

STATEMENT OF AUSTRALIAN GOVERNMENT REQUIREMENTS FOR ENVIRONMENTAL INFORMATION

Prepared by the Australian Government Environmental Information Advisory Group



Contributing to the Australian Government National Plan
for Environmental Information Initiative

Australian Government

The Australian Government Environmental Information Advisory Group was established under the National Plan for Environmental Information initiative to provide strategic advice and identify whole-of-government priorities for environmental information.

The Group comprises representatives from:

- Attorney-General's Department
- Australian Bureau of Statistics
- Bureau of Meteorology
- CSIRO
- Department of Agriculture, Fisheries and Forestry
- Department of Climate Change and Energy Efficiency
- Department of Defence
- Department of Health and Ageing
- Department of Infrastructure and Transport
- Department of Industry, Innovation, Science, Research and Tertiary Education
- Department of the Prime Minister and Cabinet
- Department of Regional Australia, Local Government, Arts and Sport
- Department of Resources, Energy and Tourism
- Department of Sustainability, Environment, Water, Population and Communities
- Geoscience Australia
- Murray–Darling Basin Authority
- The Treasury.

Statement of Australian Government Requirements for Environmental Information

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Cover image: View from Mount Abrupt,
Grampians National Park, Victoria.

Photograph: Nigel Millett





Black Swamp,
Victoria.

Photograph: Alison Pauliot

CONTENTS

Executive summary	2
1 Background	4
2 Biodiversity	8
3 Biosecurity	18
4 Climate change	24
5 Environmental reporting	34
6 Infrastructure and communities	40
7 Natural resources	44
8 Significant places	56
9 Waste and pollutants	62
10 Water	68
11 Environmental information requirements summary	74
12 Future drivers	76
13 Conclusion	80
Appendix 1 – Detailed method	82
Appendix 2 – Environmental classes	84
Acronyms	86
References	86

FOREWORD

The establishment of the National Plan for Environmental Information (NPEI) initiative in 2010 reflects the Australian Government's commitment to improve how it gathers, manages and uses environmental information. Under the auspices of the NPEI initiative, the Australian Government Environmental Information Advisory Group (AG EIAG) was established to provide strategic advice and identify whole-of-government priorities for environmental information.

The Statement of Australian Government Requirements for Environmental Information (the Statement) provides a critical first step by presenting a framework for whole-of-government collaboration on environmental information. It reflects the policy, research and operational perspectives of 17 Australian Government agencies that depend on ready access to quality environmental information.

The Statement provides a catalyst for improved collaboration across the Australian Government. It will also provide guidance to the NPEI initiative for the development of environmental information products and services and give direction to environmental information providers.

For the first time, the Australian Government's interests in environmental information have been elucidated – this is a noteworthy achievement. Many people contributed to the Statement and the rich suite of data underpinning it. We sincerely thank our AG EIAG colleagues, their contact officers and the many staff who contributed to the preparation of this important document.



Dr Rob Vertessy

Acting Director of Meteorology

Chair, Australian Government Environmental Information Advisory Group

June 2012

EXECUTIVE SUMMARY

Established in 2010, the National Plan for Environmental Information (NPEI) initiative is a whole-of-government reform program that will improve the Australian Government's capacity to monitor, detect and predict change in the environment. The NPEI initiative will build the information base to support government decision-making. The Australian Government Environmental Information Advisory Group (AG EIAG) was established under the NPEI initiative to provide strategic advice and identify whole-of-government priorities for environmental information.

Led by the AG EIAG, the Statement of Australian Government Requirements for Environmental Information (the Statement) reflects the enduring needs of the Australian Government where a long-term investment in environmental information is essential to deliver outcomes.

The Statement identifies the Australian Government's critical requirements for environmental information and broadly describes how information is used.

The Statement focuses on the interests of Australian Government and hence the requirements of States and Territories were considered out of scope. However the AG EIAG recognises the critical role they play both as a provider of priority environmental information, commonly in collaboration with the Australian Government; and as a primary user of environmental information to support their requirements.

The Statement enables new opportunities for collaboration and co-investment across the Australian Government to be explored and provides stakeholders with an improved understanding of government business activities and requirements for environmental information.

Lake Mungo, a dry lake and significant archaeological site in southwestern New South Wales.

Photograph: Adrian Martins

For the first time, the Australian Government's interests in environmental information have been elucidated. This provides important initial steps towards achieving reform in how the Australian Government accesses, manages and uses environmental information to make better decisions.

A framework for whole-of-government collaboration on environmental information.

A structured picture of environmental information requirements

The Statement provides an organising framework for whole-of-government collaboration on environmental information based on nine broad areas of interest. It describes the range of activities undertaken by agencies within each area of interest. Summary tables provide an overview of the environmental information requirements against a set of environmental information classes for each of the nine areas of interest.

Areas of interest

Biodiversity – to manage Australia's protected areas and conserve and protect Australia's terrestrial, aquatic and marine biodiversity, ecosystems and reserves.

Biosecurity – to help protect Australia's economy, environment, and peoples' health from, and mitigate the impacts of, weeds, pests and diseases.

Climate change – to enable Australia to reduce greenhouse gas emissions, adapt to the impacts of climate change and help shape a global solution.

Environmental reporting – to enable the nation to meet its environmental reporting obligations.

Infrastructure and communities – to ensure sustainability and safety of communities and infrastructure.

Natural resources – to enable the productive, innovative and sustainable use of Australia's resources by industry and the community.

Significant places – to protect and manage Australia's significant places of natural and cultural heritage.

Waste and pollutants – to preserve the health of Australians and protect the environment from the impacts of pollutants and other waste products.

Water – to ensure the quality of Australia's water resources and their use by industry, communities and the environment.

Where to from here?

The Statement reflects the considerable range of government activity for which environmental information is critical. Whilst the Statement is valuable in its own right, further engagement is needed, through mechanisms like the AG EIAG, to develop a clear understanding of the long-term, shared needs of government for environmental information.

The Statement will be updated biennially by the AG EIAG. The Bureau of Meteorology will ensure the rich suite of primary data that underpins the Statement is made available to stakeholders.

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1

BACKGROUND



Water flows from Cooper Creek
into Lake Eyre after flooding in
Queensland, February 2011.

Photograph: Kelly Barnes, © Newspix / News Ltd.

Towards a National Plan for Environmental Information

Launched in July 2010, the National Plan for Environmental Information (NPEI) initiative is an Australian Government program to improve the quality and accessibility of environmental information for decision-making. It is jointly implemented by the Department of Sustainability, Environment, Water, Population and Communities and the Bureau of Meteorology.

The NPEI initiative will bring together Australian Government interests in environmental information to build and maintain environmental information products and services that enable Australia to better manage its natural capital.

Over the long term, the NPEI initiative has four primary aims:

1. **Identify** what environmental information is needed by governments to manage our natural capital.
2. **Share** environmental information to avoid duplication of effort and maximise its productive use.
3. **Deploy** environmental information in new products and services.
4. **Improve** environmental information through collaboration and co-investment.

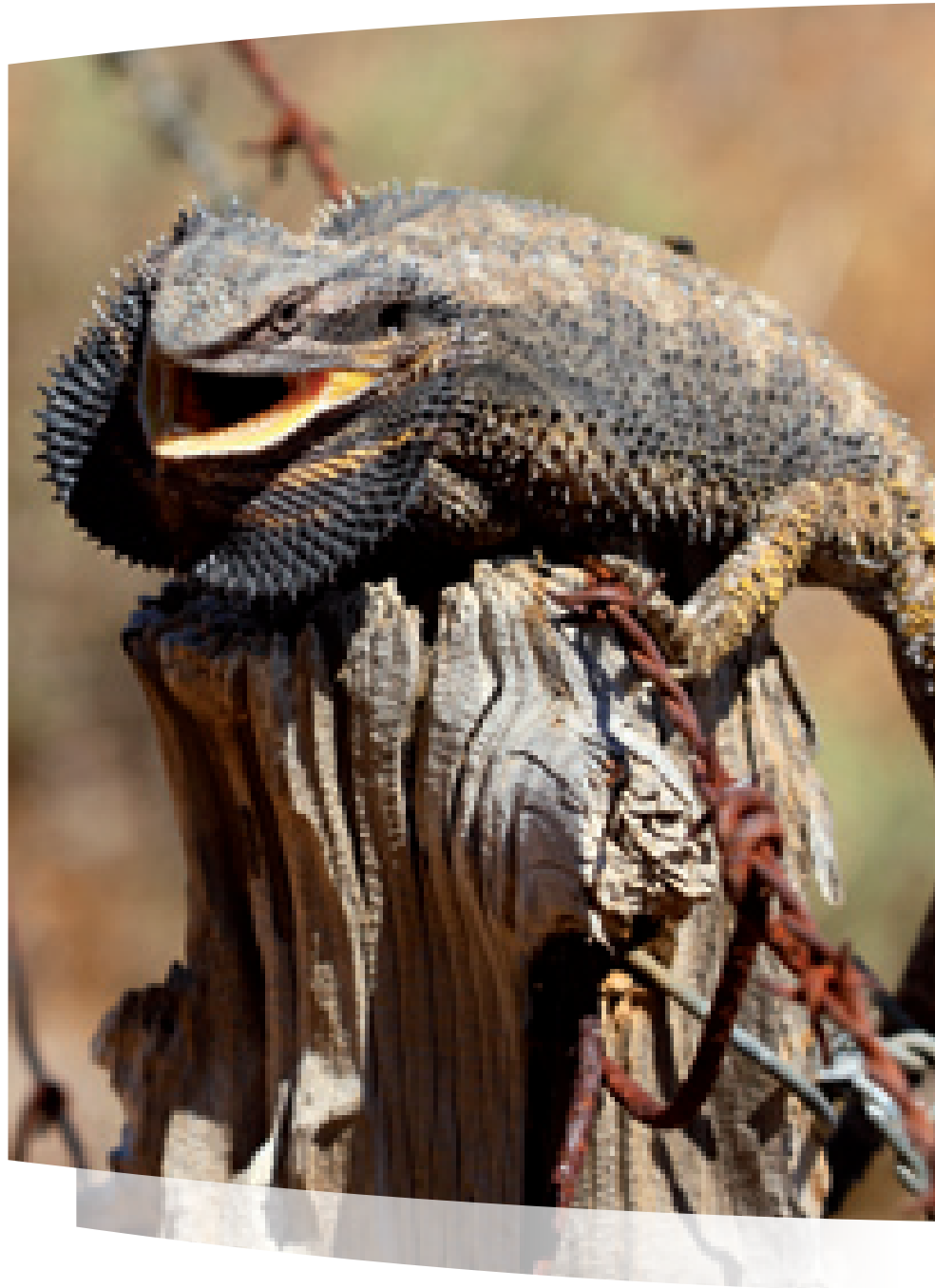
Australian Government requirements are broad, spanning human health and wellbeing, the digital economy, international security, economic sustainability and natural resource management. Some activity is critically dependent upon environmental information, such as informing policy development, monitoring performance against targets or assisting in planning, decision-making and resource allocation decisions and processes.

Typically, the development of environmental information products and services has been led by individual agencies with limited insight into whole-of-government needs or capabilities.

The challenge is to identify Australian Government priorities that are critically dependent on environmental information, detail the requirements for environmental information to inform and support them, and identify opportunities for collaboration to deliver cost-effective fit-for-purpose environmental information.

The Australian Government Environmental Information Advisory Group

The Australian Government Environmental Information Advisory Group (AG EIAG) was established to determine whole-of-government priorities that require environmental information and to guide the development of national environmental information products and services.



The group comprises senior representatives of those Australian Government portfolios and agencies that use or produce environmental information in activities including policy development, research, monitoring, analysis, modelling and reporting. The AG EIAG comprises the following portfolios and agencies:

- Attorney-General's Department
- Australian Bureau of Statistics
- Bureau of Meteorology
- CSIRO
- Department of Agriculture, Fisheries and Forestry
- Department of Climate Change and Energy Efficiency
- Department of Defence
- Department of Health and Ageing
- Department of Infrastructure and Transport
- Department of Industry, Innovation, Science, Research and Tertiary Education
- Department of the Prime Minister and Cabinet
- Department of Regional Australia, Local Government, Arts and Sport
- Department of Resources, Energy and Tourism
- Department of Sustainability, Environment, Water, Population and Communities
- Geoscience Australia
- Murray–Darling Basin Authority
- The Treasury.

Purpose of the Statement

There is an immense amount of environmental information that could be gathered, but not all of it is vital. The Statement will help define the high-level scope of the NPEI initiative and provide the starting point for identifying where the Australian Government should focus its efforts in relation to environmental information. For each area of interest and its related requirements, a detailed assessment is needed to determine the environmental information products to best meet the shared interests of the Australian Government.

Principles for developing the Statement

The production of the Statement was guided by the following principles:

- Adopt a broad definition of environmental information to engage multiple stakeholders.
- Encompass requirements that support social, cultural, economic and environmental objectives.
- Take a long-term view of current and potential environmental information requirements.
- Take an evidence-based approach that details the link between Australian Government requirements for environmental information and their dependencies on environmental information.
- Be unconstrained by current capacity to collect or disseminate environmental information.
- Revise the Statement periodically, ensuring currency and alignment with Australian Government environmental information needs.

Criteria for developing the Statement

To ensure the Statement addresses the requirements of the Australian Government for environmental information, the following criteria were applied:

- Requirements primarily reflect formal obligations and responsibilities of the Australian Government that rely on environmental information.
- Environmental information is a critical part of supporting Australian Government's policy, programs and decision-making requirements.
- Requirements encompass the enduring needs of the Australian Government to better promote long-term investment in environmental information.

Method overview

The method for developing the Statement was partially based on methods developed by: a) the Group on Earth Observations (GEO) to identify Critical Earth Observation Priorities (GEOTask US-09-01a) (2010); and b) the UK Environmental Observation Framework's 'Towards a Statement of Need' (2009). The approach to structured analysis and synthesis embodied in the GEO method was combined with the philosophy of linking environmental information to formal requirements (legislation) in the UK Environmental Observation Framework.



The method consisted of the following main stages:

1. A primary data acquisition phase with Australian Government stakeholders.
2. Meta-analysis to develop candidate areas of interest, supported by consultation to affirm and refine activities and requirements.
3. Classification of requirements into classes of environmental information.
4. Analysis and development of summary tables.

Document outline

The document is structured into six sections:

- **Executive summary** – provides a summary of the Statement, including the context, justification and descriptions of the requirements of the Australian Government that require environmental information.
- **Background** – provides the background, rationale and purpose of the Statement. It also includes brief descriptions of the criteria and methods used in its development.
- **Requirement summaries** – provides the evidence under each requirement and a graphical summary showing the information classes within an area of interest. No ranking or priority should be inferred from the summary.
- **Cross requirements summary** – tabular summary of environmental information classes combined across all areas of interest.
- **Future drivers** – description of potential future drivers for environmental information identified by AG EIAG members.
- **Conclusion** – description of how the Statement and the data that supports it can be used to further support the NPEI initiative, including its maintenance, review and limitations of the approach.

2

BIODIVERSITY



A male Splendid Fairy-wren.

Photograph: David Kleinert

The Australian Government requires environmental information to understand, conserve and protect Australia's terrestrial, aquatic and marine native species and ecosystems, manage Australia's protected areas and restore and maintain ecological connectivity and resilience.

The Australian Government develops and implements policies and programs designed to improve and maintain the ecological health and extent of the natural environment to meet the long-term needs of society, including:

- developing policies and programs to manage and conserve terrestrial, aquatic and marine species and ecosystems
- identifying species and ecosystems that are under threat or at risk of extinction and establishing responses, including through species breeding programs and reintroduction, habitat restoration and threat management
- setting national objectives and targets to improve biodiversity and support sustainable land and natural resource uses
- planning and management of national parks and other protected areas
- developing policies and programs to build ecological connectivity and resilience.

Following is a description of the requirements and their dependency on environmental information.

Australia's Biodiversity Conservation Strategy 2010–2030

To ensure Australia's biodiversity is healthy and resilient to threats and valued both in its own right and for its essential contribution to our existence.

There are three priorities for action:

- 1) engaging all Australians in biodiversity conservation,
- 2) building ecosystem resilience to climate change, and
- 3) achieving measurable results.

Environmental information is required to measure progress towards meeting ten interim national targets and inform the development of indicators for analysis and policy development to promote or support adaptation of Australia's biodiversity to climate change.

Australia's Native Vegetation Framework 2012 (in draft)

The vision for the Framework is that native vegetation across the Australian landscapes is managed in an ecologically sustainable way in recognition of its enduring environmental, economic, social, cultural and spiritual values. The Framework sets national directions and priorities to guide actions across government strategies, policies, legislation and programs related to native vegetation management on the Australian continent and its islands. Environmental information is required to measure progress towards achieving Framework targets. Some indicators need to be developed or refined (e.g. for vegetation condition). Indicators and reports are used for analysis and policy development to guide actions across governments related to native vegetation management.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Criteria 1 to 3, comprising 16 indicators, apply to monitoring biodiversity.

Australian Antarctic Science Strategic Plan 2011–12 to 2020–21

To enhance environmental protection for Antarctic and sub-Antarctic terrestrial and coastal ecosystems, and deliver effective conservation of Antarctic and Southern Ocean wildlife. Environmental information is required to: a) identify key ecosystem sensitivities and vulnerabilities to environmental stressors, b) identify signals of ecosystem change caused by human pressures, both from local activities and from global processes, as the scientific foundation for a system of spatial management and area protection that takes into account the particular characteristics of Antarctica, c) be the scientific and technical foundation for practical measures to prevent, mitigate or remediate detrimental change caused by human activity, and d) provide better knowledge about the status and trends of important Antarctic wildlife populations (whales, seals and seabirds), leading to improved conservation planning and management measures.

Australian Biological Resources Study

To provide comprehensive and authoritative information on the taxonomy and biogeography of Australia's biota. Environmental information is required to assist with the conservation and sustainable use of Australia's biodiversity.

Australian Collaborative Rangelands Information System

The Australian Collaborative Rangeland Information System is a coordinating mechanism that collates rangeland information from State, Northern Territory and Australian Government agencies and other sources. The System reports on issues of information, and the Natural Resource Programs and Policy Committee reports on issues of policy. Environmental information is required as an important contribution to rangeland management and capacity to monitor change through scientifically rigorous data and information.

Australian Pest Animal Strategy (Australia's Biodiversity Conservation Strategy 2010–2030)

Establishes key objectives and actions that aim to prevent the introduction and spread of new pest animals in Australia and assist in managing the impacts of those that are already established. Environmental information is required to measure progress against specific actions identified under the three priorities for action.

Australian Seed Bank Partnership

To create knowledge about the dormancy and germination requirements and responses to climate of Australian native



seed and to record this information in the Australian Seed Bank Partnership database. Environmental information is required, as information from the national database on seed germination and dormancy requirements is used to inform conservation and restoration decisions, particularly in light of environmental change.

Australian Weeds Strategy (Australia's Biodiversity Conservation Strategy 2010–2030)

To minimise the impact of weeds on Australia's environmental, economic and social assets. There are three priorities for action: 1) prevent new weed problems, 2) reduce the impact of existing weed problems, and 3) enhance Australia's capacity and commitment to solve weed problems. Environmental information is required to measure progress against specific actions identified under these three priorities.

Caring for Our Country

To fund projects to help achieve national targets and outcomes, including the improvement of biodiversity. Environmental information is required to: a) provide evidenced-based evaluations on the outcomes of these Australian Government investments, b) measure performance and results, including monitoring, evaluation, reporting and improvement at the project, program and national outcome levels, c) set and review priorities and targets, and d) assist in developing, assessing and contextualising projects and investment proposals.

China–Australia Migratory Bird Agreement

To conserve terrestrial, water and shorebird species that migrate between

Australia and China. Environmental information is required: a) as the Annex to this agreement instructs the migratory species list of the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act), and thus is important in assessing the likelihood of proposed actions having a significant impact on a matter of national environmental significance, b) to inform the development of Ramsar documentation such as Ramsar information sheets, ecological character descriptions and management plans and, c) as a mechanism allowing direct discussion with the Government of the People's Republic of China regarding the conservation of migratory bird species that travel between our two countries.

Clean Energy Future Land Sector Package: Biodiversity Fund

To support activities that deliver biodiversity and related environmental benefits and support landholders to manage and protect biodiverse carbon stores. Environmental information is required to: a) identify landscape change at the national and regional level and, over time, to further inform the assessment framework for projects under the Biodiversity Fund, and b) measure performance and results, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Indigenous Carbon Farming Fund

To support Indigenous participation in the Carbon Farming Initiative. Environmental information is required to measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Regional National Resource Management Planning for Climate Change Fund

To support regional natural resource management organisations to incorporate climate change mitigation and adaptation in their plans. Environmental information is required to: a) guide rural and regional communities in locating biosequestration vegetation plantings in the landscape, b) develop scenarios about the impacts of climate change, and c) measure performance and results, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Commonwealth Environmental Water

Protect and restore environmental assets in the Murray–Darling Basin. Environmental information is required to inform the acquisition of environmental water and prioritise environmental water use based on a consideration of: a) the quantified flow requirements of biodiversity and ecological function, b) expected ecological responses to inundation and flow at multiple spatial scales, c) the condition of aquatic ecosystems, d) resilience to climate change, and e) connectivity within the landscape. The impacts of environmental water use need to be monitored: a) using consistent and repeatable methodologies at multiple spatial and temporal scales, b) to understand and report on ecological response to flow/inundation to determine change over time in the condition of species, communities and ecosystems in response to flow/inundation, and c) to adaptively manage the use of environmental water.

Commonwealth National Parks, Botanic Gardens and Protected Areas – Management Plans for Commonwealth Reserves

To conserve natural and cultural heritage in Commonwealth reserves while providing sustainable visitor use for inspirational, educational, cultural and recreational purposes. Environmental information is required to inform: a) the management of national parks and other terrestrial protected areas for the conservation of biodiversity and listed threatened species, conserving the extent and condition of native vegetation and managing the impacts on biodiversity associated with tourism, fire, invasive species and climate change, b) decisions on visitor management and recreational usage of parks through an understanding of environmental impacts and benefits, and c) an understanding of the impact of climate change on parks and to develop appropriate adaptation and mitigation strategies.

Council of Heads of Australasian Herbaria and Council of Heads of Australian Fauna Collections

The Councils are peak bodies representing Australia's herbaria and museums respectively. They provide comprehensive and point of truth environmental information on Australia's biodiversity, including responsibility for an authoritative-agreed national list of names of plants and animals. These institutions provide geocoded information on species across the country; for instance Australia's Virtual Herbarium provides environmental information for 6.5 million records of Australia's plants – data that is critical for conservation priority planning.

Convention of International Trade in Endangered Species of Wild Fauna and Flora

To prevent international trade threatening endangered species with extinction.

Convention on Biological Diversity 1992

The Convention is a legally binding convention (endorsed through the EPBC Act) to which Australia is a party and, as a consequence, places international obligations upon Australia. The principal objectives of the Convention are the conservation and sustainable use of biological diversity, and the fair and equitable sharing of benefits arising from its use. The Convention recognises that the key to maintaining biological diversity depends upon conserving, using and managing this diversity in a sustainable manner.

Convention on the Conservation of Migratory Species of Wild Animals


The Convention is a legally binding convention to which Australia became a party in 1991. The Convention seeks to conserve terrestrial, avian and marine species that migrate across or outside national jurisdictional boundaries. Parties to the Convention must protect migratory species listed in Appendices I and II of the Convention that live within, or pass through, their jurisdiction. Appendix I lists migratory species that are endangered and for which parties are obliged to provide immediate protection. Appendix II lists migratory species with an unfavourable conservation status and which require, or would significantly benefit from, international agreements for their conservation and management.

Environment Protection Biodiversity Conservation Statutory and Regulatory Decision-making in Marine Areas (the *Environment Protection and Biodiversity Conservation Act 1999* [Cwlth])

To fulfil statutory responsibilities under the EPBC Act including: protection of the marine environment as a matter of national environmental significance; conservation of listed threatened species and communities, listed migratory species and listed marine species; strategic assessment of fisheries and declaration of fisheries as approved Wildlife Trade Operations for the purposes of exporting catch/product; and implementing Commonwealth marine reserve management plans. Environmental information is required to: a) inform decisions on environmental approvals and fisheries assessment, b) develop, implement and review threatened species recovery plans and threat abatement plans, and c) implement and review Commonwealth marine reserve management plans.

Environmental Stewardship Program (Caring for Our Country)

To maintain and improve the quality and extent of targeted high public value environmental assets on private land. Environmental information is required to: a) prioritise matters of national environmental significance for conservation through Environmental Stewardship projects, b) develop innovative tender designs to inform funding decisions, c) develop and evaluate management actions for preserving and enhancing the condition of target threatened ecological communities, and d) develop and evaluate condition measurements for target habitats.



Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) – Implementation of the EPBC Act

To ensure the protection of matters of national environmental significance at project, regional and landscape scales and support the sustainable management of wildlife. Environmental information is required to: a) inform decisions on whether to list species, heritage places and values and ecological communities under the EPBC Act or change the listed status of species and ecological communities, b) inform decisions on whether to approve projects or regional-scale plans, and c) provide for the protection of matters of national environmental significance in approved plans and support the sustainable management of heritage values and places, natural resources and wildlife trade.

Genetic Species and Ecosystem Approaches to Biodiversity Conservation

To increase our knowledge of biodiversity at population and genetic level in Australia to inform management of natural areas, identify biodiscovery options and increase public understanding. Environmental information is required to: a) assist in development of policy for conservation of genetic diversity to complement practices involving conservation of ecosystem and species, and b) develop taxonomic science and data, and inform the development of standards and protocols for biodiversity data management and delivery.

Global Biodiversity Information Facility

An international organisation that focuses on making scientific biodiversity data available via the internet.

Great Barrier Reef Marine Park Act 1975 (Cwlth) – Management of the Great Barrier Reef Marine Park

The long-term protection, ecologically sustainable use, understanding and enjoyment of the Great Barrier Reef for all Australians and the international community, through the care and development of the Marine Park. Environmental information is required to inform management, planning, decisions and in the preparation of five-yearly outlook reports.

Great Barrier Reef Marine Park: Managing Sustainable Use of Resources in Partnership with Traditional Owners

To achieve sustainable traditional use of marine resources and protection of traditional cultural and heritage values, in partnership with Traditional Owners. Environmental information is required to inform management decisions by Governments and Traditional Owners around sustainable levels of traditional use of marine resources within the Great Barrier Reef and State marine parks in response to a changing environment.

Great Barrier Reef Marine Park: Climate Change Impacts on the Great Barrier Reef

To develop and implement responses to climate change with government, industry, reef users and the community, and improve the Great Barrier Reef's resilience (particularly in the face of climate change). Environmental information is required to develop adaptation strategies, including improvements to current management instruments and support of efforts to ensure ecological sustainability of reef uses in the context of climate change.

Great Barrier Reef Marine Park: Impacts of Fishing

Addressing the impacts of fishing and illegal fishing. Environmental information is required to determine how fisheries of the Great Barrier Reef and adjacent areas are best managed to maximise ecosystem health, ecosystem resilience and ecosystem goods and services.

Great Barrier Reef Marine Park: Protection of Coastal Ecosystems

Contributing to the protection of coastal ecosystems that support the Great Barrier Reef, including initiatives to improve water quality, manage the impacts of fishing, including sustainable traditional hunting, and investigate and manage the impacts of climate change. Environmental information is required to inform management decisions regarding the cumulative and simultaneous impacts of multiple pressures on the Great Barrier Reef ecosystem and the goods and services it provides, and to evaluate the effects of existing management strategies on the ecosystem.

Group on Earth Observations

To make biodiversity data, information and forecasts more readily accessible to policy-makers, managers, experts and other users through collaborative development of the Group on Earth Observation Biodiversity Observation Network, the biodiversity arm of the Global Earth Observation System of Systems.

Indigenous Protected Areas (Caring for Our Country)

To support Indigenous communities and Traditional Owners in committing to long-term preservation of Indigenous-owned land or sea for biodiversity and

cultural resource conservation through the declaration of land as an Indigenous Protected Area. Declared Indigenous Protected Areas are included within the National Reserve estate for the purposes of meeting National Reserve System targets. Environmental information is required to: a) support the development of large-scale land management and planning for conservation, including fire management regimes, and b) support understanding of the degree to which Australia's protected area estate protects its distinctive bioregions and subregions, including their component biota, landscapes and ecological processes.

Intergovernmental Oceanographic Commission – Resolution 2.31 adopted by the General Conference of UNESCO

To review the state of the marine environment, including socio-economic aspects. Environmental information is required to inform and aid marine management and decision-makers, and to increase appreciation amongst the general public of our changeable oceans.

International Whale and Marine Mammal Conservation Initiative

The Initiative was established with the following information-related objectives: a) establish Australia as a global leader in non-lethal cetacean and marine mammal research and conservation, b) improve the national, regional and global management of marine mammal and human interactions by strategic enhancement of non-lethal cetacean and marine mammal research capacity, c) lead and coordinate the Southern Ocean Research Partnership in order to provide the research necessary for effective conservation and management of whales in the Southern Ocean, d) contribute

towards providing the necessary tools and information to address future conservation and management needs of cetaceans and marine mammals, e) promote a conservation focused agenda for whales and marine mammals policy at the national, regional and international levels, and f) contribute to reforming the International Whaling Commission and transforming it into a modern, conservation-focused organisation.

Japan–Australia Migratory Bird Agreement

To conserve terrestrial, water and shorebird species that migrate between Australia and Japan. Environmental information is required: a) as the Annex to this agreement instructs the migratory species list of the EPBC Act, and thus is important in assessing the likelihood of proposed actions having a significant impact on a matter of national environmental significance, b) to inform the development of Ramsar documentation such as Ramsar information sheets, ecological character descriptions and management plans, and c) as a mechanism allowing direct discussion with the Government of Japan regarding the conservation of migratory bird species that travel between our two countries.

Management of Antarctic and Sub-Antarctic Protected Areas

Management of the Heard Island and McDonald Islands Marine Reserve, Antarctic Specially Protected Areas and Antarctic Specially Managed Areas. Environmental information is required to inform: a) managers' development of appropriate protection measures, and b) site users about sensitivities and restrictions.

Marine Bioregional Planning

The Australian Government's Marine Bioregional Planning Program is supporting the conservation and sustainable use of Australia's oceans. It is doing this by building a better understanding of our unique marine environment, the life it supports and factors putting the health of our oceans at risk. Marine bioregional plans are being developed for each of Australia's marine regions. Marine bioregional plans are being prepared under section 176 of the EPBC Act. This section of the EPBC Act requires the Commonwealth Environment Minister to have regard to a bioregional plan in making any decision under the EPBC Act for which the plan has relevance. Marine bioregional plans will help improve the way decisions are made under the EPBC Act, particularly in relation to the protection of marine biodiversity and the sustainable use of our oceans and their resources by our marine-based industries. Environmental information is required to: a) implement marine bioregional plans for supporting decisions under the EPBC Act, b) update descriptions of conservation values and evaluate threats to these values, and c) implement actions under marine bioregional plans.

Murray–Darling Basin Native Fish Strategy (Murray–Darling Basin Agreement)

Provide a response to the key threats to native fish populations in the Murray–Darling Basin and to rehabilitate native fish communities in the Murray–Darling Basin back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation. Environmental information is required to plan (set priorities) and measure progress towards meeting the Native Fish Strategy objectives.



National Environmental Research Program

To: a) provide funding for environmental research to improve our capacity to understand, manage and conserve Australia's biodiversity and ecosystems, and maintain and build resilience for future changing threats, and b) create sustainable use of biodiversity and ecosystems and biodiversity markets. Environmental information is required to inform research to help decision-makers understand the major drivers for maintaining biodiversity, ecosystem function and monitor ecosystem health.

National Forest Policy Statement 1992

The Statement has 11 broad national goals to ensure that the Australian community obtains a balanced conservation and sustainable use outcome from all forest uses. The Statement highlights that effective management and use of forests must be based on sound understanding of forest ecosystems and their associated values.

National Representative System of Marine Protected Areas (NRSMPA)

The NRSMPA helps to meet Australia's responsibilities and obligations as a signatory to the Convention on Biological Diversity and the major components of the Jakarta Mandate developed under that Convention. Australia signed the Convention in 1992 at the Earth Summit in Rio de Janeiro. Australia's international agreements made at the United Nations World Summit on Sustainable Development in 2002 committed Australia to establishing a representative network of marine reserves by 2012. The primary goal of the NRSMPA is to establish and effectively manage a comprehensive, adequate and representative system

of marine reserves to contribute to the long-term conservation of marine ecosystems and to protect marine biodiversity at all levels. The NRSMPA aims to be: comprehensive – including the full range of ecosystems recognised at an appropriate scale within and across each bioregion; adequate – have the required level of reservation to ensure the ecological viability and integrity of populations, species and communities; and representative – reasonably reflect the biotic diversity of marine ecosystems. Environmental information is required to: a) inform the management of reserves, help understand reserve values and pressures on reserve values, avoiding and mitigating impacts on reserve values and ensuring reserve users comply with provision of management plans, b) inform decisions on visitor management and usage of reserves through an understanding of environmental impacts and benefits, c) inform an understanding of the impact of climate change on reserves, and to develop appropriate adaptation and mitigation strategies, and d) inform the evaluation and review of Commonwealth marine reserve management plans.

National Reserve System

To build a well managed, comprehensive, adequate and representative National Reserve System to include examples of at least 80 per cent of the extant native ecosystems present in Australia. Environmental information is required to: a) understand the degree to which Australia's protected area estate protects its distinctive bioregions and subregions, including their component biota, landscapes and ecological processes, b) inform the Interim Biogeographic Regionalisation for Australia which

supports effective conservation assessment and planning at regional and national scales, and provides a framework for prioritising competing bids for investment in land purchase for inclusion in Australia's National Reserve System (i.e. the National Reserve System is to be comprehensive, adequate and representative), c) evaluate the values, integrity and management of Australia's National Reserve System, and d) assist the preparation of five-yearly outlook reports.

National Strategy and Action Plan for the Role of Australia's Botanic Gardens in Adapting to Climate Change

Sets out overall strategies and specific actions necessary to promote and resource Australia's botanic gardens in their vital role as facilitators of climate change preparedness and adaptation. Provides a framework for the Council of Heads of Australia's Botanic Gardens to report to the Natural Resource Management Ministerial Council. Environmental information is required to: a) provide information to scientists and the community including species' environmental tolerance, their known and potential climate change vulnerability, species-specific horticulture, and weed and disease risk assessments, and b) to monitor the effect of climate change across Australia's wide variety of ecosystems using the established network of botanic gardens throughout Australia.

National Water Quality Management Strategy

To achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development. Water quality-related environmental information is used to: a) inform regulatory environmental impact assessment processes, b) develop and revise National Water Quality Management Strategy guideline/trigger values for fresh and marine aquatic ecosystems, drinking water, recreational water quality, sewage systems and recycled water to manage water quality and minimise risks to human and environmental health, c) assist water managers to protect water quality, biodiversity, ecosystem services, human health and Indigenous cultural and spiritual values associated with water resources, d) improve water quality by providing data, information and tools to help governments and communities manage their water resources, and e) inform river basin and catchment management, including environmental assessment, monitoring and reporting.

National Weeds and Productivity Research Program

To establish a new comprehensive National Weeds and Productivity Research Program that will reduce the impact of invasive plants on biodiversity and farm and forestry productivity.

National Wildlife Corridors Plan

To develop a plan to provide a framework and priorities for landscape-scale conservation. Environmental information is required to identify potential areas for nationally important wildlife corridors and to provide rationale for action.

Parks Australia Climate Change Strategic Overview 2009–2014

Identify the principles and objectives that will guide Parks Australia's response to managing the consequences of climate change in their terrestrial reserves over the next five years. Environmental information is required to inform an understanding of the impact of climate change on Commonwealth terrestrial reserves and to develop appropriate adaptation and mitigation strategies.

Powering Ideas: An Innovation Agenda for the 21st Century – National Collaborative Research Infrastructure Strategy

The Atlas of Living Australia is a national initiative focused on making Australia's biodiversity information more accessible and useable online.

Regional Forest Agreement Act 2002 (Cwlth)

The Act establishes regional forest agreements and states that the Minister must establish a comprehensive and publicly available source of information for national and regional monitoring and reporting in relation to all of Australia's forests, and to support decision-making in relation to all of Australia's forests.

Republic of Korea–Australia Migratory Bird Agreement

Migratory bird conservation and the protection of migratory shorebirds and their habitat. Environmental information is required: a) as the Annex to this agreement instructs the migratory species list of the EPBC Act, and thus is important in assessing the likelihood of proposed actions having a significant impact on a matter of national environmental significance,

b) to inform the development of Ramsar documentation such as Ramsar information sheets, ecological character descriptions and management plans, and c) as a mechanism allowing direct discussion with the Government of the Republic of Korea regarding the conservation of migratory bird species that travel between our two countries.

Research Activities for Tropical River Systems and Wetlands

Providing the science and knowledge that governments, communities and industries need for the sustainable use and management of Australia's tropical rivers and estuaries.

Science and Industry Research Act 1949 (Cwlth)


To carry out services, and make available facilities, in relation to science.

Sustainable Rivers Audit (Murray–Darling Basin Agreement)

The Sustainable Rivers Audit provides a long-term assessment of the condition and health of the 23 river valleys in the Murray–Darling Basin. Environmental information is required to provide long-term assessment reports based on indicators from five environmental themes: fish, macroinvertebrates, hydrology, vegetation and physical form. Further themes may be chosen based on decisions under the Intergovernmental Agreement.

Sydney Harbour Biodiversity Conservation and Threatened Species Management: Management of Certain Commonwealth Lands on Sydney Harbour

To maintain and protect biodiversity values of the Harbour Trust's lands



on Sydney Harbour. Environmental information is required to inform the development and implementation of management plans.

The Convention on Wetlands (the Ramsar Convention)

To meet the Australian Government's obligations under the Ramsar Convention by providing national wetland policy leadership and direction, working with State and Territory governments, implementation of the EPBC Act, and through the development of programs to improve the management of wetlands. Environmental information is required to: a) develop Ramsar documentation such as Ramsar information sheets, ecological character descriptions and management plans for Australia's Ramsar sites, b) assess site condition and monitor for potential changes in ecological character at Ramsar sites, and c) assess the impact of actions referred under the EPBC Act on Ramsar sites and manage potential risks to Ramsar sites.

The East Asian–Australasian Flyway Partnership

To conserve migratory waterbird species that migrate between Australia and Japan. Environmental information is required to provide a framework for international cooperation, including: a) development of a Flyway Site Network (for sites of international importance to migratory waterbirds), b) collaborative activities to increase knowledge and raise awareness of migratory waterbirds along the flyway, and c) building capacity for the sustainable management and conservation of migratory waterbird habitat along the flyway.

The Living Murray Program (Murray–Darling Basin Agreement)

To achieve a healthy working River Murray system by returning water to the river's environment and managing a number of iconic sites chosen for their high ecological, cultural, recreational, heritage and economic value. To recover 500 gigalitres of water for the River Murray, specifically for the benefit of plants, animals and the Australians it supports, along with improving the environment at six icon sites. Environmental information is required to plan (set priorities) and measure progress towards meeting specific icon site targets.

United Nations Convention on the Law of the Sea

In the Exclusive Economic Zone, the coastal State has jurisdiction as provided for in the relevant provisions of this Convention with regard to the protection and preservation of the marine environment.

Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray system in close cooperation with State authorities to ensure reliable water supplies for all users. MDBA also implements a range of

multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

Weeds of National Significance (Caring for Our Country)

To prioritise weed management at the State and Territory, regional and local levels to maintain or improve biodiversity and productivity outcomes in Australian Government priority areas. Environmental information is required to: a) help monitor changes in pest distribution and extent, and b) inform the overall impact of investments on environmental quality.

Working on Country (Caring for Our Country)

To support Indigenous aspirations in caring for country while helping the Australian Government to meet its responsibility to protect and conserve the environment (includes matters of national environmental significance, climate change, land and inland waters, coasts and oceans, and heritage). Environmental information is required to inform: a) management plans of Working on Country projects (including those Indigenous Protected Areas which also receive Working on Country investment), b) project managers of threats and appropriate management actions, and c) develop environmental indicators to assess progress towards management targets.

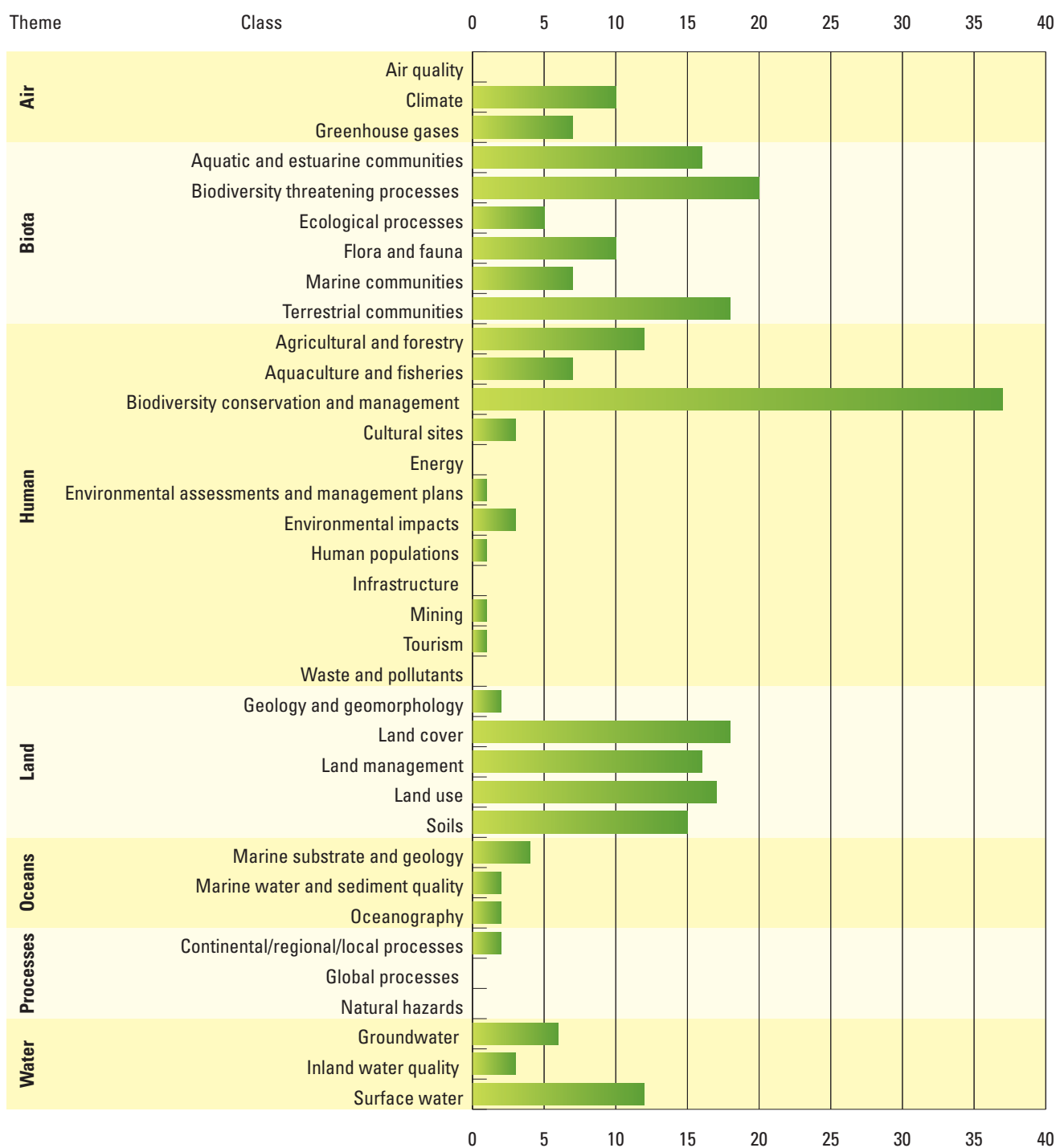


Figure 1 – List of primary environmental information requirements for biodiversity categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

3

BIOSECURITY



Customs shed on North Quay,
Fremantle, Western Australia.

Photograph: Fremantle Ports

The Australian Government requires environmental information to help protect Australia's economy, environment and people's health from, and mitigate the impacts of, weeds, pests and diseases.

The Australian Government develops and implements policies and programs to protect the health of Australia's plant and animal populations from risks associated with exotic pests and diseases, including:

- developing schemes to conserve terrestrial, aquatic and marine plant and animal life in a region to protect and sustain ecosystems
- managing and enhancing Australia's national biosecurity arrangements
- promoting international and domestic cooperation between governments to minimise the risks associated with the import and export of live plants and animals and other materials
- enhancing access to international animal and plant-related markets and protecting our favourable pest and disease status
- undertaking on-ground quarantine activities, such as conducting inspections at borders, ports, airports and other entry or exit points, managing isolation and disinfection facilities and applying penalties for breaches of regulation.

Following is a description of the requirements and their dependency on environmental information.

Australia's Biodiversity Conservation Strategy 2010–2030

Australia's biodiversity is healthy and resilient to threats, and valued both in its own right and for its essential contribution to our existence. There are three priorities for action: 1) engaging all Australians in biodiversity conservation, 2) building ecosystem resilience to climate change, and 3) achieving measurable results. Environmental information is required to: a) measure progress towards meeting ten interim national targets, and b) develop indicators for analysis and policy development to promote or support adaptation of Australia's biodiversity to climate change.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Indicators 3.1a and 3.1b are used in reporting the scale and impacts of diseases, weeds, pests, chemicals and wildfire.

Australian Antarctic Science Strategic Plan 2011–12 to 2020–21

To prevent introduction or intra-site transfer of introduced non-native species in Antarctica and the sub-Antarctic. Environmental information is required

to support risk assessment, mitigation and response guidelines for introduced non-native species in the Antarctic and sub-Antarctic.

Australian Biological Resources Study

To provide comprehensive and authoritative information on the taxonomy and biogeography of Australia's biota. Environmental information is required to identify fauna and flora and assist in assessing threats to Australia's biosecurity.

Australian Meat and Live-stock Industry Act 1997 (Cwlth)

Animal Health Australia works to strengthen Australia's national animal health system and maximise confidence in the safety and quality of Australia's livestock products in domestic and overseas markets.

Australian Pest Animal Research Program

To develop and promote improved approaches to the management and monitoring of agricultural pest animals.

Australian Pest Animal Strategy (Environmental Biosecurity Policy)

To provide leadership and coordinate the management of pest animal species, to prevent the introduction and spread of new pest animals into Australia and manage the impacts of established pest animals. Environmental information is required to: a) measure progress against specific actions identified under the three priorities for action, b) better understand

the cost of environmental impacts and changes in risk posed by pest animals due to climate change, c) address all pathways of introduction, and d) spread and continue to improve methods and knowledge for optimising pest animal management.

Australian Weeds Strategy (Environmental Biosecurity Policy)

To prevent new weed problems, reduce the impact of existing priority weed problems and enhance Australia's capacity and commitment to solve weed problems. Environmental information is required to: a) help understand the costs of environmental impacts, b) assess the risk of new weed problems arising from climate change, c) monitor and respond to environmental changes that may contribute to weed spread, d) identify the threats posed by weeds to key environmental and cultural values, e) address weed threats and causes at the landscape level, and f) monitor weed distribution and impact.

Biosecurity System Reform

To enhance information and communication technology systems to provide an enhanced capability for risk-based management of Australia's biosecurity.

BioSIRT Program

Seeks to eliminate information barriers and provides national consistency of information to enhance emergency response and routine surveillance, and control of pests and diseases that



threaten agriculture, the environment and social amenity. Environmental information is required to support responses in the event of a biosecurity risk incursion.

Caring for Our Country

To fund projects to help achieve national targets and outcomes including in relation to biosecurity, particularly through projects to help prevent and manage pest and disease incursions. Environmental information is required to: a) provide evidenced-based evaluations on the outcomes of these Australian Government investments, b) set and review priorities and targets, c) assist in developing, assessing and contextualising projects and investment proposals, and d) measure performance and results, including monitoring, evaluation, reporting and improvement at the project, program and national outcome levels.

Emergency Animal Disease Response Agreement

Brings together the Commonwealth, State and Territory governments and livestock industry groups to collectively and significantly increase Australia's capacity to prepare for, and respond to, emergency animal disease incursions.

Emergency Plant Pest Response Deed

To manage and fund responses to Emergency Plant Pest incidents, including the potential for owner reimbursement costs for growers and the role of plant industries' participation in decision-making as well as their contribution towards costs related to Emergency Plant Pest responses.

Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) – Implementation of the EPBC Act

Promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources by regulating the impacts of activities associated with the use of Australia's resources on matters of national environmental significance. This is undertaken by ensuring the protection of matters of national environmental significance at project, regional and landscape scales and supporting ecologically sustainable development consistent with the objects of the EPBC Act. Environmental information is required to: a) inform decisions on whether to approve projects or regional-scale plans, and b) provide for the protection of matters of national environmental significance in approved plans, support the sustainable management of natural resources and wildlife trade, and support the protection of heritage values and places.

Environmental Biosecurity Policy (the EPBC Act)

To contribute to the development and implementation of Australian Government and national environmental biosecurity policy as it relates to the protection and conservation of biodiversity and matters of national environmental significance. Environmental information is required to: a) develop threat abatement plans including understanding of where key threatening process occurs and how to abate the threat, b) review effectiveness of threat abatement plans, c) better understand the costs of environmental impacts of exotic pests and diseases, contribute to cost-benefit analyses to support government responses to

incursions, d) inform risk assessment, surveillance, reporting and identification of new invasive species incursions and demonstration of 'proof of freedom' as a successful eradication program outcome, and e) determine effectiveness of control/management/eradication techniques and methods including impacts on non-target species.

Export Control Act 1982 (Cwlth)

Controls the export and entry for export of prescribed goods.

Gene Technology Act 2000 (Cwlth)

To protect the health and safety of people, and to protect the environment, by identifying risks posed by or as a result of gene technology, and by managing those risks through regulating certain dealings with genetically modified organisms. Environmental information is an important resource for the risk assessment of genetically modified organisms.

Imported Food Control Act 1992 (Cwlth)

To provide for the inspection and control of food imported into Australia and for related purposes.

Intergovernmental Agreement on Biosecurity

To enhance Australia's biosecurity system and strengthen the collaborative approach between the Australian, State and Territory governments to address Australia's broad range of biosecurity issues. The goal of a national biosecurity system is to minimise the impact of pests and diseases on Australia's economy, environment and the community, with resources targeted to manage risk effectively across the continuum, while

facilitating trade and the movement of animals, plants, people, goods, vectors and vessels to, from and within Australia. The objectives of the national biosecurity system are to provide arrangements, structures and frameworks that:

- reduce the likelihood of exotic pests and diseases that have the potential to cause significant harm to the economy, environment and community (including people, animals and plants) from entering, becoming established or spreading in Australia,
- prepare and allow for effective responses to, and management of, exotic and emerging pests and diseases that enter, establish or spread in Australia, and
- ensure that, where appropriate, significant pests and diseases already in Australia are contained, suppressed or otherwise managed.

International Convention for the Control and Management of Ships' Ballast Water and Sediments

The Convention aims to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ships' ballast water from one region to another. Australia signed the Convention, subject to ratification.

International Plant Protection Convention

To secure common and effective action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control. Contracting parties undertake to adopt the legislative, technical and administrative measures specified in the Convention including the use of scientific and environmental information in risk assessment, management, control and decision-making.

National Biosecurity Committee (NBC)

The NBC was established to provide strategic leadership in managing national approaches to emerging and ongoing biosecurity policy issues across jurisdictions and sectors. The NBC takes an overarching, cross-sectoral approach to national biosecurity policy, and works collaboratively to achieve national policy objectives for biosecurity in Australia. All biosecurity issues, including environmental, animal and plant biosecurity issues, are considered by the NBC, with a view to resolution or for the development of advice to the Primary Industries Standing Committee and Primary Industries Ministerial Council as appropriate.

National Environmental Biosecurity Response Agreement

Sets out cost-sharing arrangements for emergency responses to exotic pests and diseases between governments with contributions from private beneficiaries where possible.

National Environmental Health Strategy 2007–2012

A program to intervene in the environment to prevent and control disease.

National Forest Policy Statement 1992

The Statement stipulates that protection of the conservation and commercial values of forests will necessitate protecting forest areas from the potentially harmful effects of diseases, weeds, pests (including feral animals), chemicals and wildfire. Accordingly, the governments agree to give high priority to the protection of public forests from these agents. Further, since public and private lands are closely linked, active

protection of public forests needs to be coordinated with appropriate action on private lands. Environmental information is required for the purpose of protecting forests from these agents.

National Framework for the Management and Monitoring of Australia's Native Vegetation (Australia's Biodiversity Conservation Strategy 2010–2030)

Native vegetation across the Australian landscape is managed in an ecologically sustainable way in recognition of its enduring environmental, economic, social, cultural and spiritual values. This is undertaken by setting national directions and priorities to guide actions across government strategies, policies, legislation and programs related to native vegetation management on the Australian continent and its islands. Environmental information is required to measure progress towards achieving targets. Some indicators need to be developed or refined (e.g. for vegetation condition). Indicators and reports are used for analysis and policy development to guide actions across governments related to native vegetation management.

National System for the Prevention and Management of Marine Pest Incursions

To prevent new marine pests arriving, respond when a new pest does arrive, and minimise the spread and impact of pests already established in Australia.

National Weeds and Productivity Research Program

To reduce the impact of invasive plants on farm and forestry productivity, and on biodiversity.



Northern Australia Quarantine Strategy

To identify and evaluate the unique quarantine risks facing northern Australia. Environmental information is required to: a) develop and implement measures for the early detection of targeted pests, diseases and weeds, b) contribute to national and international initiatives relating to targeted pest and disease monitoring of relevance to program domestic surveillance, and c) manage the quarantine aspects of border movements through the Torres Strait.

Quarantine Act 1908 (Cwlth)

The Act provides the legal basis for preventing or controlling the entry of people, vessels, goods, animals and plants into Australia. It also provides the legal basis for managing the quarantine risk arising from people, vessels, goods, animals and plants after arrival in Australia. The Act gives powers for the Director of Quarantine and quarantine officers to deal with quarantine matters and for offences and maximum penalties for contraventions of the Act. The Act also provides the legal authority for the making of the Quarantine Proclamations, Quarantine Regulations 2000 and other subordinate legislation.

Quarantine Border Security Program

To support frontline services at airports and mail centres.

Quarantine Regulations 2000

The objective of Australia's biosecurity policies and risk management measures is the prevention or control of the entry, establishment or spread of pests and diseases that could cause significant harm to people, animals, plants and other aspects of the environment. Environmental information is required for the purposes of risk assessment and management.

Weeds of National Significance (Caring for Our Country)

To prioritise weed management at the State and Territory, regional and local levels, in order to maintain or improve biodiversity and productivity outcomes in Australian Government priority areas. Environmental information is required to: a) help monitor changes in pest and disease distribution and extent, and b) inform the overall impact of program investments on environmental quality.

World Organisation for Animal Health

Informs member countries of animal disease outbreaks throughout the world, studies new ways of controlling animal diseases and sets international standards.

World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement)

Obligates Australia to consider all import requests from other countries concerning agricultural products.

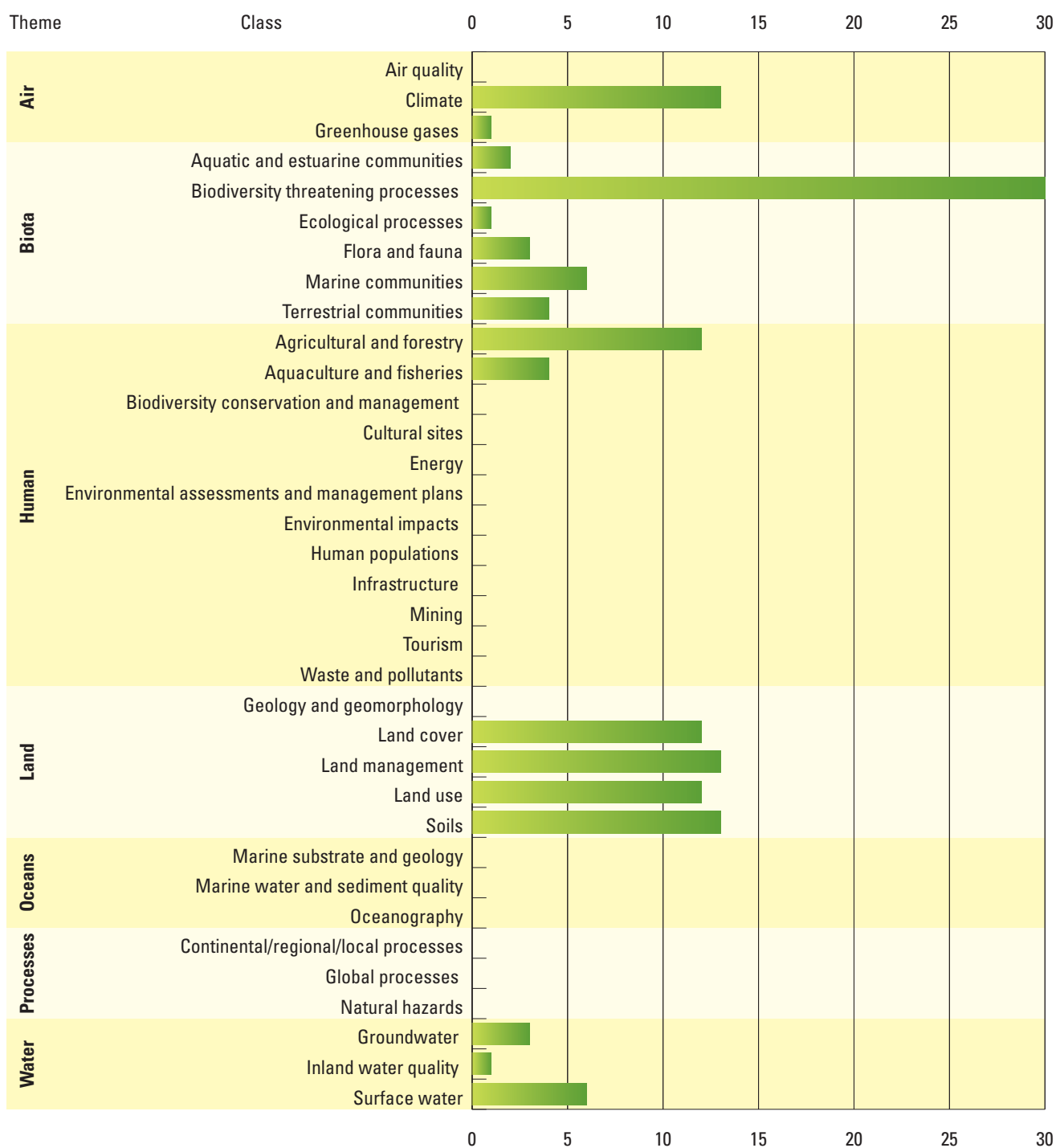


Figure 2 – List of primary environmental information requirements for biosecurity categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

4

CLIMATE CHANGE



Stormy weather over a parched landscape,
central New South Wales.

Photograph: David Kleinert

The Australian Government requires environmental information to inform mitigation actions to reduce Australia's greenhouse gas emissions, prepare for unavoidable climate change through developing and implementing adaptation policies, and help shape a global solution by working towards an international agreement that includes commitments to cut emissions by all major emitters.

The Australian Government's climate change policies and programs are designed to:

- reduce Australia's greenhouse gas emissions
- drive investment in renewable energy and encourage the use of cleaner energy options
- develop and implement adaptation strategies to prepare for the impacts of climate change, including changed rainfall patterns and increases in the severity or frequency of extreme events
- develop and implement best practice emissions accounting techniques for international reporting, including from the land sector
- determine where and how sustainable agriculture, fisheries and forestry can adapt and develop in the face of climate change
- encourage land managers to reduce emissions and/or increase carbon in agriculture and forest systems.

Following is a description of the requirements and their dependency on environmental information.

Adapting to Climate Change in Australia

The Australian Government has defined its role in adaptation to include: building community resilience and establishing the right conditions for people to adapt; taking climate change into account in the management of Commonwealth assets and programs; providing sound scientific information; and leading national reform. The Government identifies six national priority areas for action: water, coasts, infrastructure, natural ecosystems, natural disaster management and agriculture.

Adapting to Coastal Climate Change

The coastal sector is identified as a national priority for adaptation action. The magnitude and spatial extent of exposure across assets in the coastal zone is large and will increase into the future unless it is managed. Environmental information is required to: a) identify areas and habitats that are potentially sensitive to a range of physical hazards related to climate change and sea-level rise, b) facilitate effective management of coastal and estuarine marine environments and monitoring of change, including shoreline instability and erosion, and c) determine the success and efficiency of Australian Government environmental programs and assist in valuation of environmental assets for use in cost-benefit analysis and policy advice.

Australia's Farming Future

Australia's Farming Future is an Australian Government climate change initiative for primary industries. It provides funding to help primary producers adapt and respond to climate change. Environmental information is useful for: a) informing research priorities, particularly from a climate scenarios perspective, and b) measuring performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Australia's Native Vegetation Framework 2012 (in draft)

The vision for the Framework is that native vegetation across the Australian landscapes is managed in an ecologically sustainable way in recognition of its enduring environmental, economic, social, cultural and spiritual values. The Framework sets national directions and priorities to guide actions across government strategies, policies, legislation and programs related to native vegetation management on the Australian continent and its islands. Environmental information is required to measure progress towards achieving Framework targets. Some indicators need to be developed or refined (e.g. for vegetation condition). Indicators and reports are used for analysis and policy development to guide actions across governments related to native vegetation management.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Indicator 3.1 is used primarily to report the scale and impact of effects of climate change. Other indicators are also used in the context of climate change impacts.

Australia's Strategy for the National Reserve System 2009–2030

To build a well-managed, comprehensive, adequate and representative National Reserve System to protect examples of at least 80 per cent of the extant native ecosystems present in Australia. Environmental information is required to inform management options for the National Reserve System estate and identify priority areas for reservation.



Australian Antarctic Science Strategic Plan 2011–12 to 2020–21

To understand the impact of global change on sub-Antarctic, Antarctic and Southern Ocean ecosystems, and improve understanding of the role of Antarctica and the Southern Ocean in the global climate system, with special focus on addressing critical gaps in knowledge identified by the Intergovernmental Panel on Climate Change. Environmental information is required to: a) improve understanding of the impacts of ocean acidification on selected biota and ecosystems of the Southern Ocean, including assessment of their resilience to predicted change scenarios, b) identify sensitive terrestrial and marine indicator species or systems for tracking and understanding the impacts of environmental change, assess the risks of global change impacts on sub-Antarctic, Antarctic and Southern Ocean ecosystems and species of high conservation or fisheries value, including evaluation of the probability of different food web structures arising under predicted changes in the ocean and sea ice systems, c) detect and attribute climate change in the Antarctic system across the oceans, cryosphere and atmosphere, d) enhance performance of coupled earth system models through improved representation of the dynamics of Southern Ocean and Antarctic processes, providing more robust analysis of climate change to guide domestic and international responses, and e) improve our understanding of the nature and extent of change in ocean carbon sinks, sea-level rise, regional climate variability and Southern Ocean biophysical systems.

Australian Centre for Renewable Energy Act 2010 (Cwlth)

To promote the development, commercialisation and deployment of renewable energy and enabling technologies, and improve their competitiveness in Australia.

Australian Climate Change Science Program

To improve our understanding of the causes, nature, timing and consequences of climate change so that industry, community and government decisions can be better informed.

Australian Seed Bank Partnership

To create knowledge on the dormancy and germination requirements and responses to climate of Australian native seed and to record this information in the Australian Seed Bank Partnership database. Environmental information is required, as information from the national database on seed germination and dormancy requirements is used to inform conservation and restoration decisions, particularly in light of environmental change.

Australia's Biodiversity Conservation Strategy 2010–2030

Australia's biodiversity is healthy and resilient to threats, and valuable both in its own right and for its essential contribution to our existence. Environmental information is required to measure progress towards meeting ten interim national targets, and develop indicators for analysis and policy development to promote or support adaptation of Australia's biodiversity to climate change.

Australia's National Greenhouse Accounts

The Department of Climate Change and Energy Efficiency published comprehensive reports on greenhouse gas emissions in the National Greenhouse Accounts, which includes the National Greenhouse Gas Inventory, as well as emissions by State and by industry. The National Greenhouse Gas Inventory is updated on a quarterly basis and tracks progress against Australia's targets. This data is used to meet Australia's report commitments under the United Nation Framework Convention on Climate Change and Kyoto Protocol as well as report against the Government's emissions reduction targets outlined in the Clean Energy Future package.

Carbon Capture and Storage Program

The geological storage of greenhouse gases (geosequestration) is one of many options the Australian Government is pursuing to assist Australia and the world to reduce greenhouse gas emissions into the atmosphere. Environmental information is required to understand sedimentary basins and groundwater systems which have the potential for geological storage.

Carbon Farming Initiative

The Australian Government initiative to establish a carbon offsets scheme and provide economic opportunities for farmers, forest growers and land managers to reduce greenhouse gas emissions and sequester carbon. Environmental information is required to: a) fast-track the development of methodologies for offsets projects, b) manage landscapes for carbon sequestration and water availability, c) be used for surveys of management

practices in agricultural industries across different regions (to help identify activities that go beyond common practice and could be eligible for credits under the Carbon Farming Initiative) and to target research to where it will be most effective, and d) demonstrate new and innovative practices that can reduce emissions and store carbon while improving the sustainability and productivity of agriculture.

Carbon Credits (Carbon Farming Initiative) Act 2011 (Cwlth)

Legislation to establish a carbon crediting mechanism for the land sectors, fast-tracking development of methodologies for offset projects and information and tools to help farmers and landholders benefit from carbon markets. Environmental information is required to: a) manage landscapes for carbon sequestration, b) use for surveys to help identify activities that go beyond common practice and could be eligible for credits under the Carbon Farming Initiative, c) demonstrate new and innovative practices that can reduce emissions and store carbon while improving the sustainability and productivity of agriculture, and d) avoid adverse impacts on water and biodiversity and recognise co-benefits.

Centre of Excellence for Climate System Science

The Centre of Excellence for Climate System Science is a major initiative funded by the Australian Research Council. The Centre will build on and improve existing understanding of the modelling of regional climates to enable enhanced adaptation to and management of climate change. Improvements in regional climate forecasts will be fine-scaled, and require dynamic information on land cover.

Clean Energy Future Land Sector Package: Biodiversity Fund

To fund activities that deliver biodiversity and related environmental benefits and support landholders to manage and protect biodiverse carbon stores. Environmental information is required to: a) identify priority landscapes at the national and regional level, b) establish an assessment framework for projects under the Biodiversity Fund, and c) measure performance and results, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Carbon Farming Futures Fund

Carbon Farming Futures will fund measures to help farmers and other landholders benefit from carbon farming. Environmental information is required to: a) identify regional/geographical climate scenario priorities, b) inform adaptation and mitigation research priorities, c) develop regionally relevant and innovative production systems and practices that minimise greenhouse gas emissions while promoting productivity, and d) measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Indigenous Carbon Farming Fund

To support Indigenous participation in the Carbon Farming Initiative. Environmental information is required to measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Land Sector Carbon and Biodiversity Board

An independent Board established to advise the Government on implementation of the Land Sector Package. Environmental information is required to measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Regional Natural Resource Management Planning for Climate Change Fund

To support regional natural resource management organisations incorporate climate change mitigation and adaptation in their plans. Environmental information is required to: a) guide rural and regional communities in locating biosequestration vegetation plantings in the landscape, b) develop scenarios about the impacts of climate change, and c) measure performance and results, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Plan Coal Industry Assistance Packages

These programs provide transitional support for the coal mining sector for the first five years of carbon pricing under the Clean Energy Future Plan. They also support the development of new technologies to reduce fugitive greenhouse gas emissions from coal mining. The administration of these programs requires access to National Greenhouse and Energy Reporting data provided by coal mines, and national greenhouse inventory reporting data as fugitive methane emissions from the energy sector create carbon liabilities under the Clean Energy Future Plan.



Clean Energy Legislative Package 2011

Aims to reduce greenhouse gas emissions through encouraging investment in, and promoting the use of, cleaner energy options such as renewable energy and natural gas. Central to the Clean Energy Future Plan is the implementation of a carbon price, along with other mitigation measures such as the Renewable Energy Target, measures to improve energy efficiency and support for land managers to pursue climate action on the land. A series of Bills to enable the implementation of the Clean Energy Future Plan were passed by the Australian Parliament in 2011. The Clean Energy Future Program commenced on 1 July 2012.

Commonwealth Reserve Management Plans

Conservation of natural and cultural heritage in Commonwealth reserves while providing sustainable visitor use for inspirational, educational, cultural and recreational purposes. Environmental information is required to inform: a) the management of national parks and other terrestrial protected areas for the conservation of biodiversity and listed threatened species, and conserving the extent and condition of native vegetation while managing the impacts on biodiversity associated with tourism, fire, invasive species and climate change, b) decisions on visitor management and recreational usage of parks through an understanding of environmental impacts and benefits, and c) an understanding of the climate change impact on parks and to develop appropriate adaptation and mitigation strategies.

Convention of the World Meteorological Organization and related international meteorological treaties and agreements

Support meteorological, hydrological and other related geophysical observations. Environmental information is required to monitor climate variability and climate change over the long-term and detect climate change signals at a national level with a great degree of reliability.

Formal Agreement Establishing Secretariat of the Pacific Regional Environment Programme 1993

To plan and respond to climate variability and extreme weather events in the Pacific. Environmental information is required to deliver meteorological and climatological capacities to support Pacific planning and response to climate variability and extreme weather events. The Secretariat of the Pacific Regional Environment Programme also has a role raising the level of understanding of climate change in the region leading to improved community resilience.

Great Barrier Reef Climate Change Action Plan

Develop and implement responses to climate change with government, industry, reef users and the community, and determine adaptation strategies, including improvements to current management and strategies to improve the Great Barrier Reef's resilience. Environmental information is required to: a) manage climate change impacts on the Great Barrier Reef by informing vulnerability assessments for species and habitats, b) understand implications of climate change for ecological sustainability of industries to support communities (including schools and councils) and industries in understanding climate change impacts on the Reef and recognising actions they can take to reduce emissions,

and to support social and ecological resilience, c) detect and evaluate major environmental incidents (e.g coral bleaching) and develop appropriate and timely management responses, and d) understand and prioritise knowledge gaps that are limiting effective management responses to climate change risks.

Intergovernmental Oceanographic Commission – Resolution 2.31 adopted by the General Conference of UNESCO

To monitor and document changes to aid design of adaptation and mitigation strategies. Environmental information is required as global climate change studies depend upon these measurements of ocean heat content.

Intergovernmental Panel on Climate Change

To assess climate change and provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences. Environmental information is required to: a) assess the physical scientific aspects of the climate system and climate change, and b) inform modelling of climate and future climate projections and air quality, and c) inform and monitor mitigation strategies.

International Climate Change Adaptation Initiative

To meet high priority climate change adaptation needs in vulnerable countries. Environmental information is required to improve understanding of climate impacts and adaptation options and to inform decision-making for initiatives such as mitigation strategies and integrated vulnerability assessments.

International Forest Carbon Initiative

Deforestation accounts for 18 per cent of global greenhouse gas emissions¹. Australia is working in the United Nations Framework Convention on Climate Change to secure an outcome that makes forests part of the climate change solution by providing developing countries with an incentive to conserve their forests. Environmental information, in particular land cover information that captures changes in the extent of forests, is required to support collaborative Forest Carbon Partnerships with Indonesia and Papua New Guinea.

Kyoto Protocol

A legally binding international agreement that sets binding targets for 37 industrialised countries and the European community to reduce greenhouse gas emissions. The Department of Climate Change and Energy Efficiency submits emission inventories and national reports annually under the Kyoto Protocol.

Meteorology Act 1955 (Cwlth)

The national need for climatic records, water information, scientific understanding of Australia's weather and climate, and effective service provision to the Australian community. Environmental information is required to support the functions of the Bureau of Meteorology through: a) the taking and recording of meteorological observations and other observations required for the meteorology purposes, b) the forecasting of weather and the state of the atmosphere, c) the issue of warnings of extreme winds and other weather conditions likely to endanger life or property, including weather conditions that may give rise to floods or bush fires, d) the supply of meteorological information, e) the publication

of meteorological reports and bulletins, f) the promotion of the use of meteorological information, g) the promotion of the advancement of meteorological science by means of meteorological research and investigation or otherwise, h) the furnishing of advice on meteorological matters, and i) cooperation with the authority administering the meteorological service of any other country.

Montreal Protocol on Substances that Deplete the Ozone Layer

To meet Australia's obligations under the mandatory timetable for the phase-out of substances that deplete the ozone layer and its legal obligations under the Montreal Protocol and the United Nations Framework Convention on Climate Change. Environmental information is required in the form of data on ozone levels, the Antarctic ozone hole and concentrations of chlorine and bromine in the atmosphere. This will be used to assess the progress of global efforts to address ozone depletion and determine relative emission levels of ozone depleting substances and synthetic greenhouse gases in Australia.

Murray–Darling Basin Native Fish Strategy (Murray–Darling Basin Agreement)

To rehabilitate native fish communities in the Murray–Darling Basin back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation by providing a response to the key threats to native fish populations in the Murray–Darling Basin. Environmental information is required to plan (set priorities) and measure progress towards meeting the National Fish Strategy objectives.

National Climate Change Action Plan for Fisheries and Aquaculture

To guide activities to inform and support adaptation responses to climate change and to help fisheries reduce the intensity of greenhouse gas emissions.

National Climate Change Adaptation Research Facility

A national interdisciplinary research effort to generate information needed to manage the risks of climate change impacts. Environmental information is required to: a) develop National Adaptation Research Plans, b) combine existing and emerging national and international research on climate change impacts and adaptation, and develop targeted communication products, and c) undertake a program of integrative research to address national priorities.

National Climate Change and Commercial Forestry Action Plan 2009–2012

To guide action by the forestry industry, with the support of governments, to respond to climate change through adaptation and mitigation, underpinned by research and development and communication.

National Framework for Climate Change Science

To identify national climate change science priorities for the coming decade and set out ways to harness our full science capacity to address them, focusing on an agreed set of national priorities.

¹ Commonwealth of Australia Department of Climate Change and Energy Efficiency, 2010



National Greenhouse and Energy Reporting Act 2007 (Cwlth)

To implement the national reporting framework for reporting and disseminating information related to greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production of corporations. Environmental information is required to: a) underpin the introduction of an emissions trading scheme in the future, b) inform government policy formulation and the Australian public, c) meet Australia's international reporting obligations, d) assist Commonwealth, State and Territory government programs and activities, and e) avoid the duplication of similar reporting requirements in the States and Territories.

National Representative System of Marine Protected Areas (NRSMPA)

The NRSMPA helps to meet Australia's responsibilities and obligations as a signatory to the Convention on Biological Diversity and the major components of the Jakarta Mandate developed under that Convention. Australia signed the Convention in 1992 at the Earth Summit in Rio de Janeiro. Australia's international agreements made at the United Nations World Summit on Sustainable Development in 2002 committed Australia to establishing a representative network of marine reserves by 2012. National commitments under the Intergovernmental Agreement on the Environment (1992) committed all Australian governments to the establishment of representative marine protected areas. The primary goal of the NRSMPA is to establish and effectively manage a comprehensive, adequate and representative system of marine reserves to contribute to the long-term conservation of marine ecosystems and to protect marine biodiversity at all levels. The NRSMPA

aims to be: comprehensive – including the full range of ecosystems recognised at an appropriate scale within and across each bioregion; adequate – have the required level of reservation to ensure the ecological viability and integrity of populations, species and communities; and representative – reasonably reflect the biotic diversity of marine ecosystems. Environmental information is required to inform: a) the management of reserves, help understand reserve values and pressures on reserve values, avoiding and mitigating impacts on reserve values and ensuring reserve users comply with provision of management plans, b) decisions on visitor management and usage of reserves through an understanding of environmental impacts and benefits, c) an understanding of the impact of climate change on reserves, and to develop appropriate adaptation and mitigation strategies, and d) the evaluation and review of Commonwealth marine reserve management plans.

National Strategy and Action Plan for the Role of Australia's Botanic Gardens in Adapting to Climate Change

Sets out overall strategies and specific actions necessary to promote and resource Australia's botanic gardens in their vital role as facilitators of climate change preparedness and adaptation. Provides a framework for the Council of Heads of Australia's Botanic Gardens to report to the Natural Resource Management Ministerial Council. Environmental information is required to: a) provide information to scientists and the community including species environmental tolerance, known and potential climate change vulnerability, species specific horticulture, and weed and disease risk assessments, and b) monitor the effect of climate change across Australia's wide variety

of ecosystems using the established network of botanic gardens throughout Australia.

National Wildlife Corridors Plan

To develop a plan to provide a framework and priorities for landscape-scale conservation investment. Environmental information is required to identify suitable areas for nationally important wildlife corridors and to provide rationale for action.

Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 (Cwlth)

To ensure Australia meets legal obligations under the Montreal Protocol and the United Nations Framework Convention on Climate Change. Environmental information is required in the form of data on ozone levels, the Antarctic ozone hole and concentrations of chlorine and bromine in the atmosphere. This will be used to assess the progress of global efforts to address ozone depletion and determine relative emission levels of ozone depleting substances and synthetic greenhouse gases in Australia. The emission levels of synthetic greenhouse gases are calculated and reported under the *National Greenhouse and Energy Reporting Act 2007*.

Parks Australia Climate Change Strategic Overview 2009–2014

Identify the principles and objectives that will guide Parks Australia's response to managing the consequences of climate change in their terrestrial reserves over the next five years. Environmental information is required to inform an understanding of the impact of climate change on Commonwealth terrestrial reserves and to develop appropriate adaptation and mitigation strategies.

A fire breaks out in a paddock near Bushy Park, Tasmania.

Photograph: Sam Rosewarne, © Newspix / News Ltd.



River Murray Program (Murray–Darling Basin Agreement)

The River Murray Program has prime carriage for directing the sharing of River Murray waters as set out in the Agreement, ensuring the reliability of entitlement flows, allocations to jurisdictions and management of unregulated flows to maximise environmental benefit. It is tasked to: a) determine the shared entitlements of the River Murray system between New South Wales, Victoria and South Australia, b) direct the operation of River Murray system assets to meet multiple human and environmental objectives, and c) provide information and advice to Murray–Darling Basin stakeholders and policymakers. Environmental information is required for operational decisions to

take in a range of technical considerations such as flow requirements, salt and water level changes, estimated evaporation, forecast rainfall, the water available for environmental accounts and the water-carrying capacity of the river at various locations.

The Climate Change Authority

The Climate Change Authority will provide expert advice to the Australian Government on climate change mitigation initiatives, including the level of carbon pollution caps, the carbon price mechanism, the Renewable Energy Target and progress in achieving Australia's emissions reduction targets, through conducting periodic reviews and undertaking climate change research.

The Living Murray Program (Murray–Darling Basin Agreement)

To achieve a healthy working River Murray system by returning water to the river's environment and managing a number of iconic sites chosen for their high ecological, cultural, recreational, heritage and economic value. The Program seeks to recover 500 gigalitres of water for the River Murray, specifically for the benefit of plants, animals and the Australians it supports, along with improving the environment at six icon sites. Environmental information is required to plan (set priorities) and measure progress towards meeting specific icon site targets.



United Nations Framework Convention on Climate Change

Sets out an overall framework for intergovernmental efforts to tackle the challenge of climate change. The Department of Climate Change and Energy Efficiency reports greenhouse gas emissions and their removal using Australia's National Greenhouse Accounts.

Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray system in close cooperation with state authorities to ensure reliable water supplies for all users. MDBA also implements a range of multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

Water for the Future

To secure the water supply of all Australians. One of four key priorities is taking action on climate change. Environmental information is required to: a) enhance water efficiency in irrigation systems, provide critical information on Australia's current and future water availability and help prepare for changing climates, b) inform and monitor water requirements for river and wetlands to maintain flows and ecosystems, and c) manage urban water requirements and options for sources of water.

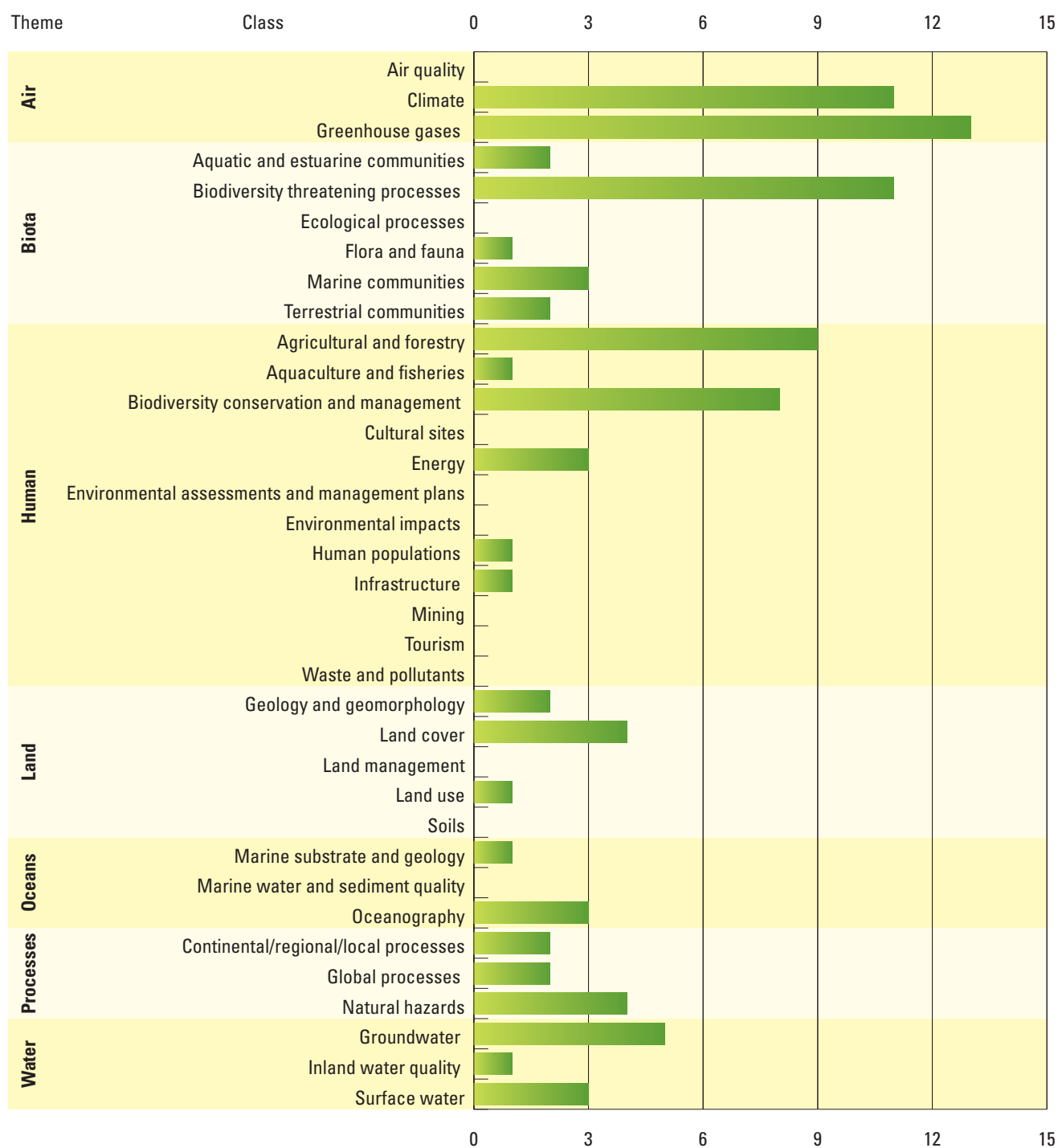


Figure 3 – List of primary environmental information requirements for climate change categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

5

ENVIRONMENTAL REPORTING



Water quality testing of the
Coal River, Tasmania.

Photograph: Lynton Crabb

The Australian Government requires environmental information to meet its reporting obligations.

The Australian Government meets a number of reporting obligations with respect to:

- the health of the Australian environment
- impacts on the environment
- effectiveness of various environmental protection measures and other responses
- environmental issues relevant to Australia's international obligations
- importance of supporting related business activities across Australian Government agencies through information sharing.

Following is a description of the requirements and their dependency on environmental information.

Agreement on an International Energy Program (IEP Agreement)

To report Australian economic data and energy production, transformation and consumption to the International Energy Agency for their annual energy statistical analyses and publications.

Australia's Biodiversity Conservation Strategy 2010–2030

To ensure Australia's biodiversity is healthy and resilient to threats and valued both in its own right and for its essential contribution to our existence. There are three priorities for action: 1) engaging all Australians in biodiversity conservation, 2) building ecosystem resilience to climate change, and 3) achieving measurable results.

Environmental information is required to measure progress towards meeting ten interim national targets and inform the development of indicators for analysis and policy development to promote or support adaptation of Australia's biodiversity to climate change.

Australia's Native Vegetation Framework 2012 (in draft)

The vision for the Framework is that native vegetation across the Australian landscapes is managed in an ecologically sustainable way in recognition of its enduring environmental, economic, social, cultural and spiritual values. The Framework sets national directions and priorities to guide actions across government strategies, policies, legislation and programs related to native vegetation management on the Australian continent and its islands. Environmental information is required to measure progress towards achieving framework targets. Some indicators need to be developed or refined (e.g. for vegetation

condition). Indicators and reports are used for analysis and policy development to guide actions across governments related to native vegetation management.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report.

Australian Energy Statistics

Detailed historical energy consumption and production statistics compiled from various sources. The primary data source is the Fuel and Electricity Survey, a partial census of major energy producers and consumers. Environmental information is sourced through the Fuel and Electricity Survey.

Australian Petroleum Statistics

To foster the development of an internationally competitive downstream petroleum sector with a focus on developing appropriate fuel standards to facilitate the adoption of advanced emission control technologies. Environmental information is required to provide monthly national and state petroleum statistical information for the following categories: a) sales of petroleum products, b) exports and imports of petroleum products and crude oil, c) production of crude oil and condensate, d) refinery input and output, and e) stocks of petroleum products.

Caring for our Country

To provide an annual report on the operations of the effectiveness of the administration of the *Natural Heritage Trust of Australia Act 1997* (Cwlth). The annual Caring for our Country report card meets the Australian Government's commitment to the Australian community on the progress towards achieving the five-year outcomes identified in 'Caring for our Country Outcomes 2008–2013'. Environmental information is required to: a) provide evidenced-based evaluations on the outcomes of Caring for Our Country investments, b) set and review priorities and targets, c) assist in developing, assessing and contextualising projects and investment proposals, and d) measure performance and results, including monitoring, evaluation, reporting and improvement at the project, program and national outcome levels.

Convention on Biological Diversity 1992

The Convention is a legally binding convention to which Australia is a party, and as a consequence places international obligations upon Australia. The principal objectives of the Convention are the conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising from its use. To meet Australia's international environmental reporting obligations, environmental information is required to inform periodic reports under the Convention on Biological Diversity. Periodic reporting by Australia is required against indicators, themes or cross-cutting issues using environmental information.



***Fisheries Management Act 1991 (Cwlth),
Fisheries Administration Act 1991
(Cwlth) and Torres Strait Fisheries Act
1984 (Cwlth)***

Fishery status reports are produced to provide governments, industry and the community with an independent overview of the status of fish stocks in fisheries managed by the Australian Government. Environmental information is required to provide an overview of trends in the biological status of fish stocks and the economic status of fisheries for which the Government has management responsibility.

***Great Barrier Reef Outlook Report
(Great Barrier Reef Marine Park Act 1975)***

Report on the state and outlook for the Great Barrier Reef Marine Park region to be tabled in Parliament every five years. The report assesses current health, biodiversity, use, risks, resilience, measures to protect and manage the ecosystem, factors influencing natural, social and economic values and finally the long-term outlook. The report is a synthesis of the best available scientific and other information relevant to the management of the Great Barrier Reef Marine Park region.

***Marine Environment Reporting
Framework***

To provide evidence-based evaluations and reports on marine ecosystem health to inform: State of the Environment reporting under the EPBC Act; international obligations to report on the marine environment; and other requests for reports on the protection of the environment in Commonwealth marine areas and the ecologically sustainable use of marine resources. Environmental information is required to: a) understand,

evaluate and report on marine ecosystem health at a national scale (such as trends in marine biodiversity and marine productivity, and the pressures affecting both marine biodiversity and marine productivity), and b) generate future predictions (i.e. outlooks) for marine ecosystem health that will be used to inform landscape level planning and management for Commonwealth marine areas and provide inputs to a range of established marine programs.

***Montreal Process and Santiago
Declaration – Forest Criteria and
Indicators***

Australia is a member country of the Montreal Process and submits forest reports every five years based on a framework of seven criteria and 44 indicators.

***Murray–Darling Basin Native Fish
Strategy (Murray–Darling Basin
Agreement)***

Provide a response to the key threats to native fish populations in the Murray–Darling Basin and to rehabilitate native fish communities in the Murray–Darling Basin back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation. Environmental information is required to plan (set priorities) and measure progress towards meeting the Native Fish Strategy objectives.

***National Environment Protection
Measures (National Environment
Protection Council Act 1994 [Cwlth])***

Annual jurisdictional reports to the National Environment Protection Council on the implementation of each of the National Environment Protection Measures are required to establish

nationally consistent approaches through National Environment Protection Measures for managing: air toxics, ambient air quality, assessment of site contamination, diesel vehicle emissions, movement of controlled waste between States and Territories, the National Pollutant Inventory and used packaging materials. Environmental information is required to evaluate the implementation and effectiveness of National Environment Protection Measures in all jurisdictions.

National Forest Policy Statement 1992

Commits governments to prepare a national State of the Forests Report every five years. This includes forest heritage issues (Indigenous and non-Indigenous). The National Forest Inventory collects and communicates information on Australia's forests.

***National Pollutant Inventory Statutory
Reporting (National Environment
Protection Council Act 1994 [Cwlth])***

Emissions and transfers of listed pollutants on a geographical basis are published annually in an online database. Maintenance and improvement of ambient air quality and ambient marine, estuarine and fresh water quality. Minimisation of environmental impacts associated with hazardous wastes. Improvement in the sustainable use of resources. Environmental information is required to inform environmental policy.

National Waste Report

Publication of the National Waste Report is a key deliverable under the National Waste Policy: Less Waste More Resources. Environmental information is required to provide users of waste and recycling data and information

with a comprehensive, online, accessible and up-to-date source to inform their decisions, including for policy development and infrastructure investment

National Water Quality Management Strategy

To achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development. Water quality related environmental information is used to: a) inform national and other State of the Environment reporting, and b) inform river basin and catchment management, including environmental assessment, monitoring and reporting.

Natural Heritage Trust of Australia Act 1997 (Cwlth)

To provide an annual report on the effectiveness of the administration of the *Natural Heritage Trust of Australia Act 1997*. The annual Caring for our Country report card meets the Australian Government's commitment to the Australian community on the progress towards achieving the five-year outcomes identified in the 'Caring for our Country Outcomes 2008–2013'. Environmental information is required to provide evidenced-based evaluations on the outcomes of Australian Government investment in natural resource management towards achieving an environment that is healthier, better protected, well-managed, resilient and provides essential ecosystem services in a changing climate.



Coral Cod, a reef fish easily identified by its vibrant scarlet body.

*Photograph: K Anthony,
© Commonwealth of Australia (GBRMPA)*



Organisation for Economic Co-operation and Development membership

Australia is required to report on environmental issues. Environmental information is required to meet Australia's international environmental reporting obligations and is used to inform periodic reports to the Organisation for Economic Co-operation and Development.

State of Australia's Environment Report (EPBC Act)

Report on the state of the environment in the Australian jurisdiction tabled in Parliament every five years. Environmental information is required to: a) provide relevant and useful information on environmental issues to the public and decision-makers, to raise awareness and support more informed environmental management decisions that lead to more sustainable use and effective conservation of environmental assets, and b) inform the development of the State of Environment report, including a series of scorecard assessments of the state of Australia's environment.

State of the Air Report

To provide a national analysis of air quality in Australia's major urban and regional monitoring regions. Environmental information is required to inform the development of the report. The report is used by the research community and the broader general community for research and reference purposes.

Sustainable Rivers Audit (Murray–Darling Basin Agreement)

The Sustainable Rivers Audit provides a long-term assessment of the condition and health of the 23 river valleys in the Murray–Darling Basin. Environmental information is required to provide

long-term assessment reports based on indicators from five environmental themes: fish, macroinvertebrates, hydrology, vegetation and physical form. Further themes may be chosen based on decisions under the Intergovernmental Agreement.

System of Environmental–Economic Accounting

The System of Environmental–Economic Accounting contains the internationally-agreed standard concepts, definitions, classifications, accounting rules and tables for producing internationally comparable statistics on the environment and its relationship with the economy. The central framework was adopted in February 2012 by the United Nations Statistical Commission as the first international standard for environmental–economic accounting. Australia currently prepares a Water Account and an Energy Account against this international reporting standard.

The Living Murray Program (Murray–Darling Basin Agreement)

To achieve a healthy working River Murray system by returning water to the river's environment and managing a number of iconic sites chosen for their high ecological, cultural, recreational, heritage and economic value. The Program seeks to recover 500 gigalitres of water for the River Murray, specifically for the benefit of plants, animals and the Australians it supports, along with improving the environment at six icon sites. Environmental information is required to plan (set priorities) and measure progress towards meeting specific icon site targets.

United Nations Environment Programme

To meet Australia's international environmental reporting obligations. Environmental information is used to inform periodic reports to the United Nations Environment Programme.

United Nations Food and Agriculture Organization (FAO) – Forests

Australia is a member country of the FAO and submits five-yearly forest reports for the purpose of global forest reporting by the FAO (e.g. FAO Forest Resource Assessment 2010 and State of the World's Forests 2011). Periodic reports are submitted to the FAO on forest subjects; examples include status of codes of forest practice, forest inventory, forest genetic resources, phytosanitary matters and fire impacts in forests.

Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray system in close cooperation with state authorities to ensure reliable water supplies for all users. MDBA also implements a range of multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

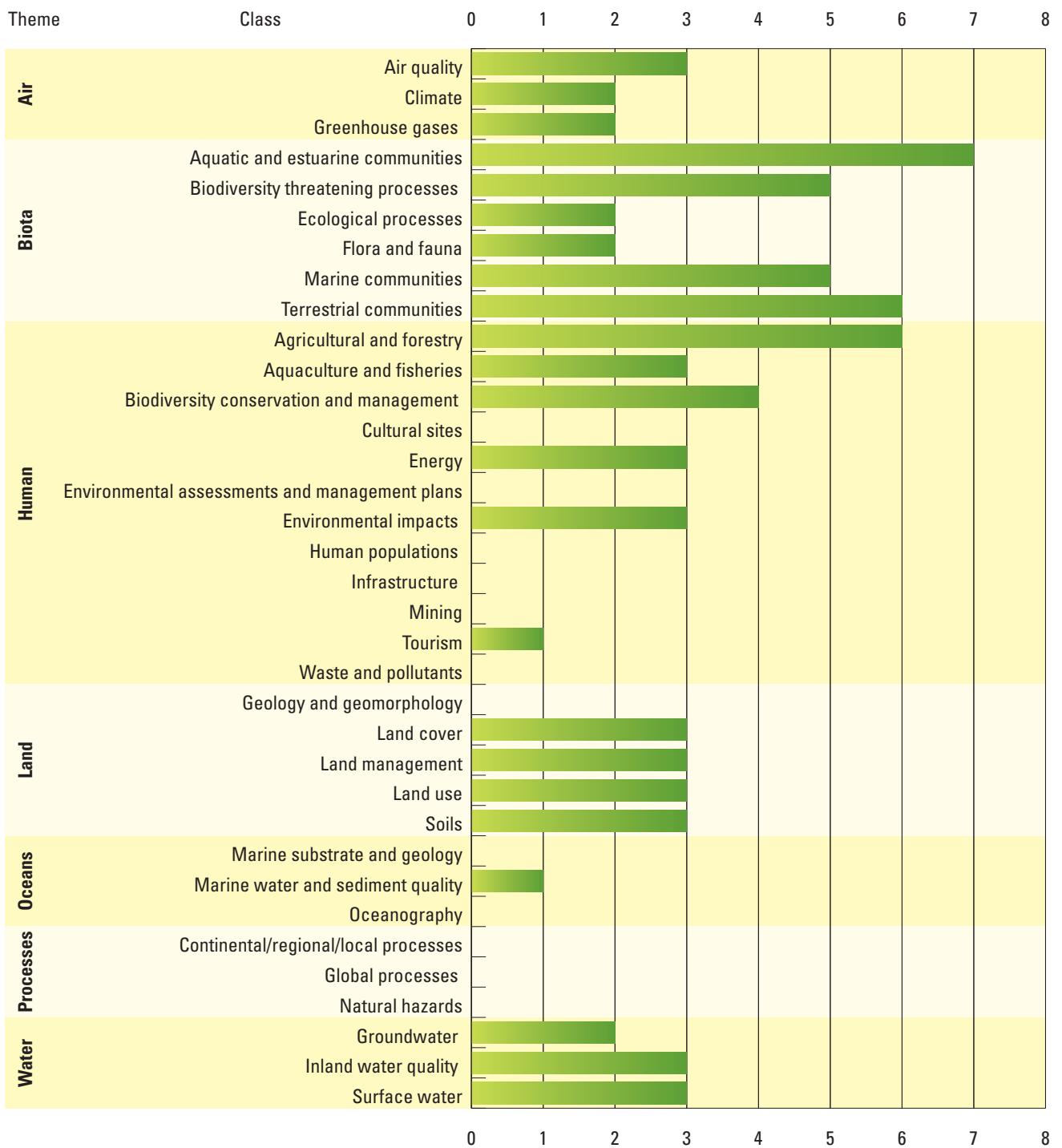


Figure 4 – List of primary environmental information requirements for environmental reporting categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

6

INFRASTRUCTURE AND COMMUNITIES



A freight train derailed in heavy flooding near Katherine, Northern Territory, following Cyclone *Grant*, December 2011.

Photograph: Michael Franchi, © Newspix

The Australian Government requires environmental information to ensure the sustainability and safety of communities and infrastructure.

The Australian Government develops policies and implements programs to support the sustainability of towns and cities, manage urban development and maintain essential services to citizens, including:

- ensuring the equitable use of key natural resources, such as water, between communities
- maintaining essential infrastructure and managing infrastructure projects
- extending facilities beyond urban boundaries to supply services to remote or rural areas
- administering disaster and emergency assistance programs.

Following is a description of the requirements and their dependency on environmental information.

Australia’s State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia’s forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Several socio-economic indicators under Criteria 6 are used to report on the sustainability and safety of communities and infrastructure.

Census and Statistics Act 1905 (Cwlth)

The *Census and Statistics Act 1905* empowers the Australian Statistician with the authority to conduct statistical collections, including the Census of Population and Housing. These statistics, relevant to industries, households, people and the environment are used to support the planning, administration, policy development and evaluation activities of government, business and others.

Community Skills Knowledge and Engagement (Caring for Our Country)

Australia’s progress towards a healthier environment and the sustainable use of natural resources depends on the collective actions of many individuals, groups and communities. Their actions need to be strategically supported and resourced. Environmental information is required to: a) support evaluations of linkages between investment in community projects, knowledge, skills and capacity, and b) the broader (measurable) environmental protection and sustainable resource management outcomes.

Convention on International Civil Aviation

To contribute towards the safety, sustainability, regularity and efficiency of international air navigation. Environmental information is required to: a) maintain a continuous survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts, b) detect the existence and extent of volcanic ash in the atmosphere in the area concerned to forecast the movement of any ash ‘cloud’ which is detected or reported, c) supply meteorological authorities and other users with global aeronautical meteorological en-route forecasts in digital form, d) track and manage the emissions of greenhouse gases, and e) implement strategies that minimise the exposure of local communities to aircraft noise.

Intergovernmental Oceanographic Commission (IOC) – Resolution 2.31 adopted by the General Conference of UNESCO

Environmental information is required: a) as part of a tsunami early warning system, and b) to support advice to policymakers and managers in the reduction of risks from tsunamis, storm surges, harmful algal blooms and other coastal hazards. This will be done by implementing adaptation measures to strengthen the resilience of vulnerable coastal communities, their infrastructure and service-providing ecosystems.

Meteorology Act 1955 (Cwlth)

To assist Australians in dealing with the harsh realities of their natural environment, including drought, floods, fires, storms, tsunami and tropical cyclones. Environmental information is required to support the functions of the Bureau of Meteorology in: a) the issue of warnings of gales, storms and other weather conditions likely to endanger

life or property, including weather conditions that may give rise to floods or bush fires, b) the supply of meteorological information, and c) the publication of meteorological reports and bulletins. The Bureau shall perform its functions under this Act in the public interest generally and in particular for the purposes of: a) the Defence Force, and b) navigation and shipping and civil aviation.

National Environmental Health Strategy 2007–2012

Provides direction for environmental health management across Australia and identifies the Australian environmental health sector’s role in developing and supporting infrastructure for health protection. The key environmental health risks addressed by the Strategy include: emergencies and disasters, climate change, increasing pressure on drinking water supplies, intensity of urban development and the lack of effective environmental health infrastructure in Aboriginal and Torres Strait Islander communities.

National Water Quality Management Strategy

To achieve sustainable use of the nation’s water resources by protecting and enhancing their quality while maintaining economic and social development. Water quality related environmental information is used to: a) inform Commonwealth, State and Territory, and local government water legislation, b) inform regulatory Environmental Impact Assessment processes, c) develop and revise National Water Quality Management Strategy guideline/trigger values for fresh and marine aquatic ecosystems, drinking water, recreational water quality, sewage systems, and recycled water in order to manage water quality and minimise risks to human and environmental health,



d) assist water managers to protect water quality, biodiversity, ecosystem services, human health and Indigenous cultural and spiritual values associated with water resources, e) improve water quality by providing data, information and tools to help governments and communities manage their water resources, and f) inform river basin and catchment management, including environmental assessment, monitoring and reporting.

Natural Disaster Resilience Program

To enhance Australia's resilience to natural disasters through mitigation works, measures and related activities that contribute to safer, sustainable communities better able to withstand the effects of disasters, particularly those arising from the impact of climate change. Environmental information is required to: a) support flood inundation work, and b) determine the success and efficiency of Australian Government environmental programs and assist in valuation of environmental assets for use in cost-benefit analysis and policy advice.

Regional Development Australia

To provide strategic and targeted responses to social, economic and environmental issues affecting regional Australia. Environmental information is required to manage Regional Development Australia regions.

River Murray Program (Murray–Darling Basin Agreement)

The River Murray Program has prime carriage for directing the sharing of River Murray waters as set out in the Agreement, ensuring the reliability of entitlement flows and allocations to jurisdictions, and management of unregulated flows to maximise environmental benefit. It is tasked to: a) determine the shared entitlements

of the River Murray system between New South Wales, Victoria and South Australia, b) direct the operation of River Murray system assets to meet multiple human and environmental objectives, and c) provide information and advice to Murray–Darling Basin stakeholders and policymakers. Environmental information is required to inform operational decision-making (flow requirements, salt and water level changes, estimated evaporation, forecast rainfall, the water available for environmental accounts and the water-carrying capacity of the river at various locations).

River Murray: The Cap (Murray–Darling Basin Agreement)

To balance in-stream and consumptive uses in the Murray–Darling Basin, and protect the supply security of existing users while arresting further deterioration of the health of the Basin's river system. Environmental information is required for annual monitoring of diversions throughout the Basin, and will support the outcomes sought by the Cap which will be used for annual audits.

State Flood Warning Consultative Committees 1987

Provision of an effective operational flood warning service in each State/Territory to reduce the risk of loss of life and property damage.

Sustainable Australia – Sustainable Communities: A Sustainable Population Strategy for Australia

Develop a strategy to ensure that future population change is compatible with the economic, environmental and social wellbeing of Australia. Four related measures include: Suburban Jobs, Sustainable Regional Development, Promoting Regional Living, and Measuring Sustainability. Environmental information is required to develop

indicators to represent key aspects of wellbeing at the national and community level, and identify information gaps.

Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray system in close cooperation with state authorities to ensure reliable water supplies for all users. MDBA also implements a range of multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

Water Trade (Murray–Darling Basin Agreement)

To support new developments, regional growth, industry sector expansion and increased value of irrigated agriculture, and increase returns to irrigators and manage climatic conditions by moving water to the highest value use. Environmental information is required for monitoring of water trade, allocations, entitlements and water use. This will provide a basis for assessing the success of water trade for sustainable management of the Murray–Darling Basin. The National Water Market System will provide guidance on how information will be used.

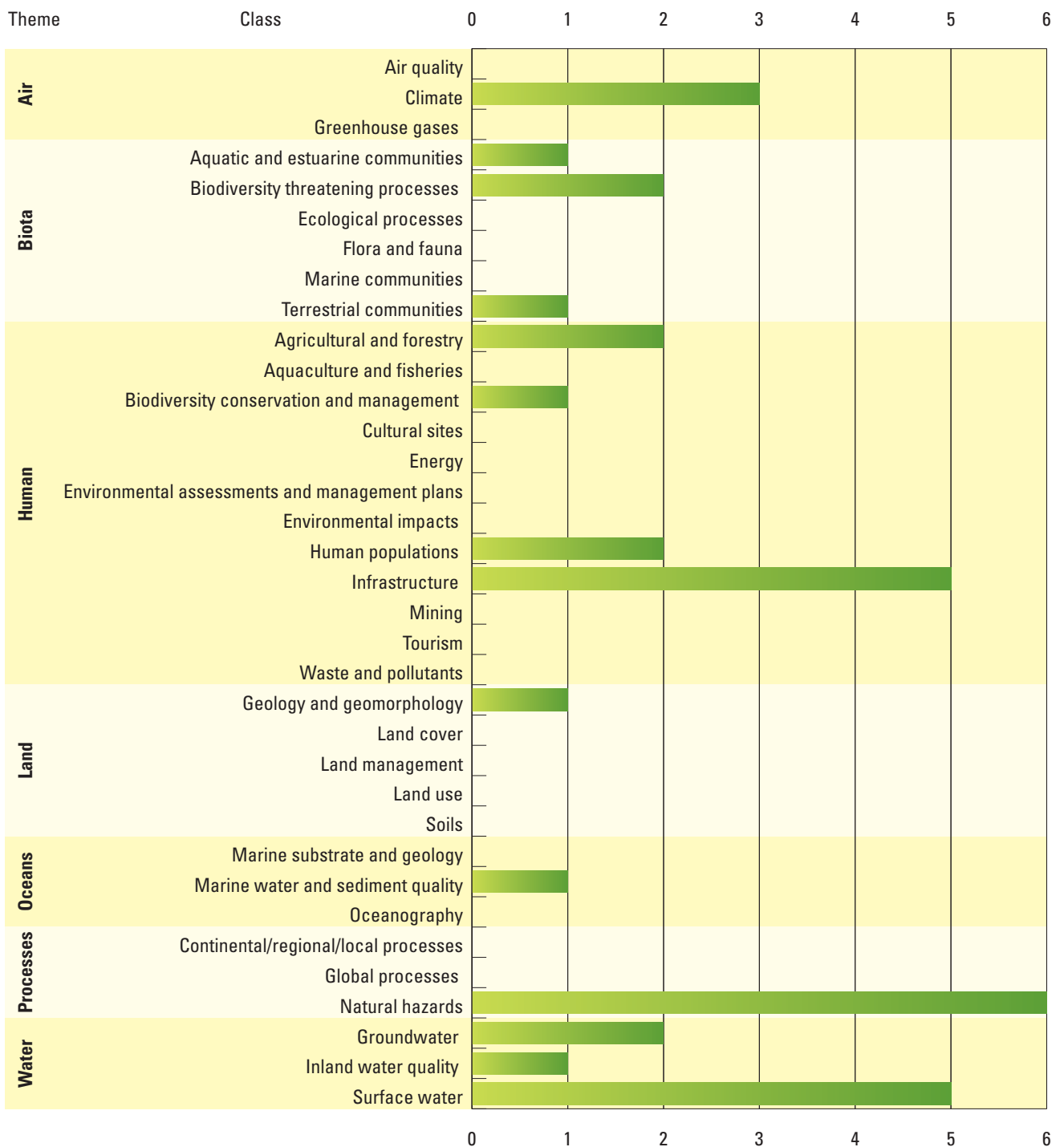


Figure 5 – List of primary environmental information requirements for infrastructure and communities categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

7

NATURAL RESOURCES



Silos at sunset near Griffith,
New South Wales.

Photograph: David Kleinert

The Australian Government requires environmental information to enable the productive, innovative and sustainable use of Australia's resources by industry and the community.

The Australian Government develops and implements policies and programs to help improve the capacity, productivity and sustainable use of Australia's resources and to manage and mitigate the impact of production systems on terrestrial, aquatic, coastal and marine habitats:

- determining sound targets and monitoring procedures for natural resource investment at national, State and Territory, regional and local levels of responsibility
- monitoring and forecasting the condition of, and the sustainable use and productivity of, Australia's natural resources.

Following is a description of the requirements and their dependency on environmental information.

Agreement for the establishment of the Indian Ocean Tuna Commission

To facilitate development of management arrangements for highly migratory tunas and billfish targeted by Australian fisheries.

Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement) 1995

Several fishery resources of commercial importance to Australia have ranges extending outside the Australian Fishing Zone into the high seas and the Exclusive Economic Zones of other countries. These stocks are important for Australian fishing industries in terms of food and economic security, and can only be managed effectively through cooperative regional action.

Agreement on the Conservation of Albatrosses and Petrels

Continued engagement in regional fisheries management organisation or body negotiations and processes is critical to supporting access for the Australian fishing industry and promoting responsible management to ensure sustainability of the fisheries and the ecosystems that support them.

Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing 2009

Several fishery resources of commercial importance to Australia have ranges extending outside the Australian Fishing Zone into the high seas and the Exclusive Economic Zones of other countries. These stocks are important for Australian fishing industries in terms of food and economic security and can only be managed effectively through cooperative regional action.

Agreement to Promote Compliance with International Conservation and Management Measures by Fish Vessels on the High Seas 1995

This agreement is of commercial importance to Australia as several fishery resources have ranges extending outside the Australian Fishing Zone into the high seas and the Exclusive Economic Zones of other countries. These stocks are important for Australian fishing industries in terms of food and economic security and can only be managed effectively through cooperative regional action.

Agricultural and Veterinary Chemicals (Administration) Act 1992 (Cwlth), Agricultural and Veterinary Chemicals Act 1994 (Cwlth) and Agricultural and Veterinary Chemicals Code Act 1994 (Cwlth)

To provide advice on the environmental impacts of new or existing chemicals and veterinary medicines.

Alligator Rivers Region Environment Protection from Uranium Mining Impacts – Alligator Rivers Region Act 1978 (Cwlth)

To protect the Alligator Rivers region from the impacts of uranium mining. To develop scientifically rigorous and appropriate environmental performance criteria for the operation, closure and rehabilitation of uranium mines in the Alligator Rivers region. Environmental information is required for scientific analysis and research to detect uranium mining related impacts on the environment of the Alligator Rivers region, including: water quality (physicochemical) and biological indicators, streamflow rates, radiological data (water, bush foods, air and dust) and spatial multispectral remote sensing (optical and Synthetic Aperture Radar) medium to very high resolution data.

Atomic Energy Act 1953 (Cwlth) and the Environmental Requirements for the Ranger Uranium Mine

To operate the Ranger uranium mine within the Kakadu National Park in the Northern Territory, environmental information is required for wetland conservation management. The supervising authority will notify the Minister of any action or determination in respect to these Environmental Requirements and act on, or implement any subsequent advice from the Minister.

Australia's Farming Future

Australia's Farming Future is an Australian Government climate change initiative for primary industries. It provides funding to help primary producers adapt and respond to climate change. Environmental information is useful for: a) informing research priorities, particularly from a climate scenarios perspective, and b) measuring performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Australia's Native Vegetation Framework 2012 (in draft)

The vision for the Framework is that native vegetation across the Australian landscapes is managed in an ecologically sustainable way in recognition of its enduring environmental, economic, social, cultural and spiritual values. The Framework sets national directions and priorities to guide actions across government strategies, policies, legislation and programs related to native vegetation management on the Australian continent and its islands. Environmental information is required to measure progress towards achieving Framework targets. Some indicators need to be developed or refined (e.g. for vegetation condition). Indicators and reports are used for analysis and policy development to guide actions across governments related to native vegetation management.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards

forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report.

Australian Antarctic Science Strategic Plan 2011–12 to 2020–21

Reaffirms the Australian Government's recognition of the importance of Antarctica to national interests and identifies a number of key policy priorities for Australia's future engagement in the Antarctic. These include pursuing possible economic opportunities arising from Antarctic-related activities, including well-managed Antarctic tourism and sustainable and well-regulated Southern Ocean fisheries. Environmental information is required to: a) provide scientific information for fisheries managers (including improved mitigation strategies to reduce bycatch) and integration of fisheries data into ecosystem models to assist in management decisions, and b) support the implementation and maintenance of a comprehensive, adequate and representative network of spatial management areas, including Antarctic Specially Protected Areas (under the Environmental Protocol to the Antarctic Treaty System) and marine protected areas in the Southern Ocean (and within the Commission for the Conservation of Antarctic Marine Living Resources Area), particularly focusing on the marine biodiversity in the waters off east Antarctica.

Australian Government Biofuels Policy

To evaluate the trade-offs between biofuels and other forms of agriculture.

Australian Pest Animal Strategy (Australia's Biodiversity Conservation Strategy 2010–2030)

Establishes key objectives and actions that aim to prevent the introduction and spread of new pest animals in Australia and assist in managing the impacts of those that are already established. Environmental information is required to measure progress against specific actions identified under the three priorities for action.

Australian Weeds Strategy (Australia's Biodiversity Conservation Strategy 2010–2030)

To minimise the impact of weeds on Australia's environmental, economic and social assets. There are three priorities for action: 1) prevent new weed problems, 2) reduce the impact of existing weed problems, and 3) enhance Australia's capacity and commitment to solve weed problems. Environmental information is required to measure progress against specific actions identified under these three priorities.

Basin Salinity Management Strategy (Murray–Darling Basin Agreement)

To: a) maintain water quality of shared water resources of the Murray and Darling rivers for all beneficial uses, b) control the rise in salt loads in tributary rivers, c) control land degradation and protect important terrestrial ecosystems, productive farm land, cultural heritage and built infrastructure at agreed levels, basin wide, and d) maximise net benefits from salinity control across the basin. Environmental information is required to measure progress against Basin Salinity Management Strategy objectives.

Caring for Our Country

To achieve national targets and outcomes including in relation to the use, condition and management of Australia's natural resources. To maintain and build the productive capacity of Australia's agriculture and fisheries by supporting sustainable farm practices, through protecting important natural assets, increasing the uptake of sustainable land management practices, reducing the impact of invasive species and expanding traditional fire management. Environmental information is required to: a) provide evidenced-based evaluations on the outcomes of these Australian Government investments, b) enable natural resource program managers to assess the effectiveness of programs and initiatives, c) set and review priorities and targets, d) assist in developing, assessing and contextualising projects and investment proposals, and e) measure performance and results, including monitoring, evaluation, reporting and improvement at the project, program and national outcome levels.

Carbon Farming Initiative

The Australian Government initiative to establish a carbon offsets scheme and provide economic opportunities for farmers, forest growers and land managers to reduce greenhouse gas emissions and sequester carbon. Environmental information is required to: a) fast-track the development of methodologies for offsets projects, b) manage landscapes for carbon sequestration and water availability, c) be used for surveys of management practices in agricultural industries across different regions (these will be undertaken to help identify activities that go beyond common practice and could be eligible for credits

under the Carbon Farming Initiative) and to target research to where it will be most effective, and d) to demonstrate new and innovative practices that can reduce emissions and store carbon while improving the sustainability and productivity of agriculture.

Carbon Credits (Carbon Farming Initiative) Act 2011 (Cwlth)

An initiative involving legislation to establish a carbon crediting mechanism for the land sectors, fast-tracked development of methodologies for offset projects and information and tools to help farmers and landholders benefit from carbon markets. Environmental information is required: a) to manage landscapes for carbon sequestration, b) for surveys to help identify activities that go beyond common practice and could be eligible for credits under the Carbon Farming Initiative, c) to demonstrate new and innovative practices that can reduce emissions and store carbon while improving the sustainability and productivity of agriculture, and d) to avoid adverse impacts on water and biodiversity and recognise co-benefits.

Clean Energy Future Land Sector Package: Biodiversity Fund

To fund activities that deliver biodiversity and related environmental benefits and support landholders to manage and protect biodiverse carbon stores. Environmental information is required to: a) identify priority landscapes at the national and regional level, b) establish an assessment framework for projects under the Biodiversity Fund, and c) measure performance and results, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Carbon Farming Futures Fund

Carbon Farming Futures will fund measures to help farmers and other landholders benefit from carbon farming. Environmental information is required to: a) identify regional/geographical climate scenario priorities, b) inform adaptation and mitigation research priorities, c) develop regionally relevant and innovative production systems and practices that minimise greenhouse gas emissions while promoting productivity, and d) measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Indigenous Carbon Farming Fund

To support Indigenous participation in the Carbon Farming Initiative. Environmental information is required to measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Land Sector Package: Land Sector Carbon and Biodiversity Board

An independent Board established to advise the Government on implementation of the Land Sector Package. Environmental information is required to measure performance, including monitoring, evaluation and reporting at the project, program and national outcome levels.



Clean Energy Future Land Sector Package: Regional Natural Resource Management Planning for Climate Change Fund

To support regional natural resource management organisations incorporate climate change mitigation and adaptation in their plans. Environmental information is required to: a) guide rural and regional communities in locating biosequestration vegetation plantings in the landscape, b) develop scenarios about the impacts of climate change, and c) measure performance and results, including monitoring, evaluation and reporting at the project, program and national outcome levels.

Clean Energy Future Plan Coal Industry Assistance Packages

These programs provide transitional support for the coal mining sector for the first five years of carbon pricing under the Clean Energy Future Plan. They also support the development of new technologies to reduce fugitive greenhouse gas emissions from coal mining. The administration of these programs requires access to National Greenhouse and Energy Reporting data provided by coal mines, and national greenhouse inventory reporting data as fugitive methane emissions from the energy sector create carbon liabilities under the Clean Energy Future Plan.

Clean Energy Legislative Package 2011

Aims to reduce greenhouse gas emissions through encouraging investment in, and promoting the use of, cleaner energy options such as renewable energy and natural gas. Central to the Clean Energy Future Plan is the implementation of a carbon price, along with other mitigation measures

such as the Renewable Energy Target, measures to improve energy efficiency and support for land managers to pursue climate action on the land. A series of Bills to enable the implementation of the Clean Energy Future Plan were passed by the Australian Parliament in 2011. The Clean Energy Future Program will commence on 1 July 2012.

Commonwealth Fisheries Harvest Strategy Policy, Guidelines for Implementation of the Commonwealth Fisheries Harvest Strategy Policy and Fish Status reports

To provide the Australian community with a high degree of confidence that commercial fish species are being managed for long-term biological sustainability and economic profitability and also to provide the fishing industry with a more certain operating environment. Environmental information is required to support ecosystem-based approaches to the management of fisheries.

Commonwealth Policy on Fisheries Bycatch and the National Policy on Fisheries Bycatch

To provide the Australian community with a high degree of confidence that the take of non-target and threatened, endangered and protected species is minimised.

Commonwealth Reserve Management Plans

To conserve natural and cultural heritage in Commonwealth reserves whilst providing sustainable visitor use for inspirational, educational, cultural and recreational purposes. Environmental information is required to: a) inform the management of national parks,

other terrestrial protected areas and Commonwealth marine reserves for the conservation of biodiversity and listed threatened species, and conserving the extent and condition of native vegetation while managing the impacts on biodiversity associated with human usage, fire, invasive species and climate change, b) inform decisions on visitor management and usage of parks through an understanding of environmental impacts and benefits, and c) inform an understanding of the climate change impact on parks, and develop appropriate adaptation and mitigation strategies.

Convention for the Conservation of Southern Bluefin Tuna

To facilitate development of management arrangements for highly migratory tunas and billfish targeted by Australian fisheries.

Convention on Biological Diversity 1992

The Convention is a legally binding convention (endorsed through the EPBC Act) to which Australia is a party and as a consequence places international obligations upon Australia. The principal objectives of the Convention are the conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising from its use. The Convention recognises that the key to maintaining biological diversity depends upon conserving, using and managing this diversity in a sustainable manner. Article 7 of the Convention requires countries to inventory, monitor and report the conservation and sustainable use of biological diversity in association with natural resources.

Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

To facilitate development of management arrangements for highly migratory tunas and billfish targeted by Australian fisheries.

Convention on the Conservation of Migratory Species of Wild Animals

Continued engagement in regional fisheries management organisation or body negotiations and processes is critical to supporting access for the Australian fishing industry and promoting responsible management to ensure sustainability of the fisheries and the ecosystems that support them.

Drought Assistance Programs

To address drought assessments and other relevant exceptional circumstance issues, and adaptation and mitigation issues.

Energy Efficiency Opportunities Act 2006 (Cwlth)

To improve the identification and evaluation of energy efficiency opportunities by large energy-using businesses and, as a result, to encourage implementation of cost-effective energy efficiency opportunities.



A wind farm near Albany,
Western Australia

Photograph: Lawrence Murray

Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
– Implementation of the EPBC Act

Promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources by regulating the impacts of activities associated with the use of Australia's resources on matters of national environmental significance. Environmental information is required to: a) inform decisions on whether to list species, heritage places and values and ecological communities under the EPBC Act or to change the listed status of species and ecological communities, b) inform decisions on whether to approve projects or regional-scale plans and to provide for the protection of matters of national environmental significance in approved plans, and c) support the sustainable management of heritage values and places, natural resources and wildlife trade.

Fisheries Management Act 1991 (Cwlth), Fisheries Administration Act 1991 (Cwlth) and Torres Strait Fisheries Act 1984 (Cwlth)

To evaluate the sustainability of Australian fisheries under current management practices. Environmental information is required to: a) respond to impacts of climate change and climate variability on agricultural, fisheries and forest industries, b) maintain productive fisheries resources, and c) respond to resource access threats, meet environmental protection requirements and manage and mitigate the impact of production systems on terrestrial, aquatic, coastal and marine habitats.

Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries 1995

Several fishery resources of commercial importance to Australia have ranges extending outside the Australian Fishing Zone into the high seas and the Exclusive Economic Zones of other countries. These stocks are important for Australian fishing industries in terms of food and economic security, and can only be managed effectively through cooperative regional action.

Gene Technology Act 2000 (Cwlth)

To protect the health and safety of people and to protect the environment by identifying risks posed by or as a result of gene technology, and by managing those risks through regulating certain dealings with genetically modified organisms. Information about the Australian environment is an important resource for the risk assessment of genetically modified organisms.

Great Barrier Reef Marine Park Act 1975

To provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef region. Scientific and monitoring information is required to underpin these objectives.

Greater Sunrise Unitisation Agreement Implementation Act 2004 (Cwlth) and Petroleum (Timor Sea Treaty) Act 2003 (Cwlth)

To facilitate petroleum exploration and development in the Joint Petroleum Development Area of the Timor Sea. Environmental information is required to develop petroleum resources in a way that minimises damage to the natural environment.

Intergovernmental Oceanographic Commission (IOC) – Resolution 2.31 adopted by the General Conference of UNESCO

Management procedures and policies leading to the sustainability of coastal and ocean environment and resources. Environmental information is required to manage fishing resources.

International Plan of Actions for the Conservation and Management of Sharks

Continued engagement in regional fisheries management organisation or body negotiations and processes is critical to supporting access for the Australian fishing industry and promoting responsible management to ensure sustainability of the fisheries and the ecosystems that support them.

Liquid Fuel Emergency Act 1984 (Cwlth)

To prepare for and manage a national liquid fuel emergency.

Market Access

To promote market access by driving environmental credentials, industry best management practices (or beneficial management practices) and quality assurance.

Meteorology Act 1955 (Cwlth)

To assist persons and authorities engaged in primary production, industry, trade and commerce. Environmental information is required to support the functions of the Bureau of Meteorology in: a) the forecasting of weather and the state of the atmosphere, b) the issue of warnings of gales, storms and other weather conditions likely to endanger life or property, including weather conditions that may give rise to floods or bush

fires, c) the supply of meteorological information, d) the publication of meteorological reports and bulletins, and e) the promotion of the use of meteorological information.

Murray–Darling Basin Native Fish Strategy (Murray–Darling Basin Agreement)

To provide a response to the key threats to native fish populations in the Murray–Darling Basin and rehabilitate native fish communities in the Murray–Darling Basin back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation.

Environmental information is required to plan (set priorities) and measure progress towards meeting the Native Fish Strategy objectives.

National Drought Policy

To encourage primary producers and other sections of rural Australia to adopt self-reliant approaches to managing for climatic variability; maintain and protect Australia's agricultural and environmental resource base during periods of extreme climate stress; and ensure early recovery of agricultural and rural industries, consistent with long-term sustainable levels.

National Food Plan

To determine the degree of security of Australia's food supply system and its responsiveness to food security in our region and globally.

National Forest Policy Statement 1992

Addressing obligations with regard to regional forest agreements and forest development strategies. Environmental information is required to address: a)

legal and policy obligations, b) State of the Forest reporting, c) minimising the impact of incursions, managing weeds, invasive animals and marine pests, d) meeting environmental protection requirements, and e) managing and mitigating the impact on ecosystem services delivered from rural land.

National Greenhouse and Energy Reporting Act 2007 (Cwth)

To implement a national framework for the reporting and dissemination of information about greenhouse gas emissions, greenhouse gas projects, and energy use and production of corporations. This includes a disclosure tool to facilitate voluntary environmental disclosures.

National Industrial Chemical Notification and Assessment Scheme and Australian Pesticides and Veterinary Medicine Authority

To advise the regulators of the level of expected risk to the environment and to provide advice on risk management options to mitigate this risk. Environmental information is required to inform the environmental exposure component of the environmental risk assessment process and to validate modelled data.

National Representative System of Marine Protected Areas (NRSMPA)

The NRSMPA helps to meet Australia's responsibilities and obligations as a signatory to the Convention on Biological Diversity and the major components of the Jakarta Mandate developed under that Convention. Australia signed the Convention in 1992 at the Earth Summit in Rio de Janeiro. Australia's international agreements made at the United

Nations World Summit on Sustainable Development in 2002 committed Australia to establishing a representative network of marine reserves by 2012. National commitments under the Intergovernmental Agreement on the Environment (1992) committed all Australian governments to the establishment of representative marine protected areas. The primary goal of the NRSMPA is to establish and effectively manage a comprehensive, adequate and representative system of marine reserves to contribute to the long-term conservation of marine ecosystems and to protect marine biodiversity at all levels. The NRSMPA aims to be: comprehensive – including the full range of ecosystems recognised at an appropriate scale within and across each bioregion; adequate – have the required level of reservation to ensure the ecological viability and integrity of populations, species and communities; and representative – reasonably reflect the biotic diversity of marine ecosystems. Environmental information is required to: a) inform the management of reserves, help understand reserve values and pressures on reserve values, avoiding and mitigating impacts on reserve values and ensuring reserve users comply with provision of management plans, b) inform decisions on visitor management and usage of reserves through an understanding of environmental impacts and benefits, c) inform an understanding of the impact of climate change on reserves, and to develop appropriate adaptation and mitigation strategies, and d) inform the evaluation and review of Commonwealth marine reserve management plans.

National Reserve System Program (Caring for Our Country)

To build a well managed, comprehensive, adequate and representative National Reserve System to include examples of at least 80 per cent of the extant native ecosystems present in Australia. Environmental information is required to: a) understand the degree to which Australia's protected area estate protects its distinctive bioregions and subregions, including their component biota, landscapes and ecological processes, b) inform the Interim Biogeographic Regionalisation for Australia which supports effective conservation assessment and planning at regional and national scales and provides a framework for determining priority of competing bids for investment in land purchase for inclusion in Australia's National Reserve System (i.e. the National Reserve System is to be comprehensive, adequate and representative), c) evaluate the values, integrity and management of Australia's National Reserve System, and d) assist in the preparation of five-year outlook reports.

National Water Quality Management Strategy

To achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development. Environmental information is required to: a) inform Commonwealth, State and Territory, and local government water legislation, b) inform regulatory Environmental Impact Assessment processes, c) develop and revise National Water Quality Management Strategy guideline/trigger values for fresh and marine aquatic ecosystems, drinking water, recreational water quality, sewage

systems and recycled water in order to manage water quality and minimise risks to human and environmental health, d) assist water managers to protect water quality, biodiversity, ecosystem services, human health, and Indigenous, cultural and spiritual values associated with water resources, e) improve water quality by providing data, information and tools to help governments and communities manage their water resources, and f) inform river basin and catchment management, including environmental assessment, monitoring and reporting.

National Weeds and Productivity Research Program

To establish a new, comprehensive National Weeds and Productivity Research Program to reduce the impact of invasive plants on biodiversity and farm and forestry productivity.

Offshore Minerals Act 1994 (Cwlth)

To expand Australia's resource base, increase the international competitiveness of our resources sector and improve the regulatory regime, consistent with the principles of environmental responsibility and sustainable development. Environmental information is required for decisions to grant offshore titles, and impose relevant conditions and administer regulations for the protection of the environment.

Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cwlth)

To expand Australia's resource base, increase the international competitiveness of our resources sector and improve the regulatory regime, consistent with the principles of environmental responsibility and sustainable development. Environmental information is required

for: a) decisions on the release of offshore petroleum and greenhouse gas storage exploration areas (Acreage Release), b) inclusion in the information package provided to potential bidders for exploration acreage, c) administration of titles, and d) regulation of offshore petroleum and greenhouse gas storage safety, well integrity and environmental management by the independent national regulator National Offshore Petroleum Safety and Environmental Management Authority.

Reducing Incidental Catch of Seabirds in Longline Fisheries

Continued engagement in regional fisheries management organisation or body negotiations and processes is critical to supporting access for the Australian fishing industry and promoting responsible management to ensure sustainability of the fisheries and the ecosystems that support them.

Reef Rescue Land and Sea Country Indigenous Partnerships (Caring for Our Country)

To establish sustainable land and sea country partnership arrangements with Traditional Owners to conserve biodiversity, protect all heritage values and contribute to the resilience of the Great Barrier Reef.

Regional Forest Agreements

The Australian Government has ten regional agreements in place with the governments of New South Wales, Tasmania, Victoria and Western Australia. Environmental information is used to report against forest sustainability indicators and performance of these agreements.

**Regional Forest Agreement Act 2002
(Cwlth)**

The Act establishes regional forest agreements and states that the Minister must establish a comprehensive and publicly available source of information for national and regional monitoring and reporting in relation to all of Australia's forests and support decision-making in relation to all of Australia's forests. The Act seeks to achieve a balance between conservation and production in native forests.

**River Murray Program
(Murray–Darling Basin Agreement)**

The River Murray Program has prime carriage for directing the sharing of River Murray waters as set out in the Agreement, ensuring the reliability of entitlement flows, allocations to jurisdictions and management of unregulated flows to maximise environmental benefit. It is tasked to: a) determine the shared entitlements of the River Murray system between New South Wales, Victoria and South Australia, b) direct the operation of River Murray system assets to meet multiple human and environmental objectives, and c) provide information and advice to Murray–Darling Basin stakeholders and policymakers. Environmental information is required for operational decisions that take in a range of technical considerations such as flow requirements, salt and water level changes, estimated evaporation, forecast rainfall, the water available for environmental accounts and the water-carrying capacity of the river at various locations.

**River Murray: The Cap
(Murray–Darling Basin Agreement)**

The Cap aims to strike the first step in a balance between in-stream and consumptive uses in the Murray–Darling Basin. In doing so it protects the security of supply of existing users while arresting further deterioration of the health of the Basin's river system. Environmental information is required for annual monitoring of diversions throughout the Basin. It will support the outcomes sought by the Cap which will be used for annual audits.

**Science and Industry Research Act 1949
(Cwlth)**

To carry out scientific research for assisting Australian industry.

Snowy Hydro Corporatisation Act 1997

To manage the Commonwealth's interest in Snowy Hydro Limited. Environmental information is required for water resources management.

Sustainable Resource Management

To manage and mitigate the impact of production systems on terrestrial, aquatic, coastal and marine habitats by determining sound targets and monitoring procedures for natural resource investment at national, State and Territory, regional and local levels of responsibility. Managing agricultural production policies and programs to help improve the capacity of agricultural land managers to deliver high quality ecosystem services while improving the profitability of agriculture and increasing landscape resilience to climate change and climate variability through: a) soil productivity – maintaining productive soils, b) managing wind and water erosion, soil carbon and acidification,

c) agricultural productivity and sustainability – profitable production of food and fibre and adoption of sustainable agricultural practices, and d) monitoring and forecasting the condition of, and the sustainable use and productivity of, Australia's natural resources. Environmental information is required on: a) soil productivity and processes, b) capacity of agricultural land managers to manage soils to deliver high quality ecosystem services whilst improving the profitability of agriculture and increasing landscape resilience to climate change and climate variability, and c) anticipating and responding to the impacts of climate change and climate variability on agricultural, fisheries and forest industries.

**Sustainable Rivers Audit
(Murray–Darling Basin Agreement)**

The Sustainable Rivers Audit provides a long-term assessment of the condition and health of the 23 river valleys in the Murray–Darling Basin. Environmental information is needed to provide long-term assessment reports based on indicators from five environmental themes: fish, macroinvertebrates, hydrology, vegetation and physical form. Further themes may be chosen based on decisions under the Intergovernmental Agreement.

**The Living Murray Program
(Murray–Darling Basin Agreement)**

To achieve a healthy working River Murray system by returning water to the river's environment and managing a number of iconic sites chosen for their high ecological, cultural, recreational, heritage and economic value. The Program seeks to recover 500 gegalitres of water for the River Murray specifically



for the benefit of plants, animals and the Australians it supports, along with improving the environment at six icon sites. Environmental information is required to plan (set priorities) and measure progress towards meeting specific icon site targets.

Tourism Australia Act 2004 (Cwlth)

To create a government subsidiary, Tourism Australia, responsible for tourism relations in Australia. Environmental information is required to encourage the development and management of tourism products and services that will provide economic and social benefits to local communities while protecting and enhancing our natural and cultural attributes.

United Nations Convention on the Law of the Sea

The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the Exclusive Economic Zone is not endangered by over-exploitation. As appropriate, the coastal State and competent international organisations, whether subregional, regional or global, shall cooperate to this end.

United Nations Convention to Combat Desertification

To contribute to improving land management systems within the country and, where we invest in agricultural improvement, internationally.

United Nations General Assembly (UNGA) Resolutions on Sustainable Fisheries (UNGA 61/105, UNGA 64/72) 2006 and 2009

Several fisheries resources of commercial importance to Australia have ranges extending outside the Australian Fishing Zone into the high seas and the Exclusive Economic Zones of other countries. These stocks are important for Australian fishing industries in terms of food and economic security and can only be managed effectively through cooperative regional action.

Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray System in close cooperation with state authorities to ensure reliable water supplies for all users. MDBA also implements a range of multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

Water Quality Management Plan (Murray–Darling Basin Agreement)

The primary objectives of the River Murray Water Quality Monitoring Program are to periodically report and assess water quality, to understand the variability and to determine trends, which in turn will guide management actions along the River Murray and the lower reaches of its tributaries and storages. Environmental information is required to measure progress against water quality objectives.

Weeds of National Significance (Caring for Our Country)

To prioritise weed management at the State and Territory, regional and local levels to maintain or improve biodiversity and productivity outcomes in Australian Government priority areas. Environmental information is required to: a) help monitor changes in pest and disease distribution and extent, and b) inform the overall impact of program investments on environmental quality.

Working on Country (Caring for Our Country)

Support Indigenous aspirations in caring for country while helping the Australian Government to meet its responsibility to protect and conserve the environment. This responsibility includes matters of national environmental significance, climate change, land and inland waters, coasts and oceans, and heritage. Environmental information is required to: a) inform management plans of Working on Country projects (including Indigenous Protected Areas managed by Working on Country rangers), b) inform project managers of threats and appropriate management actions, and c) develop environmental indicators to assess progress towards management targets.

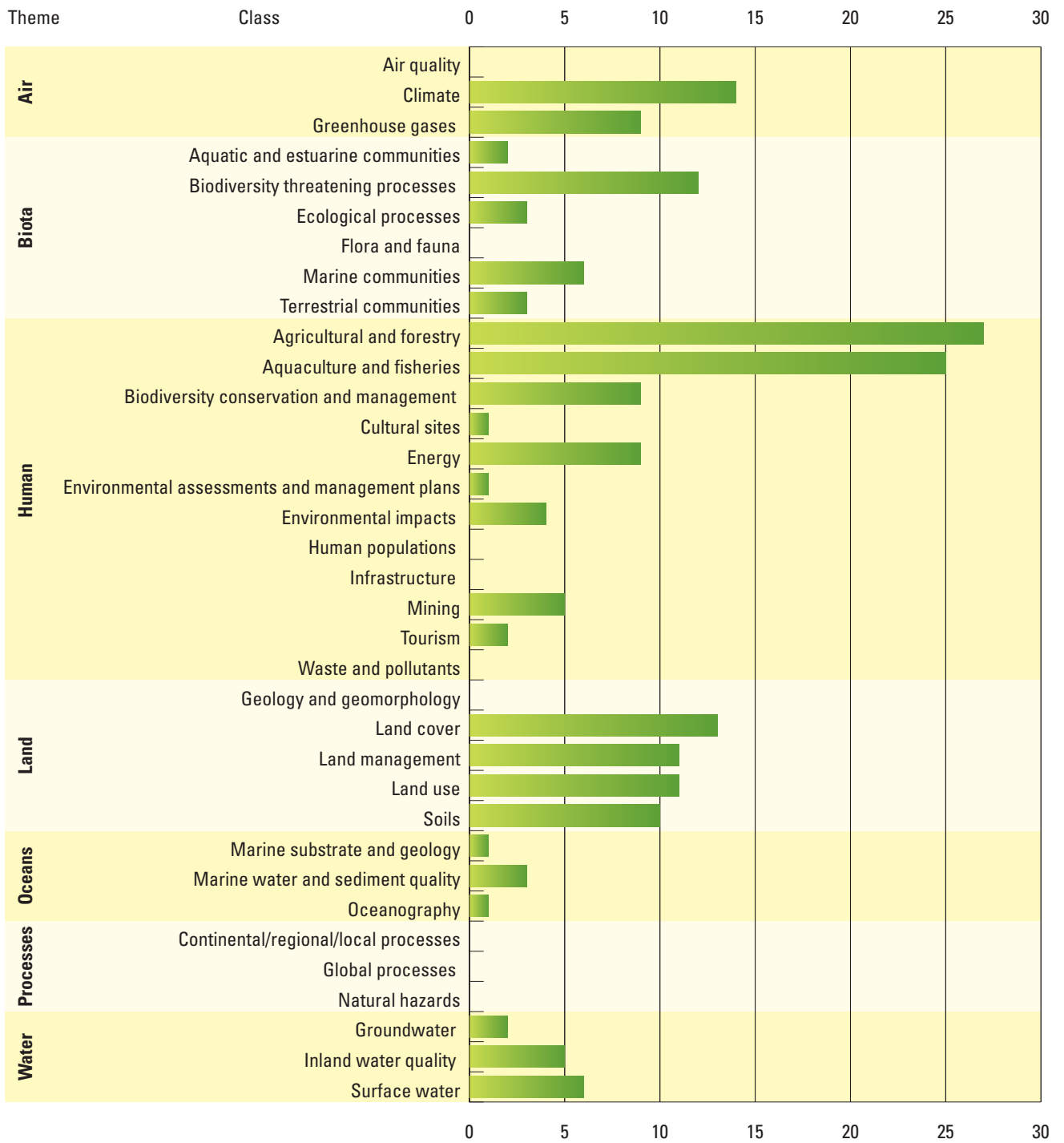


Figure 6 – List of primary environmental information requirements for natural resources categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

8

SIGNIFICANT PLACES



The Great Barrier Reef,
one of the seven wonders
of the natural world.

*Photograph: K Hoppen,
© Commonwealth of Australia (GBRMPA)*

The Australian Government requires environmental information to protect and manage Australia's significant places.

The Australian Government develops and implements policy and programs to protect and manage biodiversity heritage values, parks and reserves and underwater cultural heritage. This includes:

- identifying and prioritising areas for their natural heritage significance, focusing on biodiversity
- risk assessments of the likely impacts of climate change on significant cultural sites and important hunting grounds in Booderee and Kakadu National Parks
- conservation and protection of Australia's historic shipwrecks and underwater cultural heritage
- documentation and capture of international cultural heritage information associated with Australian Government supported World Heritage initiatives.

Following is a description of the requirements and their dependency on environmental information.

Aboriginal and Torres Strait Islander Heritage Protection Act 1986 (Cwlth) – Administering and processing statutory applications

This Act enables Aboriginal people and Torres Strait Islanders to apply to the Commonwealth to protect areas and objects from threats of injury or desecration. It enables the Commonwealth to protect significant Aboriginal areas and objects from specified threats for defined periods of time if a State or Territory has not provided protection. Environmental information is required to: a) identify tenure for consultation purposes, and b) inform decisions about the location of significant Aboriginal areas and whether they are under threat.

Antarctic Treaty System – Australian Antarctic Program: Australian Antarctic Science Strategic Plan 2011–12 to 2020–21

To guide the Australian Antarctic Science Program over the next ten years to focus efforts within four thematic areas: climate processes and change, terrestrial and near shore ecosystems, Southern Ocean ecosystems and frontier science. Environmental information is required to: a) maintain and increase Australia's physical presence in the Australian Antarctic Territory, b) increase Australia's influence in Antarctica and improve the environmental management of Australia's activities, c) support the defined policy needs of government, d) develop collaborative science and logistics relationships, and e) identify possible economic opportunities arising from Antarctic-related activities.

Australian Heritage Council Act 2003 (Cwlth)

This Act was amended in 2007, freezing the Register of the National Estate. The Register continued as a statutory register until February 2012, from which time all references to the Register were removed from the EPBC Act and the Australian Heritage Council Act. The Register of the National Estate is now maintained on a non-statutory basis as a publicly available archive.

Australian property included on the World Heritage List

To promote cooperation between the Commonwealth and the States to protect (natural) heritage in Australia that was identified as being of such outstanding universal value that its conservation is important for current and future generations. Environmental information is required to: a) monitor the condition of the outstanding universal value of Australia's World Heritage places, and b) assess the impacts of actions on the outstanding universal value of Australia's World Heritage places.

Australia's Heritage Places: Administering a legal framework

To recognise and protect places of outstanding heritage to the nation, noting that cultural heritage is considered part of the environment under the EPBC Act. Environmental information is required to assess possible impacts on matters of national environmental significance and provide referral advice.

Australia's National Landscapes Program

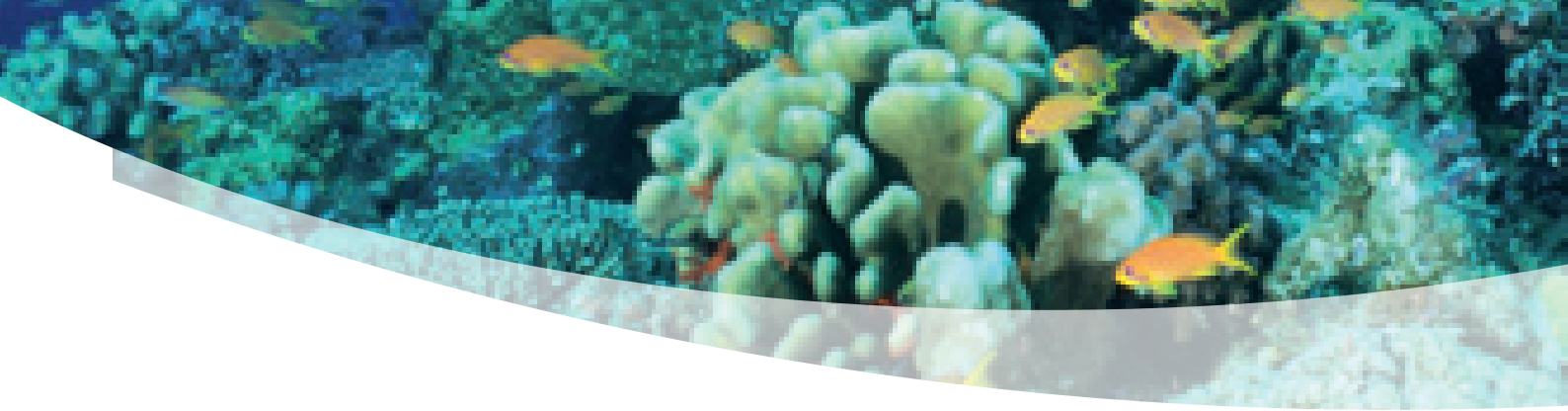
To provide a long-term strategic approach to tourism and conservation to highlight Australia's most outstanding natural and cultural environments. Environmental information is required to: a) develop an understanding of the biological diversity of areas identified within Australia's National Landscapes Program, and b) inform management, information and education programs associated with these sites.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Indicator 1.1.c reports protection of significant places.

Biodiversity Heritage Values

To identify and prioritise areas of Australia for their natural heritage significance – principally biodiversity – based on rigorous comparisons of specific natural values and to assist in meeting both the World Heritage Convention and the Convention for the Conservation of Biological Diversity. Environmental information is required to maintain the Australian Natural Heritage Assessment Tool that assists with assessment of natural values of places nominated to the National Heritage List.



Caring for Our Country

To achieve national targets and outcomes including in relation to the identification, protection and management of significant places including heritage areas.

Environmental information is required to:

- provide evidenced-based evaluations on the outcomes of Australian Government investments in these areas,
- set and review priorities and targets,
- assist in developing, assessing and contextualising projects and investment proposals, and
- measure performance and results, including monitoring, evaluation, reporting and improvement at the project, program and national outcome levels.

Commonwealth Heritage List

Identify, conserve and protect Commonwealth owned or leased places of significant heritage value. Environmental information is required to develop and implement conservation management plans and to encourage public awareness and celebration of Australia's heritage.

Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention)

To promote cooperation among nations to protect heritage around the world that is of such outstanding universal value that its conservation is important for current and future generations. Environmental information is required to inform Australian Government nominations for Australian places to enter onto the World Heritage List.

Great Barrier Reef Marine Park Act 1975 (Cwlth)

Supporting initiatives to improve water quality entering the reef lagoon and achieving sustainable traditional hunting through partnering with Traditional Owners to achieve sustainable traditional use of marine resources and protection of traditional cultural and heritage values. Environmental information is required to inform management, planning, decisions and the preparation of five-year outlook reports.

Great Barrier Reef Marine Park: Managing Sustainable Use of Marine Resources in Partnership with Traditional Owners

To achieve sustainable traditional use of marine resources and protect traditional cultural and heritage values in partnership with Traditional Owners. Environmental information is required to inform management decisions by Governments and Traditional Owners about sustainable levels of traditional use of marine resources within the Great Barrier Reef and State marine parks in response to a changing environment.

Great Barrier Reef Marine Park: Management of the Climate Change Impacts on the Great Barrier Reef

Develop and implement responses to climate change with government, industry, reef users and the community. Environmental information is required to develop adaptation strategies, including improvements to current management and completely novel strategies that could be used to improve the Great Barrier Reef's resilience (particularly in the face of climate change).

Great Barrier Reef Marine Park: Management of the Impacts of Fishing

Address the impacts from fishing and illegal fishing. Environmental information is required to determine how fisheries of the Great Barrier Reef and adjacent areas are best managed to maximise ecosystem health, ecosystem resilience and ecosystem goods and services.

Great Barrier Reef Marine Park: Management of the Protection of Coastal Ecosystems

Contribute to the protection of coastal ecosystems that support the Great Barrier Reef, including initiatives to improve water quality, manage the impacts of fishing, including sustainable traditional hunting, and investigate and manage the impacts of climate change. Environmental information is required to: a) inform management decisions regarding the cumulative and simultaneous impacts of multiple pressures on the Great Barrier Reef ecosystem and the goods and services it provides, and b) evaluate the effects of existing management strategies on the reef ecosystem.

Heritage Place Lists: Maintaining and Updating the Statutory Heritage Place Lists

To identify, conserve and protect Australia's most valued natural, Indigenous and historic heritage sites. Environmental information is required to develop and implement conservation management plans and to encourage public awareness and celebration of Australia's heritage.

Historic Shipwrecks Act 1976 (Cwlth) – Historic Shipwrecks Program

To protect Australia's shipwrecks and associated relics that are older than 75 years or separately declared. Environmental information is required to maintain the: a) national register of known historic shipwrecks and submerged aircraft, including site environment and biodiversity data, b) national register of associated relics in collection institutions and private possession, and c) geographic information system for maritime and underwater cultural heritage used for education, environmental planning purposes and compliance.

National Forest Policy Statement 1992

To protect Australia's natural and cultural heritage in the context of conservation and development initiatives.

National Heritage List Assessments

To identify Australia's most valued natural, Indigenous and historic heritage sites. Environmental information is required to support the Australian Heritage Council in assessing places for possible listing and in providing advice to the Minister for the Environment in decision-making.

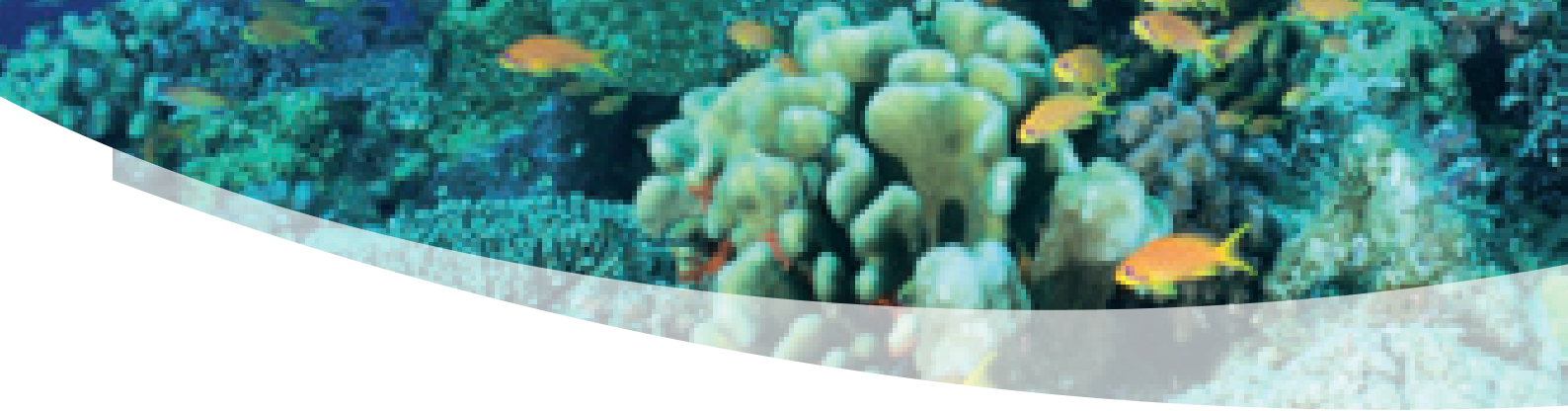
National Indigenous Forest Strategy

To better support forest and plantation management and use to achieve greater economic, social, environmentally sustainable and cultural benefits for all Australians, especially Indigenous Australians.



Emperor Penguins and their chicks at Auster rookery
near Mawson Station, Antarctica

Photographer: Chris Wilson © Chris Wilson/Australian Antarctic Division



Overseas Places of Historic Significance to Australia

To symbolically recognise sites of outstanding historic significance to Australia located outside the Australian jurisdiction. Environmental information is required to inform Australian Government nominations for Australian places to enter onto the List of Overseas Places of Historic Significance to Australia.

Regional Forest Agreements

The Australian Government has ten regional agreements in place, with the governments of New South Wales, Tasmania, Victoria and Western Australia. Environmental information is used to report against forest sustainability indicators and performance of these agreements. Sustainability and performance indicators are used to report on significant places and values.

Sydney Harbour Federation Trust Act 2001 (Cwlth)

To provide a lasting legacy for the people of Australia by helping to create the finest foreshore park in the world and provide places that will greatly enrich the cultural life of the city and the nation. Environmental information is required to inform the development and implementation of management plans to protect significant buildings and places for future generations.

The Living Murray Program (Murray–Darling Basin Agreement)

To achieve a healthy working River Murray system by returning water to the river's environment and managing a number of iconic sites chosen for their high ecological, cultural, recreational, heritage and economic value. The Program seeks to recover 500 gigalitres of water for the River Murray specifically for the benefit of plants, animals and the Australians it supports, along with improving the environment at six icon sites. Environmental information is required to plan (set priorities) and measure progress towards meeting specific icon site targets.

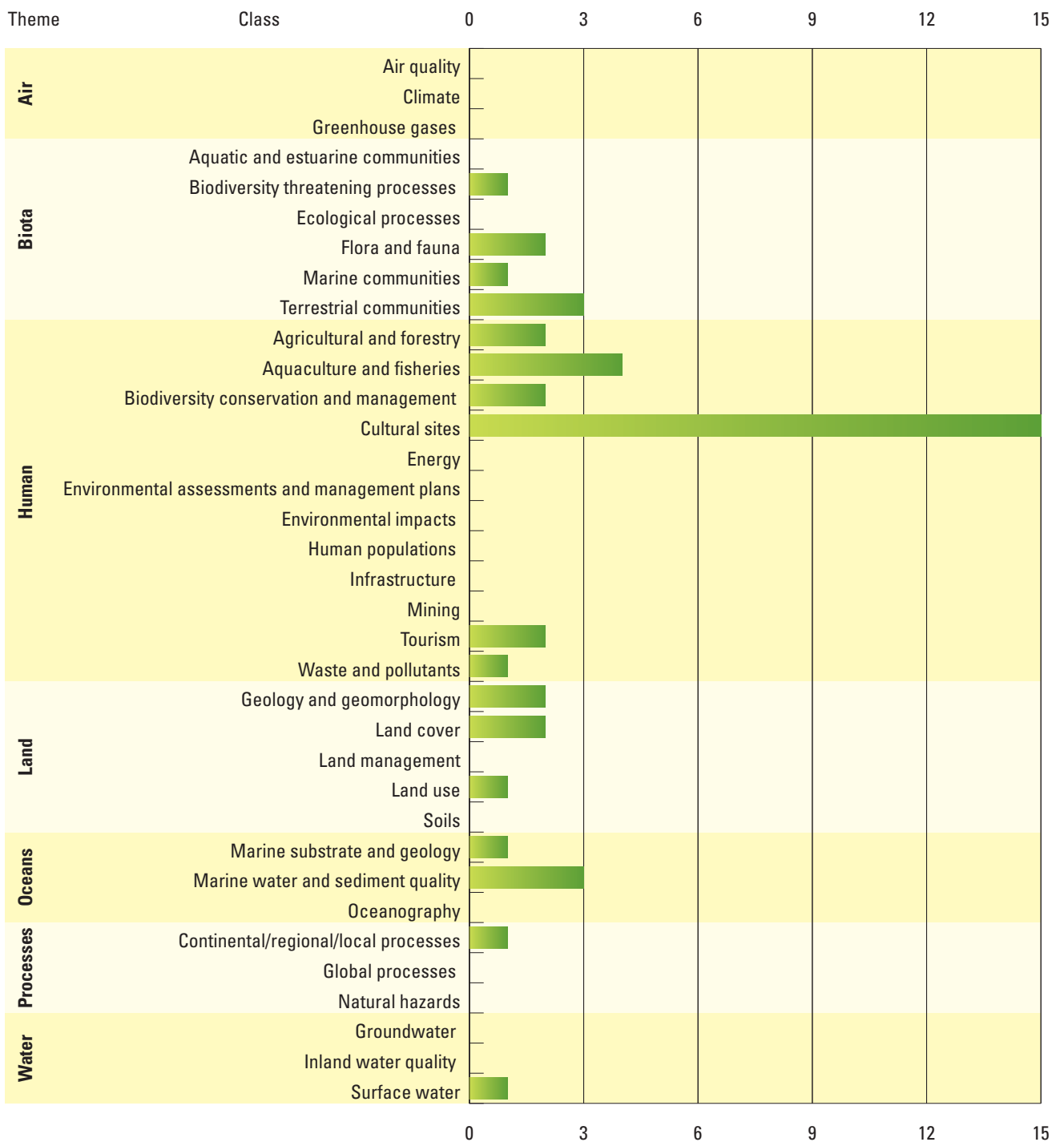


Figure 7 – List of primary environmental information requirements for significant places categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

9

WASTE AND POLLUTANTS

Environmental information will assist
to mitigate the impacts of pollutants.

*Photograph: Herald Sun,
© Newspix / News Ltd.*

The Australian Government requires environmental information to preserve the health of Australians and protect the environment from the impacts of pollutants and other waste products.

The Australian Government develops and implements policies and programs to manage the impacts of pollutants and waste on the environment, including:

- contributing to international efforts to minimise the impacts of hazardous chemicals, hazardous wastes, ozone depleting substances and synthetic greenhouse gases
- regulating actions that are likely to have an impact on matters of national environmental significance and administering guidelines, establishing standards and developing initiatives to reduce contamination of the air, water and land by emissions and waste
- reducing emissions from landfills and other waste activities
- raising awareness and supporting community activities to change common practice.

Following is a description of the requirements and their dependency on environmental information.

Agricultural and Veterinary Chemicals (Administration) Act 1992 (Cwlth), Agricultural and Veterinary Chemicals Act 1994 (Cwlth) and Agricultural and Veterinary Chemicals Code Act 1994 (Cwlth)

To provide advice on the environmental impacts of new and existing chemicals and veterinary medicines. Environmental information is required to reduce hazardous content at source, manage the risks of hazardous materials, dispose of hazardous waste safely and monitor hazardous substances in the environment.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Indicator 3.1.a reports on the impacts of pollutants affecting forests.

Australian Packaging Covenant

The National Waste Policy: Less Waste, More Resources sets the direction for national action on waste and resource recovery to 2020. The Australian Packaging Covenant is a key national mechanism for implementing Strategy 3 of the National Waste Policy – better management of packaging to improve the use of resources, reduce the environmental impact of packaging

design, enhance away-from-home recycling and reduce litter. The Australian Government's Australian Packaging Covenant Action Plan 2010–2015 outlines the activities the government will undertake to assist the Australian Packaging Covenant in achieving its objectives and goals. Government agencies are responsible for implementing the commitments in this action plan and reporting qualitative data. The Department of Sustainability, Environment, Water, Population and Communities facilitates the implementation of this action plan and prepares an annual report to the Australian Packaging Covenant Council.

Australian Antarctic Science Strategic Plan 2011–12 to 2020–21

To remediate and manage contaminated sites in Antarctica and the sub-Antarctic. Environmental information is required to support development of:

- a) management technologies to reduce waste discharge at Antarctic stations,
- b) practical and effective technologies for the containment or remediation of contaminated sites (e.g. tip sites, fuel spills) in cold climates, and c) appropriate risk assessment, mitigation and remediation guidelines for the various pressures facing Antarctic and sub-Antarctic terrestrial and marine environments, including contaminants.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

To protect human health and the environment against the adverse effects resulting from the generation,

management, transboundary movements and disposal of hazardous and other wastes. Environmental information is required to: a) inform policy development and decision-making for the management of hazardous waste, b) regulate the export and import of hazardous waste to ensure that hazardous waste is disposed of safely so that human beings and the environment, both within and outside Australia, are protected from the harmful effects of the waste.

Commonwealth Radioactive Waste Management Act 2005 (Cwlth)

The Act regulates the site selection, establishment and operation of a radioactive waste management facility and related matters, but cannot prescribe the EPBC Act.

Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region

To ban the import of all hazardous and radioactive wastes into South Pacific Forum Island Countries.

Diesel National In-Service Emissions Study

To inform a Diesel National In-Service Emissions Study and develop a proposal for the Study, provide a reliable test for key emissions data from diesel vehicles, establish the emissions performance of the Australian diesel vehicle fleet and build stakeholder participation and capability. Environmental information is



required to support emissions modelling and inform policy development for emissions management.

Environment Protection (Alligator Rivers Region) Act 1978 (Cwlth) – Alligator Rivers Region Environment Protection from Uranium Mining Impacts

To protect the Alligator Rivers region from the impacts of uranium mining and develop scientifically rigorous and appropriate environmental performance criteria for the operation, closure and rehabilitation of uranium mines in the region. Environmental information is required to inform scientific analysis and research to detect uranium mining related impacts on the environment of the Alligator Rivers region.

Formal Agreement Establishing Secretariat of the Pacific Regional Environment Programme 1993

To assist countries in implementing the waste management and pollution control program, mainly through technical advice and support.

Industrial Chemicals (Notification and Assessment) Act 1989 (Cwlth)

To protect the health of the public, workers and the environment from the harmful effect of industrial chemicals and assess all chemicals new to Australia as well as those chemicals already used (existing chemicals) on a priority basis, in response to concerns about their safety on health and environmental grounds.

Information and Communication Technology (ICT) Sustainability Plan 2010–2015

The Plan aims to significantly improve ICT environmental performance across the Australian Government. In particular, the Plan is designed to improve agency ICT performance in relation to carbon emissions, energy efficiency, equipment management, electronic waste and packaging. It includes mandatory environmental standards to be used for ICT acquisitions, ICT energy use measures and targets, and outlines ways to strengthen agency environmental management practices and processes. Initial implementation will obtain agency baseline ICT energy consumption using an ICT questionnaire within the Australian Government's online energy reporting system Online System for Comprehensive Activity Reporting. The Australian Packaging Covenant Annual Report also collects data about paper purchasing, ICT provider status as a Covenant signatory, and the use of green ICT clauses to promote packaging minimisation, recyclability and recycled content, take back and reuse or recycling of packaging to procure ICT products and services.

International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

Regulating and preventing pollution of the marine environment by ships.

Montreal Protocol on Substances that Deplete the Ozone Layer (Ozone Protection and Synthetic Greenhouse Gas Management Act 1998 [Cwlth]), Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995)

To meet Australia's obligations under the mandatory timetable for the phase-out of substances that deplete the ozone layer. To ensure Australia meets legal obligations under the Montreal Protocol and the United Nations Framework Convention on Climate Change. To minimise impacts on the environment of ozone depleting and synthetic greenhouse gases by implementing appropriate end use controls. Environmental information is required in the form of data on ozone levels, the Antarctic ozone hole and concentrations of chlorine and bromine in the atmosphere. This will be used to assess the progress of global efforts to address ozone depletion and determine relative emission levels of ozone depleting substances and synthetic greenhouse gases in Australia.

National Air Quality Database

To provide a repository for State and Territory data required under the National Environment Protection (Ambient Air Quality) Measure (Air NEPM). Environmental information is required for State and Territory monitoring to comply with the Air NEPM and to inform the State of the Air Report.

National Approach to Vehicle Emissions Inventories

To produce a national, standardised and consistent inventory of motor vehicle emissions, including methodology and

reporting. Environmental information is required to inform policy development, including prioritisation of emission reduction actions.

National Environment Protection Council Act 1994 (Cwlth) – National Environment Protection Measures for Ambient Air Quality, Air Toxics, Diesel Vehicle Emissions, National Pollutant Inventory, Used Packaging Materials

Outline national objectives for protecting or managing particular aspects of the environment and may be a combination of goals, guidelines, standards or protocols. Environmental information is required to provide an overall assessment of the implementation and effectiveness of National Environment Protection Measures in all jurisdictions.

National Forest Policy Statement 1992

The Statement stipulates that protection of the conservation and commercial values of forests will necessitate protecting forest areas from the potentially harmful effects of chemicals (pollutants and waste). Environmental information is required for the purpose of protecting forests from these agents.

National Plan for Clean Air

The National Plan for Clean Air involves the development of a new strategic national approach for air quality that integrates air quality standard-setting and available and feasible actions to reduce pollution and exposure to it. The aim is to maximise the net health benefits to the Australian community, using least cost measures. The recommendations of the review of the National Environment Protection (Ambient Air Quality) Measure

will be prioritised and responded to through the development of the National Plan for Clean Air. Environmental information is required to assess options to reduce emissions, inform policy development and decision-making, and contribute to the development of the National Plan for Clean Air by the end of 2014.

National Pollutant Inventory Database – National Environment Protection (National Pollutant Inventory) Measure

Emissions and transfers of listed pollutants on a geographical basis are published annually in an online database. This includes maintenance and improvement of ambient air quality and ambient marine, estuarine and fresh water quality, improvement in the sustainable use of resources and minimisation of environmental impacts associated with hazardous wastes. Environmental information from the National Pollutant Inventory database is used by: a) State and Australian governments to inform environmental policy, b) industry to benchmark environmental performance and inform local community groups, c) the media to draw public attention to industrial activities which may impact health and the environment, and community groups to monitor impacts of industry on health and the environment, d) universities to conduct environmental research projects and schools as a tool in environmental education, and e) the general public as a tool for discovering information on industrial activities and pollutants emitted in their area.

National Waste Policy

To: a) establish Australia's waste management and resource recovery agenda across six key directions for the period to 2020, b) avoid the generation of waste, reduce the amount of waste (including hazardous waste) for disposal, manage waste as a resource, ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner and, contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land, and c) reduce emissions from landfills and other waste activities. Environmental information is required to: a) develop and implement a National Waste Data System, to support reporting against a waste to landfill indicator within the proposed national sustainability indicator set for Australia, to support periodic national waste reporting that is accurate, meaningful, current and available online, and b) develop and improve Product Stewardship schemes under the *Product Stewardship Act 2011 (Cwlth)* including: television and computer recycling scheme (e-waste), end of life tyres (waste tyres), packaging and litter including the Australian Packaging Covenant, *Product Stewardship (Oil) Act 2000 (Cwlth)* (used motor vehicle oil), and c) map international and domestic arrangements for definition and classifications of waste including hazardous waste (definition and classifications of waste).

National Waste Report

Publication of the National Waste Report is a key deliverable under the National Waste Policy: Less Waste, More Resources. Environmental information is required to provide users of waste and recycling data and information with a comprehensive, online, accessible and current source to inform their decisions, including for policy development and infrastructure investment.

National Water Quality Management Strategy

To achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development. Water quality related environmental information is used to: a) inform regulatory Environmental Impact Assessment processes, b) develop and revise National Water Quality Management Strategy guideline/trigger values for fresh and marine aquatic ecosystems, drinking water, recreational water quality, sewage systems and recycled water in order to manage water quality and minimise risks to human and environmental health, and c) assist water managers to protect water quality, biodiversity, ecosystem services, human health and Indigenous, cultural and spiritual values associated with water resources.

Rotterdam Convention

To promote shared responsibility and cooperative efforts among parties in the international trade of certain hazardous chemicals to protect human health and the environment from potential harm. The environmentally sound use of those hazardous chemicals will be

promoted by facilitating information exchange about their characteristics, providing for a national decision-making process on their import and export, and disseminating these decisions to parties. Environmental information is required to: a) enable countries to make informed decisions regarding whether to allow import of a listed chemical into their country, b) provide assessment of import notifications, and c) develop export notifications for other countries.

State of the Air Report

To provide a national analysis of air quality in Australia's major urban and regional monitoring regions. Environmental information is required to inform the development of the report.

Stockholm Convention on Persistent Organic Pollutants

To evaluate the effectiveness of actions taken under the Convention by providing monitoring data on the presence of listed chemicals and global environmental transport. Environmental information is required to evaluate the effectiveness of the Convention in reducing global loads of persistent, toxic and bioaccumulative chemicals and to determine whether additional action is warranted to protect humans and the environment globally.

Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA)

and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray system in close cooperation with state authorities to ensure reliable water supplies for all users. MDBA also implements a range of multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

Water Quality Management Plan (Murray–Darling Basin Agreement)

The primary objectives of the River Murray Water Quality Monitoring Program are to periodically report and assess water quality, to understand the variability and to determine trends, which in turn will guide management actions along the River Murray and the lower reaches of its tributaries and storages. Environmental information is required to measure progress against water quality objectives.

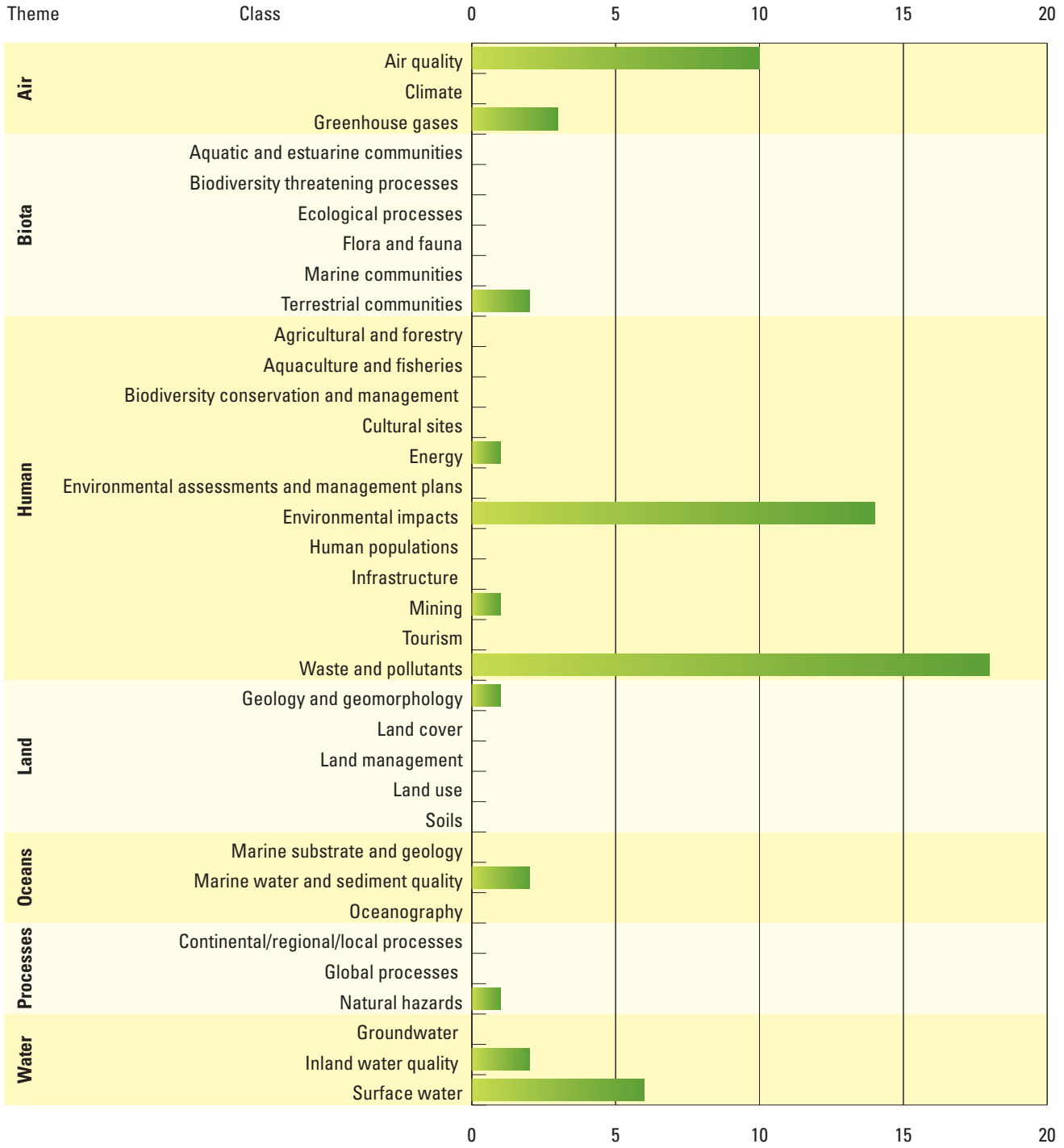


Figure 8 – List of primary environmental information requirements for waste and pollutants categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

10 WATER



Aroona Dam, Flinders Ranges,
South Australia.

Photograph: Tourism Australia

The Australian Government requires environmental information to ensure the quality of Australia's water resources and their sustainable use by industry, communities and the environment.

The Australian Government develops and implements policy with respect to water availability and quality, including:

- programs that improve the efficiency and sustainability of water use, responding to water allocation and efficiency needs
- investing in more efficient and productive management and use of irrigation water
- responding to water deficits arising from the drought and the need for increased environmental flows
- managing water quality including sediment and nutrient loads and applying water quality standards
- supporting new and innovative investment in alternative urban water supplies.

Where they interact with water resources management, other environmental policy developments are also relevant to this priority, including those relating to climate change adaptation, biodiversity, natural resource management and waste management.

Following is a description of the requirements and their dependency on environmental information.

Australia's State of the Forests Report

A State of the Forests Report is required domestically every five years for international reporting of Australia's forests and the analysis of trends. Seven criteria and 44 indicators provide the framework for describing, evaluating and reporting status and progress towards forest conservation and sustainability at the national level. Environmental information is required for the 44 indicators used in the Report. Criterion 4 with five indicators reports on the attributes associated with catchment and water values.

Basin Salinity Management Strategy (Murray–Darling Basin Agreement)

To: a) maintain water quality of shared water resources of the Murray and Darling rivers for all beneficial uses, b) control the rise in salt loads in tributary rivers, c) control land degradation and protect important terrestrial ecosystems, productive farm land, cultural heritage and built infrastructure at agreed levels Basin-wide, and d) maximise net benefits from salinity control across the Basin. Environmental information is required to plan (set priorities) and measure progress towards meeting specific icon site targets.

Commonwealth Environmental Water

To protect and restore environmental assets in the Murray–Darling Basin in order to give effect to international agreements including the Convention on Biological Diversity, the Ramsar Convention and others. Environmental information is required to inform the acquisition of environmental water and prioritise environmental water use based on a consideration of the: a) quantified flow requirements of biodiversity and ecological function, b) expected ecological responses to inundation and flow at multiple spatial scales, c) condition of aquatic ecosystems, d) resilience to climate change – connectivity within the landscape, e) hydrological history and forecast flow conditions, f) hydrological data/modelling of actual river/channel capacities, flow/evaporation rates, conveyance/transmission losses and return flows, and g) risks of negative environmental outcomes (e.g. low dissolved oxygen flows, mobilisation of acid-sulphate soils). Important information includes: surface and groundwater hydrology, topography, digital elevation models, satellite imagery, geology, soils, land use, vegetation/habitat, distribution of species and communities, hazards (e.g. salinity, acid sulphate soils), management plans and natural resource management activities that are of a high quality, standardised and available from a single source (e.g. database or website). To monitor and evaluate the impacts of environmental water use: a) using consistent and repeatable methodologies at multiple spatial and temporal

scales, b) to understand and report on ecological response to flow/inundation – to understand change over time in the condition of species, communities and ecosystems in response to flow/inundation, and c) to adaptively manage the use of environmental water.

Convention on Biological Diversity and Ramsar Convention

To provide frameworks for national action and international cooperation for the conservation and sustainable use of inland water, wetlands and their resources. Environmental information is required to manage, monitor and report on ecosystems, socio-economic aspects, conservation and sustainable use of these ecosystems as well as the ecosystem services they provide. Both Conventions are enshrined in Commonwealth legislation through the EPBC Act.

EPBC Act

Provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. Environmental information is required, as any water diversion or change in water quality could significantly impact on threatened species, Ramsar wetlands or international sites and would invoke the Act.



Great Artesian Basin Sustainability Initiative

To accelerate work on the repair of uncontrolled artesian bores and the replacement of open earthen bore drains with piped water reticulation systems, making wasteful use of Great Artesian Basin water a thing of the past.

Lake Eyre Basin Intergovernmental Agreement

Provides for the sustainable management of the water and related natural resources associated with the major cross-border river systems within the Lake Eyre Basin to protect dependent ecological, social and economic values.

National Forest Policy Statement 1992

The Statement stipulates protection of catchment values of forests and ensures the availability of reliable high-quality water supplies from forested land. Environmental information is required for the purpose of monitoring and reporting on the quality and quantity of water from forested land and catchment values, including the environmental and economic sustainability of water resources from forested lands and catchment maintenance (including vegetative cover, flood mitigation, land degradation and salinity control).

National Pollutant Inventory Database – National Environment Protection (National Pollutant Inventory) Measure

Emissions to water of listed pollutants on a geographical basis are published annually in an online database to maintain and improve ambient marine, estuarine and fresh water quality. Environmental information is required to inform policy regulating the agricultural and industrial discharges of pollutants to water.

National Water Initiative (Water for the Future)

To deliver a national blueprint for water reform. It is a shared commitment by governments to increase the efficiency of Australia's water use, leading to greater certainty for investment and productivity for rural and urban communities and for the environment. Environmental information is required to: a) prepare water plans with provision for the environment, b) manage over-allocated or stressed water systems, c) develop and introduce registers of water rights and standards for water accounting, d) inform the expansion of water trade, e) inform and improve pricing for water storage and delivery, and f) inform the management of urban water demands.

National Water Market System

To ensure: a) each jurisdiction has a sound water register that records property rights and supports water accounting and resource management, b) trades and other dealings are not limited by register processes, by reducing transaction times, reducing transaction costs for users and administrators, satisfying customer requirements for ready access to accurate, detailed and comprehensive information, and providing greater consistency of user experience across jurisdictions, and c) inter-operability between relevant water registers to improve the efficiency of interstate trading. Environmental information is required to inform market transactions, environmental planning, assessments and resource management and for the production of individual, State and Territory, and national water accounts.

National Water Quality Management Strategy

To achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development. Water quality related environmental information is used to: a) inform Commonwealth, State and Territory, and local government water legislation, b) inform regulatory Environmental Impact Assessment processes, c) develop and revise National Water Quality Management Strategy guideline/trigger values for fresh and marine aquatic ecosystems, drinking water, recreational water quality, sewage

systems and recycled water in order to manage water quality and minimise risks to human and environmental health, d) assist water managers to protect water quality, biodiversity, ecosystem services, human health and Indigenous cultural and spiritual values associated with water resources, e) improve water quality by providing data, information and tools to help governments and communities manage their water resources, f) inform national and other State of the Environment reporting, and g) inform river basin and catchment management, including environmental assessment, monitoring and reporting.

National Water Security Plan for Cities and Towns

Adapting to a future with less water – urban water security policy and programs development, implementation and evaluation.

Reef Water Quality Protection Plan (Reef Plan)

To provide a framework for the Australian and Queensland governments to work together, along with industry, regional natural resource bodies and others to improve the quality of water flowing into the Reef. The Australian Government is implementing the Reef Plan through the \$200 million, five-year Reef Rescue initiative (2008–09 to 2012–13). Environmental information is required to develop an annual report card on how onground actions are progressing toward improved water quality and ecosystem health in the Great Barrier Reef.

Regional Forest Agreements

The Australian Government has ten regional agreements in place with the governments of New South Wales, Tasmania, Victoria and Western Australia. Environmental information is used to report against forest sustainability indicators and performance of these agreements. Sustainability and performance indicators are used to report on water and catchment values.

River Murray Program (Murray–Darling Basin Agreement)

The River Murray Program has prime carriage for directing the sharing of River Murray waters as set out in the Agreement, ensuring the reliability of entitlement flows, allocations to jurisdictions and management of unregulated flows to maximise environmental benefit. It is tasked to: a) determine the shared entitlements of the River Murray system between New South Wales, Victoria and South Australia, b) direct the operation of River Murray system assets to meet multiple human and environmental objectives, and c) provide information and advice to Murray–Darling Basin stakeholders and policy-makers. Environmental information is required to inform operational decision-making, taking into account a range of technical considerations such as flow requirements, salt and water level changes, estimated evaporation, forecast rainfall, the water available for environmental accounts and the water-carrying capacity of the river at various locations.

River Murray: The Cap (Murray–Darling Basin Agreement)

To balance between in-stream and consumptive uses in the Murray–Darling Basin and protect the security of supply of existing users while arresting further deterioration of the health of the Basin's river system. Environmental information is required for annual monitoring of diversions throughout the Basin. It will support the outcomes sought by the Cap and these will be used for annual audits.

Science and Industry Research Act 1949 (Cwlth)

To carry out services and make available facilities in relation to science.

Sustainable Urban Water Resources (National Water Initiative)

To secure urban water supplies, use water wisely, address the challenges of climate change and support healthy rivers. Environmental information is required to inform policy advice on improving sustainable production and consumption of water resources in the urban environment.



Water Act 2007 (Cwlth)

The Water Act introduced new powers that help the Australian Government coordinate a national approach to integrated water management and meet the challenges facing water management in the Murray–Darling Basin. The Water Act established the Murray–Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH). MDBA will prepare a Basin Plan for the sustainable management of water across the whole of the Murray–Darling Basin and manages the River Murray system in close cooperation with state authorities to ensure reliable water supplies for all users. MDBA also implements a range of multi-jurisdictional programs that support the restoration of the environment in the Murray–Darling Basin. CEWH manages the Commonwealth environmental water holdings and the Bureau of Meteorology has a new role to collect water information.

Water for the Future

To secure the water supply of all Australians. The initiative is built on four key priorities: taking action on climate change, securing water supplies, using water wisely and supporting healthy rivers. Environmental information is required to support: a) water use efficiency labelling and standards scheme to improve water efficiency, b) enhanced water efficiency in irrigation systems for critical information on Australia's current and future water availability which helps prepare for changing climates, and c) inform and monitor water requirements for river and wetlands to maintain flows and ecosystems that manage urban water requirements and options for sources of water.

Water Quality Management Plan (Murray–Darling Basin Agreement)

To periodically report and assess water quality, understand the variability and determine trends, which in turn will guide management actions along the River Murray and the lower reaches of its tributaries and storages. Environmental information is required to plan (set priorities) and measure progress towards meeting the Water Quality Management Plan objectives.

Water Trade (Murray–Darling Basin Agreement)

The objective of water trade is to support new developments, regional growth, industry sector expansion, increased value of irrigated agriculture and increase returns to irrigators. It will allow climatic conditions to be managed by moving water to the highest value use. Environmental information is required for monitoring of water trade, allocations, entitlements and water use as a basis for assessing the success of water trade for sustainable management of the Murray–Darling Basin. The National Water Market System will provide guidance on how information will be used.

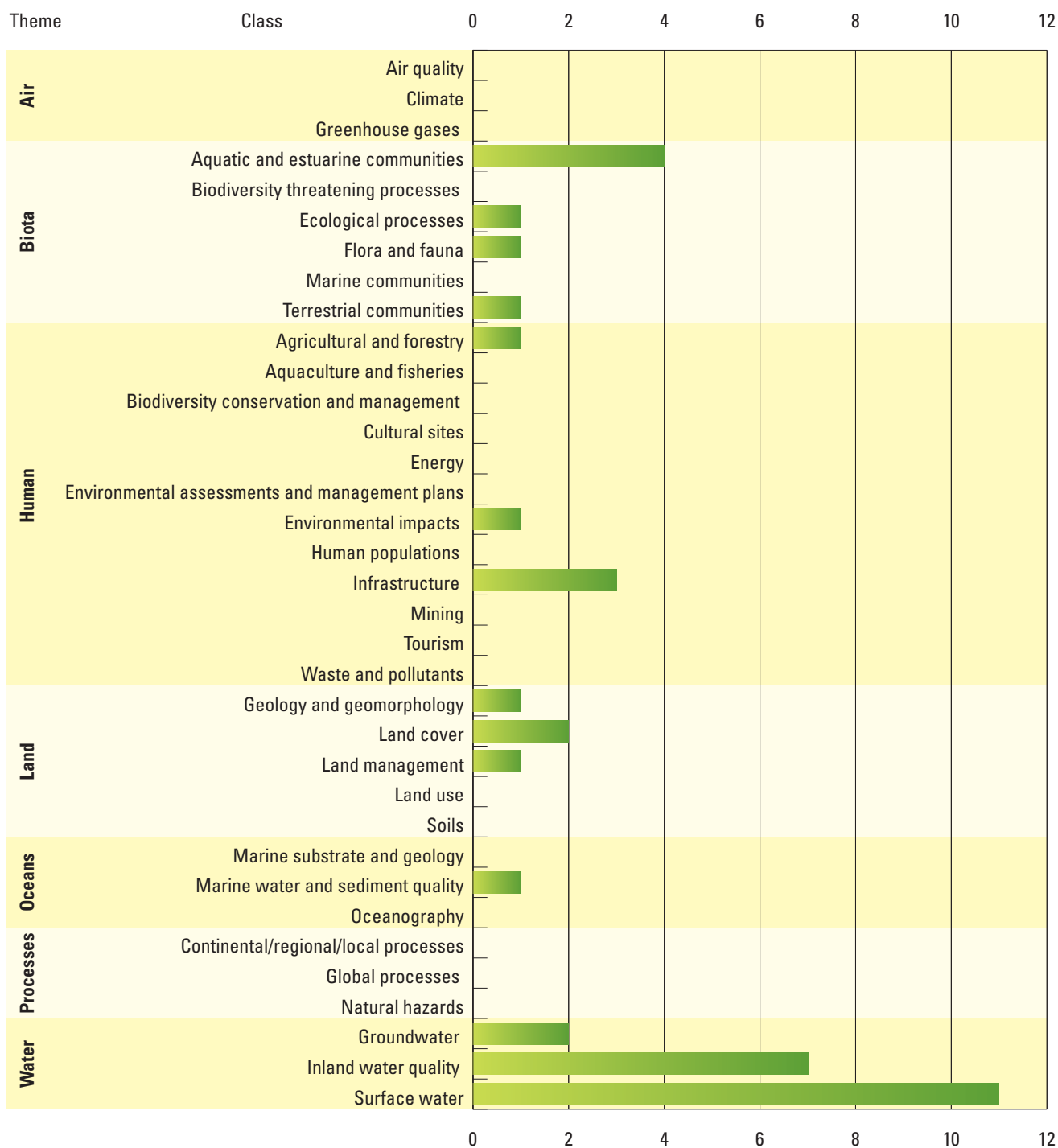


Figure 9 – List of primary environmental information requirements for water categorised by environmental class. The figure shows the number of times each class appears in this area of interest. Data in the figures should be seen as illustrative rather than comprehensive for limitations described in Chapter 13 and Appendix 1.

1 1

ENVIRONMENTAL INFORMATION REQUIREMENTS SUMMARY

Photograph: David Kleinert

The information contained under the nine broad areas of interest serves to highlight the breadth of Australian Government activity that is critically dependent on environmental information.

Environmental information is required to support activities including international agreements, such as the Kyoto Protocol with its requirement for continental-scale information about land use change to support the National Carbon Accounting System, and Australian site-specific requirements, such as the management of the Ranger uranium mine within Kakadu National Park. Environmental

information also supports historically enduring requirements including long-standing legislation such as the *Quarantine Act 1908*, through to more contemporary legislation such as the *Carbon Credits Act 2011*.

Establishing formal relationships between areas of interest and requirements and their dependency on environmental information (Appendix 1), coupled with the use of environmental information classes (Appendix 2), provides an indication of the pattern of environmental information across areas of interest. Table 1 provides a cross-area of interest overview

framed under the nine areas of interest developed through the use of consistent environmental information classes. Table 1 should be seen as illustrative, rather than comprehensive for the limitations described in Chapter 13 and Appendix 1. The method typically identified the primary information need and not necessarily the ancillary information that may be equally important to support effective decision-making.

Towards Fundamental Environmental Datasets

The Statement provides a ‘policy lens’ on environmental information needs. Consequently, it does not identify cross-cutting fundamental environmental datasets. ANZLIC - the Spatial Information Council (ANZLIC)

is responsible for the collection, management and use of the national framework spatial data themes. These themes will form a foundational spatial data layer that will underpin Australia’s future spatial capability and are the land information analogue to the fundamental environmental datasets, noting shared

interests in elevation, hydrology and land cover. The NPEI initiative will partner to identify ways to deliver fundamental environmental datasets important to Australian Government policy priorities – learning from, and collaborating with the Office of Spatial Policy and ANZLIC.

Table 1 – Australian Government environmental information requirements as represented within the nine broad areas of interest using a controlled list of information classes (Appendix 2). No priority or rank should be inferred.

Theme	Class	Biodiversity	Biosecurity	Climate change	Environmental reporting	Infrastructure and communities	Natural resources	Significant places	Waste and pollutants	Water
Air	Air quality									
	Climate									
	Greenhouse gases									
Biota	Aquatic and estuarine communities									
	Biodiversity threatening processes									
	Ecological processes									
	Flora and fauna									
	Marine communities									
	Terrestrial communities									
Human	Agriculture and forestry									
	Aquaculture and fisheries									
	Biodiversity conservation and management									
	Cultural sites									
	Energy									
	Environmental assessments and management plans									
	Environmental impacts									
	Human populations									
	Infrastructure									
	Mining									
	Tourism									
Land	Waste and pollutants									
	Geology and geomorphology									
	Land cover									
	Land management									
	Land use									
Oceans	Soils									
	Marine substrate and geology									
	Marine water and sediment quality									
Processes	Oceanography									
	Continental/regional/local processes									
	Global processes									
Water	Natural hazards									
	Groundwater									
	Inland water quality									
	Surface water									

12

FUTURE DRIVERS



Future drivers for environmental information

Over the next 40 years, it is likely that the world's population will increase from 7 to 9 billion people. For some time yet, fossil fuel consumption will continue to increase and so too will the emission of CO₂ and other greenhouse gases contributing to global warming. We can expect the average global temperature to continue to rise, moving beyond the almost 1 °C increase realised since the start of the last century. Our oceans will continue to warm and sequester CO₂, making them more acidic and placing increased pressure on calcium carbonate based life forms.

The changes may be great enough to alter marine ecosystems, particularly in the cooler waters of the high latitudes. Sea levels will continue to rise and start to impact on low-lying communities. The pressure on water resources and freshwater ecosystems will intensify. Terrestrial ecosystems and biodiversity will come under increased pressure as the world increases the production of food and fibre. In a world that produces and consumes much more, global waste streams will continue to increase in volume, impacting further on our atmosphere, our land, our oceans and our freshwater resources.

In this century, society will need to place a greater emphasis on monitoring, evaluating and forecasting environmental change and its consequences. As we approach the limits of various sustainability measures, and in some cases exceed them, it is all the more critical to measure our environmental footprint and anticipate where we are headed. The 'environment' is tremendously rich and complex, with many dimensions that vary greatly in space and time. Establishing robust measures, trends and outlooks in most facets of environmental condition requires considerable effort, resources and skill.



Biodiversity

- increasing obligations on proponents of resource developments for environmental assessment and ongoing monitoring
- the need for guidelines by regulators and industry regarding biodiversity values by regions and acceptable mitigation practices in protection of biodiversity
- increased use and formalisation of environmental offsets
- long-term threats to ecosystem function and species survival and adaptation, including from climate change and intensification of land and resource use
- community and industry expectations for access to up-to-date and reliable information at the right scale to meet their planning and management needs
- market expectations for up-to-date and reliable information to support the valuation and trading of ecosystem goods and services
- accelerating loss of biodiversity.

To meet the national challenges presented by these global trends, Australia will need to fully utilise the environmental information at our disposal, and exploit the full potential of new environmental monitoring technologies that allow us to measure more at less cost. Finally, using appropriate analysis methods, we must generate insights from this information and package it in a way that is useful to decision makers and stakeholders.

Access to sound and comprehensive environmental information is a pre-condition for a sustainable earth. It is anticipated that future (and additional) environmental information needs will be driven by:

Biosecurity

- managing risks from invasive species and minimising the impact of incursions, managing weeds, invasive animal and marine pests and their impact on natural resources and portfolio industries.

Climate change

- demand for coordinated provision of 'climate services', for example delivery of climate projections under a range of scenarios to a variety of stakeholders and improved information on expected changes in extreme weather events
- the need for better and more coordinated information on climate change impacts, in particular impacts on coasts and infrastructure, in order to inform adaptation and risk management approaches
- possible changes to international reporting requirements for greenhouse gas emissions and removals (including forestry and agriculture sectors) in a post-2012 (post-Kyoto) international climate change outcome
- increasing obligations on proponents of resource developments for environmental assessment and (ongoing) monitoring
- expanding the proportion of renewable energy used in national energy portfolio – solar power and wind power will require regional information on sunlight/wind availability, and solar and geothermal power production can be a large user of water so will require information on this resource



- gas as a transitional fuel source in future electricity generation – increased use of conventional gas, coal seam gas and potentially shale gas and commercialisation of carbon capture and storage technologies, may require enhanced geological data to determine the suitability and stability of underground storage and more general environmental data on basins and water availability etc.
- managing soil, vegetation and livestock to reduce emissions and/ or sequester carbon, adjusting to and mitigating climate change impacts
- a range of industries grappling with adaptation challenges, requiring communication services and tailored climate information products. This will also drive the conversion of technical information into information that is digestible and useable by decision-makers.

Environmental reporting

- expansion of private data produced for environmental approvals
- increasing demands for standardisation and aggregation of data to assess regional environmental impacts
- mandates for specific reporting instruments (e.g. State of the Forests Reporting).

Infrastructure and communities

- community license to operate and community expectations regarding consultation.

Natural resources

- commodity demands of developing economies (e.g. China and India)
- expansion in offshore exploration and development activity, including into frontier regions
- increasing expectations of integrated catchment management with sustainable land management
- increasing emphasis on cultural resources
- agricultural productivity and sustainability – profitable production of food and fibre, adoption of sustainable agricultural practices and protection and enhancement of natural resources
- natural resource management plans to include consideration of climate change impacts (while the Regional Natural Resource Management Planning for Climate Change Fund, part of the Clean Energy Future Plan, will provide support for these activities, there is the expectation for ongoing requirements for environmental information to support inclusion of climate change in natural resource management plans).

Significant places

- the establishment of the network of marine protected areas.

Waste and pollutants

- establishment of markets in rights to pollute
- demands for increasing use of prescriptive standards
- public resistance to disposal solutions for long-lived pollutants
- increasing demands for recycling rather than reuse or benign disposal
- increasing expectations of product stewardship and end of life take back for products containing hazardous substances.

Water

- public expectations regarding demonstrable outcomes from the management and use of Commonwealth environmental water holdings
- growing expectations of cultural and economic outcomes for Indigenous communities via State and Territory water planning, particularly in northern Australia
- public concern at the capacity of governments to properly evaluate the impacts of coal seam gas water extraction, fracture stimulation technologies and chemical use upon water basins
- information to predict potential impacts of flooding, and to provide longer term climate and water resource forecasting with increasing reliability
- water scarcity and associated costs of securing reliable, fit-for-purpose water supplies to growing urban communities
- changed land use and resultant interceptions associated with a carbon price.



Eastern Grey Kangaroos at the edge of a flooded Barmah National Park.

Photograph: David Kleinert

13 CONCLUSION



Pelicans at Nornalup Inlet near
Walpole, Western Australia.

*Photograph: Jenelle Carter
© South West Catchments Council*

Achievements

Through the formation of the Australian Government Environmental Information Advisory Group (AG EIAG) and the production of the Statement, the foundations for improved collaboration across the Australian Government have been established – this is a noteworthy achievement.

The Statement provides a sound foundation for developing the National Plan for Environmental Information, defining the environmental information requirements that products and services will be developed to address. The Statement provides a robust framework for whole-of-government collaboration on environmental information.

Limitations

The Statement provides a summary of government activities for which environmental information is needed, rather than an evaluation of the shared needs of the Australian Government. In this regard it does not assess whether the shared needs of government are being met with current products and services. Other mechanisms, such as policy and technical working groups, will be used to explore these issues further and consider what is needed.

The Statement provides a 'current-state analysis' which does not reflect future needs in any detail unless they were identified as such by agencies. The Future Drivers section provides some initial insight into future drivers; however, there is no expression of the nature of the dependency on environmental information. Future revisions of the Statement may support a framework which accommodates future requirements for environmental information where they are known, but where no formal mandate exists (e.g. legislation).

Significant effort was devoted to ensuring the Statement and its supporting data are comprehensive and representative of Australian Government requirements. This was achieved through detailed data acquisition and iterative consultation with AG EIAG agencies. There may, however, be omissions or errors in the document and we encourage agencies to communicate these to the Bureau of Meteorology Environmental Information Services Branch.

The environmental information summary presented in Chapter 11 has inherent limitations and hence no priority or rank should be inferred from the table. For instance, it reflects the primary environmental needs under the requirements provided by stakeholders rather than all the environmental information required to develop policy relevant products and services. This is why more detailed priority setting and exploration of environmental information requirements will be delivered through mechanisms such as working groups.

Revising the Statement

The Statement and its foundation data will be made available to stakeholders. The database will be maintained to support and capture information yielded during the data acquisition phase. Updates will be conducted at least biennially, oversighted by the AG EIAG and managed by the Bureau of Meteorology.

APPENDIX 1 – DETAILED METHOD

Overview

The method used to produce the Statement was partially modelled on the Group on Earth Observations' (GEO) process to identify Critical Earth Observation Priorities (GEO Task US-09-01a). In the GEO model, international advisory groups were formed across 'societal benefit areas' (SBAs), including for example agriculture, climate and energy to identify priority earth observation needs. Within an SBA, environmental information requirements were identified by scanning existing literature and expert synthesis. A task team then collated the data across the eight SBAs to identify the shared requirements for earth observation which were ranked according to frequency of need across all SBAs.

The GEO team developed SBAs *a-priori* to the data capture with the initial SBAs defining the thematic composition of the advisory groups. In contrast, the AG EIAG Statement method adopted *a-posteriori* approach to identify requirements for environmental information. Broad areas of interest were established at Stage 2 after the primary data acquisition across AG EIAG agencies.

The reference in the Statement to requirements is analogous to the UK's 'Towards a Statement of Need' method and is important for two reasons. First, it ensures expressions of environmental information dependency are supported by evidence (i.e. requirements). Second, information embedded in the requirement and its description of the dependency can provide key parameters regarding the nature of the environmental information. For example, insights into spatial extent, temporal repeat, latency and quality of environmental information can be used to better understand

product requirements. In other words, an understanding of the requirement and an articulation of the dependency can provide a critical first step in defining functional specifications for particular environmental information products and services.

Figure 10 provides a schematic showing the relationship between areas of interest, requirements, dependency and environmental information.

The method adopted balanced the richness provided by qualitative approaches to consultation with stakeholders with the objectivity of a structured approach to analysis and reporting.

In summary the method followed is as follows:

- **Stage 1 – primary data acquisition**

Agencies were asked to populate a template describing their requirements and providing some expression of the nature of the dependency on environmental information.

- **Stage 2 – drafting broad areas of interest for environmental information**

Broad areas of interest were developed through meta-analysis of Stage 1 data and reviewed by stakeholders to ensure they appropriately reflected portfolio interests. Stakeholders had the opportunity to modify or add requirements and dependency descriptions through a number of iterations.

- **Stage 3 – use of environmental classes (Appendix 2)**

Environmental classes were manually 'mapped' against the descriptions provided by stakeholders for each requirement using keyword matches. This approach typically only identified the primary requirement for environmental information but may neglect ancillary but equally important cross-cutting contextual information. For example, some environmental information critical to support decision-making across many areas of interest, may be absent in the individual area of interest summaries, or final cross area-of-interest summary.

- **Stage 4 – analysis and synthesis**

Summary tables for each area of interest and an overall summary table were produced with the classified data from Stage 3.

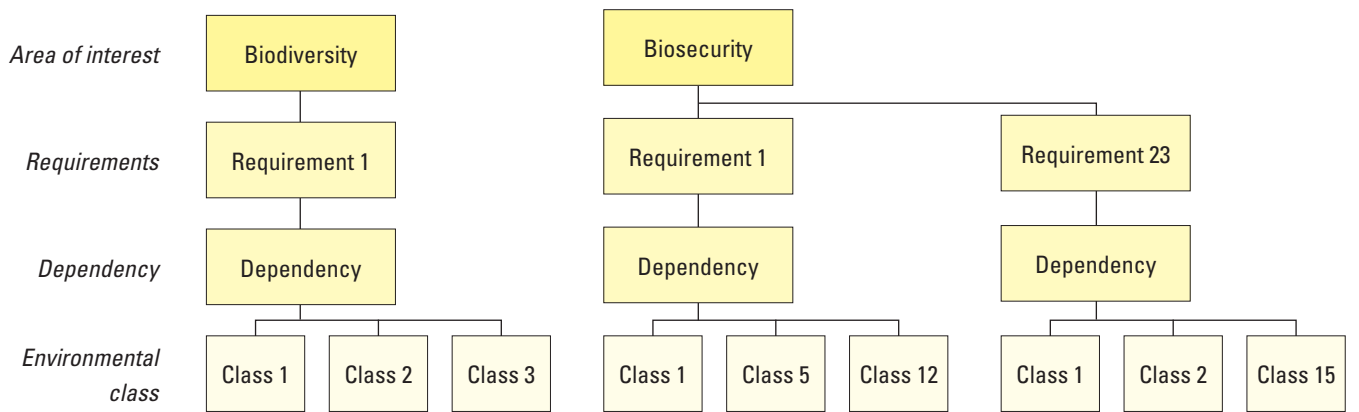


Figure 10 – Schematic showing relationship between areas of interest, requirements, the dependency on environmental information and environmental classes.

APPENDIX 2 – ENVIRONMENTAL CLASSES

To enable analysis within and comparison across areas of interest, environmental classes were developed and used to classify the dependency description provided under each mandate. Classes were developed by reviewing other classifications and assessing these against the agency responses to ensure the final classes were inclusive and comprehensive.

Table 2 provides the final list of classes used to provide an aggregate view of needs and to summarise results. Guiding principles for development of the classes included the following:

- The classes are intended to support analyses across areas of interest by providing broad and intuitive clusters that do not need to be ‘taxonomically’ pure. In other words, the classification is not intended as a biophysically ‘pure’ classification of the environment.
- Ideally the classes should be mutually exclusive; however, some overlap is acceptable.
- Classes should reflect the Australian environmental information lexicon, i.e. the terminology in the list should resonate with Australian stakeholders.
- More than ten but fewer than 50 classes should be developed. Too few classes risk generalised classes like land, air, oceans and water; too many classes makes presentation challenging and convergence on an expression of ‘shared’ challenging.

Table 2 – Environmental classes showing example attributes and classification under individual themes

Theme	Class	Attributes
Air	Air quality	aerosols; dust, ash, smoke, nitrates, etc.; smog, visibility, emissions
	Climate	Southern Oscillation Index, rainfall, temperature, radiation, water vapour, wind, indices, variability, weather
	Greenhouse gases	emissions, concentrations
Biota	Aquatic and estuarine communities	extent, type (Australian National Aquatic Ecosystem classification), condition, groundwater/riverine/lacustrine/coastal/wetland
	Biodiversity threatening processes	land clearing, fire, habitat destruction/modification/fragmentation, invasive species (weeds and pests), grazing, climate change
	Ecological processes	ecosystem processes, extents and connectivity, productivity, fluxes
	Marine communities	extent, type, condition
	Flora and fauna	terrestrial, aquatic, marine, species, populations and distribution, native/non-native, invasive, non-vulnerable/vulnerable/endangered/extinct
	Terrestrial communities	extent, type, condition, native/non-native, floristics, structure, biomass/volume/carbon, afforestation, deforestation
Human	Agricultural and forestry	food, fuel, fibre, genetics, quality, inputs, pressure, yield/production-commodities, actual versus potential, harvesting
	Aquaculture and fisheries	food, fuel, genetics, quality, inputs, pressure, yield/production-commodities, actual versus potential
	Biodiversity conservation and management	terrestrial, marine and estuarine protected areas, international agreements, recovery plans, revegetation
	Cultural sites	cultural and natural heritage sites
	Environmental assessments and management plans	national park management plans, stewardship agreements, regional forest agreements
	Energy	energy production, infrastructure
	Environmental impacts	agricultural/urban/industrial expansion, chemical spills, contamination, biomass burning, mining drainage, industrial emissions
	Human populations	demographics, size, distribution, pressure
	Infrastructure	location, type, use, transportation, buildings, communications, electricity, water infrastructure
	Mining	deposits/resources, production/extraction (onshore/offshore)
	Tourism	visitor types, pressures, impacts, reliance on environmental assets
	Waste and pollutants	solids and liquids, generation, disposal, treatment, re-use, chemical, biological, radiological
Land	Geology and geomorphology	bedrock, lithology, sediments, geochemistry, geodetics, gravity, geomagnetism, geomorphology, geothermal, deposits, minerals, petroleum, gas, tectonics
	Land cover	Food and Agriculture Organization of the United Nations (FAO) classification, fractional cover e.g. ground cover
	Land use	Australian Land Use and Management classification: conservation, production, intensives uses, water
	Land management	management practice, action, method, activity, timing, target
	Soils	type, condition, processes, Total Factor Productivity, erosion, acidity, salinity, sodicity, carbon, chemistry, nutrients, structure
Oceans	Marine substrate and geology	bedrock, lithology, sediments, geochemistry, geodetics, gravity, geomagnetism, geomorphology, geothermal, deposits, minerals, petroleum, gas, tectonics
	Marine water and sediment quality	discharges, concentrations, contaminations, sedimentation, accumulation
	Oceanography	hydrodynamics, fluxes, movement, temperature, salinity, currents, wave climate, sediment, chemistry, ocean winds, tides
Processes	Continental/regional/local processes	cross-boundary (air, land, water and ocean) dynamics, dependencies, coastal processes, sedimentation, accumulation
	Global processes	solar inputs, sea-level rise and surface temperature, sea ice, currents and weather interactions
	Natural hazards	fires, floods, geological, hydrological, meteorological
Water	Groundwater	aquifers, extent, volume, flows, fluxes, rights, allocation, availability, extraction, use, quality
	Inland water quality	discharges, concentrations, contaminants
	Surface water	hydrology, watercourses, water bodies, catchments, extent, volume, flows, fluxes, rights, allocation, availability, extraction, use, quality, groundwater interactions

ACRONYMS

AG EIAG	Australian Government Environmental Information Advisory Group
Air NEPM	National Environment Protection (Ambient Air Quality) Measure
BioSIRT	Biosecurity Surveillance Incident Response and Tracing
CEWH	Commonwealth Environmental Water Holder
EPBC	Environment Protection and Biodiversity Conservation
FAO	United Nations Food and Agriculture Organization
GEO	Group on Earth Observations
ICT	Information and Communication Technology
MDBA	Murray–Darling Basin Authority
NBC	National Biosecurity Committee
NEPM	National Environment Protection Measure
NPEI	National Plan for Environmental Information
NRSMPA	National Representative System of Marine Protected Areas
UNESCO	United Nations Education, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change

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Australian Government