with the use of the recommended indicators by local or regional environmental managers and with the role of the community in indicator work. It is the result of a pilot study carried out by the Australian local Government Association and Environment Australia.

Clearly, none of these themes is independent of the others. The consultants worked together to promote consistent treatment of common issues. In many places issues relevant to more than one theme receive detailed treatment in one report, with cross-referencing to other reports.

Report authors were asked to recommend a comprehensive set of indicators, and were not to be constrained by current environmental monitoring. One consequence of this approach is that many recommendations will not be practical to implement in the short term. They are, however, a scientific basis for longer term planning of environmental monitoring and related activities.

These reports are advice to Environment Australia and have been peer reviewed to ensure scientific and technical credibility. They are not necessarily the views of the Commonwealth of Australia.

The advice embodied in these reports is being used to advance state of the environment reporting in Australia, and as an input to other initiatives.

### SUMMARY

A set of 43 key environmental indicators for the natural and cultural heritage theme is recommended for Australian state of the environment reporting at the national scale. Of these, 8 are general indicators that apply to most but not every heritage environment and address: knowledge of heritage resources (both objects and places); condition of heritage places; resources and training; and community awareness and action. Indicators which are specific to particular heritage environments are then presented: 3 to natural heritage places; 8 to indigenous archaeological places; 6 to indigenous contemporary places; 9 to indigenous languages; 2 to historic places; and 7 to heritage objects. Monitoring strategies and approaches to interpreting and analysing each of the indicators are discussed, and possible sources of data are noted. Recommendations are also made for further development of environmental indicators for natural and cultural heritage.

### Aims of the study

- present a key set of indicators for natural and cultural heritage for national state of the environment reporting;
- ensure that the list of indicators adequately covers all major environmental themes and issues;
- examine each indicator in detail to ensure that it is rigorously defined and measurable and in an interpretive framework;
- identify suitable monitoring strategies for each indicator including measurement techniques, appropriate temporal
  and spatial scales for measurement and reporting, data storage and presentation techniques, and appropriate
  geographical extent of monitoring;
- identify relevant data sources for each indicator, if these are available;
- define the baseline information that is needed to properly interpret the behaviour of the indicators.

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#### **EXECUTIVE SUMMARY**

This report provides a proposed set of key environmental indicators for natural and cultural heritage as part of Commonwealth state of the environment reporting. These are the minimum set of indicators that will provide rigorous data describing the major trends and impacts on Australia's places and objects of natural, indigenous and historic value.

State of the environment reporting is concerned with the environment in a broad sense and with a systems approach reflecting the complexity of the natural world and the cultural values associated with it (State of the Environment Advisory Council 1996b:11). In this context, natural and cultural heritage complements all the other components of the environment in this series.

The scope of natural and cultural heritage, including places and objects, is defined as,

'Heritage places are those natural and cultural sites, structures, areas or regions that have 'aesthetic, historic, scientific or social significance or other special value for future generations as well as for the present community.'

'Heritage objects are those which provide material evidence of Australia's natural and cultural environments or its historic and cultural life and biophysical evolution. They may be *in situ* at significant sites or held in collecting institutions - archives, libraries, museums, galleries, zoos, herbaria or botanic gardens, or historic buildings.' (State of the Environment Advisory Council 1996a: 9-5)

A major task in developing the proposed key environmental indicators was to review relevant indicators arising from international, Commonwealth, State and Territory Government state of the environment reporting work. While many cases were found which included the natural environment, the Commonwealth emphasis on natural and cultural heritage appears to be an important and necessary innovation.

The report provides proposed key environmental indicators for:

- natural heritage places;
- indigenous heritage places, including those which are part of living cultures, as well as archaeological places;
- indigenous languages, given their crucial link to heritage places;
- historic places; and
- natural and cultural objects.

While the indicators are presented in separate sections, every effort has been made to deal with the environment in a holistic sense, and to recognise the complex inter-relationships that exist.

The report makes a series of recommendations about the need for further research and development related to the proposed or possible future key environmental indicators.

The report builds upon Australia: State of the Environment 1996 (State of the Environment Advisory Committee), its associated technical reports, a specialist workshop held in 1997 by Environment Australia, and contact with the range of other projects being undertaken to develop key environmental indicators for other aspects of the environment. In addition, the consultants have reviewed a wide range of other material and held discussions with many people.

### Summary list of heritage indicators

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)	
GENERAL INDICATORS		1	
Knowledge of the heritage resource	G.1 Number and distribution of identified heritage items (places and objects)	C/R	
	G.2 Number of heritage places assessed using best practice assessment standards	R	
Condition of heritage	G.3 Number of places destroyed or whose values have been severely diminished	С	
	G.4 Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use.	C/P	
Resources and training	G.5 Funds provided for maintaining heritage values	R	
	G.6 Amount of funding provided to heritage agencies responsible for heritage places and objects.	R	
	G.7 Number of conservation practitioners and training courses	R	
Community awareness and action	G.8 Community awareness of and attitudes towards heritage places and objects and their conservation.	R	
SPECIFIC NATURAL INDICATORS		-	
Knowledge of natural heritage places	N.1 Proportion of natural heritage places with a condition statement; proportion with recent condition statements; and age distribution of condition statements.	С	
Protection by Government	N.2 Proportion of natural heritage places with protected area status.	R	
	N.3 Proportion of natural heritage places with a management plan.	R	
SPECIFIC INDIGENOUS (ARCHAE)	IC INDIGENOUS (ARCHAEOLOGICAL) INDICATORS		
Issue 1 Knowledge of indigenous (archaeological) heritage places	IA1.1 Number of, and level of funding for, programs initiated or continuing focussed on recording scientific and social values of places involving collaborative research.	C/R	
	IA1.2 Level and distribution of funding or other resources provided to support systematic studies of indigenous heritage places of archaeological significance.	R/P	
	IA1.3 Net population movement of local (indigenous and non-indigenous) people away from rural lands and townships.	C/P	

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
Issue 2 Impact of development (humanly initiated actions including tourism)	IA2.1 Number and proportion of archaeological assessment studies initiated prior to development that include assessment of indigenous archaeological places and values.	C/R
	IA2.2 Extent of land area (per region or catchment) under cultivation, cleared, clear-felled forests, open mine site bare ground, or lands recorded as under stocking pressure in the Rangelands or arid zones.	Ρ
Issue 3. Impact of natural processes and humanly accelerated or initiated natural processes	IA3.1 Number of indigenous archaeological heritage places on lands reserved for conservation purposes reported as destroyed or damaged by natural forces such as flood, fire, storm (wind/wave).	C/P
Issue 4. Statutory protection, management regimes and resources	<ul> <li>IA4.1 Areal extent of lands reserved for conservation purposes under all jurisdictions including: <ul> <li>(a) proportion which is 'unmodified' plant or animal habitat, or landscape</li> <li>(b) proportion preserved for their indigenous heritage values, and</li> <li>(c) proportion in category (b) with provisions for management and its implementation.</li> </ul> </li> </ul>	C/R
	<ul> <li>IA4.2 Number and total area of protected areas or individual indigenous places under:</li> <li>(a) the primary control of local communities</li> <li>(b) the control of traditional owners</li> <li>(c) joint management regimes, or</li> <li>(d) designated as Aboriginal lands managed by resident communities according to traditional canons of practice in caring for country.</li> </ul>	C/R
SPECIFIC INDIGENOUS (CONTEM	PORARY) HERITAGE INDICATORS	
Issue 1 'Culturally appropriate' directions in conservation and management of heritage places of significance to Indigenous custodians/communities	<ul> <li>IC.1 Number of places (sample) where Indigenous people are involved in heritage management decision making by virtue of: <ol> <li>Indigenous land ownership</li> <li>joint management</li> <li>recognised custodianship</li> <li>direct consultation.</li> </ol> </li> </ul>	C/R
	<ul> <li>IC.2 Number of government heritage agencies including those agencies providing heritage research and funding programs that incorporate procedures of consultation or referral to indigenous custodial / community groups, on: <ol> <li>priority setting</li> <li>individual projects</li> <li>annual programs</li> <li>policy formulation on Indigenous issues.</li> </ol> </li> </ul>	C/R

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
	IC.3 Number of trained Indigenous heritage professionals or custodial representatives employed by government heritage agencies, or Indigenous people serving on councils or boards of such agencies, who are actively involved in the management and / or administration of Indigenous heritage places.	C/R
	<ul> <li>IC.4 Number of Indigenous community based funding applications for government heritage funding: <ul> <li>i) that are successful</li> <li>ii) are not successful</li> <li>iii) as a percentage of total government heritage funding provided</li> <li>iv) as a percentage of total government heritage funding provided</li> <li>iv) as a percentage of total government heritage funding applications.</li> </ul></li></ul>	C/R
	IC.5 Number of programs and funds allocated for repatriation of Indigenous artefactual material and / or human remains.	C/R
Issue 2 Questions of Indigenous community cultural heritage maintenance (places being one part)	<ul> <li>IC.6 Number of Indigenous communities / organisations establishing:</li> <li>i) 'keeping places'</li> <li>ii) cultural centres</li> <li>iii) site / place data bases</li> <li>iv) heritage tours, trails / walks.</li> </ul>	C/R
SPECIFIC INDIGENOUS LANGUAG		
Condition of Indigenous languages	IL.1 Number of people who identify as knowing each indigenous language.	С
	IL.2 Number of people in age group who identify as knowing each indigenous language; proportion of total identifying as indigenous.	С
	IL.3 Number of traditional languages at each recognised stage of inter-generational dislocation.	С
State of documentation of languages	<ul> <li>IL.4 The number of indigenous languages for which (a) documentation is:</li> <li>(i) good</li> <li>(ii) adequate</li> <li>(iii) inadequate</li> <li>(b) documentation is close to complete (given the state of the language)</li> </ul>	с
The wider use of Indigenous languages	<ul> <li>IL.5 The number of/proportion of traditional language used in: <ol> <li>broadcast media: radio, TV, published books, magazines, cinema, WWW, distinguishing:</li> <li>programs aimed at speakers;</li> <li>programs aimed at a general audience;</li> <li>signage in public places (streets, parks), advertisements</li> </ol> </li> </ul>	C/R

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
	IL.6 Number of approvals of geographic names, including map sheet names, using indigenous place names.	R
Funding, research and education	<ul> <li>IL.7 Amount (in \$) of funding provided for language programs through government departments and agencies, including ATSIC, DEETYA, ARC and AIATSIS; distinguishing allocations to: <ul> <li>(a) research;</li> <li>(b) language maintenance;</li> <li>(c) education and training; and</li> <li>(d) information dissemination and public education (eg translation of notices of government programs).</li> </ul> </li> </ul>	P/R
	IL.8 The number of projects which document knowledge of traditional languages, by type of project.	R
	IL.9 The number and type of indigenous language programs undertaken in language centres, schools, and other institutions.	R
SPECIFIC HISTORIC INDICATORS		
Condition of heritage places	<ul><li>H.1 The number of heritage places assessed</li><li>(by sampling) as being in (i) good,</li><li>(ii) average and (iii) poor condition</li></ul>	с
Protection by government	H.2 Number of statutory mechanisms actively used to protect historic places	R
SPECIFIC OBJECTS INDICATORS		
Knowledge of Heritage Collections	O.1 The number of objects /collections adequately catalogued.	С
Knowledge of Condition of Heritage Collections	O.2 The proportion of collections surveyed for preservation treatment by a trained curator/conservator.	C/R
	O.3 The proportion of collections requiring preservation subsequently treated.	C/R
	O.4 The proportion of collections stored in appropriate environmental conditions.	C/R
Condition of Heritage Collections	O.5 Number of heritage collections with statutory protection for that heritage type/category outside museum collections.	С
	O.6 Number of reported applications of provisions of existing legislation to protect heritage objects in museums and in situ.	C/R
Societal responses to heritage collections	O.7 Number of users of object collections for scholarly study, and the number of programs for the public use of collections.	R

# BACKGROUND

# Commonwealth State of the Environment Reporting

In 1992, Australia's National Strategy for Ecologically Sustainable Development (Council of Australian Governments 1992) was endorsed by the Commonwealth, all State and Territory Governments and Local Government. The objectives of this strategy are:

- to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations; and
- to protect biological diversity and maintain essential ecological processes and life-support systems.

The strategy called for the introduction of regular state of the environment reporting (SoE) at the national level to enhance the quality, accessibility and relevance of data relating to ecologically sustainable development.

The broad objectives of state of environment reporting for Australia are:

- to regularly provide the Australian public, managers and policy makers with accurate, timely and accessible information about the condition of, and prospects for, the Australian environment;
- to increase public understanding of the Australian environment, its conditions and prospects;
- to facilitate the development of, and review and report on, an agreed set of national environmental indicators;
- to provide an early warning of potential problems;
- to report on the effectiveness of policies and programs designed to respond to environmental change, including progress towards achieving environmental standards and targets;
- to contribute to the assessment of Australia's progress towards achieving ecological sustainability;

- to contribute to the assessment of Australia's progress in protecting ecosystems and maintaining ecological processes and systems;
- to create a mechanism for integrating environmental information with social and economic information, thus providing a basis for incorporating environmental considerations in the development of long-term, ecologically sustainable economic and social policies;
- to identify gaps in Australia's knowledge of environmental conditions and trends and recommend strategies for research and monitoring to fill these gaps;
- to help fulfil Australia's international environmental reporting obligations; and
- to help decision makers make informed judgments about the broad environmental consequences of social, economic and environmental policies and plans.

The first major product of this reporting system was Australia: State of the Environment 1996 (State of the Environment Advisory Council (eds) 1996), – an independent, nation-wide assessment of the status of Australia's environment, presented in seven major themes: human settlements; biodiversity; atmosphere; land; inland waters; estuaries and the sea; and natural and cultural heritage.

In Australia: State of the Environment 1996, each theme is presented in a chapter that follows the OECD (1993) Pressure-State-Response model (see also Commonwealth of Australia 1994). The OECD P-S-R model describes, respectively, the anthropogenic pressures on the environment, conditions or states of valued elements of the environment, and human responses to changes in environmental pressures and conditions. In the natural and cultural heritage chapter of *Australia: State of the Environment 1996*, the pressures on heritage objects and places were presented in detail, together with an account of the current condition of heritage objects and places as well as indigenous languages, and some responses to those pressures. \*

Australia: State of the Environment 1996 is the first stage of an ongoing evaluation of how Australia is managing its environment and meeting its international committments in relation to the environment. Subsequent state of the environment reports will assess how the environment, or elements of it, have changed over time, and the efficacy of the responses to the pressures on the environment. The next national SoE report is due in 2001, consistent with the regular reporting cycle of four to five years. In order to assess changes in the environment over time it is necessary to have indicators against which environmental performance may be reviewed. As pointed out in *Australia: State of the Environment 1996:* 

"In many important areas, Australia does not have the data, the analytical tools or the scientific understanding that would allow us to say whether current patterns of change to the natural environment are sustainable. We are effectively driving a car without an up-to-date map, so we cannot be sure where we are. Improving our view of the road ahead by enhancing the environmental data base is a very high priority. Our intended destination is a sustainable pattern of development, but it is not always clear which direction we need to take to get there."

The development of a nationally agreed set of indicators is the next stage in the state of the environment reporting process. Environmental indicators for the seven SoE themes were developed in parallel, with close consultation between the themes.

#### **Environmental indicators**

Environmental indicators are physical, chemical, biological or socio-economic measures that best represent the key elements of a complex ecosystem or environmental issue. An indicator is embedded in a well-developed interpretive framework and has meaning beyond the measure it represents.

The set of key indicators is defined as the minimum set that, if properly monitored, provides rigorous data describing the major trends in, and impacts on all important elements of Australia's heritage environments. It should include:

- indicators that describe the Condition of all important elements of Australia's heritage environments;
- indicators of the extent of the main Pressures on the elements; and

• indicators of Responses to either the Condition or changes in the Condition of heritage environments.

The selection criteria for national environmental indicators are listed below (from DEST 1994) and selected indicators for natural and cultural heritage should satisfy as many of these as possible. Each indicator should:

- serve as a robust indicator of environmental change;
- reflect a fundamental or highly valued aspect of the environment;
- be either national in scope or applicable to regional environmental issues of national significance;
- provide an early warning of potential problems;
- be capable of being monitored to provide statistically verifiable and reproducible data that show trends over time and, preferably, apply to a broad range of environmental regions;
- be scientifically credible;
- be easy to understand;
- be monitored regularly with relative ease;
- be cost-effective;
- have relevance to policy and management needs;
- contribute to monitoring of progress towards implementing commitments in nationally significant environmental policies;
- where possible and appropriate, facilitate community involvement;
- contribute to the fulfilment of reporting obligations under international agreements;
- where possible and appropriate, use existing commercial and managerial indicators; and
- where possible and appropriate, be consistent and comparable with other countries' and State and Territory indicators.

In the cultural heritage arena the concept of 'scientific credibility' must be extended to ensure that the indicators are also historically and culturally credible.

In Australia, Aboriginal influence on the landscape has been widespread for at least 50 000 years, with recent reports from northern Australia possibly extending this period back to more than 100 000 years. Archaeological and palaeoecological evidence demonstrates that almost every part of the continent has been traversed or inhabited by Aboriginal peoples (Head 1989). European settlement over the last 200 years in Australia much of the continent has had an impact for less than 200 years. In the period from first human occupancy until the eighteenth century, rates of change in ecosystems and their mode of functioning appear to have been relatively slow, with carnivores (including humans) and herbivores fluctuating in numbers that were restrained by the essentially arid nature of much of the interior and the modest fertility of nearly all terrestrial ecosystems.

Thereafter, the speed of change resulting from the extraordinarily rapid spread of Europeans across the entire continent in a matter of a hundred years has been too great for the stability of the former state of ecosystems to be maintained, and almost all are in a transitional phase has changed the landscape as a result of peoples' activities. As a result, Australia now is a patchwork of overlapping cultural landscapes for which the evidence can be found in the heritage places and objects that were created.

The concept of indicators of the state of the natural and cultural heritage is a relatively recent one. Internationally little indicator development has related to heritage places or objects, and what has been done mainly focuses on natural places, in the context of reservation and protection of biodiversity values (eq Denmark, Norway, Canada, UK). To date the indicators that have been developed by States and Territories have, to a large extent, focussed on the context of data establishing the state of knowledge about heritage places, and the range of government programs in place to identify and manage the heritage. A large number of indicators developed by the States and Territories use State/Territory-specific measures of registers, funding, and protective mechanisms, and in this report these have been combined or replaced with similar measures that have meaning at the national scale (see proto-indicator list at Appendix A).

# HERITAGE ISSUES AND THE DEVELOPMENT OF INDICATORS

NATURAL AND CULTURAL HERITAGE AS COMPONENTS OF THE ENVIRONMENT, AND THE SCOPE OF STATE OF THE ENVIRONMENT REPORTING

The 1996 State of the Environment Report states,

'Australia's natural and cultural heritage is an integral part of its environment. The state of our heritage is as important as the state of our atmosphere, land, water, seas, plants and animals. Its inclusion adds a new dimension to state of the environment reporting.' (State of the Environment Advisory Council 1996b:43)

The environment which is the concern of state of the environment reporting is very broadly defined to include such things as the atmosphere, land and water resources and the sea, and places of natural and cultural heritage value to Australians. The environment is humanity's special responsibility in working to achieve ecologically sustainable development. Our actions can and do have significant impacts on the environment and this responsibility includes concern for the total quality of life, now and in the future, while maintaining ecological processes.

One critical issue in state of the environment reporting is to adopt a systems approach,

'...that reflects the complexity of the natural world and the cultural values associated with it.' (State of the Environment Advisory Council 1996b:11)

With such an understanding of environment, concern for the total quality of life, and this systems approach, it is clear that natural and cultural heritage are indeed an integral part of Australia's environment and therefore a major component of state of the environment reporting. This natural heritage includes places such as national parks, fauna and flora habitats, as well as geological sites. It also includes natural objects like plant specimens in herbaria and fossils held in museums which contain valuable information about Australia's past and present environments.

The cultural heritage of Australia extends back over many tens of thousands of years, long before European colonisation in 1788. The human occupation of the continent has left a rich legacy of places which bear witness to this history. Occupation and industrial sites, art sites, contact sites, places associated with pastoralism, settlements, factories and defence sites are just a few of the types of places which are part of this legacy. The many cultures of the peoples of Australia continue to shape and respond to the environment.

This cultural heritage includes objects which, like natural objects, are important evidence of the history of human cultures in Australia.

Cultural heritage is a part of human cultures and both are linked to the total quality of life enjoyed by people. It has been suggested that culture in the broadest sense should be considered as part of or parallel to the state of the environment. While not further discussed in this report, this suggestion warrants further consideration in the holistic approach associated with the concept of the quality of life enjoyed by cultures.

The 1996 State of the Environment Report used the following definition of heritage places.

'Heritage places are those natural and cultural sites, structures, areas or regions that have 'aesthetic, historic, scientific or social significance or other special value for future generations as well as for the present community.' (State of the Environment Advisory Council 1996a: 9-5)

Heritage objects were defined as follows.

'Heritage objects are those which provide material evidence of Australia's natural and cultural environments or its historic and cultural life and biophysical evolution. They may be *in situ* at significant sites or held in collecting institutions archives, libraries, museums, galleries, zoos, herbaria or botanic gardens, or historic buildings.' (State of the Environment Advisory Council 1996a: 9-5)

### HERITAGE VALUES

'Places and objects have heritage significance because of the meanings that people attach to them. They reflect the values of their times. These intangible aspects underpin natural and cultural heritage.' (State of the Environment Advisory Council 1996:9.5)

Unlike most other aspects of the environment, Indigenous, natural and historic heritage places and objects are defined by the culturally generated values they possess. A simple analysis might give primary emphasis to the physical aspects of places which comprise these environments, for example, rock art sites, geological monuments, historic lighthouses, or steam engines. In the past the values of these places to the community has simply been assumed rather than analysed and stated. Over the last decade the assessment of heritage places against explicitly stated criteria has become standard practice. Ultimately, the identification and protection of places is only worthwhile if these places have heritage value to society. The specific nature of the values of each place should determine the way in which the place is managed, so that the values are retained. The key indicators for state of the environment reporting must always be formulated with the concept of heritage values as the central theme.

Cultural heritage and heritage values are a cultural construct. What we as a community regard as cultural heritage is a product of the culture of the community. There is no cultural heritage separate from culture. Culture is dynamic and this affects cultural heritage.

There are three ways in which cultural heritage may change over time, and two of these appear to be associated with cultural dynamism. These are,

 the expanding knowledge of specific heritage places and values, such as more heritage places being discovered or values identified as a result of research work. This happens within an existing cultural framework and without any cultural change,

- the evolving character of heritage as different types of heritage places are identified. In the relatively short history of heritage conservation in Australia, the range of types of heritage places has expanded considerably, and the threshold against which places are judged to be of heritage value have also changed. The scope of heritage and the thresholds applied will continue to change over time.
- the changing currency of heritage values as communities change. For example, in the historic environment, the social value of a local church may disappear as the community for whom the church is a place of special and strong associations moves away or dies out and is not replaced by a new generation who hold such views. The value may become an historic value, in its narrow sense.

The majority of heritage places have values that persist over time—hence the emphasis on being able to hand on these places to the next generation (that is, they are 'heritage'). However, state of the environment reporting has also to reflect the volatility of heritage in terms of the potential for the evolving character and changing currency of values. The key environmental indicators developed in this report recognise this dynamic, and allow for its assessment over time, either through specific data gathering measures or through the analysis and interpretation of data.

The heritage values which are of interest to state of the environment reporting may be described in a number of ways. The simplest and most common set of values are:

- aesthetic,
- historic,
- scientific and
- social, including spiritual.

These values are found, for example, in the definition of the National Estate (subsection 4(1) of the *Australian Heritage Commission Act 1975*). This basic set of values has been more fully described in the criteria used to assess places for entry to the Register of the National Estate.

With some variation, both the basic set of values and the criteria are used by the Commonwealth, State and Territory government heritage agencies, especially for the historic environment. A project called National Heritage Coordination is being undertaken by these governments to promote greater commonality about such things as heritage criteria for the historic environment.

Because of the close relationship between State and local governments about heritage conservation in the historic environment, it is understood that in most States, local governments have begun to use criteria compatible with those used by their State government. The basic set of values, aesthetic, historic, scientific and social, is also widely used by voluntary conservation organisations such as National Trusts. Privately commissioned heritage work tends to use either the basic set of values or Commonwealth, State or Territory government heritage criteria.

Although there is a measure of variation between the various parties in heritage conservation, most work relies on criteria which are compatible with those used for the Register of the National Estate.

It therefore seems appropriate for state of the environment reporting to rely on National Estate criteria in any consideration of heritage values.

With regard to heritage criteria for objects, there are a number of existing approaches including that available under the *Protection of Movable Cultural Heritage Act 1986* (Commonwealth), those used by the National Library in its Community Heritage Grants program, as well as under specific legislation such as that in the ACT. The ACT *Heritage Objects Act 1991* defines heritage significance by listing a series of values and these are further expanded by describing criteria. An object is a heritage object in terms of the Act and eligible for listing if it meets one of the defined criteria.

Objects listed according to the definitions and guidelines of the above Act could include those both rare or representative of the ACT natural or cultural environment but their significance relates to the ACT environment at only one point in time. The object could serve as a benchmark of the natural or cultural environment at the specified time and changes since that time could be monitored according to consistent criteria.

The ACT criteria, which decide whether an object is a heritage object, have been adapted from those used by the Australian Heritage Commission for the Register of the National Estate. Therefore they are the most likely to reflect heritage values in terms of the need for a heritage sieve for classifying objects.

Use of common heritage values, that is those derived from the Register of the National Estate, will also enable comparative assessments with those for heritage places.

The ACT criteria could be applied by the Heritage Collections Council to heritage objects/collections in their nation-wide inventory.

The Heritage Collections Council is undertaking a study into the various current approaches to the use of criteria for determining the significance of objects, including those mentioned above. The results of this study should be considered when available.

### ELEMENTS OF THE NATURAL AND CULTURAL ENVIRONMENT INCLUDED IN STATE OF THE ENVIRONMENT REPORTING.

The elements making up the natural and cultural heritage presented in this report share some indicators, but for others they are separated. This is because the data sources, and analysis and interpretation and the monitoring design differs between the elements, and separate indicators are needed to identify significant change in the elements.

The elements dealt with in the report are:

- Natural heritage places
- Indigenous places that inform us about the past and the archaeological record
- Indigenous places important to living cultures
- Indigenous languages
- Historic heritage places
- Heritage objects-natural, Indigenous and historic

The nature of each of these components, and their relationship to State of the Environment reporting are as follows.

#### Natural heritage places

Australia's natural environment includes the physical landscapes of the continent, the land, air, water and seas, together with the biota, the plants and animals, that inhabit them. These diverse biophysical elements of the natural environment are all part of our heritage.

Particular places or parts of the natural environment are regarded by society as having special importance due to their exceptional values. Each natural heritage place represents a significant expression of natural values and its boundaries are defined in relation to these values. It is recognised that some natural areas are in fact culturally influenced landscapes, where the cultural (both indigenous and non-indigenous) and the biophysical aspects of the environment may co-evolve, and that it is the sum of these interactions that results in the particular natural heritage values of a place. This aspect of the evolution of natural heritage places as part of a cultural landscape deserves further investigation to develop adequate indicators that monitor this particular aspect of heritage values. An understanding of the number and condition of all places in Australia that have significant natural heritage values is central to the purposes of State of the Environment (SoE) reporting for natural heritage places. Aspects of the biophysical environment other than natural heritage places and objects are reported under the other major themes of the national SoE reporting process, including the Atmosphere, the Land, Inland Waters, Estuaries and the Sea, Biodiversity, and Human Settlements.

Number of heritage places is used in the indicators in preference to areal extent of identified land. The latter may appear to be more relevant to the natural heritage environment in particular, where very large areas can be involved. However, whole classes of heritage values can be put at risk by the loss of quite small areas, and this risk might be overlooked in analysis if relative area were the only basis for comparison between monitoring periods.

Where particularly large areas are added or lost from registers or lists, this should be recognised and interpreted in the analysis at the time of reporting. In some cases, registered places will represent a point location and be of little consequence in terms of changes in area in relation to an indicator. In other cases, single places of large size are likely to have a significant effect on any quantification of change in areal extent. Any quantification of indicators in terms of changes in areal extent of identified heritage land should be accompanied by a size class analysis of the places involved. The analysis should characterise and quantify what the changes mean in terms of the relative contributions of numbers of heritage places to the change in area.

Legislation relevant to the identification and protection of heritage places has been passed by the Commonwealth and by some State and Territory Governments. In some cases, statutory registers of significant heritage places are maintained by these governments. Non-statutory heritage registers are also maintained by some non-government organisations concerned with heritage. The Register of the National Estate (RNE) is the only register that currently covers natural heritage places in all States and Territories. For the majority of its listed natural heritage places, the RNE includes a statement of significance, a description of natural heritage values and an assessment of condition at the time of listing, as well as information on location, boundaries, tenure and other relevant site factors.

However, the majority of Australia's heritage registers include only a small number of natural heritage places, and some may include none at all. The reasons for this discrepancy are largely historical and result from a preoccupation, amongst both government and nongovernment organisations concerned with heritage listing, with the built and historic environments and with the indigenous heritage environment, both archaeological and modern.

Instead, activities concerned with the natural environment and conservation of natural values have tended to focus on reservation of natural areas, and management to maintain natural values on other public lands, particularly within the context of sustainable multiple use regimes. However, the values of a large number of these protected areas are relatively poorly documented and there is much work yet to be done to evaluate their significance in a heritage context. As a result, the contribution of Australia's protected natural areas in terms of significant natural heritage places is not well known.

The number of natural heritage places that have been formally identified and listed under legislation at any one time is likely to be less than the total number of places needed to encompass all of Australia's significant natural heritage places. However, there is no readily-available means of estimating the total number of places likely to have significant natural heritage values. Therefore, the number of natural heritage places that remain to be identified at any particular time is unknown. As time progresses, and more places are listed, it can be assumed that the listed proportion of natural heritage places may eventually include most, if not all, significant occurrences of natural heritage values. However, heritage values being a cultural construct that changes over time, natural heritage values must be seen as a dynamic rather than a static entity.

Current initiatives may assist in overcoming some of the discrepancies in present approaches to natural heritage amongst different jurisdictions. A approach that will improve access to heritage databases is to be developed in a joint initiative of Commonwealth and State and Territory governments, as part of the National Heritage Coordination Program. It is intended that the National Heritage Places Strategy, will develop a standardised approach to recording significant heritage places, and will provide an effective set of database of heritage places based initially on improved linkages between existing heritage databases at national, State and Territory and other levels. A systematic approach to natural environment values is also being developed for local governments by the Australian Local Government Association (ALGA). Recommendations for implementation of the approach include the use of standardised environmental indicators relevant to SoE reporting (Alexandra and White 1997).

# Indigenous places that inform us about the past and the archaeological record

Australia's indigenous cultural heritage is diverse and complex. It includes an archaeological record of the dynamic cultural development of societies who first entered this island continent at least 60,000 years ago. It can provide evidence documenting the peopling of this land and societies' adaptation to the major environmental shifts through the Late Pleistocene and succeeding Holocene period. These include major changes in sea level and land mass size, related to global climatic change and bringing resultant significant environmental change.

Archaeological and environmental science investigations of this record constitute areas of major research at present. Such archaeological research does not have a long history in Australia. Therefore the delineation of the significant field areas and specific locations, as well as of the major themes for their investigation and interpretation are all part of on-going programs which need to be integrated with programs for heritage protection and management.

This aspect gives a special quality and salience to issues such as 'State of Knowledge', compared with other components of the Australian environment for which indicators are being developed. Archaeological research since the 1950s has already provided for us a unique record of human cultural and physical development within a single tradition over a great span of time. It also shows those societies adapting innovatively in the distant past to the potential of the continent's diverse environments and responding effectively to major environmental shifts, and in the last two centuries to the social and cultural change and dislocation that followed European settlement.

This emerging cultural record of the long history of the indigenous past is, of course, of major significance to contemporary indigenous people. It is also important to all Australians, as it documents the human history and natural history of the continent. As well it is significant for world history in its cultural and physical record of social and evolutionary change over many millennia. Therefore understanding the condition of the archaeological aspect of the indigenous heritage environment, identifying trends of change in it, as well as the pressures and responses that condition these, is of major relevance.

### **Range of Places and Associated Values**

The cultural heritage of this important human and natural history includes the archaeological record in places, objects and cultural landscapes. It involves a diverse range of places associated with all aspects of past indigenous society's life - from living sites containing information about life style, subsistence and modes of social organisation, to places associated with the acquisition or processing of resources (raw materials and food). The latter category includes stone and ochre quarries, artefact workshops, scarred trees, fish traps, hunting hides and plant food processing places. A further range of places reflect the social and ceremonial life of past or contemporary indigenous communities, such places as painted or engraved rock surfaces in shelters or on open outcrops, and locations important for meetings, exchange transactions or ceremonies. These may be marked by complex stone or earthen structures, or focus on some natural feature such as a waterhole.

Some indigenous places with significance for archaeological study are given greatly added value by their continuing central place within the continuing culture of the contemporary indigenous communities. Similarly, a cultural landscapes defined only in terms of archaeological sites become vastly more meaningful when the knowledge of its cultural associations and meanings within contemporary indigenous culture is able to be considered as part of its significance. The heritage values of these places for contemporary indigenous people are discussed further in the next section.

Given the extent of many of the Indigenous cultural landscapes, the nature of the archaeological evidence and of the places that form their components, questions relating to 'State of the Environment Reporting' on condition, especially regarding changes in this over time, must be considered in 'the context of land management', as Pearson and Sullivan stress (1994:21). The 'conjunction of location and human action or association', must be retained, as a critical element of place. This principle has a rider for places of archaeological significance, viz. that any disturbance of the spatial relationship between artefacts, and between artefacts and their enclosing matrix of sediments or deposits, seriously, if not totally, diminishes the ability of that archaeological material to reveal its human story. The principle, with its rider, has been a guiding tenet for the discussion that follows of pressures affecting the condition of this component of indigenous cultural heritage. It has also guided the selection of indicators to assist assessment of trends in condition, pressures, or societal responses to these over time. Further it means that issues raised by those developing indicators for the Land, Biodiversity, Estuaries and the Sea and Inland Waters will be very relevant to this discussion. Establishing linkages between several of the indicators being developed for these components of the environment will be significant for on-going assessment of the condition of cultural heritage places of archaeological significance. This is especially so for places as yet not identified or recorded, or places in sub-surface contexts, in regions for which a high number of archaeological sites would be predicted on known distribution arrays, or existing knowledge of close correlations between high numbers of sites and certain environmental parameters.

### Separation of Components of Indigenous Cultural Heritage for the Purposes of this Report

The cultural record of indigenous heritage places covering the whole span of the last 60,000 years may conveniently, for the purposes of this study, be divided into the following categories:

- 1. Places, complexes of sites and cultural landscapes that inform us about the past (places of primarily archaeological significance).
- Places and complexes of places or cultural landscapes that are part of continuing, living traditions or contemporary cultural practices of indigenous communities, or have special significance to them.
- In addition, the role of Indigenous languages as a critical factor in the maintenance and good health of heritage values, and hence of heritage values of places, has to be recognised and monitored.

The development of indicators in this report adopts this three-part division. The division in many ways is arbitrary, especially as there will be overlaps, with many places having aspects of more than one. For example, many places with a high scientific value relating to their archaeological potential, such as the Lake Mungo lunette, also have a high social value to contemporary indigenous people (McBryde, 1994b). Such a division, however, does facilitate a focus on variability, not only in temporal terms, but also in terms of the social significance and meanings of places. (See Sullivan (ed) 1995, chapters 16 (Flood), 27 (Ellis), 28 (Bowdler), and 29 (Rowland)).

This focus can provide new perspectives, relevant to considerations of condition. It is also salient to consideration of management questions, and the ways in which measurement of trends over time may be addressed appropriately.

In considering this division we must stress that though it may seem rooted in a division between scientific values and social indigenous values, this is neither the intention nor the basis of the division. We must recognise the many different layers of meaning that can be held or acquired by places. These include the strong social value often given archaeological sites of great antiquity by contemporary local indigenous communities. The story of ancestral lifestyles and events associated with these places are often valued intensely by these communities. The significance accorded places, and their various values are the core of their heritage status, to be regarded as an element of their 'condition' as much as their physical fabric (Pearson and Sullivan, 1995:15-18). This point was raised by a number of participants in the May 1997 Workshop for this project on Indicators for Natural and Cultural Heritage.

Similarly, many historic places associated with European settlement of Australia hold social significance for Aboriginal people or have an archaeology that is relevant to their concerns. Such places may document historic interaction between indigenous and settler cultures, whether peaceful or violent. Many themes in our colonial history, for example the development of the pastoral industry, or the pearling industry, have a significant Aboriginal or Torres Strait Islander history of participation with associated heritage places, and our colonial and post-Federation history has a long litany of political and social action having a profound impact on indigenous people and their culture. This again is reflected in places. This complex post-European settlement history of cultural interaction was a point made strongly by indigenous participants at the May 1997 Workshop convened for this study by the State of the Environment Reporting Unit. The overlap here between Indigenous and historic heritage values in obvious.

#### Salient Aspects of Indigenous Heritage Places of Archaeological Significance for State of Environment Reporting

As described above, heritage significance is defined by the culturally generated values they possess, and these values can change over time. As perceptions

of heritage values change, so will the definition of what constitute heritage places at that point in time.

Scientific values are also subject to re-definition—they are conditioned by the intellectual milieux of the times. Powerful in this will be what are deemed by practitioners in relevant disciplines to be research questions of significance. Also influential in archaeology will be the availability of appropriate methods and analytical techniques to provide archaeological answers to these questions, or to physically recover the relevant material evidence. Important as well are the factors influencing the preservation, discovery and recovery of archaeological material or sites. Scientific and methodological advances over the last three decades have increased the research potential of many sites, and this trend will continue into the future.

If we regard the archaeological record as integral to our cultural heritage, as an important component to preserve and protect for the future, then both our concern for the State of the Environment, and the selection of indicators to measure trends over time in its condition and in society's response, must accommodate the dynamism of society. This dynamism involves the variability within the archaeological record itself, as well as variability within research approaches to its analysis and interpretation. There will also be diversity in the values and meanings accorded it; they may often be contested.

Questioning may come from the fact that the values, meanings and interpretations may not be purely matters of scientific research. The archaeological record also has special values for the community that may be quite divorced from the scientific research values. These must be respected, and community involvement fostered, with development of culturally appropriate approaches to the identification, investigation and interpretation of indigenous places of archaeological significance (Elliott and Shanahan Research 1993; Purdie, 1997). This aspect was recognised in the 1996 State of Environment Report (State of the Environment Advisory Council, 1996:9.2). It was also raised strongly by participants in the Workshop convened by the State of Environment Reporting Unit in May 1997 to discuss the parameters of this study.

These special features of indigenous heritage cultural places, and of the indigenous archaeological record, have guided the approach in this report to selecting indicators. Given the complexity of the indigenous past and its archaeological heritage, together with the size and diversity of its spatial setting in our continent through long periods of major environmental change, our knowledge of the archaeology as a corpus of cultural heritage places is still a matter of ongoing research. So also is our understanding of its conservation and management needs in today's spatial and environmental contexts.

Uncertainties will remain in assessing current knowledge without a broad Australia-wide comparative context and baseline. So we must work to increase the comprehensiveness of our knowledge of this baseline. However, at the same time we must accept that, given the fact that much of our archaeological resource lies buried, awaiting discovery and identification, the exact 'population' of archaeological sites is 'unknowable'. We must strive to establish a sample approximating as closely as possible to the 'representative'. For this reason the existence of reserved lands is crucial. These must represent all biogeographic regions of the continent, offering conditions for the undisturbed preservation and protection of cultural heritage places of archaeological significance in their environmental context. In this way an archaeological record of the past will be preserved for the future, protected as far as possible from both the vagaries of interpretive fashion in investigation and from destruction of sites, or of their context, through accelerated or unnatural land disturbance.

# Indigenous places important to the heritage of living cultures

As discussed in the previous section, the division between archaeological manifestations of the indigenous occupation of Australia and the retention of living Indigenous culture and the components of the environment important to it is both an artificial and arbitrary one. However, it is a useful division in the context of State of Environment reporting, as it allows the complex linkages between culture and environment /place to be better elaborated.

Many places and landscapes, both ancient and contemporary, have special value for Indigenous communities and custodians. Here these values are defined as 'heritage' values, but they have a deeper meaning and are in fact essential to the good health and ongoing vitality of indigenous culture generally. Heritage provides for all peoples a powerful sense of place, of identify and 'spiritual well being'. In relation to indigenous peoples and places this has a very special connotation because in many cases indigenous peoples cultural and personal identity is embedded in relationships to particular places.

For contemporary Indigenous people archaeological sites have heritage value as a record of their past, and in many cases these places have direct cultural associations with the present. Places that are significant in the ceremonial or religious life may be the subject of important stories and song cycles. Places of this kind are vital in their social meanings, which often carry over many generations. They are expressions of the spiritual links between people and the land, symbolising the vital continuity between different planes of meaning in Aboriginal belief systems, linking the Dreaming with the present (see Myers, 1986:47-70). They are crucial to the spiritual life of indigenous societies, expressing their relationships to their country as well as their collective and individual identity (see also Pearson and Sullivan, 1994:32-33; State of the Environment Advisory Council, 1996:9.4-9.5).

Many such places are part of a network associated with traditional stories of the ancestral beings and their travels across the landscape, creating its features and establishing the rules for human conduct and living within it. These 'Dreaming Tracks' or Story lines (or 'song lines'), and the linkages of Aboriginal Australia's long-distance exchange systems, can constitute extensive cultural landscapes. They are significant components of indigenous cultural heritage for their spiritual, social or economic meanings. The need to view these places as total systems, rather than as isolated entities, poses challenges for heritage identification, assessment and management (McBryde, 1994; 1997).

To interpret the archaeological record of linked places in terms of the concept of cultural landscapes offers new insights derived from assessing 'the cumulative record of human activity and land use in the landscape' (Pearson and Sullivan, 1995:32). These insights may include interpretive clues to the values and social practices of the past society, as well as its economy.

Such an interpretative approach, which accommodates relationships between places, and the human meanings implicit in these relationships, is one particularly appropriate to the cultural record of our indigenous past.

In 1992 Uluru-Kata Tjuta National Park, already inscribed on the World Heritage List for its natural values (it is also a Biosphere Reserve) was re-nominated for its cultural values in the continuing traditions of its Aboriginal custodians. This was as an Associative Cultural Landscape of places of great social and spiritual importance. Many of these were also nodes in long distance story lines crossing the Central Australian desert.

There is a great diversity among Australia's indigenous communities. They range from metropolitan groups to rural and remote, and from those who have been dislocated from their once traditional countries to those groups living in their own country in central or northern Australia on designated Aboriginal land. These latter communities may be traditionally-oriented, still speaking an Aboriginal language as first language, able to maintain cultural practices, having control of their land and the ability to care for their significant places and the landscape according to established practice. The challenge of this diversity is considerable. Yet we must meet it with nationally applicable integrated programs of cultural conservation and management that are also perceived by these varied communities as culturally appropriate.

In the May 1997 Workshop the crucial importance of the values of the custodial communities was clearly expressed by the indigenous participants, and also by participating managers of protected areas on Aboriginal lands in central and northern Australia. These discussions and the potential indicators that emerged from them have been important in shaping the development of indicators in this section.

### Indigenous languages

The major factor contributing to the value of Indigenous heritage places to the community is existence of the living indigenous culture that gives the places meaning within the wider indigenous cultural system. The knowledge of the meaning and values of Indigenous places is bound up in the inter-generational transmission of traditional information about places which locates them in the overall cosmology and landscape. For much of Australia, the knowledge of traditional meanings and values is transmitted in Indigenous languages—the language is key to the meaning, and translation loses meaning and destroys the unity of culture and language.

Monitoring the health of Indigenous languages is therefore a key component of monitoring the health of traditional knowledge of place, and is an essential element in State of Environment reporting for Indigenous heritage.

The term 'Australian languages', as used in the indicators, is synonymous with 'indigenous languages of Australia', and slightly wider than 'traditional languages of Australia'. This accords generally with the usage of linguists, although 'Australian languages' technically is slightly narrower in that the linguistically unrelated language of eastern Torres Strait is not in the 'Australian language family'. That language is included in the Trans-New Guinea language family, whereas the language of western Torres Strait is quite different and is regarded as an Australian language in the narrower sense. 'Australian languages' can include any creoles partly derived from an Australian language — these can be considered 'non-traditional languages'.

The term 'languages of indigenous Australians' would include the 'indigenous languages of Australia' together with any other languages spoken today by indigenous Australians: which includes all kinds of English (including varieties known as 'Aboriginal English'), and really should include any other languages known by indigenous Australians (whether German or Japanese or Spanish), but this extension is not made here.

'Language' generally includes manual (signed) languages as well as oral (spoken) languages, but in Australia the indigenous sign languages are all known to be 'secondary', that is dependent on knowledge of a particular spoken language (and generally used by hearing people). Thus for this report manual languages do not require separate consideration. It could be argued however that, for a number of Australian languages, full adult knowledge comprises knowledge of the relevant secondary manual code.

There is no definitive inventory of Australian languages. Walsh 1997 discusses the problems of definition and available information. The languages of current concern are generally included in the ABS checklist.

- ABS (1997) has developed a checklist of 54 distinct Australian languages for statistical purposes: approximately those languages with more than 100 speakers. ABS say it is '[a] national standard for the publication of all ABS statistics on languages, and recommended for use by other government departments and non-government bodies.' A further 95 languages are listed in Appendix 1, ABS (1997:21-24) 'Australian Indigenous Languages contained in the Residual Categories' — these languages are expected to have less than 100 speakers, and it appears they would have at most a couple of dozen speakers each.
- The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Library and the Australian National Bibliographic Network (ABN) have promulgated a standard list of the more commonly referred to languages (including some variants and synonyms), for use in libraries (Moorcroft & Garwood 1997).
- The AIATSIS Library is still refining a checklist of names of Australian languages, showing which are variants or synonymous, improving the inventory of language names used in the AIATSIS Encyclopaedia of Aboriginal Australia.
- The Summer Institute of Linguistics' Ethnologue (Grimes 1996) is the best attempt at the difficult task of listing all the languages of the world — a catalogue of more than 6,700 languages spoken in 228 countries. It lists 257 Australian Aboriginal languages and the eastern Torres Strait language, as well as two indigenous creoles.
- Dixon (forthcoming) promises a complete list of Australian languages.

There are numerous potential indicators of the status of the community of language speakers which do not specifically relate to the community's language, but which are known to co-vary with the health of the language. A number of these relate also to indigenous places, and are covered by indicators of tangible heritage. Other general indicators would include:

- demographic measures such as the age-structure and mortality rates; and
- the kind of land tenure where the community lives or where the people would prefer to live.

### Historic heritage places

Australia's historic heritage places include all the places associated with the arrival of non-indigenous peoples over the last three hundred years. The landing sites of the early navigators, the sites associated with the European occupation of the continent, and the Asian contacts in northern Australia are all part of the historic heritage. Places associated with the history of Indigenous peoples and their interaction with Europeans may be considered within the ambit of historic heritage, though many such places also have a strong or stronger link to Indigenous heritage values.

Historic heritage places might include the physical remains of human activity, the landscapes modified by that activity, and places, both modified and unmodified, that have strong historical associations.

The Commonwealth and all States and Territories have legislation that identifies and protects historic heritage places. Most of these are based on the creation of registers identifying such places, and the enactment of special provisions in related planning legislation to protect them in various ways. Heritage and planning legislation usually establishes heritage and development approval mechanisms at local government level, and much of the protection of heritage takes place locally.

Coordination of heritage listing processes is the subject of a current National Heritage Coordination Program, which aims at achieving common standards nationally, and the accreditation of processes between jurisdictions to reduce duplication of effort and minimise the complexity created by all levels of government undertaking heritage identification and protection activities. This process promises to simplify access to heritage information and achieve standardised approaches, both of which would assist State of the Environment monitoring processes.

There is an active non-government heritage movement in the historic heritage field (and with interests overlapping into other heritage sectors). The National Trusts in each State and Territory maintain identification, conservation and lobbying activities, and harness a large force of voluntary workers in the heritage field. The changing levels of voluntary involvement is a possible source of indicators of community response that might be investigated further. Voluntary activity extends into the natural, indigenous and objects fields as well, some of which involvement is heritage related and some not. Museums and landcare groups are some of the sources of this information. For this report such an indicator has not been included, as it was felt that the multiplicity of issues that might influence voluntary involvement were not well enough established to adequately analyse what raw data might be gathered.

One of the challenges in the historic heritage field is establishing the relative numbers of places that make up the 'universe' of heritage places. Ultimately, the success of government and non-government identification and listing processes can only be assessed by comparing the number of places identified with the likely total number of heritage places. A number of means of estimating the historic heritage universe have been considered, but none of them as yet provide an insight that is nation-wide and covers all types of places. One of the problems in estimating the heritage universe is that while the gross number of, say, houses or mines or mills built in the past might be estimated, there is no simple way of establishing, in bulk, their continued existence or their heritage values against assessment standards and criteria. The task is made more complex by the changing perceptions of what constitutes heritage value-this year's view of what constitutes the 'universe' of heritage places might be different to that in five or ten year's time. This issue deserves further investigation, but at this stage the task is not able to be turned into the basis for an environmental indicator.

Monitoring the condition of historic heritage places poses a range of problems. The de facto monitoring of the condition of places in heritage registers, while neither systematic nor adequate, does give some indication of condition, and is used here as a surrogate indicator. The monitoring of the rate of development of conservation plans has been suggested, but there is little evidence to suggest that the presence of a conservation plan is in itself necessarily a guarantee of continued good condition, nor will a large number (and perhaps the majority) of heritage places ever have conservation plans written for them. At this stage the best indicator of the condition of historic heritage places is by a physical audit process carried out on a sample of places (Indicator H.3).

### Heritage Objects

In 1990 the Heritage Collections Working Group (subsequently the Heritage Collections Committee and

now the Heritage Collections Council) suggested that Australia's heritage collections might be described as,

'those objects or specimens which together constitute the material evidence of Australia's environment and of its historical and cultural life. Objects of 'significance' therefore will include not only those judged in some way unique but those which provide evidence of a style, trend or movement, or of a political, social, cultural or economic process of significance to Australia.'

They coined the term the Distributed National Collection to refer to the aggregate of all those objects held throughout Australia by collecting institutions at all levels.

One of the issues of scope regarding heritage objects, in the context of state of the environment (SoE) reporting, is the extent to which objects or collections are more and less closely related to the environment. Natural objects seem to be generally well connected to the environment as in herbaria collections, living collections and fossils. While many cultural objects are closely related to the environment, such as an archaeological collection recovered as part of an excavation, others may not be. For example, a collection of stamps or an old tractor may be important objects in Australia's cultural heritage but not be related closely to a place in the environment.

Obviously one important aspect of heritage objects is that they must be of Australian origin or use or have other strong historical or cultural associations with Australia. It is also desirable to focus on objects which have some association with the environment. Most collections of objects held by major and minor public institutions, and many, if not most private collections are substantially comprised of objects which would fall into these two categories. However, given the current level of collection documentation, it seems impractical to try and identify just those objects of Australian origin or use, and which have some association with the environment. Therefore, this study considers whole collections only.

Currently, the Heritage Collections Council has established and funded a working party (the Collection Management Working Party) to be responsible for the development of Australian Museums On Line (AMOL), a comprehensive Internet site designed to increase access to Australia's heritage collections and our history, as well as providing information to community museums. Some 950 museums are listed in the AMOL Museums Directory. They are categorised into 13 types: social history, natural history, science, historic display, historic site, house, outdoor, keeping place, art museum or public gallery, art space or display, botanic garden, zoo or maritime museum. Each is then further categorised by one of six major collection strengths and/or subset specialities. These are: the arts; history and society; indigenous cultures; science, technology and industry; natural sciences and the environment; leisure and entertainment. Items of interest are able to be listed and one of the descriptors is 'associated places (geographic areas)'. But in this total cataloguing effort there is no provision for identifying heritage objects or collections despite the generic title of the Heritage Collections Council, which has succeeded the Heritage Collections Committee and its predecessor the Heritage Collections Working Party of the Cultural Ministers Council which commenced in 1991. Their effort is directed currently at obtaining a nation-wide inventory of museum collections. Presumably the next step is assessing their heritage significance, and the Council is undertaking a study of how to determine the heritage significance of objects. The Collections Management Working Party of the Heritage Collections Council is concurrently developing substantial plans and documents concerning object conservation and management.

With regard to biological collections, both living and dead, museums, zoos, botanic gardens and herbaria have coordinated their efforts and agreed on standards for a range of activities.

At this stage in our collections environment, where the total extant population of objects is unknown and unseived for heritage value, the only collections that can be considered are those related to specific places at specific periods. However, over time as more is known about specific collections then these collections can also be considered in a state of the environment context.

It may be possible to categorise whole collections according to Australian origin or use, and which have some association with the environment. This would give some focus to information gathering for indicators as well as contextual information for interpretation of data. However, this categorisation of whole collections is a substantial research task beyond the scope of this study.

Several States and Territories have considered the role of objects in relation to their heritage legislation.

Substantial thinking about the relationship of objects to the environment was involved in the development of the Australian Capital Territory's (ACT's) *Heritage Objects Act 1991*, which goes further than any other heritage legislation in defining the criteria for identifying objects of heritage value. This Act clearly distinguishes between objects of heritage significance and objects intrinsic to the heritage significance of a place. In order to ensure that the Heritage Register provides a comprehensive listing of objects of heritage significance to the ACT, the Register would include heritage objects:

- which are either exceptional in or characteristic of the natural or cultural environment of the ACT;
- which are of symbolic or social value to the people of the ACT;
- which characterise the periods and processes in the evolution of the natural and cultural environments of the ACT;
- which are important in the context of those arts and sciences related to the natural and cultural environments of the ACT;
- which reflect all aspects and periods of the natural and cultural history of the ACT; or
- with which the ACT community can identify.

This approach warrants further discussion between the States and Territories that include objects within the scope of their heritage legislation. This discussion could be incorporated within, or modelled on, the current process of National Heritage Coordination between the States, Territories and Commonwealth jurisdictions.

In the absence of a national system for assessing which museum collections and objects are heritage objects, it is left to individual institutions to decide what objects in their collections are key heritage objects. Over time the values ascribed to certain 'icon' objects change. The biggest, oldest, largest paradigm has been replaced by the representative in context.

It is the interpretation of heritage values rather the value itself which has changed over time. A plant specimen may have been collected and saved in a herbarium as an example of that genus and species so that the suite of specimens from that family were all collected, but over time the said specimen may be the only evidence for the occurrence of that species in that locality which has now been totally altered due to say urban development. Hence the need to develop some heritage 'sieves' such as those in the ACT Heritage Objects Act 1991 in the reassessment of objects as they and their collections are catalogued for the AMOL database.

The relationship between library and archives collections and SoE reporting processes was recognised by the 1996 Commonwealth SoE report, but the nature of the relationship, and the development of appropriate indicators requires further investigation and discussion. It is clear that documentary sources of all kinds can contain information critical to the understanding and interpretation of heritage places and objects, and that the condition of and threats to the documentary record can be directly related to the long term condition of place and objects. However, the relationship between document and place is one step further removed from the general thrust of SoE reporting then that between heritage object and place. It therefore requires careful consideration whether SoE reporting would be the most appropriate vehicle for monitoring the state of documentary collections.

# INFORMATION NECESSARY FOR STATE OF THE ENVIRONMENT REPORTING

#### Heritage values

Knowledge about heritage values is the essential information required for state of the environment reporting. The most appropriate framework for understanding the heritage values of places is that provided by the National Estate criteria. While these criteria are not designed for heritage objects, they can also provide a useful starting point for understanding their values.

The overall picture of heritage identification work to date in Australia is complex. With regard to places, National Estate compatible criteria have not been adopted in all cases or have only been used for part of the period during which identification work has been undertaken. Accordingly only a small proportion of places on heritage registers have heritage values documented using current National Estate criteria or compatible criteria.

There is no uniform set of criteria for assessing the values of heritage objects, and as an explicit or formal process, such assessments are relatively recent. Assessment of significance is recognised in the National Conservation and Preservation Policy for Movable Cultural Heritage (Cultural Ministers Council 1995).

### Heritage places

The heritage environment to be considered in state of the environment reporting includes places which have not yet been identified and documented (State of the Environment Advisory Council 1996a:43). This poses a significant problem for state of the environment reporting. How is the state of the environment to be considered if it includes places not yet identified and documented on heritage registers?

Those heritage places which are yet to be discovered by anyone cannot be considered in state of the environment reporting, unless reasonable predictions can be made. The best options seems to be for reporting to deal only with the known places at a particular point in time.

In the case of those heritage places known within the community but not yet represented on heritage registers, the only practical current solution is for state of the environment reporting to rely on heritage registers. These registers may be regarded as a reasonable sample of the wider heritage environment.

It seems that further worthwhile study should be undertaken into the gap between the registered and unregistered components of the heritage environment, and the representativeness of government registers of the overall heritage environment.

#### Condition and integrity

Knowledge about the condition and integrity of heritage places completes the understanding necessary for state of the environment reporting. If a place remains in good condition and is intact then it is likely to retain heritage values through time, assuming community views about heritage do not change. If condition or integrity deteriorate then the place is likely to lose its heritage values.

While information on condition and integrity on heritage places may be collected in a wide variety of circumstances, a major problem is maintaining up to date information.

Two projects (a Pilot Audit of the Register of the National Estate (Biosis Research and du Cros & Associates 1997) and the English Heritage Buildings at Risk project (English Heritage 1992)) suggest that the sampling of places to monitor condition can provide useful information, and that this can be done cost effectively with the cooperation between a national heritage body, local government and voluntary bodies.

### ENVIRONMENTAL INDICATORS FOR CONDITION, PRESSURE AND RESPONSE

The condition-pressure-response model may seem to place equal emphasis on the three components. However, the primary interest of state of the environment reporting is the condition of the environment in the sense that the only reason for considering pressures and responses is if they have a substantial relationship with condition.

There are many pressures on natural and cultural heritage such as changing agricultural practices, the changing economics and viability of primary, secondary and service industries, urban expansion, urban and suburban densification, technological change, government downsizing and privatisation, and tourism. However, environmental indicators for a pressure will be of no value if the impact of the pressure is unknown or marginal. This situation was highlighted with regard to the historic environment as follows.

There are a large number of pressures which have positive and/or negative impacts on the historic environment... However, the general lack of quantitative data makes it impossible to clearly identify which of these pressures are the most significant (Marshall and Pearson 1997). It was recommended a program of research be undertaken to establish the level of significance of pressures. This report focuses on condition and response indicators, and there is less emphasis on pressure indicators because of the difficulty in establishing which are the significant pressures. Further research appears justified across the range of environments to ascertain such pressures.

It is noted that a number of other sectoral reports for state of the environment reporting identify pressure indicators that may prove useful for natural and cultural heritage. This includes Biodiversity indicator 2.1, Land indicators 1.1 and 2.1, and Human Settlements indicator 3.1. These indicators should be considered in the research suggested above.

The criteria for selecting indicators are detailed by the State of the Environment Reporting Unit (1997d:31-32) and the critical quality of indicators is the ability to detect environmentally significant change.

The 43 indicators recommended by this report are listed in Table 1. They are listed by major heritage issue and are categorised with a pressure – condition – response framework.

### Table 1

### Indicators for Pressure, Condition and Response

ISSUE AND ELEMENT	PRESSURE	CONDITION	RESPONSE
Knowledge of heritage			
• Heritage Registers	No useful indicators found	G.1 Number and distribution of identified heritage items (places and objects) <i>(surrogate)</i> (Also a measure of Response)	See Condition
		N.1 Proportion of natural heritage places with a condition statement; proportion with recent condition statements; and age distribution of condition statements. ( <i>surrogate</i> ) (Also a measure of Response)	
		O.1 The number of objects / collections adequately catalogued. (Also a measure of Response)	
• Documentation of heritage values	No useful indicators found	IL.4 The number of indigenous languages for which (a) documentation is: (i) good (ii) adequate (iii) inadequate (b) documentation is close to complete (given the state of the language)	<ul> <li>G.2 Number of heritage places assessed using best practice assessment standards</li> <li>IA1.1 Number of and level of funding for programs initiated or continuing focussed on recording scientific and social values of places involving collaborative research.</li> <li>IA1.2 Level and distribution of funding or other resources provided to support systematic studies of indigenous heritage places of archaeological significance.</li> </ul>

ISSUE AND ELEMENT	PRESSURE	CONDITION	RESPONSE
Condition of heritage			
• Destruction of heritage	See Condition	<ul> <li>G.3 Number of places destroyed or whose values have been severely diminished.</li> <li>G.4 Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use. Also a measure of pressure</li> </ul>	No useful indicators found
• Measuring condition	IA1.3 Net population movement of local (indigenous) people away from rural lands and townships.	<ul> <li>measure of pressure</li> <li>H.1 The number of heritage places assessed (by sampling) as being in (i) good, (ii) average and (iii) poor condition</li> <li>IL.1 Number of people who identify as knowing each indigenous language.</li> <li>IL.2 Number of people in age group who identify as knowing each indigenous language; proportion of total identifying as indigenous.</li> <li>IL3 Number of traditional languages at each recognised stage of inter-generational dislocation.</li> <li>O.2 The proportion of collections surveyed for preservation treatment by a trained curator/ conservator. (Also a measure of Response)</li> <li>O.3 The proportion of collections requiring preservation subsequently</li> </ul>	See Condition
		<ul> <li>D.4 The proportion of collections stored in appropriate environmental conditions. (Also a measure of Response)</li> </ul>	

ISSUE AND ELEMENT	PRESSURE	CONDITION	RESPONSE
Impact of development	IA2.2 Extent of land area (per region/catchment) under cultivation, cleared, clear-felled forests, open mine site bare ground, or lands recorded as under stocking pressure in the Rangelands or arid zones.	See Repsonse	IA2.1 Number and proportion of indigenous archaeological assessment studies initiated prior to development. (Also a surrogate measure of Condition)
Impact of natural processes	IA3.1 Number of indigenous archaeological heritage places on lands reserved for conservation purposes reported as destroyed or damaged by natural forces such as flood, fire, storm (wind/wave). (Also a measure of Condition)	See Pressure	No useful indicators found
Protection by government	No useful indicators found	<ul> <li>O.5 Number of heritage collections with statutory protection for that heritage type/category outside museum collections.</li> <li>O.6 Number of reported applications of provisions of existing legislation to protect heritage objects in museums and in situ.</li> <li>IA4.1 Areal extent of lands reserved for conservation purposes under all jurisdictions including: <ul> <li>(a) proportion which is 'unmodified' plant or animal habitat, or landscape</li> <li>(b) proportion preserved for their indigenous heritage values, and</li> <li>(c) proportion in category (b) with provisions for management and its implementation.</li> </ul> </li> <li>IA4.2 Number and total area of protected areas or individual indigenous places under: <ul> <li>(a) the primary control</li> </ul> </li> </ul>	<ul> <li>N.2 Proportion of natural heritage places with protected area status.</li> <li>N.3 Proportion of natural heritage places with a management plan. (possibly also a surrogate measure of Condition).</li> <li>IC.2 Number of government heritage agencies that incorporate procedures of consultation or referral to indigenous custodial / community groups, on: <ul> <li>i) priority setting</li> <li>ii) individual projects</li> <li>iii) annual programs</li> <li>iv) policy formulation on Indigenous issues.</li> </ul> </li> <li>IC.3 Number of trained Indigenous heritage professionals or custodial representatives employed by government heritage agencies, or Indigenous people serving on councils or</li> </ul>

ISSUE AND ELEMENT	PRESSURE	CONDITION	RESPONSE
		of local communities (b) the control of traditional owners (c) joint management regimes, or (d) designated as Aboriginal lands managed by resident communities according to traditional canons of practice in caring for country.	<ul> <li>boards of such agencies, who are actively involved in the management and / or administration of Indigenous heritage places.</li> <li>IL.6 Number of approvals of geographic names, including map sheet names, using indigenous place names.</li> </ul>
			H.2 Number of statutory mechanisms actively used to protect historic places
Resources and training	See Response	No useful indicators found	G.5 Funds provided for maintaining heritage values
			G.7 Number of conservation practitioners and training courses
			IA1.4 Level and distribution of funding or other resources provided to support systematic studies of indigenous heritage places of archaeological significance.
			G.6 Amount of funding provided to heritage agencies responsible for heritage places and objects.
			<ul> <li>IC.4 Number of Indigenous community based funding applications for government heritage funding: <ul> <li>i) that are successful</li> <li>ii) are not successful</li> <li>iii) as a percentage of total government heritage funding provided</li> <li>iv) as a percentage of total government heritage funding applications.</li> </ul> </li> </ul>

ISSUE AND ELEMENT	PRESSURE	CONDITION	RESPONSE
			IC.5 Number of programs and funds allocated for repatriation of Indigenous artefactual material and / or human remains.
			<ul> <li>IL.7 Amount (in \$) of funding provided for language programs through government departments and agencies, including ATSIC, DEETYA, ARC and AIATSIS; distinguishing allocations to:</li> <li>(a) research;</li> <li>(b) language maintenance;</li> <li>(c) education and training; and</li> <li>(d) information dissemination and public education (eg translation of notices of government programs). (Also a potential indicator of Pressure)</li> </ul>
			IL.8 The number of projects which document knowledge of traditional languages, by type of project.
			IL.9 The number and type of indigenous language programs undertaken in language centres, schools, and other institutions.

ISSUE AND ELEMENT	PRESSURE	CONDITION	RESPONSE
Community awareness and action	No useful indicators found	<ul> <li>IL.5 The number of/ proportion of traditional; language used in:</li> <li>i. broadcast media: radio, Television (TV), published books,</li> </ul>	G.8 Community awareness of and attitudes towards heritage places and objects and their conservation.
		magazines, cinema, world wide web (www) distinguishing: (a) programs aimed at speakers; (b) programs aimed at a general	O.7 Number of users of object collections for scholarly study, and the number of programs for the public use of collections.
		audience; ii. signage in public places (streets, parks), advertisements (also a Response)	
		<ul> <li>IC.1 Number of places (sample) where</li> <li>Indigenous people are involved in heritage management decision making by virtue of:</li> <li>i) Indigenous land ownership</li> <li>ii) joint management</li> <li>iii) recognised custodianship</li> <li>iv) direct consultation. (Also a measure of Response)</li> </ul>	
		<ul> <li>IC.6 Number of Indigenous communities / organisations establishing: <ul> <li>i) 'keeping places'</li> <li>ii) cultural centres</li> <li>iii) site / place data bases</li> <li>iv) heritage tours, trails / walks. (Also a measure of Response)</li> </ul> </li> </ul>	

### **REVIEW OF PREVIOUS ENVIRONMENTAL INDICATORS**

Environmental indicators previously developed in a variety of contexts were gathered and considered in developing the recommended set of key heritage environmental indicators . The sources of earlier indicators included:

- the 1996 Commonwealth State of the Environment Report;
- the State and Territory state of the environment reporting processes and reports;
- a range of international state of the environment reporting documents;
- indicators identified in relation to the other reporting themes for national SoE reporting; i.e. Biodiversity, the Atmosphere, the Land, Inland Waters, Estuaries and the Sea and Human Settlements;
- published and unpublished literature relevant to heritage;
- the Workshop on Key Environmental Indicators for Natural and Cultural Heritage in State of the Environment Reporting, 1-2 May 1997;
- consultation with Commonwealth, State and Territory and local government agencies concerned with heritage; and
- consultation with non-government bodies concerned with heritage.

The culling of these various sources during the current project led to the following observations:

- several of the State and Territory reports duplicate like indicators, relating them to the particular legislative framework applying to that State or Territory–this report has attempted to combine like indicators to provide data valid at the continental scale;
- some existing indicators would appear to result in the collection of data, without any clear understanding as to what trends in the data are indicating in state of the environment terms. This is particularly the case in 'response' indicators that appear to monitor government activity which has no clear link to the state of the environment. Many of these indicators do not clearly show the link between the actual impact of the action and the state of the environment; and
- the development of indicators in the heritage area, and particularly in the cultural heritage area, is patchy within Australia, and almost absent in international approaches.

The list of Proto-indicators gathered from these various sources is provided at Appendix A.

# REGIONALISATIONS AND SPATIAL SCALES FOR REPORTING ON NATIONAL ENVIRONMENTAL INDICATORS

Choosing the appropriate spatial and temporal scales for expressing indicators of natural and cultural heritage is critical. If an inappropriate scale is chosen, data from monitoring will fail to reflect adequately the changes in the state of the heritage environment at scales that are meaningful to management and funding agencies, and the indicator data will not prove useful. Indicators generalised to the national level and not able to be analysed at a smaller scale, for example, would prove of little use to State and Territory, local government and community managers and planners, and would not indicate critical regional variations, while reporting at the local level and not allowing for data to be amalgamated to give an overview of changes at the regional, State and national levels would prevent the data being used to make strategic responses at those levels.

Temporal scales for monitoring have to be established for each indicator individually. The different issues dealt with in the indicators have their own particular dynamics, and monitoring programs to detect change will have to be appropriate to the scale and rate of change likely to be observable in the particular circumstance. Some indicators draw on database interrogation that can be run at any time at little cost, while others call for special audit and census processes that will have to be carefully timed and budgeted. For most, if not all, of the heritage indicators meaningful change could be expected to be detected within the four-five year time span of the SoE cycle, so monitoring should occur at least once within that timeframe.

Since detection of change is the key rationale for state of the environment reporting, it is essential that any reporting is accompanied by estimates of uncertainty and risk associated with the data, as well as the information reported (interpretation of the data). Managers of all resources operate on a risk-acceptance basis, and they need to know (or estimate) how risky a decision or process is in terms of established objectives.

Regionalisations provide an essential framework for focussing attention, summarising patterns, aggregating information and developing indicators, as well as allocating priorities and resources (Thackway and Cresswell 1995). Indicators of natural and cultural heritage at the national level need to be expressed in a range of regional contexts. The selection of regions for data collection and reporting has to take account of the purposes to which the information is going to be put. The understanding of the dynamics of biological diversity, for example, might dictate that a scientifically valid conceptual framework such as the Interim Biogeographic Regionalisation for Australia (IBRA) be used. However, social and political regions such as State, Territory and local government areas also need to be recognised, so that information relevant to them can actually be used by the managers at those levels, and so that information held in those contexts can be gathered. While some aspects of natural heritage values might lend themselves to the IBRA model of regionalisations, for others it might be irrelevant.

The cultural heritage area also has a number of contexts for establishing regionalisations. Indigenous heritage values may be most meaningful in the context provided by tribal / language areas. The monitoring of change within this context might be far more meaningful than if a post-European settlement pattern of states and administrative regions were imposed on the data. The Aboriginal and Torres Strait Islander Commission (ATSIC) administrative areas will have relevance for data collection and management responses. In the case of indigenous archaeological sites, modern or palaoe-environmental regional contexts might be meaningful.

Historic heritage indicators may need to be assessed in the regional context established by European settlement pattern. The States were, until 1901, a set of independently administered colonies, which imposed their own stamp on the nature of land settlement and utilisation. These colonial patterns are important when considering the meanings of the regional distribution of historic places across the nation. Clearly, however, the modern contexts of State/Territory and local government regions are critical to data collection and meaningful reporting.

The analysis of heritage objects may need all of the above regionalisations in particular circumstances, as the heritage objects are a reflection of the environments that produced them.
## RESEARCH AND DEVELOPMENT NEEDS

As noted above, the incorporation of natural and cultural heritage into state of the environment reporting is a recent development. As a result, while there are some indicators for which the data sources and analysis methodologies already exist, there are others where the potential of the possible data sources has not been fully investigated, where the data sources need further development to be able to extract useful information, or where the interpretation of the data needs more testing. These are translated into research and development needs that are identified below.

## GENERAL RESEARCH

- It may be feasible to base additional sets of indicators about natural places on aspects of heritage other than number of places; for example, changes in representation of themes; and this may be considered in future research.
- Research and discussion about Indigenous heritage places could usefully focus on appropriate areas in statutory protection, recording (data choice, collection and synthesis), and the creation of inventories and management to establish areas of comparability between the varied local and State/Territory systems.

#### KNOWLEDGE OF THE ENVIRONMENT

- Development of the suggested indicators for natural heritage places should be undertaken in parallel with the development of the National Heritage Places Strategy (NHPS), including ensuring that SoE needs for information are met in the design and development of the NHPS.
- Agreed standardised definitions for what constitutes 'significant' natural heritage at national, state, regional and local levels should be developed. These definitions should clearly distinguish between natural heritage (in its broadest sense, including all of the natural biophysical environment) and natural heritage places and objects (those parts of the natural biophysical environment deemed by society have significant heritage values). They should also define the concept of significance at each

jurisdictional level, and elaborate on interrelationships and differences in applying the concept at each level.

- Research should be undertaken into the gap between the registered and unregistered components of the heritage environment, and the representativeness of government registers of the overall heritage environment.
- The scope of the suggested key indicators for natural heritage places must be extended progressively as more and better information becomes available. This will be particularly important in the case of natural heritage places which have been assessed as significant at the local level.
- Further work to establish the most appropriate ways of creating a national picture about Indigenous heritage places from the important data in Commonwealth, State/Territory and local records, as well as from a variety of governmental agencies and non-governmental bodies and university based research in the heritage field.
- The development of statistical tools for the Indigenous cultural environment which are appropriate to the range of data available, often qualitative rather than quantitative.
- Development of appropriate surveys on what is regarded as 'cultural heritage' should be undertaken in the field of Indigenous heritage places.
- Research and development is required to enable important local data about historic places to be more readily accessed, amalgamated and analysed.
- Current processes to achieve standardisation of heritage register information and assessment processes for historic places are part of the intergovernmental National Standards process and should be continued.
- The future development of Australian Museums On Line (AMOL) should include a variable to monitor progress in accessions which fill gaps in establishing nation-wide collections representative of the major natural and cultural heritage themes (Indicators O.1).

## CONDITION OF THE ENVIRONMENT

- Other approaches to monitoring condition of natural heritage places need to be explored. Possible approaches to monitoring condition might include periodic survey of places, periodic censuses based on views of managers and others with local knowledge, the establishment of local networks such as a 'Heritage Watch' (suggested by R. Purdie, personal communication) with reporting mechanisms, periodic extensive audits of databases in conjunction with mechanisms for regular updating of register information, or a combination of some or all of these.
- Development of strategic environment monitoring programs should be promoted using an integrated approach that includes the cultural environment, especially indigenous cultural heritage places. Such monitoring should be at a national scale but based on biogeographic regions for land resources and biodiversity studies, and the regional archaeological record.

- The indicator for the condition of the historic heritage places proposes a new cyclical sampling process that requires research and development work to plan and initiate.
- There is a need to create links between Indigenous archaeological sites and a number of indicators in the Land and Biological Diversity area, to ensure that the relevance to heritage issues is recognised in the data gathering, analysis and interpretation.

#### **GOVERNMENT AND SOCIETAL RESPONSES**

- Further research is required to adequately measure whether the provisions of legislation applying to heritage places can also protect their ex situ contents (Indicator O.5).
- The future development of a comparable and inclusive database on visitor surveys of cultural and biological collections is required from which to monitor variables relating to state of environment reporting (Indicator O.8).

## RECOMMENDED KEY INDICATORS - GENERAL INDICATORS

An objective of the project has been to link or integrate indicators from the various heritage environments discussed in the report. This has been possible in a number of cases and such indicators are presented in this chapter as general indicators. A few general indicators are relevant to many but not every heritage environment and this is identified in the indicator description. However, complete integration of all indicators has not been possible because of the different priorities in the different environments, and the differences in data sources, analysis and interpretation between apparently similar looking indicators. Indicators which are specific to particular heritage environments are presented in the following sections.

#### Table 2

#### Recommended key indicators—general

Issue or element	Indica	ator	Condition (C), Pressure (P), Response (R)
Knowledge of the heritage resource	G.1	Number and distribution of identified heritage items (places and objects)	C/R
	G.2	Number of heritage places assessed using best practice assessment standards	R
Condition of heritage	G.3	Number of places destroyed or whose values have been severely diminished	С
	G.4	Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use.	C/P
Resources and training	G.5	Funds provided for maintaining heritage values	R
	G.6	Amount of funding provided to heritage agencies responsible for heritage places and objects.	R
	G.7	Number of conservation practitioners and training courses	R
Community awareness and action	G.8	Community awareness of and attitudes towards heritage places and objects and their conservation.	R

# Issue 1 Knowledge of the heritage resource

INDICATOR G.1 NUMBER AND DISTRIBUTION OF IDENTIFIED HERITAGE ITEMS (PLACES AND OBJECTS)

## Description

This indicator will measure the number and distribution (by category of place or object, location and category of register) of identified natural and cultural heritage items (places and objects) on a national scale. It combines information held by all levels of government as well as the non-government sector.

#### Rationale

In a legal sense, places of heritage value are defined by the formal processes instituted by government at all levels to identify them. Government and nongovernment heritage agencies identify heritage items by developing heritage registers, lists and databases These cover, variously or in combination, places in the natural, indigenous and historic environments. Changes in the numbers of identified places reflects, in part, changes in government and/or community commitment to the health of this heritage. It is also a surrogate for the condition of heritage items generally, though the use of this data is a less robust indicator of condition than it is of response. Heritage registers are a surrogate indicator of condition because the data contained within them either clearly states or implies the condition of the place or object at the time of listing, and often contains updated statements of changes in condition. Most heritage place registers have the long-term objective of reflecting as fully as possible the extent of heritage items in the relevant jurisdiction, and they currently represent a more reliable sample of heritage condition (at least for historic heritage places) than any other readily available measure. It may be that in the implementation of SoE monitoring, other indicators of condition are found to provide at least as adequate an overview of condition, and this indicator might revert to being an indicator of response alone.

The National Heritage Places Strategy (NHPS), outlined above, will eventually provide access to suitable databases of information concerning heritage places from the various jurisdictions. The outcomes of the NHPS should be used for this indicator as soon as it becomes fully functional. In the case of objects, the collections held by government institutions are measured through accession lists or catalogues.

Like cultural places, objects exist in a symbiotic relationship with culture, in a relationship which is dynamic rather than passive. Different cultures may value the same object differently and/or assign it different values over time. Objects also exist in a spatial context, that of the place from which they were collected. Separated from their spatial context and from each other, objects risk losing coherence and becoming isolated examples of a type without their original associations (Anderson 1997).

For the purposes of state of the environment reporting it is essential to relate objects to place. Of the estimated 41 millions objects held by Australian museums and collecting institutions, only about onequarter are catalogued in a way that might allow the object to be related to its place of collection. If their place or spatial context data is available but has not yet been physically entered into a cataloguing system, the objects have potential value but if the site context data is unavailable, never collected or lost, the objects are useless for state of the environment purposes - and for many other purposes, such as interpretation. (See indicator O.1 which monitors rates of cataloguing)

For those objects which are catalogued, the details should provide information which will enable attributes of place and time to be analysed. Comparative analysis of the place attributes will allow a picture of the contents of a place to be built up, even if the place has been vastly altered. This is one of the major values of cataloguing place-based attributes of objects - to recreate the place at one point in time.

For example, herbaria contain plant specimens that provide information about past environments (the species and its habitat requirements then for its survival and distribution); social history collections contain items which provide information about use, user and place of use; for a defined place at a defined time, say the 1860s goldfields, the range of objects/taxa can enable the relationship of the cultural item/specimen and its user to the environment to be recreated. This analysis of the range of objects/taxa belonging to a place could be repeated at periodic intervals to show changing environmental relationships. Heritage places refer to those where physical evidence of past states/environments survives. Maintenance of that heritage entails allowing it to evolve and change, therefore the contents of that place at a specified point in time become essential for measuring rates and types of environmental change in/to heritage places.

#### Analysis and interpretation

The indicator provides the basis for monitoring a number of types of changes over time. It is assumed (and demonstrated by their continued growth) that the current registers, lists and catalogues do not yet identify all heritage items. It is also known that place registers generally do not yet reflect a balanced geographic presentation of the real distribution of heritage places. Simple change in the number of listed places and objects has to be analysed and interpreted with care. Changes in gross numbers of places or objects nationally might mask important regional or socio-economic variations.

As an example, the comprehensive regional surveys involving systematic or thematic assessments for heritage values are being undertaken as part of regional forest assessments in the Regional Forest Agreement (RFA) process, and significant heritage places are nominated for listing on the Register of the National Estate (RNE). This will increase the overall number of places in the RNE. However, while these areas will be comparatively well studied for heritage values, particularly natural values, the areas surveyed or to be surveyed represent only a small fraction of Australia's environment.

In the case of heritage objects, increases in the number of archaeological objects could increase because of requirements for their lodgement in museums following enactment of State legislation; but if the increase is due to salvage procedures prior to destruction of the site in which the archaeological objects were located and they were subject to no research, then the increase could be seen as a decrease in the integrity of the environment.

The RNE is as yet the only major heritage register that covers natural, indigenous and historic places in the one database. The criteria for National Estate listing have undergone change since the establishment of the RNE and, as a result, the information available for registered places varies depending on when listing took place. A process of upgrading the information available for listed places is under way, but is as yet incomplete. As well as listed places, the RNE also includes interim listed places; that is, places that have been nominated and assessed, and are awaiting review and finalisation of their listing. Analyses involving heritage places on the RNE should take account of these factors.

Changes in the number of listed heritage places occur as new places are identified and added to heritage registers such as the RNE, or when listed places are removed due to loss of heritage values. Changes in this number may also occur in response to changed levels of effort (including funding) expended in identifying and assessing potential places by Government or the community, and changing thresholds applied to heritage assessment. Any assessment of temporal change in this indicator should address issues such as: the level of resources expended in identifying or reviewing heritage places; changes in the perception of pressures or threats by Government or community; changes in criteria or thresholds for assessment; and the jurisdictional, biogeographic and thematic contributions to the total number of heritage places.

The case of heritage objects, the current catalogues of major collecting institutions have developed over many years in response to a variety of needs. If AMOL (Australian Museums On-Line) eventually incorporates all of these catalogues, or provides seamless access to them as independent data bases, the task of analysis and interpretation of the current knowledge of heritage objects for State of Environment purposes will be made much easier and enable more valid results, especially if there is agreement on data classification before it is inputted so as to allow accurate comparisons and gap analysis.

The use of common descriptors and criteria is essential to provide for ongoing assessment of the representativeness or comprehensiveness of the combined AMOL catalogue information. Representativeness of collections is relevant to the state of knowledge as it is for places. For example, every species of Australia's biota should be represented in the Distributed National Collection at least once so as to provide reference material for taxonomic identification and hence assessment of Australia's biodiversity. Similarly, cultural collections should be representative of all significant themes and types in Australia's indigenous and non-indigenous history, including objects that reflect important historical events of the present and recent past.

The analysis of this indicator will provide basic and important information for a range of other indicators.

## Monitoring design and strategy

The strategy for monitoring would be periodic census and analysis of places and objects in the register, list and catalogue sources relevant to each type of heritage item, as indicated in Date Sources below. The census and analysis should be carried out at least once in each SoE reporting cycle. It may best be undertaken separately for the component parts (natural, indigenous, historic and objects) depending on the extent of the linkages between the various databases involved.

The current status of all statutory and non-statutory heritage registers and lists for natural heritage places, including at State or Territory and local level, should be investigated. The number of heritage places on each register or list should be quantified where possible and the overlap with the RNE in terms of common natural heritage places or parts of places should be quantified for each register. If this is not feasible, specific case studies should be undertaken to estimate the extent of overlap with the RNE.

The issue of data-matching to avoid double-counting of places appearing in more than one register, inventory or list has to be addressed before the combined results can used as a reliable data set. The achievement of a centrally accessed and manipulable database or network of databases would greatly aid in datamatching. This does not appear to be an issue for objects.

The analytical capacities of relational databases provide a powerful means for quantitative analysis of the contributions of various factors to the indicator. For heritage places the monitoring design should enable the tabulation of numbers and proportion of places in the registers against the variables listed below, followed by cross-variable comparison and analysis.

- category of place (including any thematic classification relevant to each category;
- category of register;
- geographical distribution (specific and by State or Territory, region, biogeographic region, land system or catchment, as relevant to each type of place);
- values attributed to place (as designated in an accepted criteria set such as that of the Register of the National Estate);

 condition of place (including the date of last assessment of condition).

In the case of objects, there needs to be consistent recording of attributes before any monitoring of environmental conditions can occur using electronic databases. Information able to be gleaned from the databases include:

- the number of catalogued objects by place and by type of place (context recorded at collecting);
- the condition of objects;
- the geographical distribution of identified objects, so that for example the number of specimens for each biogeographical region can be assessed; and
- the temporal spread of social history collections so that the representativeness of objects from each Principal Australian Historical Theme can be identified.

Because different data sources applying to the different types of heritage items, and because the issues relevant to the analysis of these data also vary, there are some specific monitoring design and strategy issues applying to some heritage items. These are as follows:

#### Natural heritage places

An appropriate national regionalisation scheme which summarises the major biophysical variation of the continent, such as the Interim Biogeographic Regionalisation for Australia (IBRA) (Thackway and Cresswell 1995), should be used in conjunction with the RNE Data Base (RNEDB) to characterise the biogeographic distribution of listed natural heritage places in terms of the relative contribution (in terms of numbers of places) of each IBRA region to the indicator.

From a practical point of view, it is unlikely that information concerning natural heritage places held at local government level will be available for use with the indicator within the next SoE cycle. A strategy should be developed to ensure that any relevant information available at this level is used in measurements of the indicator for subsequent SoE cycles. The strategy might include case studies that attempt to quantify the extent of overlap of significant natural heritage places identified at local government, State and Territory and national levels.

A strategy should also be developed to investigate likely future availability reliability, variation and degree of information concerning natural heritage places in State and Territory, local and non-government registers and lists.

#### Heritage objects

The objects component of this indicator would concentrate on the number of objects in government institutional collections, which include natural and cultural items. Other collections may be included if data are available. Analysis would focus on changes to the size and range of these catalogued heritage collections, and the representation of the major Australian natural and cultural heritage themes in those collections as well as giving parameters or attributes of an object enabling it to be related to a place and giving it spatial and temporal context.

For some regions where museum collections are not catalogued on AMOL, a strategy needs to be devised to monitor the adequacy of cataloguing local history collections.

## **Reporting scale**

The basic reporting scale for this indicator should be national. The various contributions to the national indicator should also be reported at scales appropriate for each; this may include State or Territory, regional or local scales, IBRA regions, indigenous language group areas or Aboriginal and Torres Strait Islander Commission regions.

#### Outputs

Outputs should include:

- tabulated numerical summaries of each of the sectoral findings (natural, indigenous, historic and objects) and the factors contributing to each;
- Maps, tables, and summary statistics including graphs may also be appropriate, particularly for reporting at finer reporting scales. Mapping against regional environmental and administrative parameters would be facilitated by the use of Geographic Information System (GIS) technology;
- Graphical outputs for summarising trends; these will be important for displaying trends associated with successive SoE cycles;
- For objects, provision of sorted lists (for example by object type, theme, values such as scarcity or rarity, representativeness or geographic location for condition monitoring).

Multi-variate analysis of the data should be presented.

#### Data sources

Formal heritage registers and lists with heritage places, including:

- the Register of the National Estate;
- the National Heritage Database (if available);
- the World Heritage List;
- relevant State and Territory heritage registers and lists;
- relevant local government heritage lists;
- non-statutory lists, including National Trust heritage lists at state, territory and local level; and
- heritage lists of relevant professional bodies (for example the Geology Society of New South Wales (NSW), Australasian Institution of Engineers, Royal Australian Institute of Architects).

Places that are formally gazetted and reserved for conservation purposes are also likely to have heritage value. However, reservation may have occurred for a range of reasons which may or may not have resulted from the reserve reaching threshold heritage values. The boundaries of reserves may or may not define the boundaries of the area with heritage value. Research should be carried out to establish how closely the reservation of lands has coincided with the establishment of areas of heritage significance, and how comprehensively the components of reserved lands with heritage values are already represented on existing heritage registers.

The issue of data-matching to avoid double-counting of places (referred to above) has to be addressed. The achievement of a centrally accessed and manipulable database or network of databases would greatly aid in data-matching.

For heritage objects there is no national register of heritage collections and a variety of recording formats and systems for the various types of artefacts exist. A national strategic plan has been drawn up and one outcome is Australian Museums On Line (AMOL), which is a computer based catalogue of individual collections. So far 950 museums have recorded their collection details on this system allowing some scope for comparative analysis of common variables. With regard to biological collections, both living and dead, museums, zoos, botanic gardens and herbaria have coordinated their efforts and agreed on standards for a range of activities.

The Indicator of necessity must combine data from both surveys of cultural and biological collections. The future development of AMOL should provide a national catalogue from which *inter alia* it would be possible to monitor variables relating to state of environment reporting. One of these variables should be the progress in accessions which fill the gaps in establishing nation-wide collections representative of the major natural and cultural history themes.

#### Links to other indicators

This indicator provides the basic knowledge of the identity of heritage places and objects. As such, this indicator is linked to all other indicators that look at the condition of heritage, and the pressures and responses that might impact on that heritage.

INDICATOR G.2 NUMBER OF HERITAGE PLACES ASSESSED USING BEST PRACTICE ASSESSMENT STANDARDS

#### Description

This indicator will show the changing extent of knowledge of the values of heritage places on a national scale by measuring the proportion of identified places assessed using best practice assessment standards in various heritage registers and inventories.

#### Rationale

The usefulness and relevance of heritage registers and lists have increased greatly over the past decade with the development of a range of assessment standards and criteria. The term 'best practice assessment standards' is taken to mean standards such as those agreed between the States and Territories and the Commonwealth through the National Heritage Standards project. There are still some listing processes that do not use such best-practice standards, and most registers have records that pre-date the application of the standards. A number of jurisdictions have programs to address the latter category, but the rate of upgrade of old records varies greatly.

The key aspect of the improved standards is the establishment of stated criteria or other bases for the assessment of heritage value. While conservation is often interpreted as involving the conservation of the

fabric or physical form of places, this is really a convenient surrogate for the conservation of heritage value. A forest, for example, might be of heritage value for a range of reasons: its retention of a rare and endangered species of plant or animal; its range of botanical associations; its high degree of biodiversity; its wilderness quality; or a combination of two or more of these values. Similarly, indigenous places might be of value because of the archaeological evidence they contain about the past, their possession of art of outstanding beauty, their strong association with traditional indigenous culture and a contemporary indigenous community, or a combination of these and other values. Historic places might be of architectural or engineering importance, associated with important historical events or periods, be of townscape value, or have strong associations with particular groups in the community, or a combination of these and other values.

Standards for assessment establish guidelines for the assessment of these values, and their clear enunciation in the records for the place. This knowledge is critical to the retention in good condition of the elements that give the place particular heritage value. The most obvious type of standard is the use of heritage assessment criteria, based on those used for the Register of the National Estate. Compatible criteria have now been adopted by all State and Territory heritage agencies for the development of their registers. Other standards include the development of defining criteria for the identification of places with wilderness quality for the National Wilderness Inventory, and catchment quality for the identification of wild rivers.

Standards have also been developed for the process by which heritage value is established, for example in the involvement of contemporary indigenous communities in the assessment of indigenous heritage places, and the recognition and sensitive documentation of the value assessments of the custodians of indigenous places (an issue of great concern to contemporary indigenous communities). Until recently social values and cultural awareness in relation to places of archaeological importance were neglected relative to scientific values. The recognition of their relevance is a growing aspect of knowledge of archaeological heritage as well as its management, as well as being an aspect of heritage value in their own right. Standards in these areas are still developing, and SoE reporting should be based on the best practice standards in place at the time of monitoring.

Best practice standards that could be used for this indicator apply to the following:

- heritage assessment criteria
- heritage assessment processes
- involvement of contemporary indigenous communities and recognition of values held by them
- wilderness identification
- wild rivers identification
- assessment of social significance

These standards are still being developed, so this list will be expanding over time.

The parallel development of standards for the cataloguing and control of heritage object collections is dealt with in indicator O.1.

Change in the proportion of heritage places identified using best practice assessment standards for their listing provides an indication of the changing knowledge of heritage values and, by association, the prospect of those values being conserved into the future.

#### Analysis and interpretation

This indicator analyses and interprets the changing proportion of places identified on registers and lists which use best practice heritage criteria, and/or which were based on best practice assessment processes.

An increasing proportion of identified places with or using best practice heritage assessment criteria or processes reflects an improvement in our understanding of heritage places. A decreasing proportion conversely reflects a decline in understanding and suggests an impediment to conservation. No change indicates a static situation, in which a large proportion of places are not adequately understood, and where conservation is not necessarily synonymous with identification.

The analysis of data that is normally clearly identified in place records, such as the use of assessment criteria, would be straightforward. The analysis of some other aspects of standards might require further investigation to identify the most effective way of extracting the information. An example might be the involvement of indigenous communities in assessments of indigenous places, and the recognition of the indigenous custodian's own assessment of significance. This information might be included as text rather than as a separate field, and so may be more difficult to isolate. Inclusion of such information in dedicated fields in record formats would greatly simplify the task of monitoring.

Some standards of assessment may apply to individual components of larger areas of heritage significance. Wilderness and wild rivers values have been identified and standards for their assessment established. By monitoring the relevant National Wilderness Inventory and Wild Rivers inventories, which are based on Australiawide baseline surveys, the indicator provides a quantitative measure of the extent to which high quality wilderness values are represented in formally-listed natural heritage places, and summarises the extent to which the high value parts of Australia's remaining natural river systems are represented in natural heritage places.

#### Monitoring design and strategy

The strategy for monitoring would be periodic analysis of either a central database, should one exist, or of the various heritage registers and inventories, as well as an audit of the assessment processes adopted by a range of heritage agencies. The periodically gathered information should be able to be gathered from State and Territory government heritage agencies.

The various heritage registers and inventories provide information about identified heritage places. These registers and inventories would be investigated to find out the number of identified places assessed using best practice assessment criteria or relevant processes to identify the values of places, as a proportion the total number of places identified (indicator G.1).

In the case of the National Wilderness Inventory, it has provided a basis for GIS data layers for wilderness quality that cover the entire continent. The Wild Rivers Inventory data could be used to develop a similar GIS layer. These data layers should be intersected with each natural heritage place listed on the RNE, based on its geo-coded boundary information, to identify those areas of high wilderness quality and Wild Rivers value within natural heritage places. The total areas should be derived by summing all areas of high wilderness value and Wild River value associated with natural heritage places listed on the RNE. When expressed as a proportion of the total areas of high wilderness value and Wild River value for the continent, these will provide direct quantitative measures at the continental scale of the extent to which occurrences of these values are included in natural heritage places.

#### **Reporting scale**

The information sources for this indicator are a combination of local, State, Territory and national sources and reporting would be at the national scale. However, reporting could also be provided at State, Territory or local scales. Reporting could also be provided separately for the natural, indigenous and historic environments. Analysis of the natural heritage information may include contexts where the use of IBRA regionalisations is appropriate.

## Outputs

Outputs of monitoring could be by map, tabular and graphical presentation of information, both for the national situation, for each of the States and Territories and for each heritage environment.

#### Data sources

Formal heritage registers and lists with heritage places, including:

- the Register of the National Estate (RNE);
- the National Heritage Database (if available);
- the World Heritage List;
- relevant State and Territory heritage registers and lists;
- relevant local government heritage lists;
- Non-statutory lists, including National Trust heritage lists at state, territory and local level;
- heritage lists of relevant professional bodies (for example the Geology Society of NSW, Australasian Institution of Engineers, Royal Australian Institute of Architects).
- National Wilderness Inventory databases
- Wild Rivers Project databases
- Environmental Resources Information Network (ERIN) GIS data layers with natural heritage places boundaries

## Links to other indicators

Indicator G.1, which provides data on the overall number of identified places, forms the basis for assessing the proportional representation of places assessed against criteria. Aspects of the indicator are linked to indicators developed in other themes of the SoE process, such as Biodiversity Indicators 1.1 and 1.2 (Human...demand on natural resources) (Saunders et al. 1998), and Indicator 2.1. (Extent and rate of clearing, or major modification of natural vegetation or marine habitat) (Fairweather & Napier 1998).

## Issue 2 Condition of heritage

# INDICATOR G.3 NUMBER OF PLACES DESTROYED OR WHOSE VALUES HAVE BEEN SEVERELY DIMINISHED

#### Description

This indicator will show the extent to which heritage places have been reported as destroyed or severely damaged during a set period.

#### Rationale

Heritage registers and inventories are, at present, the only effective means of identifying, on a national scale, the extent, nature and location of heritage places. The number of registered or listed places destroyed or severely damaged would be one indicator of the loss of heritage values, and could be used to isolate specific pressures or responses that have led to changes in the rate of loss.

Information on the damage or destruction of listed places is poor at the national level (e.g. in the RNE), because there is no formal notification or approvals system in place that would provide this information at the national level. Information on the damage or destruction of listed places is better at most State and Territory register/inventory levels, and probably best at the local government level. For example, local government authorities have building application approval powers (including demolition) in most States and Territories, with the State heritage or planning agency often having reserve approval powers in relation to places of State significance. For this reason this indicator concentrates on accessing local government planning data as well as State and Territory inventory data. In the case of some large areas, knowledge of the existence of indigenous heritage values may be predicted though not verified and documented by detailed survey work. In such cases, the area affected by damaging action is a more useful measure of loss than numbers of places.

#### Analysis and interpretation

Analysis and interpretation will depend entirely on the ability to extract relevant information from the local and State and Territory environment, heritage and planning systems. In the case of historic places this will involve information on building approvals.

Assuming that such data can be isolated and amalgamated to allow reporting on the national scale, the data could be assessed under the following categories:

- loss of heritage places by natural cause;
- loss of heritage places by human cause;
- damage to heritage places by natural cause;
- damage to heritage places by human cause; and
- building approvals for historic places.

In the case of historic places, it appears at present that information relating to building approvals may not identify whether the particular proposal is beneficial or detrimental to heritage values. All the counting of building approvals would indicate would be a change in the rate of activity—more information would be needed to determine if that activity was detrimental to the condition of the historic environment. The data for building approvals would therefore have to be interpreted using separate information. Such additional interpretative information could be gathered by a sampling strategy such as identified at Indicator H.1.

Interpretation may come from linkages to other indicators. For example, indicators in the Human Settlements area dealing with changing land values and urban expansion may be correlated with heritage place information to indicate specific pressures.

For indigenous heritage places, the damaging actions might be impact through direct development or land clearance. Much information is held in environmental impact studies, and it might be possible to analyse the rate of mitigating activity that arises from the recognition of impending damaging actions.

#### Monitoring design and strategy

The effectiveness of the indicator will depend on the extent to which the planning or other government approvals decisions can be correlated with the heritage status of places, and this correlation reported.

The RNE currently has no mechanism by which the information on the condition of registered places is updated, except perhaps in the case of Commonwealth-owned property, where a section 30 process under the Australian Heritage Commission (AHC) Act might become a reporting mechanism. The situation in the States and Territories varies, but there is a general trend, particularly in the historic environment, to pass down to local government level the decision making powers over most heritage places. The processes of reporting development application information for heritage property by local government varies from State to State. In the indigenous environment, the reporting process is often tied to proposal impact studies, evaluated at the State or Territory level.

The most appropriate monitoring design will have to be reviewed at frequent intervals, due to the rapid changes being made in the methods employed for the recording of planning and other government decisions. The potential for correlation with heritage inventory information via electronic databases is, in many States, currently not great. The planning information is reported at local or State level, but not amalgamated at State level except where special controls at State level are involved (such as State heritage listing). Indeed, in some States there appears to be a trend to weaken rather than strengthen the links between local and State-based planning data sets.

It may be that in some States the building and development approvals data can only be gathered at local government level. Therefore the monitoring strategy would have to recognise this limitation, and devise a mechanism for gathering the data, for example with the assistance of local government or regional associations. A sampling strategy might be considered, which sampled local government areas, selected so as to reflect the range of the geographic and socio-economic circumstances across the continent.

Decisions affecting indigenous heritage places tend to be made at a State/Territory government agency level, due in part to the blanket protection offered to indigenous sites in most jurisdictions. Accordingly, the comprehensive collection of information in this environment is probably easier, provided assess to this information is available for analysis ( this is not the case currently in SA).

The strategy for monitoring would be periodic analysis (perhaps linked to the SoE cycle) of the State or Territory or local government

planning/heritage/environment data. A strategy for monitoring local government heritage lists would have to be reviewed at each collection date, to take account of the changing degrees of access.

## Reporting scale

The information is generated from all levels of government, especially at the local level for the historic environment. The reporting would be at the National scale, but could readily be reported at the State, Territory or local scales, and for the three environments. The indicator is therefore an indicator that should be monitored across all jurisdictions.

#### Outputs

Outputs of monitoring could be by:

- tabulated lists of destroyed or damaged places for the reporting period, sorted by place type, values, or geographical location;
- tabulated or graphic representations of trends in destruction across reporting periods, sorted by place type, values, or geographical location; and
- mapping of categories of information via a GIS (RNE currently has such capability).

Reports interpreting the findings would be necessary.

#### Data sources

Local government, State and Territory planning/heritage/environment approvals data and statistics, correlated with local government heritage surveys and planning scheme schedules, State and Territory heritage registers and lists, and the Register of the National Estate. The Conservation Advice Database maintained by the Australian Heritage Commission as a record of Commonwealth agency actions involving RNE listed properties is an additional data source.

#### Links to other indicators

This indicator is linked to other indicators that might provide contexts for the interpretation of the benign or destructive impact of observed changes in planning/heritage/environment approvals. Indicator H.1 proposes a sampling condition monitoring approach and is one such linkage in the historic environment.

INDICATOR: G.4 NUMBER OF PLACES RESERVED FOR CONSERVATION PURPOSES WHERE HERITAGE VALUES HAVE BEEN SERIOUSLY IMPAIRED BY VISITOR USE

#### Description

This indicator shows the number of places identified as having impaired heritage values. The indicator focuses on condition and response, in relation to visitor use. It elicits measures that derive from management's concern formally and professionally to record and monitor the condition of heritage places and changes over time that may correlate with visitor use.

#### Rationale

It is important to monitor the condition of places and their heritage values and note any changes over time to enable an assessment of visitor impact on these places. The indicator also measures response in terms of the extent to which initiatives are taken by management to monitor condition and undertake field studies to identify factors affecting the place which may be correlated with visitor use.

#### Analysis and Interpretation

The purpose of the analysis is to determine the incidence of damage to heritage values by people visiting a place. The scale and nature of damage may or may not correlate with the scale of visitation but these are matters that could be analysed if the data sources provide sufficient information. An increasing incidence of visitors causing damage to heritage values would correspond to a declining state of the environment.

An example of the categories of damage to Indigenous heritage places could include – erosional damage to archaeological deposits; dust covering images; algal growth on rock surfaces; abrasion of rock surfaces; defacement and graffiti; removal of artefacts and other vandalism.

Care needs to be exercised in interpreting results as an increasing or decreasing number of reports of damage may be due to higher or lower levels of monitoring. It is also important to distinguish between damage by

visitors and other damage caused by people whose activities are not related to some sort of recreational intention (eg contractors undertaking work).

Variability in monitoring designs implemented by agencies will need to be taken into account in statistical analyses.

#### Monitoring design and strategies

The data used for this indicator depends on monitoring and research, with relevant people to conduct them (eg professionally trained rangers working with indigenous owners in the case of indigenous heritage places). Initiatives to establish consistent integrated monitoring programs should be considered.

#### **Reporting Scale**

Reporting would be at national, State and Territory scales.

#### Outputs

- Tabulated sorted lists, numbers and proportions, by other variables, depending on detail available.
- Statistical analyses presented graphically in histograms and other relevant diagrammatic forms.

#### Data sources

Data to be obtained from the records of agencies and organisations managing places for conservation purposes. However the available data sets may be limited in range (to a few organisations such as Parks Australia, NSW National Parks and Wildlife Service (NPWS), and limited in size as even where such programs exist they are in the main relatively recent initiatives. So there may not be data available giving good national coverage, much less covering all jurisdictions at this stage. Despite this there is a valuable potential as the current data collection in the field is focussed, consistent and professional.

#### Links to other indicators

This indicator is linked to indicators G.3, IA2.2 and H.1.

# Issue 3 Societal and government responses

INDICATOR G.5 FUNDS PROVIDED FOR MAINTAINING HERITAGE VALUES

#### Description

This indicator will show the change in major forms of effective financial assistance available to the owners or

managers of heritage properties and objects by measuring the levels of assistance available compared to demand, over time, from:

(a) for the natural environment:

- Grants Commonwealth, State, Territory and local;
- Tax incentives Commonwealth;
- other government forms of funding, such as program funding for research and management;

(b) for the indigenous environment:

- Grants Commonwealth, State, Territory and local;
- other government forms of funding, such as program funding for research and management;

(c) for the historic environment:

- Tax incentives Commonwealth;
- Grants Commonwealth, State, Territory and local;
- Land tax State and Territory;
- Rate reductions local;
- Low interest loans State and Territory;

and

(d) for heritage objects:

- Tax incentives Commonwealth;
- Grants Commonwealth, State, Territory and local; and
- other government forms of funding, such as program funding for research and management.

#### Rationale

The Australian community, through the various levels of government, seeks to ensure the conservation of heritage places and, to a lesser extent, objects through statutory protection and the provision of financial assistance. This indicator deals with financial assistance including program funding.

Conservation of Australian heritage places and objects is achieved through a variety of means. Many places

and objects are cared for as part of their normal use or ownership. For example, many historic houses are maintained by their owners as part of the normal process of home maintenance. Some privately owned natural places are maintained simply by being reserved from agricultural activity. Other places are subject to special conservation programs, and some places are not well maintained or cared for at all. Heritage objects may be in the care of or donated to collecting institutions.

In all of these circumstances governments have provided financial assistance to help with conservation, both for government and privately owned places, as well as government and community collecting institutions. Such incentives include income tax incentives, grants, land tax and rate reductions, low interest loans, as well as direct program funding in the case of government property and collecting institutions. However, some governments only offer some forms of assistance, the demand for assistance or needs are rarely met, and in the case of private property, not all owners or places are eligible. Private collections of heritage objects are rarely supported by governments.

This indicator focuses on the change, if any, in the level of financial assistance available for heritage property and objects. The indicator addresses all major forms of assistance and compares the level of assistance available with the demand or need for assistance.

While information about the levels of financial assistance should be readily obtainable, information about demand or need may not be forthcoming in all cases. The analysis and interpretation takes account of this possibility.

#### Analysis and interpretation

The indicator is comprised of a number of measures tax incentives, grants, land tax and rate reductions, low interest loans and program funds. These measures span the three levels of government. Each class of measure should be considered separately given the different value of, say, a grant compared to a loan. However, it is also possible to calibrate the value of each measure to arrive at an overall figure of the demand/need for and the level of financial assistance available.

The analysis of the indicator can take place at two levels. The first level is that of each of the measures.

An increase in the level of financial assistance available within any particular measure, say tax incentives, reflects an improvement for state of the environment reporting. Conversely a decrease in assistance reflects reduced funding for conservation and therefore a decline in the state of the environment. No change in assistance reflects a static situation. An overall picture will be developed by considering any change in each of the measures.

A more sophisticated analysis is possible by comparing the level of assistance available with the demand or need for assistance. The extent to which the assistance available meets demand can be used as an indicator. If demand is fully met, or over a reporting period the gap between assistance available and demand decreases then the situation may be considered satisfactory in the former case or improving in the latter. An increasing gap between assistance available and demand reflects a decline in the state of the environment. Again, no change in the gap reflects a static situation. Considering the change in the gap between the assistance available and demand for each of the measures will allow the overall situation to be assessed.

The second level of analysis involves calibrating information for each of the measures to produce a single figure of the level of financial assistance available and a single figure for demand. Interpreting the results would be much as described above.

While the second analysis producing national figures provides a very convenient basis for national state of the environment reporting, it also loses some important details available in the first form of analysis. The different measures are not interchangeable in their impact on heritage conservation activity. For example, tax incentives are only available to tax payers, and grants may not be available to private owners of heritage property. Some of the measures target different sectors of the community and others are only available to government property. If one measure declines markedly but the overall situation improves, the second analysis may conceal the fact that one sector of the community has been severely disadvantaged in its ability to undertake heritage conservation. Accordingly, both levels of analysis are needed, or at least the first level.

While it is desirable to separate and analyse the levels of funding provided for research and management, it is not clear if data sources will readily support this approach. Similarly, an analysis of funding provided by

place or collection type and theme would be desirable. Further investigation is necessary to establish the nature of data sources and the possibility of more detailed analyses.

Funding for the natural environment should be analysed by Interim Biogeographic Regionalisation for Australia (IBRA) region in addition to national, State and Territory jurisdictions.

This indicator is limited to the funding provided for certain activities and does not consider the effectiveness of the use of such funds. Effectiveness is a major issue and, ideally, it would be the basis for an indicator. However, the basis for such an indicator does not currently exist and this proposed indicator is a surrogate. There may be future opportunities to move towards an effectiveness indicator, such as through extending the scope of indicators which rely on a sample audit of the condition of places. Another approach may be to audit the effectiveness of a particular funding program over a period of time. Such developments should be considered in the next generation of indicators.

#### Monitoring design and strategy

Information for this indicator would come from all levels of government as follows.

- Tax incentives Commonwealth
- Grants Commonwealth, State, Territory and local
- Land tax State and Territory
- Rate reductions local
- Low interest loans State and Territory
- Other government forms of funding, such as program funding for research and management.

Information would be sought from governments about:

- the levels of financial assistance/funding available in each of the above categories;
- any eligibility restrictions on the types of owners or managers that can seek assistance, or the types of places or objects eligible; and
- the levels of demand for assistance in each category.

The strategy for monitoring would be periodic gathering of information which should be available

from Commonwealth, State and Territory government heritage agencies. Information about local government assistance should, at least to some extent, be available from State governments. If not, it will be difficult to gather from all local governments and it is not appropriate to rely on a sample.

Further research is needed to determine the nature of data sources to support a range of analyses.

## Reporting scale

The information sources for this indicator are a combination of local, State, Territory and national sources and reporting would be at the national scale. However, reporting could also be provided at the IBRA region and State scales.

#### Outputs

Outputs of monitoring could be:

- by tabular and graphical presentation of information;
- for the national situation;
- for IBRA regions in the case of natural environment places;
- for each of the States and Territories;
- for each heritage sector; and
- for each category of financial assistance/funding.

Other outputs depend on the nature of data sources supporting more detailed analyses.

#### Data sources

Commonwealth Treasury, State and Territory government heritage agencies, possibly local governments or their associations.

#### Links to other indicators

The effectiveness of financial assistance in achieving long-term conservation could be monitored, for example, as a component of Indicator H.1.

It is likely this indicator is linked to Biodiversity Indicator 24.7 (Percentage of budgets spent on conservation).

Several indicators deal with funding issues, but are not regarded as being components of the general indicator—these include IC.4, IC.5, IA1.2, IL.7.

INDICATOR: G.6 AMOUNT OF FUNDING PROVIDED TO HERITAGE AGENCIES RESPONSIBLE FOR HERITAGE PLACES AND OBJECTS

#### Description

This indicator shows the level of funding provided to support heritage protection and management. It is directed to a crucial factor in determining the effectiveness of legislative implementation and of management – the provision of funding.

#### Rationale

Given the fundamental nature of resourcing available to agencies responsible for protection and management of heritage places and objects this indicator is directed to a vital issue. It offers ways for quantifying, measuring, and monitoring current status and change over time of governmental commitment in the response of funding heritage protection and management. It can also offer measures of pressure, as changes in funding can either facilitate effectiveness or (if towards restriction) can ensure diminished staffing, resources and activities essential to adequate protection and management.

#### Analysis and Interpretation

This indicator relies on a number of measures relating to the various heritage sectors as well as to the different resources available (such as staff levels and funding). The analysis should be undertaken at the sector level and then an analysis prepared of the combined figures for all sectors. A change in funding between reporting periods would indicate a changing level of response by governments, and perhaps reflect a change in the condition of heritage places or objects.

More detailed analyses may be possible depending on the detail available in the data sources. For example, the allocation of resources to different activities may be important to understand if the data sources can support such an analysis. This should be further considered.

#### Monitoring Design and Strategy

Information for this indicator would be collected from State, Territory and Commonwealth governments.

In the first data gathering exercise, it would be desirable to undertake an assessment of the nature of the information and its ability to support more detailed analyses such as those outlined above.

#### Reporting Scale

Temporally per five year period using annual data, spatially at aggregated national scale with break-down for State, Territory and national situations.

#### Outputs

- Tabulated sorted lists by number, proportion and variables.
- Statistical analyses presented as appropriate in tabulated, graphical or diagrammatic forms. After several reporting cycles the trends of change over time could present a data set for more sophisticated analyses and multi-variate study.

#### Data sources

Data sources will include records of relevant State, Territory and Commonwealth agencies. From these data should be collected on annual allocations across all jurisdictions, analysed as amount and proportion to provide quantified measures of funding for States, Territories and the Commonwealth.

Links to other indicators

# INDICATOR G.7 NUMBER OF CONSERVATION PRACTITIONERS AND TRAINING COURSES

#### Description

This indicator will show the availability of trained conservation practitioners and conservation training courses on a national scale by measuring the number of:

- trained conservation practitioners;
- conservation training courses; and
- total conservation training course completions

relevant to the natural, indigenous and historic environments, as well as to heritage objects.

#### Rationale

The conservation of heritage places and objects, and their continued existence through time relies on many factors. While some places and objects may survive through time without any active conservation measures and without the involvement of conservation practitioners, most places and many types of objects require some measure of active conservation and the involvement of a conservation practitioner such as an heritage manager/officer, architect, historian, archaeologist or conservator.

Ensuring the appropriate conservation of heritage places and objects therefore depends on the availability of such practitioners. The primary recommended measure relates to the number of trained conservation practitioners working in the industry. This gives a direct measure of the availability of practitioners.

The other recommended measures relate to conservation training courses which will produce the future practitioners for the industry, including governments and the community. The two recommended measures relate to both conservation training courses and course completions. While the number of completions provides information about the size of the possible future pool of conservation practitioners, information about courses gives additional information for assessing the health of training activity.

#### Analysis and interpretation

A change in the number of conservation practitioners will reflect either an increasing or decreasing availability of practitioners to guide or undertake heritage conservation work.

Ideally this would be compared with the need, or market demand, for practitioners. However, at this stage no reliable information sources are known which would give a useful guide to demand. Newspaper advertisements may provide such a source but this is not clear and further research may be worthwhile.

A change in the number of conservation training course completions is subject to a similar interpretation as for the number of practitioners. However, any change must be qualified by two factors:

- completion of a course does not necessarily mean that a person is fully qualified, a period of postgraduation work experience may be necessary; and
- not all graduates of a course will enter the industry, irrespective of job vacancies.

A change in the number of training courses gives a cruder measure of the health of training activity. In the long term, course completions may prove the more useful measure.

However, the training course measure may be more amenable to showing the geographic distribution of courses. This is an important factor as geographic distribution seems likely to be important in ensuring that expertise is available in every State and Territory. Centralisation of courses in only a few locations is likely to result in a distribution pattern which may not reflect industry, government and community needs.

While it may be useful in the future to consider the various conservation disciplines separately, some of the information sources may not lend themselves to such an analysis. This refinement may be considered at a later stage.

## Monitoring design and strategy

Information on conservation practitioners would be sought from a variety of sources including:

- professional associations (such as Australia ICOMOS and Museums Australia); and
- registers of consultants maintained by Commonwealth, State and Territory government heritage agencies, including museums.

Information about training courses and completions would be sought from the tertiary education sector.

In the first year of collection it would be useful to establish a register of sources for the first measure and a register of courses for the other measures.

#### Reporting scale

The information sources for this indicator are a combination of State, Territory and national sources and reporting would be at the national scale, with some geographic component. However, reporting could also be provided at the State scale.

#### Outputs

Outputs of monitoring could be:

- by tabular and graphical presentation of information;
- for the national situation;
- for each of the States and Territories; and
- by conservation sector or discipline, depending on the information available.

#### Data sources

- Australian Heritage Commission
- State and Territory government heritage agencies, including museums
- Australia ICOMOS
- Museums Australia
- Australian Archaeological Association
- Professional Historians Association
- Australasian Society of Historical Archaeology
- Royal Australian Institute of Architects
- National Trusts
- Tertiary institutions

#### Links to other indicators

The indicator may provide information useful to indicator H.2 which deals with the effectiveness of statutory protection for heritage places.

INDICATOR: **G.8** COMMUNITY AWARENESS OF AND ATTITUDES TOWARDS HERITAGE PLACES AND OBJECTS AND THEIR CONSERVATION

#### Description

Periodic community attitude surveys based on standard sets of questions and designed to provide quantitative estimates of community awareness and attitudes towards natural, indigenous and historic heritage places and objects and the conservation of their significant values, and to gauge temporal changes in these views.

#### Rationale

Community awareness and attitudes are an important element of societal responses regarding heritage places and objects and the conservation of significant heritage values. Surveys of community attitudes involve a direct approach to a sample of the community with questions designed to assess awareness of and attitudes towards particular issues and to elicit opinions. The surveys are based on a standard and widely used methodology for assessment of community opinion. The indicator provides quantitative estimates of the level of awareness amongst the community of heritage places and objects and the incidence of particular attitudes towards the conservation of these places and objects and their significant values.

#### Analysis and interpretation

Survey design should ensure sampling of a representative cross-section of the population, to provide an indication of the views held by the entire community, and should allow a breakdown by demographic group and geographic region across the nation. A standard set of questions should be developed based on issues associated with the documentation, listing, and conservation of heritage places and objects. The questions should be designed to establish a profile of current community attitudes towards heritage places and their conservation at different scales (national, State or Territory, regional, local). Awareness of, and attitudes towards the heritage values of objects would be established by a subset of questions.

In particular, the surveys should quantify levels of community awareness of, and attitudes towards, issues such as:

- the importance of heritage values for future generations;
- the need for conservation of heritage values;
- threats and issues affecting these values;
- levels of funding for heritage places and objects;
- management of heritage places and objects;
- education programs relevant to heritage places and objects; and
- information programs relevant to heritage places and objects.

Respondent profiles should be developed for each survey. These should be used to investigate the influence of factors such as respondent age, sex, socioeconomic status, occupation, location (LGA or electorate) etc on survey results.

Surveys should be designed to enable analyses of results in different contexts, such as national and State or Territory contexts. Survey design should also provide the basis for characterisation of temporal trends in community attitudes towards heritage places and objects.

## Monitoring design and strategy

Community attitude surveys based on standard techniques should be used for this indicator. Costeffective methods such as national mail surveys or phone surveys should be used. The possibilities for future use of internet surveys should also be explored, including methods for interpreting the results of these in the context of results of standard national surveys.

Surveys should be implemented at scales appropriate for gauging the range of views held by the community at any particular time. Standard techniques based on random or stratified sampling should be employed as necessary. Intervals for successive surveys should be appropriate for detecting temporal change in awareness and attitudes at the national level. Additional sub-surveys should be undertaken as necessary to test effectiveness of survey design or to quantify uncertainty.

Appropriate statistical analyses should be used to analyse survey results. Survey results should always be qualified by estimates of uncertainty and a discussion of underlying assumptions. Quantitative profiles of community awareness and attitudes towards heritage places and objects should be developed based on the survey results.

## Reporting scale

Reporting should be at the national scale, and at states and territory level where appropriate. Collection and analysis must allow for regional, socio-economic and age variations to be recognised and reported.

## Outputs

Outputs should include tables, graphs and maps that summarise results of surveys. Summaries should constitute a quantitative profile of current community attitudes. Graphs should also be used to summarise trends in community awareness and attitudes over more than one SoE cycle.

## Data sources

Results of community attitude surveys. These would have to be commissioned as a recurrent commitment, as no current surveys cover and report on this aspect of community awareness.

#### Links to other indicators

No links identified

## **RECOMMENDED KEY INDICATORS - NATURAL**

## Table 3

## Recommended key indicators - natural heritage places

Issue or element	India	cator	Condition (C), Pressure (P), Response (R)
General Indicators relevant to natural heritage places	G.1	Number and distribution of identified heritage items (places and objects)	C/R
	G.2	Number of heritage places assessed using best practice assessment standards	R
	G.3	Number of places destroyed or whose values have been severely diminished	с
	G.4	Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use.	C/P
	G.5	Funds provided for maintaining heritage values	R
	G.6	Amount of funding provided to heritage agencies responsible for heritage places and objects.	R
	G.7	Number of conservation practitioners and training courses	R
	G.8	Community awareness of and attitudes towards heritage places and objects and their conservation.	R
Issue 1. Knowledge of natural heritage places	N.1	Proportion of natural heritage places with a condition statement; proportion with recent condition statements; and age distribution of condition statements.	С
Issue 2. Protection by Government	N.2	Proportion of natural heritage places with protected area status.	R
	N.3	Proportion of natural heritage places with a management plan.	R

The remainder of this section provides a description of the indicators specific to the heritage places in the natural environment.

# Issue 1: Knowledge of natural heritage places

INDICATOR: N.1 PROPORTION OF NATURAL HERITAGE PLACES WITH A CONDITION STATEMENT, PROPORTION WITH A RECENT CONDITION STATEMENT, AND AGE DISTRIBUTION OF CONDITION STATEMENTS

#### Description

The number of natural heritage places with a statement of condition of their values expressed as a proportion of the total number of listed natural heritage places (Indicator G.1). Also, the proportion of the total number of natural heritage places listed on the RNE that have a condition statement prepared recently (within the previous 4-yearly SoE cycle) and the distribution of age classes for condition statements expressed as mean age  $\pm$  standard error for each decile of the total 'population' of places with condition statements.

## Rationale

Knowledge of the condition of natural heritage places is important for ensuring the maintenance and protection of heritage values for present and future generations Current condition statements associated with listed places represent readily available sources of this knowledge. The indicator provides a quantitative measure of knowledge of condition based on the age of condition statements.

#### Analysis and interpretation

Condition statements are recorded for many of the natural heritage places entered on the RNE. Entries for natural heritage places in the RNE also include the date of their listing. These dates are likely to provide a rough estimate of the time (year) when the condition statement was prepared. Some of the condition statements on the RNE have been updated since the time of listing of a place, but the majority have not. Year of update is also recorded.

For the purposes of the indicator, it must be assumed that the information in a condition statement represents the most recent available at the time of preparation of the statement, and therefore has 'currency' at the time of listing. The indicator provides the basis for identifying the proportion of the total number of natural heritage places listed on the RNE that have a condition statement prepared recently (within the previous 4-yearly SoE cycle). It will also provide an estimate of the mean age of the youngest, second youngest etc deciles of the population of condition statements. An analysis of the present distribution of age of the most recent condition statements will provide a baseline for monitoring and assessing changes in knowledge of condition for listed natural heritage places. A program of periodic updating of condition statements would also provide a means for monitoring changes in condition and in predicting trends of change over time.

The indicator, based on analysis of the age distribution of condition statements, is suggested as an initial step towards developing a more appropriate and robust indicator that can eventually be used in conjunction with heritage databases to estimate currency of statements concerning the condition of natural heritage places. The development of the National Heritage Coordination Program will lead to the adoption of common standards for identifying and recording heritage. It is likely these standards will be based to a large extent on those used for the RNE and the proposed indicator should be developed so as to ensure its suitability for future common use of the standards so derived.

#### Monitoring design and strategy

The date of entry (or dating of condition statements) on the RNE should be used as the basis for an age class analysis of the 'population' of condition statements for listed natural heritage places. The mean age  $\pm$ standard error for each decile of the population should be calculated. Age class intervals of one SoE cycle (4 year intervals) should also be used and the number of places with condition statements calculated for each age class.

Reporting of the indicator should specify the number of places with a recent (<4 year-old) condition statement expressed as a proportion of all listed natural heritage places. It should also include a discussion of the current distribution of age classes and trends of change for all places. The number of natural heritage places on the RNE with upgraded condition statements should be reported separately, as should the number of places on the RNE without condition statements.

The use of an auditing process, such as that used by Biosis Research and du Cros & Associates (1997), should be used to provide direct assessments of the currency of information in condition statements. Audit results should be assessed against the other measures based on age of condition statement, outlined above.

Analysis of the age distribution of condition statements for places associated with different heritage themes (or criteria) should also be undertaken.

For the initial reporting of the indicator, a strategy to assess the uncertainty associated with using the date of listing as a surrogate for date of preparation of the condition statement should also be implemented. A suitable approach might involve sub-sampling the population of places to quantify and assess differences between listing date and the most recent date of preparation for each condition statement.

#### Reporting scale

This indicator should be reported at the national scale and for each State and Territory.

#### Outputs

Tabular summaries of the proportion of natural heritage places with a condition statement, at national, and State and Territory level. Tabular and graphical (histogram) summaries of the age class distribution of condition statements for natural heritage places listed on the RNE, based both on time intervals of one SoE cycle (4 years) or other suitable interval, and on deciles of the population total. Tabular summaries of the proportion of natural heritage places with a recent condition statement, including discussion of recent in the context of the age distribution of condition statements.

#### Data sources

- Register of the National Estate
- National Heritage Database (if available)

#### Links to other indicators

This indicator is linked to Indicator G.1.

## **Issue 2: Protection by government**

INDICATOR: N.2 PROPORTION OF NATURAL HERITAGE PLACES WITH PROTECTED AREA STATUS

#### Description

The number of natural heritage places that have protected area status, expressed as a proportion of the total number of listed natural heritage places (Indicator G.1).

## Rationale

Heritage listing does not ensure that a natural heritage place will be protected. In the case of Australian places on the World Heritage List, protection is afforded by the World Heritage Properties Conservation Act 1983. In some jurisdictions natural places might be identified under specific legislation (such as a Heritage Act or National Parks Act) that gives the place some degree of protection linked to an acknowledged heritage status. For other heritage places, there may be no formal protection directly linked to heritage status, although protection may be afforded indirectly through other arrangements including tenure and management prescriptions.

The majority of government and non-government activities concerned with the conservation of Australia's natural environment have focussed on the establishment of protected areas to conserve natural values, and on sustainable management to maintain natural values on tenures subject to non-conservation land uses. Covenants or other legal arrangements designed to protect natural values are also used in the case of private land. Protected area status includes a wide range of tenure, land use and legal arrangements designed to afford protection of values. The indicator provides a direct quantitative measure of the proportion of natural heritage places that have protected area status due to tenure or other arrangements.

#### Analysis and interpretation

There are a wide range of different types of conventions, treaties, legislation, heritage covenants and agreements and other mechanisms under which protected area status is applied to natural areas. The most secure forms of protection involve reservation, including the gazettal of national parks under Commonwealth or State or Territory legislation. There are many types of reserves used by the Commonwealth, States and Territories, which vary in the type and level of their protection. National parks, are used by all States and Territories and the Commonwealth.

The various types of protected areas should be classified according to the major forms of protection afforded natural values. In their most simple form, these classes might include protection by legislation and tenure arrangements, protection by management arrangements, and no formal protection. Reserves subject to multiple uses and not protected by legislation, tenure or management would be included in the latter.

#### Monitoring design and strategy

The GIS data layers available from ERIN and summarising tenure arrangements for all parts of the continent should be used to derive the indicator. These data layers can be intersected with the area of each natural heritage place listed on the RNE, based on the geo-coded boundaries recorded for each place, to identify its current tenure arrangements. This will provide the basis for identifying the number of places with protected area status and the proportion that these represent of the total number of listed natural heritage places.

Tenures appropriate to each class of secure/non-secure reserves as outlined above should be identified and places classified according to these. These data will enable the proportion of places with protected area status associated with secure reserves to be identified.

The relative contribution of factors such as the different jurisdictions (national, State or Territory, and local), biogeographic regions (IBRA regions) and heritage themes (National Estate criteria, or agreed standard themes) to the indicator should be investigated as outlined for indicator G.1.

## Reporting scale

The basic reporting scale for this indicator should be national. The various contributions to the national indicator should also be reported at scales appropriate for each; this may include State or Territory, regional or local scales.

## Outputs

Outputs should include tabulated and graphical summaries of the national indicator and the factors contributing to it.

## Data sources

- ERIN GIS data layers with boundaries for places on the RNE
- ERIN GIS data layers with tenure boundaries

#### Links to other indicators

This indicator is linked to Indicator G.1 and to Biodiversity Indicator 13.1 (Extent of vegetation type or marine habitat type in protected areas).

## INDICATOR: N.3 PROPORTION OF NATURAL HERITAGE PLACES WITH A MANAGEMENT PLAN

#### Description

The estimated number of natural heritage places listed on heritage registers with a management plan for conservation of significant heritage values, expressed as a proportion of the total number of listed natural heritage places (Indicator G.1).

### Rationale

Appropriate management of natural heritage places is fundamental to ensuring the maintenance and protection of their significant heritage values for present and future generations. Appropriate management also represents an important aspect of society's response to pressures on natural heritage places. Management plans identify goals, strategies and mechanisms to maintain values, ensure appropriate land uses and prevent or ameliorate threats.

The suggested indicator is based on the use of surveys to assess the existence or otherwise of a management plan for natural heritage places. The indicator provides a quantitative estimate of the number of listed natural heritage places with management plans.

## Analysis and interpretation

The existence or otherwise of management plans is not always included in the documentation for natural heritage places listed on the RNE and other registers. A periodic audit of listed natural heritage places is suggested as an initial basis for quantifying the indicator. The recent audit of the RNE by Biosis Research and du Cros & Associates (1997) provides an example of this approach. Audits should be based on surveys sent to agencies or individuals responsible for each natural heritage place, with questions designed to solicit information appropriate for the indicator concerning management.

The auditing approach has been suggested as a first step towards developing more appropriate indicators for this issue. Development of future indicators should explore other mechanisms for collecting information. It is important that any information collected is appropriate for inclusion in heritage registers and databases, particularly the RNE, and any future linked registers.

## Monitoring design and strategy

Standard survey techniques for sampling variable populations should be used to obtain estimates of the incidence of management plans amongst natural heritage places. The survey design should be based on a stratified sub-sampling strategy and should be statistically robust. Sampling should encompass variation due to major factors such as time of listing, jurisdiction or responsibility, tenure, main heritage themes etc. The design should include provision for the calculation of uncertainties associated with survey results. Information collected should be appropriate for inclusion in place records for the RNE.

The relative contribution of the different jurisdictions (national, State or Territory, and local), biogeographic regions (IBRA regions) and heritage themes (National Estate criteria, or agreed standard themes) to the indicator should be investigated as outlined for indicator G.1.

#### Reporting scale

The basic reporting scale for this indicator should be national. The various contributions to the national indicator should also be reported at scales appropriate for each; this may include State or Territory, regional or local scales.

#### Outputs

Outputs should include tabulated and graphical summaries of the national indicator and the factors contributing to it.

#### Data sources

- the Register of the National Estate;
- other registers as appropriate; and
- survey data obtained from periodic audits of places on the RNE.

## Links to other indicators

This indicator is linked to Indicator G.1. It may also be linked to Biodiversity Indicator 13.2 (Number of protected areas with a management plan).

## RECOMMENDED KEY INDICATORS - INDIGENOUS

INDIGENOUS PLACE INDICATORS - PLACES THAT INFORM US ABOUT THE PAST AND THE ARCHAEOLOGICAL RECORD The indicators listed in Table 4 are those that inform us about the past, that is archaeological sites and areas, and archaeological record, places of archaeological significance.

Table 4

#### Recommended key indicators—indigenous places/archaeological places

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
General Indicators relevant to Indigenous heritage places	G.1 Number and distribution of identified heritage items (places and objects)	C/R
	G.2 Number of heritage places assessed using best practice assessment standards	R
	G.3 Number of places destroyed or whose values have been severely diminished	С
	G.4 Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use.	C/P
	G.5 Funds provided for maintaining heritage values	R
	G.6 Amount of funding provided to heritage agencies responsible for heritage places and objects.	R
	G.7 Number of conservation practitioners and training courses	R
	G.8 Community awareness of and attitudes towards heritage places and objects and their conservation.	R
lssue 1. Knowledge of indigenous (archaeological) heritage places	IA1.1 Number of, and level of funding for, programs initiated or continuing focussed on recording scientific and social values of places involving collaborative research.	C/R
	IA1.2 Level and distribution of funding or other resources provided to support systematic studies of indigenous heritage places of archaeological significance.	R/P
	IA1.3 Net population movement of local (indigenous and non-indigenous) people away from rural lands and townships.	C/P

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
Issue 2. Impact of development (humanly initiated actions including tourism)	IA2.1 Number and proportion of archaeological assessment studies initiated prior to development that include assessment of indigenous archaeo logical places and values.	C/R
	IA2.2 Extent of land area (per region or catchment) under cultivation, cleared, clear-felled forests, open mine site bare ground, or lands recorded as under stocking pressure in the Rangelands or arid zones.	Ρ
Issue 3. Impact of natural processes and humanly accelerated or initiated natural processes	IA3.1 Number of indigenous archaeological heritage places on reserved lands reported as destroyed or damaged by natural agencies such as flood, fire, storm (wind/wave).	C/P
Issue 4. Statutory protection, and management regimes	<ul> <li>IA4.1 Areal extent of lands reserved for conservation purposes under all jurisdictions including:</li> <li>(a) proportion which is 'unmodified' plant or animal habitat, or landscape</li> <li>(b) proportion preserved for their indigenous heritage values, and</li> <li>(c) proportion in category (b) with provisions for management and its implementation.</li> </ul>	C/R
	<ul> <li>IA4.2 Number and total area of protected areas or individual indigenous places under:</li> <li>(a) the primary control of local communities</li> <li>(b) the control of traditional owners</li> <li>(c) joint management regimes, or</li> <li>(d) designated as Aboriginal lands managed by resident communities according to traditional canons of practice in caring for country.</li> </ul>	C/R

## Issue 1 Knowledge of indigenous (archaeological) heritage places that inform us about the past

The indicators selected for this Issue are designed to facilitate assessment of the adequacy of our current state of knowledge, focussing on three aspects:

- its extent, comprehensiveness and representativeness;
- the range of values considered in assessing these heritage places;
- its culturally appropriate awareness.

The potential indicators suggested below are chosen in the first instance, to give data on the currently known universe of places, as recorded in the registers and inventories of State/Territory or Commonwealth heritage agencies, and from local government records. They also measure response to the need to supplement knowledge systematically by seeking data on the funding of area surveys being undertaken to gain relevant evidence under controlled conditions.

Earlier discussion of 'uncertainties' explored some of the difficulties in using available register information to construct a national picture and so develop analysis of change over time through sequential State of Environment reporting cycles. The records of places in registers, or survey reports may be neither representative, comparable or comprehensive. The purposes of the listing or field investigation, and the methods chosen to achieve these will condition those aspects. However, information from such reports and registers or inventories, if interpreted carefully allowing for these limitations, may still yield data indicative of broad trends. Given our current state of knowledge these will have value. It will also potentially give a picture at the national scale grounded in local or regional data.

Records of investigative projects funded by National Parks Services or Shires, or by national bodies such as AIATSIS, ARC or programs such as the NEGP will provide valuable data on projects in terms of number, location and purpose and funding level. Analysis of these records should provide consistent data relevant to the measure of change over time, quantitatively robust and with a national compass.

Further indicators suggested explore the second grouping focussed on the cultural aspects of knowledge and whether the range of values considered in assessing places can be regarded as adequate or comprehensive, i.e. does it include social, historical and indigenous values as well as scientific values. The indicators relating to programs of research or documentation should provide data amenable to statistical analysis with national scope, suitable for measuring trends over State of Environment reporting cycles.

INDICATOR: IA1.1 NUMBER AND LEVEL OF FUNDING FOR PROGRAMS, INITIATED OR CONTINUING, FOCUSSED ON RECORDING SCIENTIFIC AND SOCIAL VALUES OF PLACES INVOLVING COLLABORATIVE RESEARCH

## Description

The indicator is designed to provide ways of assessing the amount of resources being expended to redress imbalances in recording scientific and social values of indigenous places with the collaboration of indigenous communities (as identified by indicator G.2), and ensuring that ongoing identification processes include these aspects of assessment. The aim is to monitor the completeness of assessments, especially in terms of the full range of values and meanings attributed to places.

#### Rationale

This indicator explores complementary aspects to those measured by Indicator G.1 and G.2 especially the

government response as reflected in funding. The recognition of the relevance of social values and cultural awareness in relation to places of archaeological importance is a growing aspect of knowledge of archaeological heritage as well as its management. The monitoring of change in the inclusion of this information in records about place is covered in Indicator G.2. The present indicator measures the commitment to involvement of indigenous custodians in identifying values.

#### Analysis and Interpretation

The level of funding is used together with data obtained in Indicator G.2 to indicate the relative changes between the quality of place records and the amount of effort going into improving this aspect of assessment. Analysis of the combined data should allow for the identification of the distribution of funding in comparison with identified regional deficiencies in the standard of records.

#### Monitoring Design and Strategy

Tabulation and analysis of data from records (by number and proportion) according to the following variables:

- Number of places/programs
- Level of funding
- Geographical distribution
- Sponsoring or managing body or agency
- Type of collaborative body associated (e.g. community, individual, Land Council, Cultural Centre)
- Number of all archaeological places/programs supported.

#### Reporting Scale

There is potential here for effective aggregation of local, State/Territory and Commonwealth agency/authority records to provide a national scale of considerable strength which could be disaggregated to provide breakdowns.

#### Outputs

• Tabulated and sorted lists per number, proportion and amounts by variables as noted above.

- Statistical analyses across variables to explore interrelationships.
- Maps showing spatial components of analyses and geographical distribution.

#### Data Sources

For this indicator the data sources used will include the records of funding bodies such as the Australian Research Council (ARC) and the Australian Institute of Aboriginal and Torres Strait Island Studies (AIATSIS). Many basic research programs address this topic, as well as projects initiated under the National Estate Grants Program, or by heritage agencies or National Parks Services. Combining these sources will strengthen the statistical bases of analysis as many can provide long-term consistent, comparable data at a national level.

INDICATOR: IA1.2 LEVEL AND DISTRIBUTION OF FUNDING OR OTHER RESOURCES PROVIDED TO SUPPORT SYSTEMATIC STUDIES OF INDIGENOUS HERITAGE PLACES OF ARCHAEOLOGICAL SIGNIFICANCE

#### Description

This indicator will provide ways of measuring both Response and Pressure by showing the resources provided for improving the state of knowledge of archaeological indigenous heritage, itself an area of pressure. It will provide insights into both societal response and the pressures resulting from changes in resourcing over time.

#### Rationale

The resourcing of systematic studies is clearly crucial given the pressures attendant on inadequacies in our knowledge-base. This is especially so in the areas of quality of knowledge, i.e. comprehensiveness and representativeness, as well as of type of place and of associated values. Analysis of this aspect and of changes over time, will be vital to state of Environment Reporting in relation to societal Response and to Pressures. It is clearly a significant Indicator (for example one could cite the implications of loss of the States Component of the National Estate Grants Program in 1996 (Relevant also to the data for Indicator IA1.1)).

#### Analysis and Interpretation

Analysis of data from records of government funding provided to agencies for this purpose and also of

funding bodies that sponsor heritage studies, or basic research, is crucial to this indicator. The Australian Research Council (ARC), AIATSIS, and the National Estate Grants Program (National Component) (AHC) would provide major sources of consistent data with a continuing national coverage. These could provide significant measures of support level amenable to statistical analyses over time, so giving this indicator robustness. Besides raw figures and proportional data on funding measures involving other parameters available from these consistent and detailed records could be developed. (cf. Recent AIATSIS Research Consultancy for the ARC on ARC funded research and Aboriginal community interests in research).

To avoid uncertainties that may arise if only the figures constituting levels of resourcing were considered, changes in this over time must be assessed in the light of the number of systematic studies supported, their type and their geographic distribution. Valuable indices could be developed here as the data are quantifiable and broadly-based.

#### Monitoring Design and Strategy

Similar to those for IA1.1.

These should be developed appropriately to make best use of the potential of the data sources outlined above. Initially a review at each State of Environment reporting cycle should be considered.

Variables to consider in preparing tabulated lists by number and proportion, and for preparing statistical analyses of relationships/variation include:

- level of funding (amount);
- geographical distribution;
- number of studies;
- type of study;
- number of studies as proportion of all studies;
- distribution by type of agency or funding body;
- nature of community involvement.

## Reporting Scale

Through records of Commonwealth, State/Territory agencies and local government or authority an aggregate national scale could be achieved. Those of national bodies such as the ARC, AIATSIS, and AHC offer a national perspective. This could be disaggregated to provide State/Territory or regional break-downs.

## Outputs

Analysis presenting measures of the situation at each state of environment reporting cycle and of trends over time – these to be expressed in:

- Tabulated sorted lists by variables;
- Statistical analyses with graphic presentation e.g. bar-charts, histograms;
- Distribution maps showing numbers and proportions across spatial variables (using GIS capabilities);

More sophisticated multi-variate, correlative analyses might be applicable for much of the data. Research and Development would assist in establishing robust and viable approaches to the data.

INDICATOR: IA1.3 NET POPULATION MOVEMENT OF LOCAL (INDIGENOUS AND NON-INDIGENOUS) PEOPLE AWAY FROM RURAL LANDS AND TOWNSHIPS.

## Description

This indicator shows the level of demographic shift from rural lands and townships. It will provide a surrogate measure of the potential loss of local knowledge of, and active care for, culturally important archaeological places. It is a key indicator in terms of the potential significance of the situation which it could represent. Key indicator in terms of potential importance of the issue. However, also an indirect or surrogate indicator requiring careful development to achieve its potential.

#### Rationale

This is an important aspect of both site protection, and maintenance of local knowledge. The importance of indigenous local knowledge is clear. However, in many areas the non-indigenous local communities and land holders have been significant in their concern to protect archaeological places and record local knowledge about them.

At present the demographic and economic shifts apparent in rural Australia put the continuance of these traditions at risk, with the threat of loss of knowledge of places and their associated values, as well as discontinuance of conserving care for places. This indicator relates to indicator 5.1 in the human settlements report (Newton et al. 1998)

#### Analysis and Interpretation

Data sources in Australian Bureau of Statistics (ABS) and Census records would be available according to census region providing a generalised picture of demographic shift. To establish quantifiable measures directly linked to loss of knowledge or care for places would require careful development. The link with oral history programs and research is a clear one. Research initiatives in this area are vital.

This direct indicator of demographic change is proposed as an indirect indicator of loss of knowledge about and conserving care for, archaeological heritage places. Such a proposal rests on the assumption that this often-recorded role of local people is a general phenomenon. The assumption must be tested in historical research and oral history programs before the Indicator is adopted as a long-term component of state of environment reporting.

However the potential value is high. The assumed causal link between knowledge of heritage places and current population shifts and socio-economic pressures cannot be ignored in spite of the qualitative nature of the evidence and the challenges of establishing robust measures and analyses to explore its parameters.

## Monitoring Design and Strategy

To be established in Research and Development. A sampling strategy involving oral history programs would be required for the Research and Development phase to give realistic scope to monitoring potentially involved, and also to test the underlying assumptions.

#### **Reporting Scale**

Potentially national using ABS and Census data. However, this would also have regional, and State/Territory components.

#### Outputs

These might include:

- Graphs, tables and other statistical presentation of demographic data from ABS and Census records.
- Mapped presentation of demographic data by State/Territory and region.
- Oral history and other research presenting the results of studies based on sampled areas and communities; in the form of written reports.

## Issue 2 Impact of development (humanly initiated actions including tourism)

This issue constitutes a major pressure on indigenous archaeological heritage places as well as natural environments and ecosystems. Expanding settlements are often concentrated in regions of resource rich ecosystems or on coastal margins, where past indigenous settlement was dense and left an archaeological record rich and diverse. Pressures from primary industry in clearing and stocking rates affecting vegetation cover (that minimised disturbance of land surfaces and hence of associated archaeological sites) are also often severe in these areas, especially in the rangelands. Pressures from extractive industries such as mining, and from pastoral activities may be severe in the fragile arid zone and desert marginal lands. Forestry also can result in both direct damage to cultural places or impacts which diminish heritage values and disturb land surfaces.

The expansion of settlements (housing and associated infra-structure) especially in outer metropolitan areas and towns along the eastern sea-board, raises particular problems. For smaller scale housing developments the planning controls may not be consistently applied. One could ask how many indigenous heritage places are lost without record if small scale housing developments proceed without prior cultural impact assessment? Or what impacts follow where a local government area has not in place a Local Environment Plan that accommodates indigenous heritage places, or has no cultural resource zoning provisions? On the other hand large scale industrial developments trigger environmental impact studies and assessment, with consequent mitigation programs or modification of the development to accommodate the statutory requirements of either heritage or planning legislation. In leasehold areas of semi-arid lands agricultural activities and/or stocking rates are controlled to minimise environmental impacts. The actual rate of loss of places is monitored by general Indicator G.3, and a number of indicators in Human Settlements will monitor land use changes and urban expansion.

Tourism is a major growth industry in the Australian economy (Driml and Common 1995; Hyde 1995). Indigenous cultural heritage in places, art and material culture contributes a significant component attracting many overseas as well as Australian visitors. So also do

Australia's museums and its important National Parks and World Heritage Areas open to the public such as Uluru – Kata Tjuta and Kakadu. Visitor numbers to the last two are high (e.g. about 350,000 people a year visit Uluru – Kata Tjuta). This must then be seen as a potential pressure. Measures of the impact of visitor use on the physical condition of these important places must be established. As well, modes of presentation, interpretation and management must be culturally appropriate, ensuring that the indigenous cultural values are not diminished by this use. Indigenous archaeological heritage places open to the public, or used for cultural tourism and educational purposes without prior and appropriate professional assessment or consultation with local custodians regarding likely impact may well be at risk. The impact of tourism on indigenous places is monitored in General Indicator G.4, and visitor numbers to particular areas in Human Settlements Indicator 5.4.

Relevant here is the significant development of Joint Management regimes for World Heritage Listed Properties on Aboriginal Lands in Central and Northern Australia, at Uluru – Kata Tjuta National Park and Kakadu National Park. Both parks are on Aboriginal land which is leased back to the Commonwealth for the purposes of this arrangement. Management of these properties is a partnership between the traditional custodial Aboriginal communities and Parks Australia (North). It combines the expertise, experience and perspectives of both traditions to ensure protection and conservation of the values that underpin the World Heritage status (in the natural and cultural spheres) of these places. Such innovative arrangements are of great significance for Australia's cultural heritage management but are also the subject of considerable international interest.

Less easily or directly measured pressures from tourism are the general impacts of use of the coast and beaches in recreation and local holiday tourism. The impact on the coastal landforms, ecosystems and the rich archaeological record associated with these, can be severe; it must be considered in State of the Environment reporting. The Estuaries and the Sea study has suggested an indicator for this, and also explicitly noted it as an issue for consideration in this heritage study (Ward, 1998 Indicator 7.7 p. 61).

Given that local, State/Territory, and Commonwealth agencies are involved in the implementation of both protective and planning legislation their records should provide data suitable for sustaining strong and statistically useful measures to be set in place to monitor the impacts of developments of various kind for assessment of trends over the cycles of State of Environment reporting. Such measures should give a valuable indication of trends over time. It is important that in the future integration is developed with the natural environment's Regional Integrated Management concerns for which indicators are being developed for Estuaries and the Sea, Inland Waters, Biodiversity and the Land. In this way sustainable development can be progressed, and the principle of this concept applied to cultural resources.

INDICATOR: IA2.1 NUMBER AND PROPORTION OF ARCHAEOLOGICAL ASSESSMENT STUDIES INITIATED PRIOR TO DEVELOPMENT THAT INCLUDE ASSESSMENT OF INDIGENOUS ARCHAEOLOGICAL PLACES AND VALUES

#### Description

The indicator shows the extent of archaeological assessment preceding development focussed on indigenous archaeology. The indicator should be analysed in close association with General Indicator G. 3, which shows actual losses of places and values resulting from developments and land disturbance.

The measures of losses and the mitigating actions will give data for assessing the impact of these pressures. As society's response or commitment is involved in the mitigating actions, or decisions to allow development to proceed at the expense of destruction of heritage places or values, then this indicator will also measure the extent of this response and allow analysis of threats over time.

## Rationale

The indicator will give data for assessing the number of impact assessments focussing on indigenous places, both as an absolute number and as a proportion of environmental impact assessments generally. It will measure both changes in pressures leading to impact assessments being undertaken, and the degree of commitment by government to ensure that impacts on indigenous places are identified and mitigation actions able to be undertaken.

#### Analysis and Interpretation

Data sources in Commonwealth, State/Territory agencies and local government authorities (planning, environmental and heritage) should provide material sufficient to establish a national aggregate. Analysis should elicit numbers and proportions of impact assessments by regional location and type of development (e.g. housing, mining) or humanly accelerated natural processes to provide measures of geographical focus of pressure and correlation with specific developments or processes.

The detailed records which may be accessed for these indicators derive from the fact that State/Territory protective legislation covering indigenous archaeological places provides 'blanket' protection for all places. In some States there is a requirement for formal 'consents to destroy' issued by the relevant agency. So the situation differs from that of other components of cultural heritage.

Trends over time could be significant for targeting areas at risk or documenting association of risk with particular activities and so relevant to future strategies in planning and conservation issues in relation to the pressures concerned.

#### Monitoring Design and Strategy

Studies should be initiated in consultation with relevant agencies and Departments in States/Territories as well as local government to collect and analyse these data for each State of Environment reporting cycle.

Monitoring of available data should involve analyses according to number and proportion of:

- indigenous archaeological studies against of all such assessments;
- type of development;
- by jurisdiction and geographical distribution (biogeographical region/ catchment as well as State/Territory and region);

Valuable analyses of correlation and relationships with data gained in General Indicator G.3 could emerge from multi-variate study of resulting statistics. These would be significant for assessment of the impact of the pressures concerned or the extent of society's response.

## Reporting Scale

Regional and State/Territory as well as Commonwealth aggregating to national. There would be the capacity to break down into State/Territory and local or regional components for more detailed assessments.

## Outputs

Analysis of situation for each reporting cycle, leading over time to analysis of change over time with significant spatial parameters.

- Tabulation in sorted lists according to variables.
- Graphs, histograms presenting data and statistical analysis, also multi-variate analyses, where data are appropriate, probing correlations.
- Maps presenting data spatially and based on GIS capabilities will provide insights into comparative impacts on sensitive areas whose archaeology is rich or vulnerable, and into spatial correlations or otherwise between variables.

INDICATOR: IA2.2 EXTENT OF LAND AREA (PER REGION OR CATCHMENT) UNDER CULTIVATION, CLEARED, CLEAR-FELLED FORESTS, OPEN MINE SITE BARE GROUND, OR LANDS RECORDED AS UNDER STOCKING PRESSURE IN THE RANGELANDS OR ARID ZONES.

#### Description

This Indicator shows the extent of disturbed lands or lands vulnerable to humanly accelerated natural processes (especially erosion), presented by area per region or catchment. It will give a measure of the area of land nationally for which we may predict

- the loss of, or impairment of heritage values for above ground indigenous archaeological heritage places;
- the high probability of damage to or impending loss of sub-surface archaeological features.

#### Rationale

This Indicator focuses on the pressure, derived from extractive and primary industries, on the archaeological record whether above ground or sub-surface. It is a pressure that constitutes a major threat; that of destruction or serious damage diminishing heritage values.

For further discussion see the introductory comment at the beginning of Issue 1 and Issue 2.

## Analysis and Interpretation: Links to other Indicators or Studies

This indicator links closely to the Land Indicator 1.1 (Hamblin 1998, p.28) and related component indicators and Issue 2 in the Biodiversity report (Saunders et al. 1998, p.19 Indicators 2.1 and 2.2). The Inland Waters study also focussed on the issue of land clearance (see Indicator 5.3 Fairweather and Napier 1998, p.42).

The development of analysis and interpretation, monitoring design and strategy, as well as discussions on reporting scales and outputs should be developed by these groups as specialist expertise and existing initiatives are integral to successful development of this Indicator. Robust quantifiable measures are apparently available.

However, there should be separate analysis and interpretation for the application of the results of their studies to the questions significant to heritage. Assessing the parameters of the resultant pressures on the archaeology of indigenous heritage places in Australia requires input from archaeological expertise. The results of such analyses will be of extreme national importance in assessments of potential condition and in planning future informed conservation strategies in response to this pressure.

## Issue 3 Impact of natural processes and humanly accelerated or initiated natural processes

The impacts of natural processes on the archaeological record and indigenous heritage places of archaeological significance, especially the pressures associated with accelerated alteration of land surfaces resulting from human activities (anthropogenic pressures), are major factors in loss of heritage places or serious damage to their physical fabric or heritage values.

Erosion and degradation or loss of land surface may be seen as the predominant pressures here. They may be accelerated or initiated by actions and practices associated with primary industry, both agriculture and grazing (e.g. clearing, cropping or unsustainable stocking rates) or with extractive industries such as quarrying or mining.

Destruction or damage to indigenous archaeological heritage places can, of course, also occur as a result of natural forces – storms, floods, fires. Data on places so damaged or destroyed available in heritage agency records would supplement other records and if collated could provide valuable information. So one Indicator (IA3.1) is suggested to cover this aspect. The Estuaries and the Seas study (Ward 1998) also raised for consideration the question of rising sea levels. This would have direct relevance for indigenous archaeological heritage places, given the known richness of coastal archaeology with many sites located in coastal dune or beach situations as well as in estuarine areas or immediately behind the coastal dune systems. The estuaries of eastern coastal river systems (e.g. in northern NSW) are excellent examples. Any programs to develop indicators or measures of this element (sea level change) in the future should also consider indigenous cultural heritage places.

Erosion is, of course, a dynamic part of the natural cycle. However, its acceleration, induced by such activities as vegetation clearance or over-stocking without care to stabilise or maintain the land surface, is identified as a major problem in Hamblin's 1998 report on Land indicators and in the 1995 land cover disturbance report by Graetz, Wilson and Campbell. Hamblin comments (1998 p.16):

Erosion ... is a natural process that shapes all terrain, is the cause of sedimentary rocks, and proceeds inevitably in all environments. Accelerated erosion, on the other hand, is the product of human interventions that remove vegetational protection from the earth's surface. It is the largest, best known and probably least quantified form of land degradation in Australia...

Erosion and land degradation also constitute a major pressure on preservation of the archaeological record given the significance of the relationship to enclosing contexts (see Cameron, White, Lampert and Florek 1990). Eroding land surfaces take with them the record of the past. Such threats are particularly severe in the fragile terrains of the arid zone, as well as being significant in rangeland regions often subjected to intense pressures of clearing, cropping and overstocking. We risk losing significant components of our indigenous cultural heritage from the past without knowledge of their existence, nor opportunity to record their features and interpret their story of the past. This is a loss to Australia's future generations, and to world history given the global significance of our archaeological record.

According to Hamblin, non-disturbed ecosystems are 'notoriously under-represented' in the lower-lying, more fertile agricultural farmlands of south eastern Australia with conservation reserves on average under 1% in the IBRA biogeographical regions inventory. Hamblin (1998) referred back to the 1996 State of Environment Report's stress on erosion and also made links to population pressures.

Hamblin states: '... on a scale of change in managed ecosystems over history and prehistory ... Australia's managed land systems ... are actively changing very rapidly.' (1998:p.10) She attributes most of these pressures to the impact of either human settlement or unconstrained use of resources for primary production (1998:p.11). For discussion of pre-European settlement situations see Head (1989)—; the comparative aspect makes for salutary reflection.

The reports for state of environment reporting developing indicators for the Land, Biodiversity, Inland Waters and Estuaries and the Sea have each discussed the needs associated with this series of pressures on the land and its ecosystems. The National Strategy for Ecologically Sustainable Development, the Natural Heritage Trust, the National Biodiversity Strategy, a National Rangeland Monitoring Strategy and moves to create regionally oriented integrated management programs are all important initiatives addressing the situation. It is crucial that cultural heritage, especially indigenous cultural heritage of archaeological significance, be incorporated into these programs. The condition of the cultural environment in this instance is closely bound up with that of the land and its ecosystems. It thus becomes an issue of land management, at both the regional and national level.

Ward (1998) comments on the importance of human values in establishing ecosystem management. This is particularly relevant to our area of concern; cultural heritage places. Collaboration to ensure due regard to social as well as scientific values, and for culturally appropriate practice in conservation should be an essential part of developing such integrated approaches. Essential also is the involvement of community groups, and other 'stake holders' in monitoring and mitigation programs.

Important contributions can be made by indigenous communities. Their members' ecological expertise and knowledge of traditional land management practices (such as the correct use of fire as a land management tool) should be seen as vital components in developing such integrated programs. They would also encourage a holistic approach, melding the cultural and natural management regimes. In the Joint Management of Ulu<u>r</u>u – Kata Tju<u>t</u>a National Park, members of the Mutitjulu community have a decisive input into the documentation and management of that Park's faunal and vegetational resources. They work in close collaboration with the specialist scientific members of the Park's staff throughout the year. In all management decisions, the *Tjukurpa* (the traditional law and practice from the Dreaming), offers the guiding principles.

INDICATOR: IA3.1 NUMBER OF INDIGENOUS ARCHAEOLOGICAL HERITAGE PLACES ON LANDS RESERVED FOR CONSERVATION PURPOSES REPORTED AS DESTROYED OR DAMAGED BY NATURAL FORCES SUCH AS FLOOD, FIRE, STORM (WIND/WAVE)

#### Description

This indicator shows the number of archaeological heritage places known to have been destroyed by natural forces.

#### Rationale

It measures losses due to natural forces and so facilitates both assessment of pressure from such forces and monitoring of change in this over time.

#### Analysis and interpretation

The indicator, though limited in many ways in its application and range of available data sources, offers important opportunities to establish quantifiable measures of the impact on indigenous archaeological places of naturally occurring forces in the environment. This is in terms of loss or damage in situations where there can be regular monitoring and the environmental context is well documented. It assumes that full records are kept by the management agencies. It is in effect a sampling strategy which could yield valuable controlled results, and hence robust measures of correlation and change over time with wide predictive applicability.

#### Monitoring Design and Strategy

Expertise from relevant scientists in other SoE groups to be integrated. Analysis of data from management agency records, comparing numbers and proportions against:

- type of 'natural disaster';
- environmental context;
- location and biogeographic region;
- information on the circumstances of the event;
- date of event.

#### Reporting Scale

Potentially national, but relying on consistent, controlled regional data sources in the areas reserved for conservation purposes, it could also provide regional and State/Territory breakdowns.

#### Outputs

- Tabulated lists of numbers and proportions sorted according to the variables mentioned above.
- Statistical analyses presented in appropriate forms (graphic and tabular).
- Full field and analytical reports on the sampling areas studied and results of the monitoring program.
- Distribution maps of occurrences of each cycle of State of Environment Reporting, per biogeographic regions, climatic regions, weather zones using GIS capabilities and relevant advice.

#### Links to other Indicators

Concerns link to those of the Land, and Estuaries and the Sea.

# Issue 4 Statutory protection and management

This issue focuses on questions of the statutory protection and management provided for indigenous cultural heritage places or cultural landscapes of archaeological significance. It requires indicators that measure:

- provisions relevant to the physical condition of heritage places, of the contextual environment or cultural landscape.
- effectiveness in implementing statutory requirements for protection or management.
- extent of societal response in commitment to protection on reserved lands and management in general.

Adequate protection, conservation and management must also be concerned with sustaining the social values of a place or cultural landscape. So indicators that can measure whether management has these concerns will be valuable. Involvement of the custodial community and respect for its traditions and practices in relation to care for country and significant places are vital components whose continuity should be monitored. Changes in this will have significant implications; for archaeological sites as well as places of contemporary social or spiritual significance.

State/Territory statutory provisions for protection of indigenous places of archaeological significance (often through protection of artefacts ('relics') which may be components of these places) provide 'blanket' protection for all such entities. This is a significant difference from the statutory protection offered historic places in Australian heritage legislation.

In the case of certain areas protected for conservation purposes there may be additional statutory protection and statutory provisions relating to their management. In considering statutory protection not only the legislation itself, but also the mechanisms in place for its implementation (especially funding and staff resources) are salient.

Some indicators which could be proposed (such as the extent or number of protected areas) are indirect measures. The underlying assumption here is that such lands will provide good conditions for the preservation of surficial and sub-surface archaeological materials. Another underlying assumption is that there will be preservation of a 'representative' sample of all such materials from the past, subject to the normal processes conditioning survival of archaeological evidence.

Such assumptions cannot be accepted without question. There remains the guestion of whether currently reserved lands (which may initially have been reserved to protect for their natural values) present a representative range of the environments or ecosystems important in the land use of the societies whose cultural places we wish to protect in representative range. For example, the rangelands of the New South Wales' western slopes and plains provided high subsistence resources (in terms of 'biomass'), for hunting and gathering groups. However, these terrains and ecosystems may not be as well represented in protected areas or reserved lands as the forested or the littoral regions in that state. They are often, because of their resources and terrain, devoted largely to pastoral or agricultural primary production, while their woodland landscapes do not have the 'wilderness' appeal of coast or rain-forest so are rarely selected for reservation.

Further assumptions lie behind this use of extent of reserved lands as an indirect measure of condition or protection. We may assume that these areas offer sites good protection, that they are well managed by professional staff. Further we may assume that there are management and conservation regimes in place, that these are constantly monitored and are culturally appropriate, respecting all values held by the heritage places (both scientific and social). Measures need to be established to test that these assumptions are well founded, and thus the adequacy of using these indirect indicators. Relevant too are questions of adequate funding for programs and for provision of professionally trained staff.

Effective implementation also requires provision for custodial involvement of local indigenous groups; the provision of trained personnel or of training for personnel to gain necessary skills in conservation and management practices.

## INDICATOR: IA4.1. AREAL EXTENT OF LANDS RESERVED FOR CONSERVATION PURPOSES UNDER ALL JURISDICTIONS INCLUDING:

- (a) proportion which is 'unmodified' plant or animal habitat, or landscape
- (b) proportion preserved for its indigenous heritage values, and
- (c) proportion in category (b) with provisions for management and its implementation

#### Description

This indicator demonstrates the extent of lands in which conditions for protection of the archaeological record should be good. It will also measure societal response in the provisions for protection and management. It meets all three requirements listed in the beginning of this subsection.

## Rationale

This indicator addresses important protection and management issues discussed in the introduction to Issue 4 and in the introduction to Issue 3. This indicator is also relevant to Issue 1.

It allows examination of a number of salient questions relating to protection in terms of areas reserved for conservation, the proportion of these specifically for Indigenous heritage values.

#### Analysis and Interpretation

This indicator will provide measures of the extent of lands dedicated to the conservation of heritage. The categories selected will facilitate exploration of questions relating to the assessment of protection, its adequacy and appropriateness.

- Indigenous heritage places as represented in these (Category (b)).
- Reservation of areas likely to protect a full range of archaeological places (Category (a)) in their environmental context (also an indirect Indicator for condition).
- Extent of provision for management (Category (c)).

Analysis should consider proportions of the total constituted by the three categories as well as their areal extent in figures. This will facilitate comparison when considering changes over time and interpreting trends in this.

See introductory comments to Issue 4 for further discussion of factors relevant to interpretation.

## Monitoring Design and Strategy

Data sources will include governmental, local authority and heritage agency records for all jurisdictions. These should be analysed for the three categories according to jurisdiction, and by land system, biogeographic regions and catchments. The definition of these variables should be consistent with those developed for analogous indicators directed to other questions in the reports on the Land and Biodiversity. Integration of comparisons would be valuable, compare with approach to analysis for Indicators under Issue 3.

Valuable quantifiable measures of change and analysis of trends over time will be possible using this measure and the available data sources.

The monitoring design, especially in relation to time intervals, and spatial controls should be developed in consultation with researchers in the area of Biodiversity and Land themes. Assessment for each State of Environment Reporting cycle would be valuable if data sources and collection procedures allow this.

#### Reporting Scale

This should be strong for regional analyses and by aggregate to a national perspective with the capacity

for break-down into State/Territory or local components as well as regional.

## Outputs

- Tabulated sorted lists by category, jurisdiction and geographic location.
- Statistical analyses presented in tabular and graphical forms as appropriate, with potential for multi-variate comparison and correlation study.
- The spatial parameters to be mapped at land system, regional and catchment level (using GIS capabilities).

#### Links to other Indicators

Relevant to questions addressed by Indicators for Issue 3 and Issue 1 in this section of the Report. It also links to Issues and indicators being developed for the Biodiversity theme.

## INDICATOR: IA4.2 NUMBER AND TOTAL AREA OF PROTECTED AREAS OR INDIVIDUAL INDIGENOUS ARCHAEOLOGICAL HERITAGE PLACES UNDER:

- (a) the primary control of local communities
- (b) the control of traditional owners
- (c) joint management regimes, or
- (d) designated as Aboriginal Land managed by resident communities according to traditional canons of practice in caring for country

## Description

This indicator shows the number and areal extent of protected areas of individual indigenous archaeological heritage areas under various categories of ownership or control. It therefore measures the nature of overall management, and the extent to which indigenous custodians are involved in this.

It is an indicator directed at maintenance of values and culturally appropriate care for physical fabric. Given this, and the fact that societal response is involved in the formal governmental decisions establishing the form of control, it is therefore an indicator measuring both Condition and Response.
### Rationale

The introduction to Issue 4 outlined the significance of cultural sensitivity and awareness for protection and maintenance of values of indigenous heritage places. This is important for archaeological sites as well as places part of contemporary culture.

The indicator measures this through analysing various forms of ownership, control and management which involve participation of custodial communities. It gives a wide perspective to demonstrate and measure areas in which archaeological heritage will be managed as part of the traditional cultural landscape according to accepted indigenous practice. The assumption here is that this will provide conditions conducive to preservation.

It will also act as an indicator of societal response as the transfer of heritage control for archaeological places or protected areas to communities involves governmental decision, and that decision is ultimately rooted in the attitudes of the wider community.

A current example is the passage and implementation of the Act relating to the ownership of five National Parks in New South Wales. These include Lake Mungo National Park. The significance of its archaeological record for local Aboriginal communities is discussed in the introduction to Issue 4, and the importance of joint management Issue 2.

#### Analysis and Interpretation

Points relevant here have been raised in the introduction to Issue 4. Details of analytical procedures will be similar to those for IA4.1, also concerns for interpretation of numbers, proportions and the significance of change or stability in these figures over time.

Designating 'protected areas' rather than lands reserved for conservation purposes was necessary in this instance. Many individual archaeological sites in south eastern Australia are protected in small local reserves under various types of management.

These should be included as an interesting sub-set, but data collection could be a difficult task compared to that of accessing agency records. This category could be explored using a sampling strategy that explored an appropriate geographic or social range. If this sub-set were omitted at the initial stage for practical reasons the Indicator would still be a strong and useful one, applied to lands reserved for conservation purposes.

#### **Monitoring Design and Strategy**

Data sources will include records of local, State/Territory and Commonwealth agencies and authorities, for lands reserved for conservation purposes, plus records from a sample of other protected areas. From these information on the numbers involved, their proportion of the total and the nature of control or management involved can be collated and analysed statistically. Numbers and proportions for each category should be analysed by:

- jurisdiction;
- location and by region, catchment, biogeographic regions;
- Aboriginal language area;
- Aboriginal and Torres Strait Islander Commission region.

Such analyses should provide valuable material for studies of trends in societal response over time, and also indirectly trends in the protection and presentation of indigenous social values for indigenous archaeological heritage. They will offer quantifiable measures of these, relevant for assessing both condition and societal response at various levels. The data should be amenable to statistical analyses, including multi-variate directed to correlation and co-variance.

Data collection and analysis should be designed to facilitate reporting on these for each state of environment reporting cycle. Over time a longer interval between assessments may become appropriate but at present a close time scale would seem valuable given the initiatives under way in this area.

## **Reporting Scale**

This will range from local to national, given the agencies and authorities involved and the inclusion of individual archaeological places likely to be local initiatives as well as larger protected areas under State/Territory or Commonwealth control. An aggregated national perspective will be attainable, as well as break downs for State/Territory, regional, or local levels.

#### Outputs

- Tabulation in sorted lists by variables.
- Quantifiable data analysed statistically and presented in tabular, graphical and diagrammatic form. Multi-variate analyses.
- Distribution maps to present the spatial parameters on regional, on national scale, also as mapped against biogeographic regions and catchments, Aboriginal linguistic areas and Aboriginal and Torres Strait Islander Commission Regions (using GIS capabilities).

#### Links to other Indicators

There will be links here to earlier indicators in this section relating to condition and to the indicators being

developed in another section of this Report, relating to indigenous places of contemporary social or spiritual significance.

## INDIGENOUS PLACES IMPORTANT TO THE HERITAGE OF LIVING CULTURES

The indicators listed in Table 5 have been based on those types of places significant to Indigenous communities today. Such places may be important because of their continuing traditional value, and/or their contemporary significance for either their spiritual, scientific, historical or other social value or for a combination of the above values.

#### Table 5

#### Recommended key indicators—indigenous places/living cultures

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
General Indicators relevant to indigenous heritage values (contemporary)	G.2 Number of heritage places assessed using best practice assessment standards	R
	G.3 Number of places destroyed or whose values have been severely diminished	С
	G.4 Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use.	C/P
	G.5 Funds provided for maintaining heritage values	R
	G.6 Amount of funding provided to heritage agencies responsible for heritage places and objects.	R
	G.7 Number of conservation practitioners and training courses	R
	G.8 Community awareness of and attitudes towards heritage places and objects and their conservation.	R

## Environmental Indicators Natural and Cultural Heritage

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
Issue 1 'Culturally appropriate' directions in conservation and management of heritage places of significance to Indigenous custodians/communities	<ul> <li>IC.1 Number of places (sample) where Indigenous people are involved in heritage management decision making by virtue of: <ul> <li>i) Indigenous land ownership</li> <li>ii) joint management</li> <li>iii) recognised custodianship</li> <li>iv) direct consultation.</li> </ul> </li> </ul>	C/R
	<ul> <li>IC.2 Number of government heritage agencies including those agencies providing heritage research and funding programs that incorporate procedures of consultation or referral to indigenous custodial/community groups, on: <ol> <li>priority setting</li> <li>individual projects</li> <li>annual programs</li> <li>policy formulation on Indigenous issues.</li> </ol> </li> </ul>	C/R
	IC.3 Number of trained Indigenous heritage professionals or custodial representatives employed by government heritage agencies, or Indigenous people serving on councils or boards of such agencies, who are actively involved in the management and/or administration of Indigenous heritage places.	C/R
	<ul> <li>IC.4 Number of Indigenous community based funding applications for government heritage funding: <ul> <li>i) that are successful</li> <li>ii) are not successful</li> <li>iii) as a percentage of total government heritage funding provided</li> <li>iv) as a percentage of total government heritage funding applications.</li> </ul> </li> </ul>	C/R
	IC.5 Number of programs and funds allocated for repatriation of Indigenous artefactual material and/ or human remains.	C/R
Issue 2 Questions of Indigenous community cultural heritage maintenance (places being one part)	<ul> <li>IC.6 Number of Indigenous communities/organisations establishing:</li> <li>i) 'keeping places'</li> <li>ii) cultural centres</li> <li>iii) site/place data bases</li> <li>iv) heritage tours, trails/walks.</li> </ul>	C/R

## Issue 1 'Culturally appropriate' directions in conservation and management of heritage places of significance to Indigenous custodians/communities

This issue focuses on directions in Indigenous heritage protection, preservation, conservation and management that are 'culturally appropriate' to Indigenous people. The underlying issues determining what are 'culturally appropriate' directions in Indigenous heritage management are related to the common theme, of the recognition of the expertise of Indigenous people in managing and conserving their heritage places and objects and their right to be active participants in the interpretation and management of these places and objects. Custodian's knowledge of their heritage places should be recognised as being equal to that of 'professional' cultural heritage managers.

As mentioned previously, in the first component of the Indigenous Places Section, adequate protection, conservation and management must also be concerned with sustaining the social value of a place or cultural landscape. Involvement of the custodial community and respect for its traditions and practices in relation to care for country and significant places are vital components deserving measurement over time. Changes in this will have significant implications.

The proposed indicators relating to this issue are of course developmental, and time will determine their worth or otherwise. They at least provide a starting point to focus on an aspect of Indigenous heritage which Indigenous people feel strongly about and from a state of the environment perspective, an area which has had little research.

INDICATOR: IC.1 NUMBER OF PLACES (SAMPLE) WHERE INDIGENOUS PEOPLE ARE INVOLVED IN HERITAGE MANAGEMENT DECISION MAKING BY VIRTUE OF:

- i) Indigenous land ownership
- ii) joint management
- iii) recognised custodianship
- iv) direct consultation

#### Description

Identifies the number (and proportion) of managed places that directly involve Indigenous people in management decision making, and the nature of that involvement.

## Rationale

This indicator provides a means of measuring societal and government response over time, in regards to the promotion of Indigenous involvement in managing Indigenous heritage. Data obtained for this indicator will also provide insights into the numbers (sample) of Indigenous communities actively involved in the management of their heritage places.

#### Analysis and Interpretation

Data for this indicator should be provided from sample study areas from across the country. The numbers and percentages of places where Indigenous people are involved in heritage management, as opposed to no management involvement, can be established for all States and Territories and this data analysed statistically. Further statistical analysis can be made of the data relating to the categories by which Indigenous involvement in heritage management has been activated (eg.):

- i) Indigenous land ownership
- ii) joint management
- iii) recognised custodianship
- iv) direct consultation.

Such analyses should provide valuable material for studies of trends over time, and in doing so provide a history of Indigenous involvement in the management and interpretation of their significant heritage places.

## Monitoring Design and Strategy

This indicator is one that should be seen as developmental particularly in regards to accessing relevant data. Initially, sample areas from across Australia covering all States and Territories should be selected for detailed data gathering purposes. Future data collection and analysis should be designed to facilitate reporting on these for each State of the Environment reporting cycle. Over time more effective means of gathering data for this indicator could be established and modifications to the actual indicator made if required.

#### Reporting Scale

Sample areas from all States and Territories should be the target of data gathering exercises. By aggregating data the reporting scale would be national based on a national sampling strategy.

#### Outputs

Outputs could be presented in appropriate tabulated, graphical and diagrammatic forms to facilitate interpretive use.

#### Data sources

For the initial sample areas selected to obtain data, sources would include State and Territory Government Indigenous heritage Departments and their registers, Indigenous organisations including Land Councils and Indigenous heritage funding bodies.

#### Links to other indicators

This indicator is linked directly to Indicator IA4.2. The link between these indicators being the issue of Indigenous involvement in management (total or joint) of places or sites for which they are the custodians of.

All of these indicators measure society's response in regards to making provisions to accommodate 'culturally appropriate' methods of management in relation to places and sites that are significant to contemporary Indigenous custodians, for their social or other values.

INDICATOR: IC.2 NUMBER OF GOVERNMENT HERITAGE AGENCIES INCLUDING THOSE AGENCIES PROVIDING HERITAGE RESEARCH AND FUNDING PROGRAMS THAT INCORPORATE PROCEDURES OF CONSULTATION OR REFERRAL TO INDIGENOUS CUSTODIAL/COMMUNITY GROUPS, ON:

- i) priority setting
- ii) individual projects
- iii) annual programs
- iv) policy formulation on Indigenous issues

INDICATOR: IC.3 NUMBER OF TRAINED INDIGENOUS HERITAGE PROFESSIONALS OR CUSTODIAL REPRESENTATIVES EMPLOYED BY GOVERNMENT HERITAGE AGENCIES, OR INDIGENOUS PEOPLE SERVING ON COUNCILS OR BOARDS OF SUCH AGENCIES, WHO ARE ACTIVELY INVOLVED IN THE MANAGEMENT AND/OR ADMINISTRATION OF INDIGENOUS HERITAGE PLACES

#### Description

Identifies the number of relevant government agencies involving Indigenous community groups in decision making processes, the number of Indigenous people directly employed in the management and administration of Indigenous heritage places, and the number of Indigenous people serving on the councils or boards of heritage agencies.

## Rationale

The health of Indigenous heritage places relies in large part in the retention of linkages with the Indigenous culture that give the places heritage values. The indicators will show the extent of, and trends in, the active involvement by government agencies of Indigenous people in general and specific decision making processes for heritage places.

#### Analysis and Interpretation

For Indicator IC.2, simple analysis can be carried out establishing the numbers and the percentages of government heritage agencies (including heritage research and funding agencies) which incorporate procedures of consultation or referral to indigenous custodial/community groups across the country.

For Indicator IC.3, elements of analysis will include numbers and percentages of total for indigenous representation in various positions in all State, Territory and Commonwealth heritage agencies. The analysis of the data will indicate the levels of commitment government heritage agencies have towards involving Indigenous people in the management and/or the administration of Indigenous heritage places.

#### Monitoring Design and Strategy

Such analysis should be undertaken on a regular basis to provide data for study of trends over time. Appropriate intervals would be the State of the Environment reporting cycle.

#### Reporting Scale

By aggregation of state data the reporting scale would be national, and Australia-wide in spatial scale.

#### Outputs

Appropriate tabular, graphic and diagrammatic presentation of analyses would facilitate interpretative use.

#### Data sources

Data sources to be researched in collating the data for analysis for this indicators include the records of State, Territory and Commonwealth agencies and authorities, including heritage funding bodies and institutions.

## Environmental Indicators Natural and Cultural Heritage

#### Links to other indicators

These indicators are linked to Indicator IC.1 of this section under the general theme of Indigenous involvement in Indigenous heritage management. Indicator G.7 is linked to both these indicators in regards to the issue of employment of Indigenous people in Indigenous heritage management or Indigenous representation on Indigenous heritage advisory bodies.

A link also exists between Indicator IC.3 in this section and Indicator G.7, in their referral to the training of Indigenous heritage managers/professionals.

INDICATOR: IC.4 NUMBER OF INDIGENOUS COMMUNITY-BASED FUNDING APPLICATIONS FOR GOVERNMENT HERITAGE FUNDING:

- i) that are successful
- ii) are not successful
- as a percentage of total government heritage funding provided
- iv) as a percentage of total government heritage funding applications.

#### Description

Measures the amount and relative proportion of funding provided by government for Indigenous community-based heritage initiatives, and the success rate of requests for such funding.

#### Rationale

Heritage funding programs are a vital resource in allowing Indigenous community heritage priorities to be addressed by the custodians themselves. This indicator provides insights into the success and level of funding for Indigenous community-based heritage projects in relation to total funding available for heritage programs. It offers ways of measuring, and monitoring change over time, and government commitment to Indigenous peoples heritage priorities.

#### Analysis and interpretation

Annual collections of data should occur across all jurisdictions. Data should be analysed to provide quantified measures reflecting the success and subsequent allocation of funds for Indigenous community based projects compared to other funded applications across all heritage areas. Changes in the allocations of funding over time will provide insights into government responses towards Indigenous heritage and towards Indigenous community's heritage priorities.

#### Monitoring design and strategy

Data collection and analysis should be designed to facilitating reporting on these on an annual basis. However, as records of funding allocations are available, reporting could be carried out each State of the Environment reporting cycle.

#### Reporting scale

Reporting for this indicator should be at the State, Territory and national level and across all jurisdictions.

### Outputs

Primarily quantitative analysis of data, presented in appropriate tabulated, graphical and diagrammatic forms to facilitate interpretive use.

#### Data sources

Data sources will include records of State, Territory and Commonwealth heritage funding agencies and authorities.

#### Links to other indicators

This indicator is linked to Indicator IA.4.3, in that they are both related to issues of funding allocation for Indigenous heritage.

INDICATOR IC.5 NUMBER OF AGREEMENTS REACHED AND FUNDS ALLOCATED FOR THE REPATRIATION OR OTHER APPROPRIATE TREATMENT OF INDIGENOUS ARTEFACTUAL MATERIAL AND/OR HUMAN REMAINS

#### Description

Measures the number of agreements reached between government agencies and indigenous groups targeted at the repatriation or other appropriate treatment of Indigenous artefacts and skeletal material, and the funding made available to implement such programs.

#### Rationale

The repatriation and appropriate treatment of artefactual material and human remains continues to be a priority for Indigenous peoples. They are seen by Indigenous people as being intrinsically associated to the places or 'country' from which they came. As the

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bulk of this material is held by government agencies and museums (both in Australia and overseas), government programs and funding are essential to ensure that repatriation or the finding of other agreed solutions continues. Policies have been agreed by all major museums in Australia to guide their approaches to this issue (see Council of Australian Museums Associations 1993). The indicator would identify trends in government commitment to this objective through the number of agreements actually finalised and the amount of funding applied to the programs.

#### Analysis and interpretation

This indicator will provide quantifiable data on the number of agreements reached and funds allocated for the repatriation or other agreed treatment of artefactual material and/or human remains by Indigenous communities. For a number of reasons, not all indigenous communities desire to see material physically returned to them, and a range of alternative treatments of material can be agreed between communities and museums. Interpretative analysis should consider the range of alternative solutions agreed upon, the change in the number of agreements over time (both in absolute terms and as a proportion of applications made by communities), and the change in funding for the programs.

#### Monitoring design and strategy

Data collection and analysis should be designed to facilitating reporting on an annual basis. However, reporting could be carried out at each State of the Environment reporting cycle.

#### Reporting scale

Reporting for this indicator should be at the State, Territory and national level and across all jurisdictions. An aggregated national perspective will be attainable.

#### Outputs

Primarily quantitative analysis of data, presented in appropriate tabulated, graphical and diagrammatic forms to facilitate interpretive use.

#### Data sources

Data sources will include records of State, Territory and Commonwealth collection agencies and authorities.

#### Links to other indicators

This indicator is linked to Indicator IA.4.3 and Indicator IC.4 above, in that they all are related to issues regarding funding allocation for Indigenous heritage.

## Issue 2 Questions of Indigenous community cultural heritage maintenance (places being one part)

Indicators relating to this issue are very much in a developmental stage with regards to State of the Environment reporting. The issue however, is a significant one in that if Indigenous cultural and or spiritual information relating to places/sites and cultural landscapes (the continuing, living traditions) is not passed on to younger generations then these places in effect will become more archaeological in nature, and heritage values will be lost.

The nature of this issue, particularly, the difficulty in obtaining data, makes the selection of the indicator tentative in the first instance. Research should go into this area similar to that occurring with Indigenous languages so that over time more robust indicators can be developed.

Specific indicators of condition have not yet been established, though most of the indicators given here for living cultures have a direct or surrogate relationship with condition assessment. Other directly relevant indicators relate to the condition of language, which are dealt with in indicators IL.1-4.

At this point in time, the proposed indicator for this issue aims to shed light on some areas where cultural heritage maintenance (places being one part) by Indigenous communities can be attempted to be measured.

## INDICATOR: IC.6 NUMBER OF INDIGENOUS COMMUNITIES/ORGANISATIONS ESTABLISHING:

- i) 'keeping places'
- ii) cultural centres
- iii) site/place data bases
- iv) heritage tours, trails/walks

#### Description

The number of indigenous communities and organisations taking direct action to maintain cultural heritage knowledge, values and practices, and to transmit information and understanding about these to the wider community.

### Rationale

The maintenance and control of traditional knowledge, places and objects is a central objective of Indigenous communities. It is seen as being a prerequisite for the continued good health of indigenous heritage values. Such knowledge might include ceremonial knowledge, traditional knowledge of plants and animals in the environment, and traditional knowledge explaining the meanings of landscape, places and objects.

The indicator will provide quantitative information on the extent Indigenous communities are trying to maintain and transmit their cultural heritage.

#### Analysis and interpretation

The indicator provides information on the actions taken by communities to maintain and present aspects of heritage places. The information on such actions can be compared with information on funding to indicate the adequacy and effectiveness of funding programs. Changes over time might reflect pressures brought about by inadequate funding, or changes in Indigenous community attitudes to this method of maintaining and presenting cultural heritage.

#### Monitoring design and strategy

Such analysis should be undertaken on a regular basis to provide data for the study of trends over time. Initially, research identifying the most appropriate data sources would be time consuming, but once completed appropriate reporting intervals could be linked to the State of the Environment reporting cycle. Monitoring should also include agreements between indigenous communities and museums for the museums to act as holding places for the communities. This option is sometimes preferred by the community, who may not be prepared, for financial, management or other reasons, to take direct custodianship of cultural material at the time of the agreement.

#### Reporting scale

Aggregated data would provide a national overview, and the State/Territory and regional situation could be reported and comparisons made between them.

#### Outputs

Primarily quantitative analysis of data, presented in appropriate tabulated, graphical and diagrammatic forms to facilitate interpretive use.

#### Data sources

Data sources for this indicator would be Indigenous Land Councils (Regional), State, Territory and Commonwealth agencies and authorities. Research would have to undertaken to identify the best mix of data sources and ways of gathering data.

#### Links to other indicators

This indicator is linked to Indicator IC.4 in terms of access to funding to undertake these activities.

## Indigenous language indicators

Table 6

## Recommended key indicators - indigenous languages

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
Issue 1. Condition of Indigenous languages	IL.1 Number of people who identify as knowing each indigenous language.	С
	IL.2 Number of people in age group who identify as knowing each indigenous language; proportion of total identifying as indigenous.	С
	IL3 Number of traditional languages at each recognised stage of inter-generational dislocation.	С
Issue 2. State of documentation of languages	<ul> <li>IL.4 The number of indigenous languages for which</li> <li>(a) documentation is: <ul> <li>(i) good</li> <li>(ii) adequate</li> <li>(iii) inadequate</li> </ul> </li> <li>(b) documentation is close to complete (given the state of the language)</li> </ul>	С
Issue 3. The wider use of Indigenous languages	<ul> <li>IL.5 The number of/proportion of traditional language used in:</li> <li>i. broadcast media: radio, TV, published books, magazines, cinema, WWW, distinguishing: <ul> <li>(a) programs aimed at speakers;</li> <li>(b) programs aimed at a general audience;</li> </ul> </li> <li>ii. signage in public places (streets, parks), advertisements</li> </ul>	C/R
	IL.6 Number of approvals of geographic names, including map sheet names, using indigenous place names.	ĸ
Issue 4. Funding, research and education	<ul> <li>IL.7 Amount (in \$) of funding provided for language programs through government departments and agencies, including ATSIC, DEETYA, ARC and AIATSIS; distinguishing allocations to:</li> <li>(a) research;</li> <li>(b) language maintenance;</li> <li>(c) education and training; and</li> <li>(d) information dissemination and public education (eg translation of notices of government programs).</li> </ul>	P/R
	IL.8 The number of projects which document knowledge of traditional languages, by type of project.	R
	IL.9 The number and type of indigenous language programs undertaken in language centres, schools, and other institutions.	R

## Issue 1 Condition of Indigenous Languages

INDICATOR: IL.1 NUMBER OF PEOPLE WHO IDENTIFY AS KNOWING EACH INDIGENOUS LANGUAGE.

## Description

Identifies the population knowing each indigenous language. The Australian Bureau of Statistics Census restriction to 'people over 5 years of age' is reasonable.

#### Rationale

The fundamental measure of language strength is the number of people who learnt it as their first language. Linguists term such people 'native speakers', which may be slightly misleading, as it covers understanding ('hearing') the language as well as speaking it (and applies to oral languages, ignoring sign (manual) languages). An advantage of the term 'speaker' is that it focuses on knowledge of the spoken language, with no regard to literacy (knowledge of reading and writing); the spoken language is primary, and the written form derived. A spoken language can be written down at any time, but a language known only from writing rarely (perhaps never) resurges as a spoken language.

#### Analysis and interpretation

A small speaker population (less than a few dozen) points to the speakers being old people and probably the language is not being learnt by children. A speaker population of a few hundred however may well be stable.

#### Monitoring design and strategy

• Interview surveys and census of indigenous people.

It is acknowledged that self-reporting has biases as a measure of language population. In areas where languages are strong and multilingualism is common, a person may not bother to report a language which they actually know fairly well because it is not their main language, or because they do not know it 'as of right' (i.e. by inheritance, such as by being a traditional owner of the land affiliated with the language), but through chances of their life history. At the other extreme, in areas where little of a traditional language is remembered, a person who knows some more words and traditions than their peers may get recorded in a survey as a speaker of their ancestral language. Some population figures have been obtained more painstakingly, by a single researcher interviewing people household to household. While not administering competence tests, an interviewer with local knowledge can reduce the above biases — for instance, see Hoogenraad 1992. The best population figures for each language might result from administration of some uniform competence test (such as applies to languages taught at schools and universities), but this would have its own pitfalls, and it is understood that such a test has not been attempted in Australia (outside of formal education contexts). The only community testing known is Hansen's 1984 survey of inter-dialectal knowledge within the Western Desert language.

 An alternative way of collecting population information is to survey the linguists who are experts on particular languages. This is basically the method behind the Ethnologue, and is used by Dixon (forthcoming). The linguist's estimate is the more reliable the smaller the number of speakers. A difficulty is that there is no formal register of the relevant (several dozen) linguists.

#### Reporting scale (spatial)

National, by ABS division. ABS will for a fee extract data on a customised basis.

A practical compromise is being reached (by ABS and AIATSIS) on the distinction between 'dialect' and language, so that for most languages, for figures for its various dialects can be aggregated, but some (relatively populous) languages are best listed separately even though linguists may regard them as being in a dialect relation within a larger language.

#### Outputs

Tabulation of population by language.

Mapping of language populations by traditional country, compare with Henderson & Nash 1997 Figure 4.

#### Data sources

The ABS 1991 Census had a question on language spoken at home, and any Australian language was coded as 'Australian Indigenous Language', that is even the raw data did not distinguish between Australian languages. The ABS 1996 Census was a great improvement from on this point — 54 Australian languages and two creoles are distinguished (ABS 1997:19-20), and several dozen less populous languages are also recognised in the data. None of the population by language has yet been published; the aggregate national figures from the 1996 Census are:

LANGUAGE SPOKEN AT HOME (Aged 5 years and over)

Australian Indigenous Languages 21,824 males + 22,368 females = 44,192 persons

The Summer Institute of Linguistics' *Ethnologue* (Grimes 1996) reports a population estimate for each language. While the *Ethnologue* is a possible source of the names and identities of Australian languages, it would not be a good data source for population figures because the current estimates are of widely variable age and reliability, as they derive from a whole range of (sometimes secondary) sources. Also, even if the *Ethnologue* continues with further editions, it does not have fixed reporting periods, and the population figures in particular would not reliably show trends. However, "SIL is considering including information on language endangerment in the next edition of *Ethnologue* and seeks advice on what kind of information can reasonably be included." (CELP 1998)

The Linguistics Society of America (LSA) has a Committee on Endangered Languages and their Preservation (CELP) which has made a survey of endangered language community populations and speaker populations, by world area and language, including numbers of remaining speakers and contact names of linguists. The results are expected to be on the LSA's web site <http://www.lsadc.org/> (CELP 1998).

## Links to other indicators

This indicator is elaborated by the indicator of knowledge across generations. Other indicators which may be expressed as 'per capita of speakers' would by definition rely on this indicator.

INDICATOR: IL.2 NUMBER OF PEOPLE IN AGE GROUP WHO IDENTIFY AS KNOWING EACH INDIGENOUS LANGUAGE; PROPORTION OF TOTAL IDENTIFYING AS INDIGENOUS. INDICATOR IL3 NUMBER OF TRADITIONAL LANGUAGES AT EACH RECOGNISED STAGE OF INTER-GENERATIONAL DISLOCATION.

#### Description

The number of people in each age group knowing a language, and the spread of language knowledge across generations, are measured here as good indicators of the strength of a language

#### Rationale

Humans have a 'critical learning period' for full acquisition of a language, which ends around puberty. Adults can of course learn a language, but they generally find it difficult, and have to apply themselves consciously to the task, and generally do not acquire the more difficult parts of the language's grammar. In a situation of language death, the most knowledgeable speakers are usually adults who use another language as their main language, and whose partial knowledge of the dying language might be anywhere on a very wide scale. Least likely to be maintained are multiclausal sentences, and irregularities of grammar. Somewhat more robust are the terminologies (vocabulary) on some particular subjects (flora, fauna, artefacts, body parts), oratory styles, and some songs. If any parts of a language are remembered, it tends to be some words, common phrases or short sentences (especially commands), and perhaps a snatch of song.

Traditions can be passed on more fully when the children and young adults use their elders' language, i.e. where the indigenous language is a primary means of communication. It can be expected that there are subtleties of cultural knowledge (especially songs, stories and ceremony related to place) which do not survive translation to a creole or English, and those aspects are thus less likely to be transmitted to the next generation.

#### Analysis and interpretation

Considerable research has been undertaken about the process of language maintenance. McKay 1996 is an excellent and most recent source for consideration of maintenance of Australian languages (including his summaries of earlier studies). McKay 1996 adopted 'a classification of the specific types of language status in which language intervention occurs', as in the following table.

#### Table 7

#### Language Maintenance Terminology after Australian Indigenous Language Framework (AILF)

AILF Cat	egory	Defining Characteristics
Language Maintenance (First Language Maintenance)		All generations full speakers
Language Revival (3 sub-categories — all involve children learning the language of their own heritage)	Language Revitalisation	Generation of (older) speakers left — children likely to have good passive knowledge
	Language Renewal	Oral tradition but no full speakers — children likely to have little or no passive knowledge
	Language Reclamation	No speakers or partial speakers — relying on historical sources to provide knowledge of the language
Language Awareness		Non-speakers learning about the languages where it is not possible to learn and use the language— vestiges only, documentation poor
Language Learning (Second Language Learning)		Non-speakers learning as L2
Source: (McKay 1996: p.19)		

It is feasible to specify for each language its current status according to the above categories. This would require assessment by linguists or others knowledgeable about each region.

Fishman 1991:395, 1992 discusses Reversing Language Shift (RLS) in community and Aboriginal languages in Australia according to 8 stages, which could be used as an 8-valued language response indicator — and which co-vary as condition indicators. Fishman's stages 6-8 relate to the AILF categories, as discussed by McKay (1996:192-8). McKay (1996:198-200) in particular has built on the critique of Fishman by McConvell 1992.

#### Monitoring design and strategy

See remarks above on the speaker population (Indicator IL1). The method of surveying the regionallyexpert linguists, while still indirect, is more appropriate for this indicator than for collection of the self-reported speaker status (Indicator IL1). Design and implementation of such a survey should be include regional language centres, which cover most of Australia (Contact list for Australian Aboriginal and Torres Strait Islander Language Organisations http://coombs.anu.edu.au/WWWVLPages/AborigPages /LANG/CONTACTS.HTM). There is no definitive list of linguists who would need to be surveyed, but the co-operation of professional bodies could be sought. Note that the Linguistics Society of America (LSA) has a Committee on Endangered Languages and their Preservation (CELP) which has made a survey of endangered language community populations and speaker populations, by world area and language, including numbers of remaining speakers and contact names of linguists (CELP 1998).

The Aboriginal and Torres Strait Islander reports on its Language Maintenance and Broadcasting section according to objectives beginning with the following:

- 1.1 maintain or revive existing language
- 1.2 preserve/protect/record language
- 1.3 retrieve/restore a language

Note that 1.1. - 1.3 correspond roughly to the Australian Indigenous Language Framework categories.

#### Reporting scale (spatial)

A status could be assigned to each Australian language, using ATSIC's internal reports. The complementary suggestion is to compile survey data from each linguist known to be studying an Australian language.

#### Outputs

Tabulation of population by age group by language.

Mapping of age-stratified language populations by traditional country (compare with Henderson & Nash 1997, Figure 4).

Mapping of languages by traditional country showing AILF Language Maintenance status.

#### Data sources

The ABS 1996 Census data on Australian languages has the potential for providing language population by age, and within each subdivision the proportion of those identifying as indigenous who report speaking an Australian language at home. None of this breakdown is yet available, and it is subject to biases of selfreporting (discussed above). On the other hand, a language may be sufficiently known for traditions to be learnt, but it is not a language of the home.

The Summer Institute of Linguistics' Ethnologue (Grimes 1996) generally includes a brief comment on the population of speakers, and sometimes on how well the language is known: e.g. for Bunaba (Kimberley): 'Only old people speak Bunaba. Children only know a few words; their first language is Kriol (Hudson 1987:16)'.

#### Links to other indicators

Clearly this indicator elaborates on the basic population indicator.

# Issue 2 State of documentation of Indigenous languages

## INDICATOR: IL.4 THE NUMBER OF INDIGENOUS LANGUAGES FOR WHICH:

- (a) documentation is:
  - (i) good
  - (ii) adequate
  - (iii) inadequate
- (b) documentation is close to complete (given the state of the language)

#### Description

A checklist of documentation (published and in print, or readily available) for each language.

Relevant categories of documentation are:

- dictionary: whether a vocabulary, picture vocabulary, full dictionary with exemplification, bilingual Language X-English dictionary (with English 'finder list'), or English-to-Language X dictionary;
- learner's guide: written lessons, audio-taped lessons, lessons delivered by computer-aided instruction;
- grammar;
- recordings in the language (audio, video): in a variety of genres, including traditional songs;
- text collections (that is primarily for people who do not know the language, such as texts with interlinear analysis); and
- vernacular literature (that is in the language, and primarily for people who are literate in the language).

#### Rationale

There are several reasons why language documentation is useful: two important ones are:

- (a) the survival of an Australian language in a wider environment of formal education and literacy is allied with adoption of some of these non-traditional means of instruction, even for the young speakers; and
- (b) in the absence of knowledgeable speakers, good documentation is the only basis for understanding and appreciating narratives, history, song or any material in the language.

Goddard and Thieberger (1997:pp.191-3) make recommendations for the future of lexicography (dictionary-making) of Australian languages. They note that most existing dictionaries are of the type 'Aboriginal vernacular to English', and 'a preponderance of lexicography in this direction is indicative of the dominant status of the target language'. The existence of an 'English-to-Language X' dictionary can mean that the language is particularly healthy, as speakers are literate in it as a first language and need such a dictionary to understand concepts expressed in English. This type of dictionary needs to be distinguished from vocabularies arranged by English because the work is for adult learners whose first language is English.

## Environmental Indicators Natural and Cultural Heritage

#### Analysis and interpretation

For a language still spoken, documentation is never complete. For a language no longer spoken, the combined documentation can amount to a complete statement of what is known and is unlikely to be superseded — the amount and quality of documentation of language needs to be assessed in the light of whether further study can add to and improve it.

#### Monitoring design and strategy

Expert advice is needed to assess the adequacy of documentation reported from bibliographic sources. The western half of the country has been covered by four regional 'handbooks' (see Data sources), which inevitably grow out of date.

#### Reporting scale (spatial)

Data from national bibliographic sources could be assigned to the reporting categories, primarily at the level of each language.

#### Outputs

A checklist of documentation (published or readily available) by type of work (grammar, dictionary, etc) and by language.

#### Data sources

In order of age, the existing handbooks, which cover the western half of the country, are:

- McGregor, William 1988, Handbook of Kimberley languages. Pacific Linguistics C-105.
- Nash, David 1981 (ed), Sourcebook for Central Australian Languages. Compiled by Kathy Menning. Alice Springs: Institute for Aboriginal Development.
- Thieberger, Nick 1993, Handbook of Western Australian Aboriginal languages south of the Kimberley region. Pacific Linguistics C-124.
- Baker, Brett 1996, Handbook of Top End Aboriginal languages. Ms, AIATSIS.

Goddard & Thieberger (1997) is an update of a catalogue of Australian language dictionaries (references therein), but there is no arrangement for future updates. Bibliographies and library catalogues (with subject coding) can be used to track published documentation. The Australian Journal of Linguistics has since 1981 published an annual bibliography of linguistic publications on Australian languages. The AIATSIS Library also tracks unpublished documentation.

The Summer Institute of Linguistics' *Ethnologue* (Grimes 1996, mentioned above) also makes a brief comment on major documents available for each language: for example for Pitjantjatjara, 'Pitjantjatjara Dictionary. Grammars. Bible portions 1949-1995. Work in progress.'

Dixon (forthcoming) will provide a synopsis of the state of documentation of all Australian languages up to the mid-1990s, including an annotated select bibliography with qualitative evaluation.

#### Links to other indicators

Documentation is an output of research, and so links with indicator IL.6.

The kinds of documentation which can be expected relate to the status of the language (indicators IL.1, IL.2).

Some publication of vernacular literature (indicator IL.4) also constitutes documentation of the language.

# Issue 3 The wider use of Indigenous languages

INDICATOR: IL.5 THE NUMBER OF/PROPORTION OF TRADITIONAL LANGUAGE USED IN:

- broadcast media: radio, TV, published books, magazines, cinema, WWW, distinguishing:
   (a) programs aimed at speakers;
  - (b) programs aimed at a general audience;

## ii. signage in public places (streets, parks), advertisements.

#### Description

The demographics of use of the language in contexts where the speaker does not specifically know who the audience is: broadcasting: radio, TV, video library, WWW (Nathan 1997).

#### Rationale

Fishman (1991, 1992) discusses the role in Reversing Language Shift (RLS) of language courses and alphabet books, and languages in Aboriginal media. Broadcast programs aimed at speakers provide a service in the language, more accessible thereby to native speakers, and provide learners of the language an extra reason for knowing the language. Broadcast programs aimed at a general audience accord the language status to wider audience (thus, subtitled, parallel translation). A 'higher profile' for a language can promote its prestige, and have positive effects on the younger generation's acquisition.

#### Analysis and interpretation

The use of a language for wider communication may not necessarily enhance its continued survival. It has been argued that in some situations of diglossia, a language may survive in the home environment with a function of enhancing in-group solidarity, and this might be compromised by a higher profile in the wider community. On the other hand, this has not been demonstrated for the situation of Australian languages, nor have speakers of Australian languages generally stated that they wish their language not to receive wider publicity.

#### Monitoring design and strategy

Broadcasts and programs etc could be counted by an existing monitoring agency at regular intervals -- see the Yellow Pages category 'Press Cuttings & Media Monitoring Services'. Annual reports of government funded broadcasters may include this information.

Signage could be measured/monitored, by sampling surveys.

#### Reporting scale (spatial)

Surveys such as by language centres generally form an impression of language use by 'community'. ABS statistical subdivisions are usually a lot larger than a language area, so, unless particular languages are specified in the census form, a question simply about indigenous languages would often aggregate a number of languages. For customised reports, figures may be available at the level of ABS collection district.

#### Outputs

Tabulation of proportions allocated by language and region.

#### Data sources

The Aboriginal and Torres Strait Islander Commission has a Broadcasting, Language, Arts & Culture section,

which is subject to evaluation by ATSIC's Office of Evaluation and Audit (OEA). The Language Maintenance and Broadcasting section supports projects (71 in 1995-96) which ATSIC reports on (according to objectives listed under indicator 2).

#### Links to other indicators

Language use in face-to-face contexts is intrinsic to the health status of the language (IL.2).

Some documentation of a language (indicator IL.3), especially bilingual literature, is suitable for a wider audience.

Signage often relates to place names (indicator IL. 7).

INDICATOR: IL.6 NUMBER OF APPROVALS OF GEOGRAPHIC NAMES, INCLUDING MAP SHEET NAMES, USING INDIGENOUS PLACE NAMES.

#### Description

Approvals of geographic names, including map sheet names, with respect to indigenous place names.

## Rationale

Whether an Australian place name (toponym) is of local Aboriginal origin is usually readily apparent (given the distinctive phonology of Australian languages compared to English (and other introduced languages). Hence increased visibility of indigenous toponyms boost to public awareness of indigenous heritage, and assist prestige of the related indigenous languages.

#### Analysis and interpretation

Dual naming has been tried as a compromise, with some success.

#### Monitoring design and strategy

It would probably require special research to report on toponyms on a finer level than that of the States and Territories. Mapping of officially recognised indigenous toponyms would be straightforward as the location is an essential attribute of a toponym, but the difficulty would be that the relevant database may well not flag whether or not the toponym is of indigenous derivation.

#### Reporting scale (spatial)

Data from State and Territory agencies could be assembled nationally, and would need to be

disaggregated subject to the reporting categories, but ideally to the level of each Australian language.

## Outputs

Tabulation of numbers of indigenous-derived toponyms approved, and total number of toponyms approved, for each State and Territory, probably by year.

#### Data sources

Responsibility for official toponyms rests with State and Territory Surveyors-general authorities. The national Committee for Geographical Names in Australia coordinates some activities of the State and Territory authorities, but does not have formal responsibility.

The Australian Land Information Group (AUSLIG) include official toponyms on their map products (at scale 1:100 000 and larger), and data can be extracted from their digital products. However there is no marker as whether or not the toponym is of indigenous derivation.

The Australian Research Council (ARC) have funded a Research Fellowship tenable at the Department of English, Macquarie University (for two years from January 1998) to promote the National Place Names Project's aim of constructing a comprehensive database Australian place names. As a large proportion of these toponyms are of indigenous derivation, the Fellow could be expected to collect and collate data relevant to this indicator.

#### Links to other indicators

Toponyms are documented as part of some kinds of research, especially site documentation, and to some extent the compilation of dictionaries.

## Issue 4 Funding, research and education

INDICATOR: IL.7 AMOUNT (IN \$) OF FUNDING PROVIDED FOR LANGUAGE PROGRAMS THROUGH GOVERNMENT DEPARTMENTS AND AGENCIES, INCLUDING ATSIC, DEETYA, ARC AND AIATSIS; DISTINGUISHING ALLOCATIONS TO:

- (a) research;
- (b) language maintenance;
- (c) education and training; and
- (d) information dissemination and public education (eg. translation of notices of government programs).

#### Description

Identifies the extent of government funding of key areas of language retention.

#### Rationale

The obvious rationale of this indicator is that projects cost money.

#### Analysis and interpretation

It is a truism, especially that funding figures alone can be misleading in that the effectiveness of a program (particularly in hindsight) is only partly related to its cost, let alone problems of poor targeting and 'waste'. The consequences of funding of indigenous programs is the particular concern of ATSIC's Office of Evaluation and Audit (OEA).

#### Monitoring design and strategy

Extracting funding data on a per language basis has some difficulties. First, some projects cover a number of languages, and it may be arbitrary to assign a proportion of the project to each language. (For these cases, a more general category tracking regional or nationwide funding is justified.) Second, the project title may not name the specific language, or may use an alternative name which needs to be equated with a more standard language name. Expert advice would address this categorisation.

#### Reporting scale (spatial)

Data from federal and state government organisations (including universities) could be assembled nationally, and would need to be disaggregated subject to the reporting categories, but ideally to the level of each Australian language.

#### Outputs

Tabulation of amounts allocated by category and region. Tabulation of amounts by language would also be desirable, but would need some analysis.

#### Data sources

The statutory annual reports of the Aboriginal and Torres Strait Islander Commission, Department of Employment, Education, Training and Youth Affairs, Australian Research Council and the Australian Institute of Aboriginal and Torres Strait Islander Studies mention research funding on Australian languages.

#### Links to other indicators

Research funding for a language should be assessed in the light of indicator IL.4 (concerning whether the documentation of a language is close to complete) — if a particular language has no speakers or partial speakers, then it is understandable there is no research funding expended on documenting that language.

INDICATOR: IL.8 THE NUMBER OF PROJECTS WHICH DOCUMENT KNOWLEDGE OF TRADITIONAL LANGUAGES, BY TYPE OF PROJECT.

#### Description

Identifies the range of research projects aimed at documenting traditional languages.

#### Rationale

Research is essential to produce documentation, for which see indicator IL.3.

Research is also an activity stimulating the involved individuals, families, and communities to further interest in their own heritage, and promotes maintenance of it. Hence indicators of the amount of heritage-related research involving indigenous people (with varying kinds of involvement) are also indirect indicators of the continuation of traditions, when seen against the extent and type of collaboration (for example whether co-author, research assistant, field assistant).

### Analysis and interpretation

As mentioned for indicator IL.3 (documentation), the amount of research on a language needs to be assessed in the light of whether further study of a language could be productive. Some research however may be relevant even where a language has no remaining speakers and existing documentation is fairly complete for instance research could be undertaken into strategies and effectiveness of language learning, or comparative research on related languages may permit further understanding of the existing documentation.

#### Monitoring design and strategy

Data could be extracted from relevant annual reports by someone familiar with relevant categories and regions.

Australian Research Council (ARC) is currently studying 'the extent and effects of research of potential interest to Aboriginal and Torres Strait Islander peoples, the involvement of indigenous communities in research which is dependent on their involvement and the dissemination of research results'. The results of this study, although cast much wider than research on Australian languages, will presumably be a relevant compilation.

## Reporting scale (spatial)

Data from federal and state government organisations (including universities) could be assembled nationally, and would need to be disaggregated subject to the reporting categories, but ideally to the level of each Australian language.

#### Outputs

Tabulation of amounts allocated by language or region.

#### Data sources

The statutory annual reports of the Department of Employment, Education, Training and youth Affairs, Australian Research Council and the Australian Institute of Aboriginal and Torres Strait islander Studies.

#### Links to other indicators

Relates to the funding indicator IL.5, as research requires funding.

Research often produces documentation , and so links with indicator IL.3.

INDICATOR: IL.9 THE NUMBER AND TYPE OF INDIGENOUS LANGUAGE PROGRAMS UNDERTAKEN IN LANGUAGE CENTRES, SCHOOLS, AND OTHER INSTITUTIONS.

#### Description

Measures the formal education activity in Indigenous languages.

#### Rationale

Fishman (1991, 1992) discusses the role in Reversing Language Shift (RLS) of independent Aboriginal schools teaching vernacular languages, among other factors; and of language courses and alphabet books.

#### Analysis and interpretation

Different types of program need to be distinguished according to the degree of language knowledge of the pupils.

For instance, there are primary schools with language programs in a wide variety of settings:

• Pupils virtually monolingual in an indigenous language, where the language program aims to

teach the pupils English — such a school has no indigenous language program (often at community request) partly because the indigenous language is quite strong.

- Language maintenance programs where the pupils otherwise (outside that class) speak a variety of English and not their elders' language(s).
- Exposure of pupils to an ancestral language in the mode of 'X as a Foreign Language'.

The proportion of school time applied to the program also varies.

An alternative classification of school programs is according to some of the Fishman stages of intergenerational dislocation:

- 4a Schools in lieu of compulsory education and substantially under indigenous curricular and staffing control.
- 4bPublic schools for indigenous children, offering some instruction via their own language, but substantially under English curricular and staffing control.
- 5. Schools for literacy acquisition, for the old and for the young, and not in lieu of compulsory education.

(Adapted from Fishman 1991:395, 1992; re-presented and discussed by McKay 1996:192-8)

#### Monitoring design and strategy

Whatever internal monitoring is used by Aboriginal and Torres Strait Islander Language Initiatives program (ATSILIP) (within ATSIC) and government Departments of Education would be a starting point. It is a difficult area calling for educational as well as linguistic expertise, and may be an attractive research project within a tertiary Faculty of Education. Also, extracting data on a per language basis has some difficulties (as for IL.7, above) and expert advice would be needed.

## Reporting scale (spatial)

Nationally, by indigenous language.

## Outputs

Tabulation of types of program by language.

Mapping of languages by traditional country showing type of language program.

#### Data sources

ATSILIP as the major funder of indigenous language centres monitors the outcomes of programs.

State & Territory Departments of Education track language programs in schools.

#### Links to other indicators

The maintenance status of each language (indicator IL.2) has implications for the kind of relevant education programs.

## **RECOMMENDED KEY INDICATORS - HISTORIC**

#### Table 8

#### Recommended key indicators—historic places

Issue or element	India	ator	Condition (C), Pressure (P), Response (R)
General Indicators relevant to historic heritage places	G.1	Number and distribution of identified heritage items (places and objects)	C/R
	G.2	Number of heritage places assessed using best practice assessment standards	R
	G.3	Number of places destroyed or whose values have been severely diminished	С
	G.4	Number of places reserved for conservation purposes where heritage values have been seriously impaired by visitor use.	C/P
	G.5	Funds provided for maintaining heritage values	R
	G.6	Amount of funding provided to heritage agencies responsible for heritage places and objects.	R
	G.7	Number of conservation practitioners and training courses	R
	G.8	Community awareness of and attitudes towards heritage places and objects and their conservation.	R
Issue 1. Condition of heritage places	H.1	The number of heritage places assessed (by sampling) as being in (i) good, (ii) average and (iii) poor condition	С
Issue 2. Protection by government	H.2	Number of statutory mechanisms actively used to protect historic places	R

# Issue 1 Condition of historic heritage places

Much of the indicator development work carried out in Australia to date has focussed on the actions of governments in identifying and listing heritage places, expending funds for that purpose, applying legislative planning controls over identified places, and expending funds for specific conservation works. These types of indicators, on the whole, relate only indirectly to the actual monitoring of the condition, the good health, of heritage places. They are commonly measures of the quantity of action, not the quality of outcome. Generally speaking, the existing government registers are not effective mechanisms for identifying trends and changes in the condition of historic heritage places. The exception, to some extent, are the local government registers, which are closely linked to local decisions about development. However, even local government registers will not indicate changes in condition that are not related to the issuing of development and building approvals.

The approach taken with the indicator for this issue is therefore to apply a sampling methodology whereby heritage places are actually inspected and a range of factors indicating condition can be monitored. This approach will require specific funding and crossgovernment cooperation, but it will provide information on national trends that cannot be gathered using existing registers or other information sources.

## INDICATOR H.1 THE NUMBER OF HERITAGE PLACES ASSESSED (BY SAMPLING) AS BEING IN (I) GOOD, (II) AVERAGE AND (III) POOR CONDITION

## Description

This indicator will show the physical condition of historic environment heritage places using a sampling audit strategy. The sample will be national in its focus, and will be repeated at set intervals using a consistent sampling methodology.

#### Rationale

The monitoring of the condition of historic environment heritage places has not been previously attempted on a national scale. The success or failure of all government and private attempts to conserve the historic heritage can, ultimately, only be assessed by determining the actual condition of heritage places.

The factors affecting the physical condition of historic environment heritage places are many and varied. It is not feasible to monitor the multiplicity of factors comprehensively on a continental scale. However, a sampling methodology can be developed, based on local government areas, that represents the range of environmental and cultural variations across the continent and enables the recognition of trends and changes in the condition of heritage places over time.

#### Analysis and interpretation

A number of issues could be analysed using this indicator. A similar sampling in Britain indicated that while 95% of occupied buildings were in good to fair condition, 40% of vacant buildings were in poor to very bad condition. The information collected for this indicator would allow correlations of this kind to be identified for the Australian situation, but taken further. For example, the correlation of type of use and condition may be more relevant to the Australian situation than simple occupancy and condition. The long-term effect of appropriate and inappropriate repairs and maintenance programs might be recognised, and the impact of a conservation plan on long-term conservation of heritage values might be addressed. The effectiveness of local and State government planning controls in leading to the conservation of heritage values over time could be monitored.

The data might be used to show changing community awareness of heritage places, and the impact this might have on local decision-making. Local and regional variation in economic circumstances, access to conservation skills, and viability of alternative uses might be analysed as factors influencing retention of heritage values.

Achieving compatibility of data across the nation will be aided by the current move by the Commonwealth and the States towards establishing National Standards in the cultural heritage sphere.

#### Monitoring design and strategy

The sample would be based on five urban and five rural local government areas in each state, and one urban and rural area in each mainland Territory. This same sample would be re-studied at five year intervals, allowing an ongoing audit of changes to be undertaken. It is envisaged that local heritage expertise, such as National Trust and historical society members and professional local heritage advisers would be directly involved in this process.

The methodology would entail a review of any existing local heritage study and planning schedule, to identify additional heritage places valued by the local communities and/or identified in studies undertaken since the last local survey was completed. A sample of 20 places (as a minimum) in each Local Government Area (LGA) would be selected, randomly from the combined lists of existing and additional heritage places in the first instance, then 5 selected randomly and 15 of the previously surveyed places in subsequent sample periods. This additive approach is necessary to ensure, on one hand, a reliable basis for identifying change over time by monitoring the same places, and, on the other hand, allowing for changes in the identification of local heritage resulting either from improved survey techniques or changing community perceptions of heritage values.

The places in the sample would be inspected in order to complete a standard questionnaire. Issues addressed in the questionnaire might include the following:

• the physical condition of the place (compared where possible with an earlier statement of condition, such as in a heritage register or local schedule listing)

- the integrity of the place in respect to its heritage values
- the occupancy and use of the place (including change in use since last review period; is use compatible with values?)
- the appropriateness of repairs and maintenance, additions and surroundings to the significance of the place
- identification of local or State financial assistance in the conservation of the place
- the adequacy of the existing documentation and assessment of the place, and the existence of any conservation plan
- the public accessibility of the place
- evidence of community awareness and valuing of the place.

The responses would indicate whether the assessment was based on internal inspection or simply external observation.

The information gathered from each sampled LGA would be tabulated and compared under a number of headings to indicate nationally significant trends. Local, regional and State-based trends would also become apparent.

The sampling could include places with heritage object collections, and so used as an audit for indicators O.1, O. 2, O.3 and O.4.

## Reporting scale

The recording occurs at a local scale, and then is combined to provide State and national level overviews of trends.

### Outputs

Outputs of the sampling strategy could be by:

- tabulation and graphical presentation of information at State and national levels, this presentation being targeted at each of the specific issues being addressed. The presentation of data would have to be supported by analysis of each issue, and an interpretation of the trends being observed.
- mapping of categories of information on a national scale, based on a categorisation of LGAs (eg rural

versus urban, isolated versus central, areas of nett population increase versus decrease, areas of economic decline versus areas of economic growth etc.) and extrapolating the sample data to like LGAs.

### Data sources

Local government heritage surveys and planning scheme schedules form the basis for the sample. Not all LGAs as yet have heritage studies completed. The sampling strategy would have to be adjusted over time as more LGAs undertake such studies (and indeed the SoE process could target LGAs where such studies are a priority).

Some States require the regular update of LGA heritage lists, and the SoE monitoring could be costeffectively combined with this process. In other situations there would have to be a separate review process instigated to develop the SoE data. While there is no process currently in place to collect the Questionnaire information sought for this indicator, there may be cost-effective approaches that draw on the expertise and local knowledge of heritage advisers now employed by many LGAs, and of community groups. The gathering of the necessary information would need commitment at the local, State and Commonwealth level, as well as specific funding to allow data collection and analysis.

#### Links to other indicators

This indicator links to Indicator G3 dealing with building applications and the destruction of registered places. If correlations can be drawn in the sampling approach between building additions and modifications and the retention or loss of significance, the trends in building applications might prove to be a surrogate for loss or retention of heritage values. This indicator would act as a check mechanism on the accuracy of Indicator G3, as damaged and destroyed places would be identified at the local level in the sample, and a national picture developed of such damage. It may be that Indicator G3 will be found to be redundant if this indicator provides such information accurately, but it is more likely that Indicator G3 would be retained as it is based on a larger database of places and provides convenient national scale data on this one point across all types of heritage places.

The sampling could include places with heritage object collections, and so used as an audit for indicators O.1, O.2, O. 3, and O.4  $\,$ 

## Issue 2 Protection by government

Government response to perceived pressures on, or changes in, the condition of heritage places is to legislate for the control or protection of heritage places, and to apply government-controlled human and financial resources to remedial action (part of which is covered in Indicators G.5 and G.6).

The indicator focuses on monitoring the application and effectiveness of government legislative mechanisms for heritage identification and conservation.

## INDICATOR: H.2 NUMBER OF STATUTORY MECHANISMS ACTIVELY USED TO PROTECT HISTORIC PLACES

### Description

This indicator will show the change in the application of statutory protection for heritage places by measuring at all levels of government any practical change in protection offered by the active use of:

- heritage legislation; and
- planning/development legislation.

### Rationale

One of the major features of heritage conservation in Australia is the use of Commonwealth and State legislation to identify and protect places of heritage value.

This legislation operates in various ways but common features are the:

- identification of heritage places through a public process leading to formal registration; and
- protection of registered heritage places by making activities affecting such places illegal without the permission of an approving body.

Heritage legislation operates in all jurisdictions -Commonwealth, and all States and mainland Territories. In addition, legislation can operate through the planning Acts, and is often administered at local government level.

The long term conservation of heritage places and values relies to some extent on the availability and

effectiveness of this heritage legislation. People may seek to change heritage places in such a way as to diminish heritage values, or they may seek to demolish heritage places entirely. Effective heritage and planning legislation can operate to preclude entirely or at least minimise the adverse impact of proposed actions. However, legislative measures are not always implemented—the passing of an Act does not mean protection automatically follows. Examples include the normally lengthy time-frames allowed for the establishment of heritage registers when new heritage legislation is enacted, and the demonstrably slow rate at which heritage protection through prescribed local government planning processes actually takes place.

Monitoring the change, if any, in actual application of statutory protection of heritage places will provide information about changes in government action to protect the heritage environment.

#### Analysis and interpretation

The indicator is comprised of a number of measures dealing with the theoretical and practical level of statutory protection applying across the three levels of government.

The theoretical level of statutory protection relates to the legislative provisions irrespective of their implementation. The practical level relates to the implementation of the provisions. These aspects must be considered separately in order to understand the cause of any failure in the use of legislation to protect heritage places. The outcome of the analysis will be a combination of the two aspects expressed in terms of effectiveness to achieve best practice protection.

The analysis must therefore begin with an assessment of existing levels of statutory protection in each jurisdiction. Then the degree to which the specific protective mechanisms of the legislation are actually used during the audit period would be assessed. As an example, in NSW, where legislative processes in place since 1979 have encouraged the development by local governments of Local Environment Plans (LEP) incorporating heritage registers. The application of this process is seen as being the principal means of achieving heritage protection in the State, yet almost one third of local government areas still had no LEP by May 1998. This indicator would monitor any changes in the application of this legislative protection, and similar processes in other jurisdictions. For the first reporting period, the analysis would entail a comparison of the level of 'theoretical' protection offered by legislation with the actual application of the protective mechanisms that give effect to the legislation. In subsequent reports, the analysis would compare the current situation with both the immediately preceding period as well as the 'theoretical' situation. It is anticipated the 'theoretical' situation would be constant across at least several reporting periods, providing some stability in the analysis.

The analysis would have to take into account the fact that from time to time a State or Territory might decide to change the direction or emphasis of its heritage protection system, and shift its resources from the implementation of one piece of legislation to another. In a number of State this is occurring presently, by shifting emphasis from the mechanisms of the Heritage Acts to those of the planning legislation as the primary means of ensuring protection. This is a legitimate objective. This indicator would monitor the effectiveness of the change-ideally the lessening of the application of one set of legislative mechanisms would be at least compensated for by the active implementation of other legislative mechanisms, and desirably the rate of protection would increase. The indicator should show if the effective rate of protection decreases or increases during this period of transition.

#### Monitoring design and strategy

Information for this indicator would come from all levels of government as follows. The theoretical and practical situation would be monitored in each case.

- Australian Heritage Commission Act (especially s.30 and Register of the National Estate mechanisms) -Commonwealth
- State and Territory heritage Acts State and Territory Governments
- Planning/Development Acts with heritage provisions

   State and Territory Governments, and local governments where the State does not hold relevant centralised information

Information would be sought from governments about:

- the nature of protection offered by heritage legislation;
- the nature of protection offered by planning/development legislation;

- changes made to legislation, including regulations, which have an impact on statutory protection;
- administrative changes which have an impact on statutory protection;
- statistics on the application of protective mechanisms
- resource changes which have an impact on statutory protection; and
- changes in the availability of expertise within government which have an impact on statutory protection.

#### Reporting scale

The information sources for this indicator are a combination of local, State and national sources and reporting would be at the national scale. However, reporting could also be provided at the State scale.

#### Outputs

Outputs of monitoring could be:

- by mapped, tabular and graphical presentation of information;
- for the national situation;
- for each of the States and Territories;
- for local government, depending on the information available;
- for the current situation compared with the previous reporting period.

## Data sources

Commonwealth, State and Territory government heritage agencies, State and Territory government planning/development agencies, and local governments or their associations where this information is not available at the State level.

#### Links to other indicators

The indicator is linked to Indicator G.7 which deals with the availability of trained conservation professionals. The expertise available to governments is one component of the effective implementation of statutory protection.

## **RECOMMENDED KEY INDICATORS - OBJECTS**

## Table 9

## Recommended key indicators—objects

Issue or element	Indicator	Condition (C), Pressure (P), Response (R)
General Indicators relevant to heritage objects	G.1 Number and distribution of identified heritage items (places and objects)	C/R
	G.5 Funds provided for maintaining heritage values	R
	G.6 Amount of funding provided to heritage agencies responsible for heritage places and objects.	R
	G.7 Number of conservation practitioners and training courses	R
	G.8 Community awareness of and attitudes towards heritage places and objects and their conservation.	R
Issue 1. Knowledge of Heritage Collections	O.1 The number of objects /collections adequately catalogued.	С
Issue 2. Knowledge of Condition of Heritage Collections	O.2 The proportion of collections surveyed for preservation treatment by a trained curator/ conservator.	C/R
	O.3 The proportion of collections requiring preservation subsequently treated.	C/R
	O.4 The proportion of collections stored in appropriate environmental conditions.	C/R
Issue 3. Condition of Heritage Collections	O.5 Number of heritage collections with statutory protection for that heritage type/category outside museum collections.	С
	O.6 Number of reported applications of provisions of existing legislation to protect heritage objects in museums and in situ.	C/R
Issue 4. Societal responses to heritage collections	O.7 Number of users of object collections for scholarly study, and the number of programs for the public use of collections.	R

# Issue 1 Knowledge of heritage collections

INDICATOR: O.1 THE NUMBER OF OBJECTS/COLLECTIONS ADEQUATELY CATALOGUED

#### Description

This indicator will show the changing extent of knowledge on a national scale of heritage collections by measuring the representation of the major Australian natural and cultural heritage themes in those collections as well as giving parameters or attributes of an object enabling it to be related to a place and giving it spatial and temporal context. The indicator would be interpreted in conjunction with the objects component of General Indicator G1.

#### Rationale

Documentation of objects removed from place to collections is as important as conservation of their physical condition; lack of adequate documentation of context greatly diminishes their heritage value and makes analysis of their relationship to place nearly impossible. For all objects, the level of documentation associated with each is also a significant aspect of the state of knowledge. An object with a richly documented social or natural history may be priceless. Without it, it may nearly be worthless (SoE Advisory Council 1996:9-28).

In 1991 Australian museums held in excess of 41 million objects. Many of these are mass research collections, mostly unaccessioned. The number of actual accessions is closer to 10 million, of which the vast majority are scientific specimens collected by museums over the last century of research. These collections represent an irreplaceable record of Australia's biota both past and present. The collections of biological specimens represent each species and are of importance in understanding variation within species. The principal disciplines to which such collections relate are evolutionary studies and, through its links to ecological studies, biodiversity.

The material culture of Australia's human occupation is reflected in 4 million objects in archaeology and anthropology collections, of which three-quarters are mass archaeological specimens held in the South Australia Museum. Of the half-million specimens in anthropological collections only a quarter of a million are Aboriginal and Torres Strait Islander ethnographic artefacts. Similarly while there are 1.4 million historical artefacts, 1 million are held by the Australian War Memorial. Rough estimates of Australian art collections suggest another 150,000 items. Historical collections include, importantly, items of concern to current social events, where the objects themselves are documents of the historical present and recent past. Overall then we see a very skewed national collection representing the peculiarities of individual institutional museum collectors. In contrast a balanced national collection distributed throughout Australian museums would ideally represent the major themes in Australian history, both natural and cultural, and society.

However approximately three quarters of the 41 million objects held in Australian museums in 1991 were uncatalogued. Uncatalogued objects are currently useless in relating the object to place of collection. If their place or spatial context data is available but has not yet been physically entered into a cataloguing system, the objects have potential value but if the site context data is unavailable, never collected or lost, the objects are useless for State of Environment purposes and for many other purposes, such as interpretation.

#### Analysis and interpretation

For those objects which are catalogued, adequate documentation should provide information which will enable attributes of place and time to be analysed. Comparative analysis of the place attributes will allow a picture of the contents of a place to be built up, even if the place has been vastly altered. This is one of the major values of cataloguing place-based attributes of objects - to recreate the place at one point in time.

For example, herbaria contain plant specimens that provide information about past environments (the species and its habitat requirements then for its survival and distribution); social history collections contain items which provide information about use, user and place of use; for a defined place at a defined time, say the 1860s goldfields, the range of objects/taxa can enable the relationship of the cultural item/specimen and its user to the environment to be recreated. This analysis of the range of objects/taxa belonging to a place could be repeated at periodic intervals to show changing environmental relationships. Heritage places refer to those where physical evidence of past states/environments survives. Maintenance of that heritage entails allowing it to evolve and change, therefore the contents of that place at a specified point in time become essential for measuring rates and types of environmental change in/to heritage places.

## Environmental Indicators Natural and Cultural Heritage

### Monitoring design and strategy

The electronic databases for cultural and biological collections provide the basis for monitoring. Databases should be searched and the necessary data extracted. This is essentially a census of the nature of the records of objects held in collections.

There needs to be agreement on the range of attributes to be recorded as part adequate documentation when cataloguing each object, and on the level of detail for each attribute. Much work has already been done to achieve this. Developments in computerised search engines, and a growing understanding of various classifications structures used for museums collections will increasingly allow use of existing data without the need to achieve retrospective standardisation of data entry structures. . Some data, such as point source data for biological specimens, is unlikely to become freely available, because of the growing business value of such data to museums. However, standards for the entry of such data is still critical to its research use, and arrangements should be able to be made for the level of analysis required for SoE reporting.

There should be agreement on the standards to be regarded as 'adequate' in the monitoring of this indicator. They should reflect best practice in the field. For natural history specimens, objects should be catalogued to species level for vertebrates and plants, and to family level for invertebrates, cryptogams and fossils. For cultural material, objects should be documented in accordance with the Australian Museums On Line (AMOL) minimum data set, although currently 'geographic area' is not a mandatory field on AMOL. Objects catalogued to these levels should also be on an electronic database to enable data interpretation for comparative analysis.

However, there needs to be consistent recording of attributes before any monitoring of environmental conditions can occur using such databases. Information able to be gleaned from the databases include:

- the number of catalogued objects by place and by type of place (context recorded at collecting);
- the condition of objects;
- the geographical distribution of identified objects, so that for example the number of specimens for each biogeographical region can be assessed; and

 the temporal spread of social history collections so that the representativeness of objects from each Principal Australian Historical Theme can be identified.

The strategy for monitoring would be periodic analysis of the combined databases linked to the State of Environment reporting cycle. For some regions where museum collections are not catalogued on AMOL, a strategy needs to be devised to monitor the adequacy of cataloguing local history collections.

## Reporting scale

Because the collections database would reflect the combination of data from all levels and types of government funded collecting institutions, the reporting would be at national scale but could be disaggregated to other levels such as bioregional or local for some collection types.

#### Outputs

Outputs of monitoring could be:

- tabulation and graphical representation of agglomerated data; and
- mapping of categories of data via a GIS capability, with reports interpreting the validity of spatial findings.

#### Data sources

AMOL and biological collections catalogues. So far 950 museums have recorded their collection details on this system allowing some scope for comparative analysis of common variables. With regard to biological collections, both living and dead, museums, zoos, botanic gardens and herbaria have coordinated their efforts and agreed on standards for a range of activities.

### Links to other indicators

This indicator is linked to all other indicators that look at the distribution of places from which the objects were collected. Without adequate documentation, the links between object and place will be greatly reduced or lost entirely. The indicator will show the proportion of collections that can be effectively used as data for SoE reporting.

# Issue 2 Knowledge of the condition of heritage collections

INDICATOR: **O.2** THE PROPORTION OF COLLECTIONS SURVEYED FOR PRESERVATION TREATMENT BY A TRAINED CURATOR/CONSERVATOR

INDICATOR: O.3 THE PROPORTION OF COLLECTIONS REQUIRING PRESERVATION SUBSEQUENTLY TREATED

INDICATOR: **O.4** THE PROPORTION OF COLLECTIONS STORED IN APPROPRIATE ENVIRONMENTAL CONDITIONS.

## Description

This set of indicators will monitor the physical condition of heritage collections in government funded collecting institutions by using a sampling strategy to illustrate whether the collections are maintained in a condition which can be measured and used to assess the condition of the environment from which it was collected.

#### Rationale

The factors affecting the physical condition of heritage collections are many and varied depending on the history and status of the collecting institution. Museums vary greatly in their capacity to preserve the heritage collections in their care. This was an issue of great concern to the Pigott Enquiry into Museums in 1975 and it remains a major issue despite progress in the 1980s. The Heritage Collections Working Group estimated in 1993 that less than half the collections in major museums have been formally surveyed to assess their condition, while the proportion actually treated is between 5 and 10%.

Nor have conservation resources always been allocated to the areas of greatest need. While art museums are generally better served in terms of storage and treatment, at least in terms of their collections of paintings, science and history museums are, by comparison, significantly disadvantaged. Some State museums and almost all local and community museums currently lack the resources to guarantee the preservation of important material and to make it publicly accessible. Preservation programs are intended to preserve accessibility in both the short and long term, for example, important ethnographic collections in Victoria, South Australia and Tasmania cannot be displayed because in the absence of appropriate conservation treatment they are too fragile to be put on public display. This fragile material can also be seen as a surrogate for information sources about the environment.

#### Analysis and interpretation

This set of indicators only tells us about the condition of the object *per se* and if its condition deteriorates it will be less useful for measuring relationships with other environmental attributes.

Knowledge of the physical condition of the object, how it was stored over time and what preservation treatments it has undergone may be essential components in interpreting the results of new treatments such as DNA testing of specimens.

The data might be used to show gradual improvement or otherwise in the physical conditions for storage and display of the heritage collections. It would also illustrate the amount of scientific conservation treatments applied and the level of external assistance required in terms of specialist staff and finance.

#### Monitoring design and strategy

The analysis would be based on a sample covering all types of collections at all levels - national, State, regional and local.

It could use the same sample used by the Heritage Collections Working Group for their 1993 report when all major Commonwealth and State museum collections and a sample of the 1800 smaller regional, local and community museums were surveyed. In all, 205 museums out of an estimated 1900 provided information and about half of these were personally inspected.

Issues addressed in the sample should include:

- the physical condition of the storage for the collection, ie. appropriate environmental conditions (not necessarily air conditioning);
- the integrity or security of the storage (weather and fire proof structure compared to an outside shed);
- management structure for the maintenance and display of the collection, that is trained staff, even if volunteers, and adequate resources;
- appropriateness of treatments applied for preservation of the collections;

- use of trained conservators or use of publications on preservation treatments;
- identification of financial assistance from own, local, State or Commonwealth sources; and
- public accessibility to the collections.

The sample should be based on both internal inspection and external survey by questionnaire.

Surveys of the collections would have to occur at regular intervals to be effective in establishing a time sequence and identifying trends. The Heritage Collections Working Group recommended a three year program but a five year cycle in line with State of Environment reporting might be more feasible. At each monitoring period the same process of updating the measurements for assessing the condition of the collections would have to be used, and the list of collections being monitored would have to include collections previously reported on, as well as a sample of new collections identified during the review process.

This incremental approach is necessary to ensure a reliable basis for identifying changes to the physical condition of the collections by monitoring the same collections, and allowing for changes in the identification of collections resulting from improved survey techniques or changing perceptions of appropriate treatment. Consequently the number of collections surveyed will increase from the initial sample.

Information gathered from each sampled collection would be tabulated and compared under a number of indicator headings to indicate nationally significant trends. Local and State-based trends would also become apparent. The monitoring of issues outlined in the analysis and interpretation section above would form part of the monitoring design and strategy.

Another avenue for collecting data may be the Statistical Advisory Group of the Cultural Ministers Council which undertakes a survey every two or three years.

#### Reporting scale

The reporting occurs at a collection level scale and then is combined to provide State and national level overviews of trends by type of collecting institution.

#### Outputs

Outputs of the sampling strategy could be by:

• tabulation and graphical presentation of information at each level of collecting institution and the

presentation being targeted at each of the specific issues being addressed. The presentation of data would have to be supported by analysis of each issue and an interpretation of the trends being observed such as more conservation surveys by trained curators; and

• extrapolation of sample data to collecting institutions of similar type.

#### Data sources

The Heritage Collections Working Group surveys and the Australian Biological Resources Study provide the basis for continuing samples using their initial collections as benchmarks plus a range of new collections to represent all the Principal Australian Historic Themes and regional sub-themes represented in local museum collections, biogeographical regions and taxa.

#### Links to other indicators

This indicator links to others dealing with statutory protection of heritage objects outside museum collections and to indicators dealing with protection of Indigenous cultural heritage. If correlations can be drawn between statutory protection of objects outside museums and retention or loss of significance inside museums due to the physical condition of storage, then the degree of statutory protection might be a surrogate for loss or retention of heritage values.

## Issue 3 Condition of heritage collections

INDICATOR: **O.5** NUMBER OF HERITAGE COLLECTIONS WITH STATUTORY PROTECTION FOR THAT HERITAGE TYPE/CATEGORY OUTSIDE MUSEUM COLLECTIONS

INDICATOR: **O.6** NUMBER OF REPORTED APPLICATIONS OF PROVISIONS OF EXISTING LEGISLATION TO PROTECT HERITAGE OBJECTS IN MUSEUMS AND IN SITU.

#### Description

These indicators will show whether the objects in collections or in their natural context *(in situ)* outside museums are protected by effective application of existing legislation.

#### Rationale

Most nineteenth century museums commenced collecting curiosities, either of the natural world or of

the 'new fangled' science and technology. Collections then developed along taxonomic lines rather than along local or regional bio-cultural areas. The objects in State institutions are theoretically protected by the enabling legislation for that museum.

But the natural or cultural area, in reality the cultural landscape, from which the object comes may or may not be protected. If it is a national park it has protective legislation, but that does not necessarily protect an individual representative specimen *in situ* if it is subject to natural forces like fire or ecological succession. A dead parrot can then be removed to a museum collection as a representative of past occupancy of that specific place/habitat within the park. However as the park is protected there is less likelihood that parrots will become extinct and so less specimens are required in collections. Indeed, most will end up there only to fill in the gaps in the detailed taxonomic framework of the curator.

The reduction in the rate of accessions and the individual number of specimens could be a response to the changing assessment of the need to collect objects/specimens and transfer them to museums for safe keeping. The place-based heritage legislation has been fairly effective in conserving places, but this does not always include the contents - the objects, whether it is household goods or industrial machinery.

### Analysis and interpretation

The mere presence of legislation which aims to protect heritage objects outside museum collections does not ensure their actual physical protection. However in the case of indigenous artefacts, it ensures that they are appropriately curated by indigenous communities as part of living culture and not regarded as dead objects able to be exchanged or traded as museum commodities.

Legislation would cover indigenous, archaeological, natural/environmental and historic/built. For the natural heritage, legislation now exists to protect rare and endangered species in situ and so it is to be expected that there are less specimens in this category in museum collections.

#### Monitoring design and strategy

A sampling approach would be required because the provisions of a vast number of pieces of legislation affecting protection of heritage objects outside museum collections would have to be examined. Then similar objects inside museums would have to be identified, and a sample of types examined to see whether rates of accession of certain types had altered as a result of statutory protection of ex situ collections.

For an examination of this indicator the following should be considered:

- the specific provisions of individual legislation to protect different types of heritage objects ranging from Aboriginal to archaeological to archival;
- the geographical spread of the protection provisions; and
- the types of objects in museum collections now but whose original context is now protected.

## Reporting scale

Because most of the legislation will be State based, the results will only be able to highlight geographical and temporal changes in the protection of heritage objects outside museums.

#### Outputs

Outputs of monitoring could be:

- provision of sorted lists (for example by object type or geographic location); and
- tabulation and graphical representation.

#### Data sources

State government gazettes and/or Hansard.

#### Links to other indicators

This indicator could link to Indicator O.1.

# Issue 4 Community and professional use of collections

INDICATOR: **O.7** NUMBER OF USERS OF OBJECT COLLECTIONS FOR SCHOLARLY STUDY, AND THE NUMBER OF PROGRAMS FOR THE PUBLIC USE OF COLLECTIONS

#### Description

This indicator will show the degree of active use of museums and collections for scholarly study and public programs, and assist in policy formulation for resource allocation to object based collections.

## Rationale

While museums may have large visitor numbers, the actual relationship between visitors and heritage objects is tenuous. It is not possible to correlate raw visitor numbers with community awareness of environmental heritage issues and objects. Heritage collections are maintained only partly for public access and presentation: major portions of collections are primarily of research importance, as object-focused archives of the environmental, biological, archaeological and historical past and present.

The indicator focuses on the active use of heritage collection material for public programs, and on the extent to which collections are being used for scholarly study, both by visiting scholars and staff of the collecting institution. Because this data is collected under these sorts of heading only by the major collecting institutions, the indicator is limited to them.

#### Analysis and interpretation

The number and nature of scholarly uses of collections would indicate the areas of heritage objects being actively researched during the monitoring period. This should be able to be compared with areas of activity in the place-based heritage environment. This information should be analysed to indicate trends in the use of heritage objects for scholarly study.

Raw access figures measure the volume of visitors but not their experience of the object/collection. Interpretation of the complex world of scholarship associated with a collection is vital for providing meaning to visitors. The indicator will show the number and nature of public programs utilising heritage objects. Interesting correlations might be made between the nature of public programs, the nature of scholarly research of collections, and the public attitudes to heritage measured in Indicator G.8.

#### Monitoring design and strategy

The records held by collecting institutions provide the basis for monitoring. Relevant types of information available through the databases include:

- the number of requests for access to off-display collections annually, by type and by most frequently used types of collection; and
- the occupation of the user requesting access or purpose for using the collection, for example

taxonomic research, ecological and distributional study, display, history.

The strategy for monitoring user numbers would be periodic analysis of the data currently collected by the Cultural Ministers Council linked to the state of environment reporting cycle.

The number of public programs using heritage objects should be able to be provided by institutions using currently collected information. However, there needs to be discussion and agreement on the criteria used to define programs and the extent to which heritage objects are central to them.

#### Reporting scale

Because the Cultural Ministers Council statistics for visitor numbers is an aggregated database from all levels and types of museums and collections in a broad series of categories, the reporting would be at a national scale but it could be disaggregated to State levels and types of collections.

#### Outputs

Outputs of monitoring could be:

- provision of sorted lists users by categories, most frequently studied collections by type;
- tabulation and graphical representation of agglomerated data; and
- mapping of categories of data using GIS techniques to show links between place of origin of the collections and most frequently used collections and/or origin of requests for access to closed collections.

## Data sources

AMOL, Cultural Ministers Council Statistical Advisory Group, Australia Council, Australian Heads of Botanic Gardens statistics and annual reports of collecting institutions.

#### Links to other indicators

This indicator through regular monitoring of user characteristics and public programs provides the basic measure of use natural and cultural collections. As such it is linked to all other indicators that examine societal response as well as those linked to types of collections (Indicator G.1).

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## APPENDIX A: INDICATORS CONSIDERED FOR THE KEY SET BUT NOT INCLUDED

The following are tables of indicators drawn from a variety of sources or developed as part of the study but which, after consideration, have not been proposed as part of the set of key environmental indicators. The three tables are for condition, pressure and response proto-indicators respectively, categorised according to the views of the author of the indicator. Some indicators appear in more than one table. In addition to the primary form of indicators, alternate forms are also listed.

There are four reasons why indicators have not been included in the key set. These are that the indicator:

1 is not of national significance, or not able to be aggregated to the national scale;

- 2. overlaps with selected key indicators; or
- presents technical difficulties with interpretation or measurement. These Indicators may be suitable for future inclusion in the Key indicator List, but have not yet been sufficiently developed to resolve the above problems.
- 4 is not specific to the heritage component of SoE (and may have been picked up by other sector reports)

Some proto-indicators may be worth further consideration as SoE reporting progresses and experience shows gaps or inadequacies in the set of indicators being used.

In the following tables this numbering is used to indicate the reason for excluding indicators. The tables also indicate where other areas of State of the Environment reporting has developed an indicator paralleling the proto indicator.

#### Table 10

#### PROTO CONDITION INDICATORS

	Primary Indicator Form	Alternate Form	Used By	Reason not included		
Natura	Natural Places					
1.	Number of (listed) natural places with protected area status		SA UK Norway Canada	2		
2.	Species abundance compared to virgin area—biodiversity	Total no. of species in need of special protection and their distribution by category	Denmark	4		
3.		Current diversity, range, abundance and conservation status of native plant and animal species		4		
4.		extent to which the reserve system is representative of the State's biodiversity	WA	4		
5.	Rate of species extinction			4		
6.	Survival of habitat	Rate of habitat loss X		4		

	Primary Indicator Form	Alternate Form	Used By	Reason not included
7.	Area degraded forest; use/ sustainability growth ratio— biodiversity in forest lands			4
8.	Threatened or extinct species as % of total species (by habitat?)	Number of threatened species		4
9.	No. of species in need of special protection and their distribution by habitat		Denmark	4
10.	Threats against species in need of special protection	Threatened species in protected areas (no. or %)	Denmark	4
11.	Area of wilderness against similar criteria		Norway	2
12.	Protected and conserved areas as a % of total land area			4
13.	Endemic species in protected areas (no. or %)			4
14.	Extent to which areas of special value are included in the reserve system		WA	2
15.	Extent to which reserves are viable in terms of size and other characteristics needed to maintain species and populations in the reserves		WA	4
16.	Extent to which undesirable disturbance to reserves is adequately managed		WA	4
17.	Quantity and currency of information concerning natural heritage places in government databases concerned with the natural environment			2/3
18	Proportion of natural heritage places subject to monitoring of the condition of their significant values			3
19	Proportion of natural heritage places assessed as having high integrity of significant values			3
20	Proportion of natural heritage places assessed as showing damage to or loss of significant values			3
21	Proportion of natural heritage places subject to significant threats to their values			3

	Primary Indicator Form	Alternate Form	Used By	Reason not included
22	Number, nature and extent of significant threats to values of listed natural heritage places			3
23	Proportion of natural heritage places subject to monitoring of management			3
Indiger	nous Places			
1.	Number, type and distribution of indigenous places listed in state registers	Number, nature, condition and percentage of total sites and structures	Qld SA NSW	2
2.		Number of ATSI places on State Registers	Qld	2
3.		Number of ATSI places on RNE	Qld	2
4.		Number of significant cultural sites and their level of degradation		2
5.		Density of ATSI places recorded per 1:250,000 map sheet	Qld	2
6.	Number of reserved areas with active programs directed to maintaining or creating cultural awareness and community involvement			3
7.	Number of consents to destroy issued for indigenous archaeological sites relating to development approvals			3
8.	Number of local government authorities that have in place provisions for responding to proposed development in relation to impacts on indigenous heritage places of archaeological significance			3
9.	Number of indigenous archaeological heritage places (from a set of sample areas established across a range of environments and with on-going regular monitoring) recorded as lost or seriously impaired in relation to their heritage values as a result of erosion			3
10.	Number of environmental management plans for areas under extractive industry development which make provision for indigenous archaeological heritage places and/or cultural landscapes			3

	Primary Indicator Form	Alternate Form	Used By	Reason not included
Historio	c Places			
1.	Number, type and distribution of historic places listed in state/local government registers	Correlation of heritage identification with theoretical population of the historic environment	Cwlth	3
2.		Number of places representing types/themes	Qld	2
3.		Predictive analysis of comprehensiveness of documented heritage values based on date of assessment		3
4.		Number of places entered in State heritage and planning registers	Qld	2
5.		Number of places entered in local government area heritage and planning registers	Qld SA NSW	2
6.		Number of Conservation Orders made under Act	NSW	1/3
7.		Number of historic places entered in RNE	Qld	2
8.		Number of places on National Trust list	Qld	2
9.		Density of historic places per local government area	Qld	3
10.		completion of the Australian Shipwrecks Database (ASD)		1
11.		Number of wrecks protected by Historic Shipwrecks Act as % total known wrecks	Qld	2
12.		Number of found historic shipwrecks in State	Qld	2
13.		Number of significant cultural sites and their level of degradation		2
14.	Occupancy rates of historic buildings	The use of heritage places for new or traditional purposes— Planning applications for change of use		2
15.	Number of building applications to develop/change fabric of listed places		Qld	2

	Primary Indicator Form	Alternate Form	Used By	Reason not included
16.	Number of historic places destroyed	Damage to designated and protected areas		2
17.	Distribution (extent) and structure of vegetation as one of the major components of the cultural landscape			3
18.	The number of gazetted historic places monitored annually would be an indicator of the maintenance of the components of the cultural landscape	Proportion of listed places subject to annual maintenance programs		2
19.	Number of key thematic types represented at local level			2
Natura	I Objects/Collections	1	1	1
1.	The number of species kept at the Zoo which are involved in conservation breeding programs nationally, internationally and for reintroduction to the wild	<ul> <li>number of type of native</li> <li>'taxa' in living collections</li> <li>level of documentation of collections</li> </ul>		2/4
2.	The numbers of viable offspring produced as a result of reintroduction breeding programs			4
3.	The number of endangered animals provided for release into the wild as part of collaborative conservation programs			4
4.	The number of endangered species breeding management plans completed			4
Gener	ic Objects	+		1
1.	Number and type objects in collections in government museums etc		Cwlth	2
2.		Size of museum collections	Qld	2
3.		Number of public art collections	Qld	2
4.	Number of type of objects in local history museums			2
5.	Level of documentation of collections	Level of documentation of collections objects in local history museums	Qld	2
6.		Level of documentation of collections in government museums etc	Qld	2

	Primary Indicator Form	Alternate Form	Used By	Reason not included
7.	Number and nature of collections in libraries etc			4
8.	Adequacy of storage and display conditions			2
9.		% of collections stored in climate controlled conditions	Qld	2
10.	The progress of museums in identifying categories of material currently under-represented in collections			2
11.	The proportion of collections surveyed for conservation needs and subsequently treated			2
12.	The proportion of museum collections held and exhibited in climate- controlled areas			2
Indiger	nous Languages		·	·
1.	Number and 'strength' of traditional indigenous languages—	Number of traditional languages used as a primary form of communication	Cwlth	2
2.		Number of speakers.		2
Generi	c Indicators			
1.	Condition of the 'fabric' of places/ objects	Measure of physical condition	Cwlth	2
2.		Sample monitoring—Integrity of places		2
3.	Number, type and distribution of all places listed in Register of National Estate			2
4.		% of total cultural places on RNE within each State	Qld	2
5.	Number of places protected by formal statutory instruments such as Conservation Orders		NSW	1
6.		Increasing preservation and conservation <i>in situ</i>		2
7.	Number of listed places managed under appropriate management plans and with adequate resources	Number of places with formal conservation planning	Cwlth	2

#### Table 11

#### PROTO PRESSURE INDICATORS

	Primary Indicator Form	Alternate Form	Used By	Reason not included
Natura	l Places	·		·
1.	Land conversion; land fragmentation, as indicator of pressures on Biodiversity			4
2.	Use intensity—biodiversity in forest lands			4
3.	Rate of land use changes			4
4.	Diversity and abundance of introduced species			4
5.	Area of native vegetation proposed for clearing			4
6.	Disturbance of wildlife corridors			4
7.	Annual catch/harvest of native species (from hunting, fishing, river dredging, wetland drainage)			4
8.	Extent and severity of wildfires			4
Indiger	nous Places		1	
1.	Number of identified heritage-listed Aboriginal and non-Aboriginal sites, structures and landscapes threatened by economic development	Number of consents to destroy issued for indigenous archaeological sites relating to development approvals		2/4 3
2.	Number of visitors recorded annually at indigenous heritage places with archaeological components open to the public and actively interpreted for visitors			3
3.	Number of indigenous archaeological heritage places (from a set of sample areas established across a range of environments and with on-going regular monitoring) recorded as lost or seriously impaired in relation to their heritage values as a result of erosion	Area of land affected by measurable erosion or degradation of land surface, per biogeographic regions or catchments		3
Histori	c Places			
1.	Number of identified heritage-listed Aboriginal and non-Aboriginal sites, structures and landscapes threatened by economic development			2/4

	Primary Indicator Form	Alternate Form	Used By	Reason not included
2.	The number of planning permits and building repair orders issued	Indices of construction and housing industry performance		4
3.		Applications to demolish or remove a building from a designated area	Qld	2/1
4.		Buildings moved (permits to transport building)	Qld	1
5.		Nominated buildings destroyed prior to listing	Qld	2
6.	The number of mining permits issued over a specified period could be used as an indicator of pressure on the defined landscape			1/4
7.	Changing population density correlated to the heritage density of areas, especially for housing areas			4
8.	Indices of urban real property fluctuation correlated with changing population, paying particular regard to catchment areas for urban areas			4
9.	Planning areas with local heritage lists and conservation controls			2
10.	Correlation of development/ expansion areas with areas of heritage density			4
11.	Major Development involving Demolition			4
12.	Correlation of zoning allowing consolidation with areas of heritage density	Correlation of re-zoning applications with heritage status		2/4
13.		Categorisation of re-zoning applications according to likely level of impact		2/4
14.	Number of heritage assessments undertaken as part of EIS process		Qld	1/3
15.	Sample surveys within classes of the historic environment of the type of management regime compared to theoretical best management practices			2
16.	The extent to which our knowledge of the values of historic places is current	Age and currency of surveys		2

	Primary Indicator Form	Alternate Form	Used By	Reason not included
17.		Age and currency of register information		2
Indiger	nous Objects		1	
	Reported causes of damage to places on ATSI Inventory		Qld	2
Generi	c Objects			
1.	The proportion of museum collections held and exhibited in climate- controlled areas			2
2.	The % of collections surveyed by conservators at each institution annually		Qld	2
3.	% of collections accessioned		Qld	2
4.	Number training courses for museum studies		Qld	2
Generi	c Indicators			
1.	Level of financial assistance available	Level of funding in proportion to need	Cwlth	2
2.	Size of the 'pool' of heritage professionals available		Cwlth	2
3.	Theoretical effectiveness of conservation controls			2/3
4.	The extent and effectiveness of change monitoring systems			2/3
5.	Objections to heritage registrations		Qld Cwlth	2/1
6.		Number of appeals to heritage listings	Qld	1
7.		Number of entries removed from heritage register	Qld	2
8.		Number of Certificates of Immunity applied for	Qld	1
9.	Expertise available to local government (staff, advisers) correlated with areas of heritage density			2
10.	Number of places removed from registers			2
11.	Number of prosecutions	Under Historic Shipwrecks Act	Qld	3

#### Table 12

#### PROTO RESPONSE INDICATORS

	Primary Indicator Form	Alternate Form	Used By	Reason not included
Natura	l Places		·	
1.	Protected area forest, sustainable logging			4
2.	Protected areas/sensitive areas			4
3.	Introduced species control plan - annual funding and area affected			4
4.	Number of trained personnel managing relevant natural places			2
5.	Number of natural heritage professionals employed			2
6.	Number of natural heritage-related training courses available, student participation, and resources allocated to courses			3
7.	Non-government organisations active in relation to heritage listing and conservation of natural heritage places			3
8.	Number of visitors to listed natural heritage places			3
Indige	nous Places			
1.	Number of indigenous personnel managing indigenous places			2
2.	Number and coverage of ATSI representative bodies		Qld	3
3.	Number and total area of Native Title claims		Qld	3
4.	Number of claims under other ATSI land Acts		Qld	3
5.	Number of National parks gazetted for claim under ATSI legislation		Qld	3
6.	Number of applications for protection of areas under ATSI protective Acts		Qld	2
7.	Number of research permits issued for ATSI research		Qld	2
8.	Visitor facilities at rock art sites		Qld	3

	Primary Indicator Form	Alternate Form	Used By	Reason not included	
9.	Types of site managers at rock art sites		Qld	2	
10.	Amount of funding and effort devoted to conservation and management of indigenous archaeological heritage and/or cultural landscapes in production areas			3	
11.	Number of reserved areas with active programs directed to maintaining or creating cultural awareness and community involvement			3	
Historio	c Places				
1.	Number of councils conducting local heritage studies		NSW	2	
2.	Number of Councils with heritage provisions and schedules		NSW	1/2	
3.	Number of trained personnel managing relevant historic places			2	
4.	Number of listed historic buildings owned by governments and use appropriate for values			3	
5.	The extent of historic environment impact assessment within government policy and program design and consideration	Mandatory acceptance of EIS requirements with regard to shipwrecks in all developments		1/3	
6.	Extent of monitoring of health of heritage properties	Rate of inspection of shipwrecks		3	
Indiger	nous Objects				
1.	Number of indigenous community requests for return of cultural items		Qld	2	
2.	Number of items de-accessioned and returned		Qld	2	
3.	Number of items loaned to communities		Qld	2	
Generi	Generic Objects				
1.	Level of accession of collections	% of collections accessioned	Qld	2	
2.	Level of curation of collections			2	
3.	Number of museums and collecting institutions		Qld	3	

	Primary Indicator Form	Alternate Form	Used By	Reason not included
4.	Number of acquisitions per institution		Qld	3
5.	Types of museums		Qld	1
6.	Number of trained staff managing collections			2
7.	Membership of Museums Australia		Qld	1
8.	Membership of Friends groups		Qld	1
9.		Number of museum volunteers	Qld	1
10.	Number of programs available in government museums	The extent to which state and federal cultural policies include specific programs to preserve and interpret material heritage		1
11.		Regional services supported by State institutions	Qld	1/4
12.	Attendances at museums, galleries etc		Qld	2
13.	The degree to which portable cultural heritage is included in state and federal heritage legislation			2
14.	The extent to which portable heritage is included in the work of heritage agencies - in statements of significance, assessments of significance and conservation plans			3
15.	Progress on the distribution of information about collections.			2
16.	Scope of objects legislation		Qld	1/4
17.	Tax incentives for the arts (value of donations, where to)		Qld	1/4
18.	State grants for museums		Qld	1/4
19.	State Museum budgets		Qld	1/4
20.	Funding of State archives		Qld	4
21.	Public use of State archives		Qld	4
22.	Public use of State libraries		Qld	4
23.	Funding of State libraries		Qld	4

	Primary Indicator Form	Alternate Form	Used By	Reason not included
Indigenous Languages				
1.	The number and type of projects which document traditional knowledge and/or traditional languages			2
2.	The amount of traditional indigenous language used in the media, especially the broadcast media			2
3.	Approvals of geographic names, including map sheet names, with respect to indigenous place names			2
4.	The number and type of indigenous language programs undertaken in schools, language centres and other institutions			2
5.	Funding provided through government departments and agencies, including ATSIC, DEET, ARC and AIATSIS for indigenous language programs			2
Generi	c Indicators			
1.	Expertise available to local government (staff, advisers) correlated with areas of heritage density			2
2.	Rate of protection of all heritage areas	Area protected by planning controls		3/4
3.		Annual additions to reserve system (ha)	SA	4
4.		Area of heritage agreement areas (ha)	SA	1/3
5.		Number of councils with heritage provisions and schedules	NSW	1
6.		Number of Landscape Conservation Areas listed by the National Trust	NSW	1/2
7.		Number of conservation agreements reached	NSW	1
8.		Number of sites covered by World Heritage listing	Qld NSW	2

	Primary Indicator Form	Alternate Form	Used By	Reason not included
9.		Number of stop-work orders issued in the States	Qld	1/3
10.		Number shipwrecks with protected zones	Qld	1/2
11.		Number of shipwrecks requiring permits to enter zone	Qld	1
12.		Use of GBRMP zoning plans to protect wrecks	Qld	1
13.		Number of wrecks surveyed	Qld	1
14.	Protected areas as % of threatened area			4
15.	Funding programs for the conservation of environmental heritage	Funds for species conservation by source, annual total and area	NSW	4
16.		Annual expenditure on programs for heritage conservation		2
17.		Funding for State agencies	Qld	2
18.		Level of financial assistance available for identification and/ or conservation historic places	Cwlth	2
19.		Level of financial assistance available for identification and/ or conservation indigenous places	Cwlth	2
20.		Level of financial assistance available for identification and/ or conservation natural places	Cwlth	2
21.		Number of places receiving assistance		2
22.		Level of financial assistance available - to government institutions - to local museums - to indigenous communities - to community heritage bodies (eg National Trusts)	Qld (to National Trust only)	2/1
23.		Number of non-government- owned heritage places benefiting from government grants, tax incentives, loans etc., and level of funding provided.		3

	Primary Indicator Form	Alternate Form	Used By	Reason not included
24.		Funding requested/and provided through Tax Incentives Scheme	Qld	2
25.		Funding requested and provided through NEGP	Qld	2
26.		Allocation of NEGP funds to project types	Qld	2
27.		Funding requested and provided through State granting funds	Qld	1/2
28.		Funding provided by Local Government Grant programs	Qld	1/2
29.	Areas affected by fire management plans			4
30.	Areas of the LGA investigated for Aboriginal and non-Aboriginal sites, structures or artefacts			1
31.	Number and type of heritage places listed in registers or heritage objects in collections	Number, type and distribution of historic places listed in state registers		2
32.		Number, type and distribution of indigenous places listed in state registers		2
33.		Number, type and distribution of all places listed in Register of National Estate		2
34.	Number of international heritage conventions ratified by Australia		Cwlth	1/3/4
35.	Number of places protected under relevant conventions			1/3/4
36.	Number and nature of relevant Commonwealth, State and Territory acts		Cwlth	3
37.	Number of places/objects protected under relevant acts	Number of decisions under specific protective provisions of relevant acts	Cwlth	2
38.	Number and nature of C'th decisions affecting heritage places			3
39.	Level of statutory referrals from Commonwealth agencies for conservation advice about heritage places		Cwlth	3
40.	Number of listed places managed under agreed and appropriate management plans and with appropriate resources	Number of listed places managed under appropriate management plans and with adequate resources	Cwlth	2

	Primary Indicator Form	Alternate Form	Used By	Reason not included
41.	Number of heritage professionals employed by three levels of government			2
42.	Number of heritage advisers provided by state and local governments			2
43.	Size of the 'pool' of heritage professionals available		Cwlth	2
44.	Number of training courses available and participation rates			2
45.	Objections to listings in heritage registers		Cwlth	2
46.	Level of involvement in relevant non government organisations and community		Cwlth	2
47.		Membership numbers- National Trust	Qld	1/3
48.		Branch number for National Trust	Qld	1/3
49.		Number of buildings owned or managed by National Trust	Qld	1/3
50.	Level of involvement in heritage identification, evaluation and conservation		Cwlth	1/3
51.	Number and currency of heritage survey reports			2/3
52.	Adoption of accepted heritage terminology by planning authorities and public land managers			1
53.	The number of visitors, tourist accommodations and new facilities in heritage areas			1/3
54.	Funding opportunities for research	Funding opportunities within maritime archaeology for research and excavation		2
55.	Number of research permits issued			1/2
56.	Rate of public access to heritage information sources	Museum attendance rates		2
57.	Availability and usage of education programs at all levels			2
58.	Ratings and number of viewers for heritage shows on TV		Qld	1
59.	Number of owner nominations to heritage registers		Qld	1

# APPENDIX B: Contact List

The following people and organisations were consulted during the course of the study.

Name	Organisation
Lyn Alexander	Australian Heritage Commission
Seamas Andrewatha	The Arts Office, Queensland
Rod Applegate	Department of Lands, planning and Environment, NT
Australian Heritage (	Commission
lan Baxter	Heritage Council of WA
Harry Blutstein	EPA, Victoria
Sarah Jane Brazil	Australian Council of National Trusts
Martin Brine	State Heritage Branch, SA
Daniel Catrice	Department of Natural Resources and Environment, Victoria
Phillip Cosser	Department of Environment, Queensland
Karen Dennis	Department of Environment, Queensland
Department of Com	munications and the Arts
Desk Officer	National Trust of Australia (Tasmania)
Desk Officer	National Trust of Queensland
Desk Officer	State Heritage Branch, Department of Environment and Natural Resources, South Australia
Joan Domicelj	Former State of the Environment Advisory Council, Commonwealth
Des Griffin	Australian Museum
Helen Halliday	Biodiversity Group, Environment Australia
lan Heath	Australian Local Government Association
Leona Jorgensen	Australian Heritage Commission
Christine Lawrence	Australian Heritage Commission
Alex Marsden	Australian Heritage Commission
Susan Marsden	Australian Council of National Trusts
Peter McAdam	Australian Heritage Commission
Jedranka McAlpine	World Heritage Unit, Department of the Environment
Joy McCann	Australian Heritage Commission

Christine Mercer	Environment Protection Agency, NSW		
Dale Middleby	ACT Heritage Listings		
Jonathon Miller	Wilderness and Wild Rivers, Environment Australia		
Warren Nicholls	World Heritage Unit, Department of the Environment		
Cathy Nicoll	Commissioner for the Environment's office, ACT		
Tim O'Loughlin	Parks and Wildlife Service, Tasmania		
John Pritchard	Australian Local Government Association		
Rosemary Purdie	Australian Heritage Commission		
Brian Samuels	State Heritage Branch, SA		
Jane Simpson	Department of Linguistics, University of Sydney		
Helen Sims	Commissioner for the Environment's office, ACT		
Cath Snelgrove	Heritage Office, NSW		
Katherine Spencer-Ross Parks Canada			
Kristin Stewart	Australian Local Government Association		
Ray Tonkin	Heritage Victoria		
Jackie Venning	Department of Environment and Natural Resources, SA		
Luigi Vitale	State Heritage Branch, SA		
Stephen Waight	Department of Environment and Land Management		
Ray Wallace	Environment Protection Authority, WA		
Peter Wells	State Heritage Branch, SA		
Cameron White	NSW State Heritage Inventory		
Denise White	Wilderness and Wild Rivers, Environment Australia		
Elizabeth Williams	World Heritage Unit, Department of the Environment		
John Woinarski	Parks and Wildlife Commission of the Northern Territory		
Alan Yen	Museum of Victoria		
David Yencken	University of Melbourne		

Environment Australia)

#### FATSIL Federation of Aboriginal & Torres **APPENDIX C:** Strait Islander Corporation of Languages ABBREVIATIONS ICOMOS International Council on ABS Australian Bureau of Statistics Monuments and Sites AHC Australian Heritage Commission OEA Office of Evaluation and Audit, ATSIC AIATSIS Australian Institute of Aboriginal & Torres Strait Islander Studies RFA **Regional Forest Agreement** AILF Australian Indigenous Language RNE Register of the National Estate Framework RLS reversing language shift (including AMOL Australian Museums On-Line 'language maintenance') ARC Australian Research Council State of the environment SoE ATSIC Aboriginal & Torres Strait Islander NHPS National Heritage Places Strategy Commission GIS Geographic Information System ATSILIP Aboriginal & Torres Strait Islander Language Initiatives Program Local Government Area LGA DEETYA Department of Employment, IBRA Interim Biogeographic Education, Training & Youth Affairs Regionalisation for Australia ERIN Environmental Resources Information Network (of

## LIST OF ENVIRONMENTAL INDICATOR REPORTS

Environmental indicator reports for national state of the environment reporting are available in seven themes. An eighth report in the series examines local and community uses of environmental indicators. Bibliographic details are as follows:

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#### Biodiversity

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SoE Reporting homepage: http://www.erin.gov.au/environment/epcg/soe.html