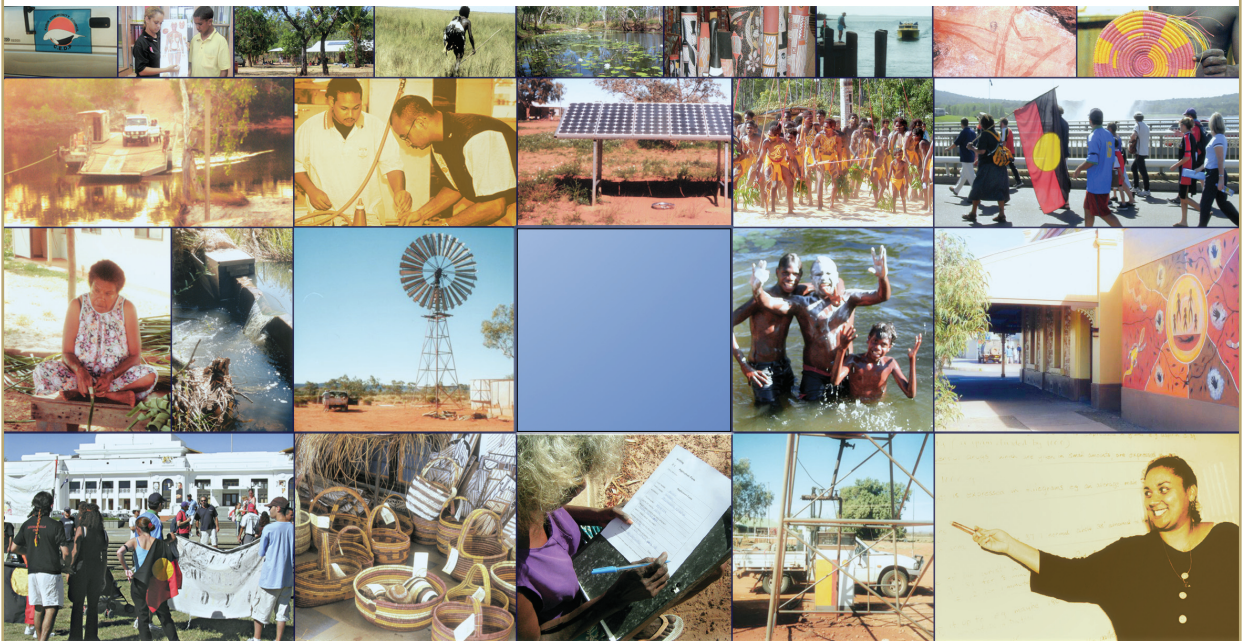


THE ENVIRONMENTAL SIGNIFICANCE OF THE INDIGENOUS ESTATE: NATURAL RESOURCE MANAGEMENT AS ECONOMIC DEVELOPMENT IN REMOTE AUSTRALIA

J.C. Altman, G.J. Buchanan and L. Larsen

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ABSTRACT

This discussion paper explores the geography of the Indigenous estate, its environmental significance, and some of the innovative approaches adopted by Indigenous landholders to protect the natural and cultural values of their land. A number of maps are used to explore the environmental significance of the Indigenous estate. These maps indicate that the Indigenous estate—making up 20 per cent of the Australian land mass—covers vast areas of relatively intact land. The Indigenous estate contains some of the highest conservation priority lands in Australia. Emerging recognition of the environmental significance of the Indigenous estate is indicated by a number of Commonwealth-funded programs that represent a form of payment for environmental services (PES). Such programs provide important employment opportunities for Indigenous people living in some of the remotest parts of Australia, areas far from mainstream labour markets. Environmental service provision might provide alternate development opportunities on the Indigenous estate beyond standard private sector industries like mining, tourism and pastoralism, or publicly-funded provision of standard municipal services.

Keywords: Indigenous estate; land rights; native title; conservation; protected areas; co-management; natural resource management; payment for environmental services.

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The production of the maps presented in this paper was a challenging task, and was greatly assisted by the advice, support and access to mapping and data provided by a number of people and organisations. In particular we would like to thank John Lumb from the Department of the Environment and Water Resources (DEW) as well as Environmental Resources Information Network (ERIN) staff within DEW; Tim Price from the Indigenous Land Corporation (ILC); Peter Bowen and Steven James from the National Native Title Tribunal (NNTT); and Belinda Oliver.

Earlier versions of this discussion paper have been presented, as the research has evolved, at a large number of forums for feedback and peer review. These have included (in chronological order): 'Integration or disintegration?: The provision of environmental services and biodiversity conservation by Indigenous Australians on the Indigenous estate', Land and Water Australia Integration Series, Canberra, June 2006; 'From terra nullius to terra vacua: Outstations and government policy', Charles Darwin University, Darwin, July 2006; 'The Indigenous estate and the conservation estate: Integration possibilities for effective environmental management', Parks and Protected Areas Management conference, Queanbeyan, NSW, August 2006; 'The Indigenous estate and the conservation estate', Enhancing Indigenous Engagement in NRM 4th Workshop, Canberra, August 2006; 'The biodiversity value of the Indigenous estate and paying for environmental services: Win/win or lose/lose?', CAEPR Seminar, August 2006; and 'Recognizing and rewarding ecosystem services provided by Indigenous people on the Indigenous estate: How to get a serious policy response from the Australian government', Institute of Environmental Studies, University of NSW, Sydney, May 2007. Many participants at these seminars provided very useful feedback which we gratefully acknowledge.

We would like to thank Rosie Cooney, Mike Dillon and Amanda Martin for their comments on this paper. Finally, many thanks go to Hilary Bek for editing, John Hughes for the adaptation of maps and for layout and production, and Melissa Johns for proofreading. The authors take full responsibility for any errors or shortcomings contained within this paper.

ABBREVIATIONS AND ACRONYMS

ABC	Australian Broadcasting Corporation
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
ALINRMG	Aboriginal Lands Integrated Natural Resource Management Group
ALRA	<i>Aboriginal Land Rights (Northern Territory) Act 1976 (Cth)</i>
ANU	The Australian National University
ATSISJC	Aboriginal and Torres Strait Islander Social Justice Commissioner
CAEPR	Centre for Aboriginal Economic Policy Research
CDEP	Community Development Employment Projects (Programme)
CFCU	Caring For Country Unit (Northern Land Council)
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEH	Commonwealth Department of the Environment and Heritage
DEW	Commonwealth Department of the Environment and Water Resources
DIPE	Northern Territory Department of Infrastructure, Planning and Environment
DLNG	Darwin Liquefied Natural Gas Pty Ltd
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
ERIN	Environmental Resources Information Network
IBRA	Interim Biogeographic Regionalisation of Australia
ILC	Indigenous Land Corporation
ILUA	Indigenous Land Use Agreement
IPA	Indigenous Protected Area
IPCC	Intergovernmental Panel on Climate Change
LWA	Land and Water Australia

NAILSMA	North Australian Indigenous Land and Sea Management Alliance
NCRM	natural and cultural resource management
NLC	Northern Land Council
NLWRA	National Land and Water Resources Audit
NNTT	National Native Title Tribunal
NRM	natural resource management
NRMMC	Natural Resource Management Ministerial Council
NRS	National Reserve System
NSW	New South Wales
NT	Northern Territory
NWI	National Water Initiative
PES	payment for environmental services
Qld	Queensland
SA	South Australia
SCRGSP	Steering Committee for the Review of Government Service Provision
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WALFA	West Arnhem Land Fire Abatement (Project)

INTRODUCTION

In this exploratory discussion paper we attempt three things. First, we estimate the continental extent of Indigenous land holdings, the Indigenous estate in 2006. Second, we seek to assess the biodiversity and environmental values of this estate by crudely overlaying a conservatively-sized template of the Indigenous estate with a number of resource atlas maps produced by federal agencies. Similarly, we apply this template over a number of maps identifying processes that threaten biodiversity and environmental values Australia-wide, so as to assess the environmental challenges facing the Indigenous estate. Third, we discuss some of the main approaches adopted by Indigenous land owners and stakeholders to protect the environmental values of their lands. We end by highlighting that there are numerous employment and enterprise possibilities in natural resource management on the Indigenous estate, and show that there is likely a national under-investment in such possibilities. This is especially the case because much of the Indigenous estate is in the remotest parts of Australia where market opportunities are limited. Nevertheless, many Indigenous people live on this estate—land that they own. We also canvass one alternate way of looking at Indigenous development predicated on state support of Indigenous employment in natural resource management. This alternate or third way seeks to transcend an emerging dichotomy in development discourse that promulgates a false choice for Indigenous people between engaging with the free market and being doomed to livelihoods limited by welfare entitlements.

This paper has its intellectual genesis in two broad areas. The first is in research undertaken at the Centre for Aboriginal Economic Policy Research (CAEPR) throughout the 1990s that has looked to estimate the impacts of land rights and native title laws on Indigenous land holdings (e.g. Altman 1993; Altman & Pollack 1998; Pollack 2001; see also discussion in Rowse 2002). The second is the high-profile public policy debate in recent years about the relationship between Indigenous land and economic development. This is a complicated issue with many perspectives. There are some who believe that Indigenous land ownership is facilitating remote living and thereby exacerbating Indigenous economic marginalisation (e.g. Hughes 2007). There is another view that land ownership should facilitate Indigenous development, both in mainstream industries like mining and tourism (when they occur on or adjacent to Indigenous-owned land) and in the distinct Indigenous customary or non-market sector (Altman 2007a). In truth, land will always be but a partial explanator of people's economic well-being unless it has exceptionally high commercial value, and this is certainly not the case with most Indigenous-owned land. Such debates have had considerable coverage in both the academic literature and policy and popular discourse, and while they inform this paper they are not its direct focus. Instead, we are interested in exploring another dimension of Indigenous land holdings: its biodiversity and environmental values.

In looking to pursue this particular direction in 2006, we were surprised by two early findings that we seek to address here. First, there is an absence of a single comprehensive national data set or map that identifies Indigenous land holdings across all jurisdictions in Australia. This was a surprising finding because there are institutions in Australia, such as the Indigenous Land Corporation (ILC) and the National Native Title Tribunal

(NNTT), whose core business is linked to Indigenous land. However the absence of a national database might be explained by the myriad number of land rights and native title laws at federal and State/Territory levels in Australia. Second, at the national level, no-one appears to have attempted the fundamentally straightforward correlations between the Indigenous estate and natural resource atlas maps of biodiversity and environmental quality—perhaps because of the absence of a national database on land holdings.

In undertaking this project, we sought some additional support from the Poola Foundation (Tom Cantor Fund) and from Oxfam Australia, which we would like to openly acknowledge. While the Poola Foundation and Oxfam Australia have not attempted to influence this research, its environmental slant is undeniably linked to these funding sources. However, in the last year the authors have all had involvement in research on natural resource management on Indigenous lands (and offshore waters), with some of this research already publicly presented and subsequently reviewed and published.

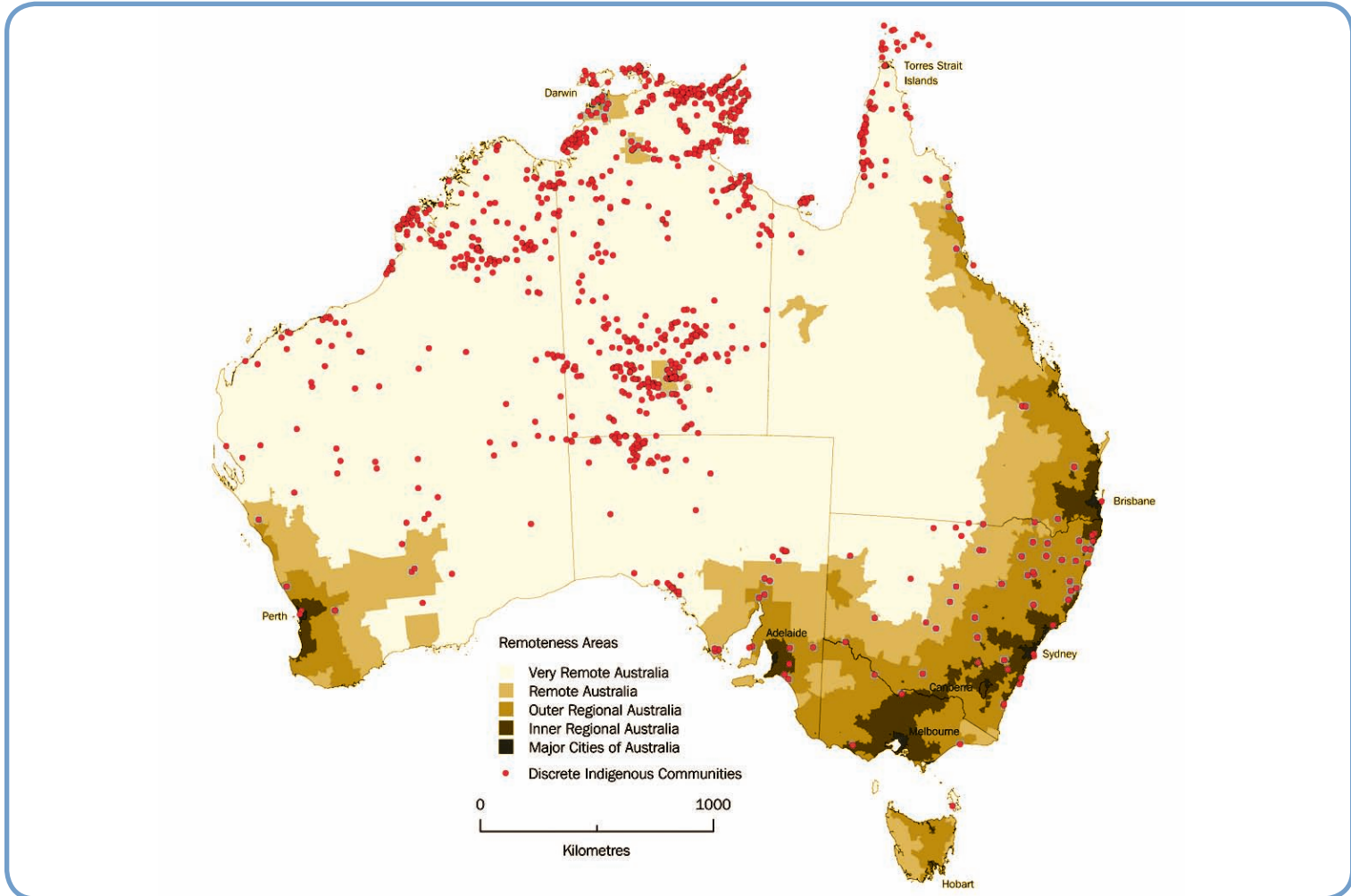
This research remains exploratory and is continuing to evolve for a number of conceptual and methodological reasons outlined below. So we begin with the following caveats. This discussion paper is neither definitive nor comprehensive. It is primarily produced to generate discussion and inform debate. Because the paper is exploratory, we take full responsibility for any errors and shortcomings. The paper focuses primarily on issues of national significance and on Commonwealth programs rather than State, Territory or regional natural resource management (NRM) issues and initiatives. And finally, our focus on biodiversity and environmental issues in this paper is our chosen conceptual lens: it is not intended as an argument that other forms of development cannot occur on the Indigenous estate. This paper seeks to provide information and a perspective that might facilitate informed decisions, especially by Indigenous people, about what is possible on their land—the Indigenous estate. Our scale is broad-sweeping, and the particularities we focus on are intended more as exemplars than as prescriptions.

It should be noted that the research that we have undertaken on this project has been divided into two parts. One part is this broad overview paper. The other is a more detailed background paper that examines the expansion of the Indigenous estate between 2000 (Pollack 2001) and 2007 that will be published separately.

THE INDIGENOUS ESTATE

As a first step in this exploratory exercise it is important to define what we mean by, what is included in, and who resides on the Indigenous estate. Over the past decade the term 'Indigenous estate' has been used in the realm of Indigenous policy to encapsulate contemporary Indigenous land ownership in Australia on a national scale (Altman & Pollack 2001; ILC 1997; Lane 2005). As noted in the Aboriginal and Torres Strait Islander Social Justice Commissioner's *Native Title Report 2005*, given the diversity of Indigenous rights and interests in land, the Indigenous estate is not a homogeneous set of landholdings, and generalised notions of Indigenous land can prove problematic (Aboriginal & Torres Strait Islander Social Justice Commissioner

Fig. 1. Discrete Indigenous communities by remoteness, ABS, 2006



Source: ABS (2007a).

Table 1. Indigenous and non-Indigenous population distribution by remoteness category, 2001

	Non-Indigenous	Indigenous	Indigenous % of total
Major city	12,732,492	138,494	1.1
Inner regional	3,932,907	92,988	2.3
Outer regional	1,907,688	105,875	5.3
Remote	284,160	40,161	12.4
Very remote	97,473	81,002	45.4
Total	18,954,720	458,520	2.4

Source: Taylor (2006).

(ATSISJC) 2005: 106). Here we provide a definition and geography of the Indigenous estate that allows for generalisation on a national scale without losing sight of the diversity that exists across this estate.

POPULATION DISTRIBUTION AND THE INDIGENOUS ESTATE

The 2006 Census of Population and Housing shows that the estimated Indigenous population of Australia is 517,000 or just on 2.5 per cent of the total population (ABS 2007b). Using 2001 Census data, Taylor (2006: 5) shows that the majority of this population resides in major cities and regional Australia, with just over 25 per cent (121, 163) residing in remote and very remote Australia (see Table 1). Very remote Australia covers just under 75 per cent of the Australian land mass and is dominated by three broad tenures: the pastoral estate, the conservation estate, and the Indigenous estate. The 18 per cent of Australia's Indigenous population that reside in very remote Australia make up almost half (45.4%) of that geographic region's population (Taylor 2006: 5). However, this proportion varies significantly between States and Territories. For example, in the Northern Territory, 70 per cent of the non-urban population is Indigenous, almost all residing on the Indigenous estate. It is estimated that across Australia approximately 120,000 Indigenous people reside on the Indigenous estate at 1,200 discrete Indigenous communities (Altman 2006a: 2; see Fig. 1). Of these discrete communities, 1,000 have a population of less than 100 (Altman 2006a: 4). Based on such figures, Taylor (2006: 5) argues that outside the main service and mining towns in very remote Australia 'Indigenous people are by far the majority', and that Indigenous people and their institutions therefore dominate the majority of Australia's land mass. However, this institutional dominance is held within a context of significant marginality and socioeconomic disadvantage, with mainstream measures indicating that high levels of poverty and financial stress are the common experience of many Indigenous people living in remote and very remote areas, often on the Indigenous estate (Hunter 2006).

THE DIVERSITY OF RIGHTS AND INTERESTS ON THE INDIGENOUS ESTATE

The term 'Indigenous estate' is used in the literature in the same way that the terms 'conservation estate' and 'pastoral estate' are used—that is, to generalise similar tenure or land use types on a broad (often national) scale.¹ When observed in closer detail these broad estate categories contain considerable internal variation, having been created through a range of mechanisms which in turn have delivered a diverse range of rights and interests to landholders and managers. The diversity of rights and interests that exists today on the Indigenous estate flows from diverse Indigenous systems of land ownership; colonial processes of removal, protection, dispossession, assimilation and development; and post-colonial processes of returning land to Indigenous people and of Indigenous people returning to land. The Indigenous estate has been formed through five key mechanisms which have ties to each of these systems and processes:

- Creation of Aboriginal reserves in the protectionist era²
- Land rights legislation passed since the late 1960s
- Other land legislation which allows transfer of ownership or granting of leases to Indigenous groups³
- Land acquisition programs since the late 1960s, and
- Native title processes following the *Mabo [No. 2]* High Court decision in 1992, including determined claims, registered claims, and Indigenous Land Use Agreements (ILUAs) under the *Native Title Act 1993* (Cth) (NTA).

These key contributors to the reconstitution of the Indigenous estate—and the diversity of rights and interests that they have delivered—have been reviewed comprehensively elsewhere in recent times (AIATSIS 2006; ATSIJ 2005; Pollack 2001; Way & Beckett 1999) and will not be explored in detail here. These reviews indicate that around 30 separate pieces of legislation have been enacted by Commonwealth and State parliaments over the past 40 years which have allowed for the recognition, grant, transfer or acquisition of title to land by or for Indigenous Australians. However, the nature of the title and the amount of control Indigenous people have over different areas varies significantly between—and in some instances within—the States and Territories (e.g. see ATSIJ 2005: 67–80).

The rights and interests that exist within the Indigenous estate can be seen to lie along a spectrum with exclusive possession of, or freehold title to, land at one end and weaker, non-possessory rights and interests that do not amount to a title over land at the other. The *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth) (ALRA) is at the strong end of this spectrum, setting the high water mark for Indigenous land and property rights regimes in Australia. Land granted under the ALRA provides inalienable freehold title to land owners as well as the right to veto mining company exploration, which in effect provides traditional owners with a de facto property right in minerals (Altman 2001a: 108). At the other end of the spectrum, the property rights available to Indigenous parties with a determination of non-exclusive native title (which

Table 2. Indigenous owned or controlled land by State/Territory, December 2006^a

Area of land by tenure type	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust ^b
Freehold (inalienable)	km ²	–	50.1	–	–	188,819.9	556.0	–	568,366.6	757,792.6
Freehold (alienable)	km ²	3,581.5	48.2	25,212.2	438.4	167.1	30.8	–	10,765.1	40,243.3
Old system	km ²	–	1.7	–	–	–	1.2	–	–	2.9
Leasehold	km ²	369.2	–	29,079.5	161,640.3	14,909.3	46.8	5.0	23,122.6	229,172.7
Licence	km ²	63.6	–	–	–	25.3	–	–	–	88.9
Aboriginal Reserve	km ²	–	–	51.2	202,352.9	–	–	–	–	202,404.2
Deed of Grant in Trust (Qld)	km ²	–	–	156.2	–	–	–	–	–	156.2
Tenure not stated	km ²	167.0	–	258.9	5.1	1.3	44.1	–	2,587.8	3,064.2
Total Indigenous land	km²	4,181.2	100.0	54,758.0	364,436.7	203,923.0	678.9	5.0	604,842.2	1,232,925.0
Proportion of total Indigenous land	%	0.3	0.008	4.4	29.6	16.5	0.05	–	49.1	100.0
Total land area of State/Territory	km²	800,642.0	227,416.0	1,730,648.0	2,529,875.0	983,482.0	68,401.0	235,800.0	1,349,129.0	7,692,024.0
Indigenous land as a proportion of total land area	%	0.5	0.04	3.2	14.4	20.7	1.0	0.002	44.8	16.0
Number of land parcels^c	no.	5,996	464	1,561	2,609	1,490	220	2	1,031	13,373

Notes:

- (a) The ILC makes no warranties as to the currency and accuracy of this information
- (b) Difference in area of total Indigenous land between Table 2 and Table 3 is due to additional known Tasmanian Aboriginal land absent from ILC figures not being included in Table 3.
- (c) Parcels are individual geographic features rather than legal entities. That is, a legal parcel may be dissected into two or more parcels by, for example, a road and are represented in these data as two parcels while being only a single legal land entity.
– Nil or rounded to zero.

Source: SCRGSP (2007); Office of Aboriginal Affairs, Tasmania (unpublished).

Table 3. Indigenous owned or controlled land by geographic region, December 2006^a

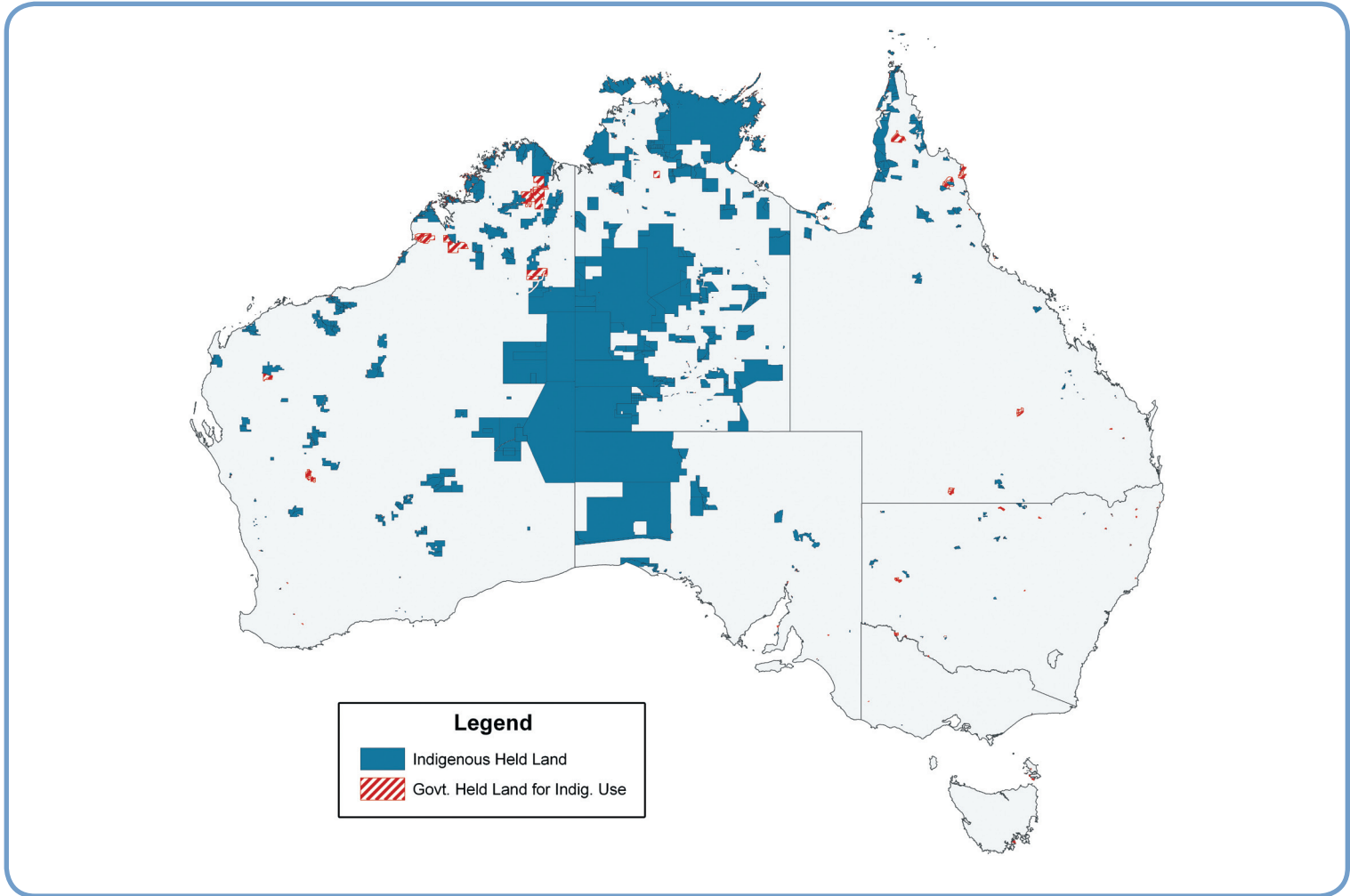
Area of land by tenure type	Unit	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia ^b
Freehold (inalienable)	km ²	0.1	16.3	201.9	5,082.9	751,981.5	757,282.8
Freehold (alienable)	km ²	31.2	158.3	1,837.4	4,004.4	34,212.1	40,243
Old system	km ²	–	1.7	–	1.2	–	2.9
Leasehold	km ²	0.2	3.8	296.2	5,476.1	223,391.5	229,167.7
Licence	km ²	–	–	88.9	–	–	88.9
Aboriginal Reserve	km ²	0.6	0.3	108.2	155.2	202,139.9	202,404.2
Deed of Grant in Trust (Qld)	km ²	–	–	–	–	156.2	156.2
Tenure not stated	km ²	–	–	64.9	116.2	2,883.2	3,064.3
Total Indigenous land	km²	32.1	180.4	2,597.4	14,835.9	1,214,764.3	1,232,410.2
Proportion of total Indigenous land	%	–	–	0.2	1.2	98.6	100.0
Total land area of region	km²	14,330.0	219,380.0	801,524.0	1,019,581.0	5,637,209.0	7,692,024.0
Indigenous land as a proportion of total land area	%	0.2	0.1	0.3	1.5	21.5	16.0
Number of Indigenous land parcels ^c	no.	1,495	2,461	3,937	1,669	3,811	13,373

Notes:

- (a) The ILC makes no warranties as to the currency and accuracy of this information
- (b) Difference in area of total Indigenous land between Table 2 and Table 3 is due to additional known Tasmanian Aboriginal land absent from ILC figures not being included in Table 3.
- (c) Parcels are individual geographic features rather than legal entities. That is, a legal parcel may be dissected into two or more parcels by, for example, a road and are represented in these data as two parcels while being only a single legal land entity.
- Nil or rounded to zero.

Source: SCRGSP (2007); Office of Aboriginal Affairs, Tasmania (unpublished).

Fig. 2. Legal Indigenous land interests greater than 1,000 ha as at 31 December 2006¹



Source: Indigenous Land Corporation.

might provide visitation or hunting rights on a pastoral lease and a right of consultation about commercial development) are clearly extremely limited, at least in terms of commercial leverage.

This paper focuses primarily on that land where Indigenous Australians hold rights and interests at the strong end of the spectrum. Ultimately, the Indigenous estate is defined here as the aggregate area of Australia's land mass⁴ which is held by, or on behalf of, Aboriginal peoples and/or Torres Strait Islanders under a corporate or group title or trust.⁵ This focus and definition produces a particular geography of Indigenous rights and interests in land in Australia which can be quantified and mapped using various official sources.

A GEOGRAPHY OF THE INDIGENOUS ESTATE

The development of land rights legislation, land acquisition programs and native title law over the past 40 years has helped shape what Davies (2001) has called the 'contemporary geographies of Indigenous rights and interests in rural Australia.'⁶ We explore here a particular geography of Indigenous rights and interests as they relate to land in Australia: a geography of the Indigenous estate.

Pollack (2001) undertook research that sought to estimate the extent of the Indigenous estate in 2000. He found that there was no official, comprehensive, and up-to-date national dataset that identified Indigenous-held land across all jurisdictions in Australia. This is still the case and consequently Pollack's paper, now some six years old, continues to be widely utilised and quoted. The ILC currently provides the most reliable and relied-upon central source of data on the size and location of the Indigenous estate (ATSISJC 2005; Steering Committee for the Review of Government Service Provision (SCRGSP) 2005, 2007). Table 2 shows the ILC's snapshot of the Indigenous estate by State and Territory at 31 December 2006 (see also Fig. 2).⁷ Table 3 shows the Indigenous estate by geographic region.

The most striking feature that comes out of these snapshots is the concentration of the Indigenous estate in very remote Australia (98.6%) and across three jurisdictions—the Northern Territory (49.1%), Western Australia (29.6%) and South Australia (16.5%). All but 0.2 per cent of the Indigenous estate lies in remote and very remote Australia. These figures provide a lower-bound estimate of the proportion of the Australian land mass held by Indigenous interests of 16 per cent (1.2 million km²)—the same lower-bound proportion estimated at 30 June 2000 by Pollack (2001). Pollack (2001: 30) speculated that the size of the Indigenous estate was likely to lie within the bounds of 16 to 18 per cent given the questionable accuracy and reliability of available data. He also predicted that the Indigenous estate would be likely to increase significantly in size over the next decade, particularly as a result of determinations of native title and the development of ILUAs under the NTA—though not to the 78 per cent of Australia that had been provocatively suggested by the Department of Prime Minister and Cabinet at that time (Pollack 2001: 31).

Table 4. Determinations of native title by State/Territory, 31 December 2006^{a,b}

	Unit	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Cth ^c	Aust
Native title found to exist in the entire or part of the determination area	km ²	–	0.1	12,550.6	28,271.1	20,500.7	–	398.1	589,289.8	2,325.5	653,335.9
Native title found not to exist in the determination area	km ²	–	874.4	310.8	248.2	28.5	–	10,519.5	23,580.6	2,132.8	37,694.8
Total land area of State/Territory ^d	km ²	2,358.0	800,642.0	1,349,129.0	1,730,648.0	983,482.0	68,401.0	227,416.0	2,529,875.0	n/a	7,692,024.0
Area of State/Territory land where native title found to exist as a proportion of all land where native title found to exist	%	–	–	1.9	4.3	3.1	–	0.1	90.2	–	99.6
Proportion of State/Territory land where native title determined to exist in full or part	%	–	–	0.9	1.6	2.1	–	0.2	23.3	–	8.5

Notes:

- (a) Areas are based on the geographic extent of the determination area as per the Court's decision. Parts of these determinations may not be included on the National Native Title Register at this time. Where native title has been extinguished within a determination area and it has been possible to map these areas then they have been included in the calculations.
- (b) Includes areas subject to appeal.
- (c) Commonwealth waters where determinations of native title have been made.
- (d) Areas include islands adjacent to the mainland – figures sourced from Geoscience Australia.
- Nil or rounded to zero
- n/a Not Applicable

Source: SCRGSP (2007).

Table 5. Determinations of native title by remoteness area, 30 June 2006^{a,b}

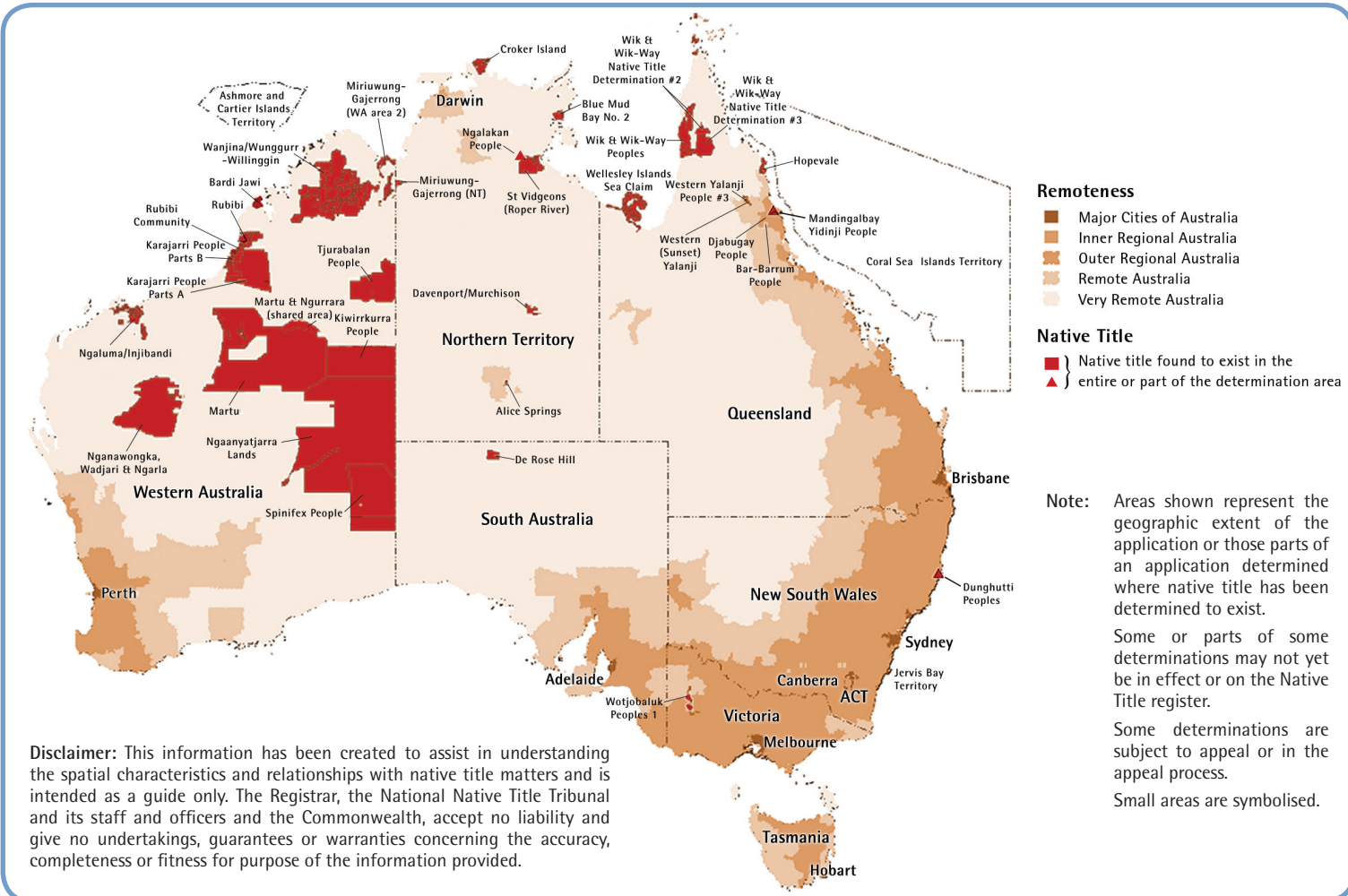
	Unit	Major cities	Inner regional	Outer regional	Remote	Very remote ^c	Aust
Native title exists in full or in part	km ²	–	0.1	524.7	1,615.2	626,154.3	628,294.3
Native title extinguished	km ²	2.5	978.2	4,290.3	6,549.8	25,473.9	37,294.7
Total area of determinations	km ²	2.5	978.3	4,815.0	8,165.0	651,628.2	665,589.0
Proportion of remoteness area where native title found to exist as a proportion of all land where native title found to exist	%	–	–	0.1	0.3	99.7	100.0
Total area of remoteness area ^d	km ²	14,330.0	219,380.0	801,524.0	1,019,581.0	5,637,209.0	7,692,024.0
Proportion of remoteness area land where native title determined to exist in full or part	%	–	–	–	0.2	11.1	8.2
Proportion of remoteness area land where native title determined not to exist	%	–	0.4	0.5	0.6	0.5	0.5
Proportion of land subject to determinations	%	–	0.4	0.6	0.8	11.6	8.7

Notes:

- (a) Areas are based on the geographic extent of the determination area as per the Court's decision. Parts of these determinations may not be included on the National Native Title Register at this time. Where native title has been extinguished within a determination area and it has been possible to map these areas then they have been included in the calculations.
- (b) Includes areas subject to appeal.
- (c) Commonwealth waters where determinations of native title have been made.
- (d) Areas include islands adjacent to the mainland – figures sourced from Geoscience Australia.
- Nil or rounded to zero
- n/a Not Applicable

Source: SCRGSP (2007).

Fig. 3. Determinations of native title mapped against remoteness, 2006



Source: National Native Title Tribunal.

NATIVE TITLE AND THE INDIGENOUS ESTATE

It is somewhat surprising that there has been limited effort to gauge the overall impact of native title on the size of the Indigenous estate given the extent of national debate about the Mabo judgment, the NTA and its amendment in 1998. This can be partially explained by the extremely variable nature of native title determinations and the fact that land available for claim is highly geographically focused on the remotest parts of Australia.

A GEOGRAPHY OF NATIVE TITLE

The fifteenth anniversary of the High Court's Mabo decision occurred on 3 June 2007. Over this time 101 determinations of native title have been registered, with 67 determinations that native title exists and 34 that native title does not exist. This indicates a vast increase since Pollack's (2001) survey of the Indigenous estate, at which point there had been just ten determinations of native title, with eight of these finding that native title existed in the entire or part of the determination area. Determinations that have found native title to exist in the entire or part of the determination area now account for approximately 8.5 per cent of the Australian land mass (see Tables 4 & 5 and Fig. 3). The geographic distribution is heavily skewed, with 99.7 per cent of these determinations being in very remote Australia and 90.2 per cent in Western Australia.

These numbers and maps do not show where and how much of this 8.5 per cent of Australia covered by native title determinations is actually held by Indigenous Australians in a manner that could be considered equivalent to landholdings included in the geography of the Indigenous estate outlined above. The strongest form of native title is found in determinations that recognise claimants' right to possess, occupy, use and enjoy land to the exclusion of all others—that is, exclusive possession or possessory native title. These areas of exclusive possession native title are the closest equivalent to statutory freehold titles to land held by Indigenous Australians under the ALRA. At present, the NNTT and other agencies do not provide summary data on the number, area or location of exclusive possession native title determinations. However, an inspection of determinations in Western Australia provides the best indication of the contribution of exclusive possession native title areas to the Indigenous estate.

In the early days of the operation of the NTA, Altman (1994) had noted that with 90 per cent of the continent's vacant Crown land and without a formal land rights regime, Western Australia was where Indigenous Australians were most likely to gain from recognition of native title. To date in Western Australia, 18 native title determinations have found that native title rights and interests exist within the determination area (Office of Native Title 2007). The total area covered by these determinations is approximately 633,812 square kilometres or 25 per cent of the Western Australian land mass. Of these determinations, five—Martu (Stage 1), Karajarri Area A, Kiwirrkurra, Tjurabalan, and Rubibi 6—have found that claimants hold exclusive possession native title over the entire determination area. These five exclusive possession determinations cover an area of 229,758 square kilometres or 9 per cent of the State's land mass. Overlaying these determinations upon a

map of the existing Indigenous estate in Western Australia (WA)—the WA Aboriginal Lands Trust estate (DIA 2007)—reveals that approximately 78 per cent (180,416 km²) of this area lies outside that existing estate. Therefore, a conservative estimate of the contribution of exclusive possession native title to the Indigenous estate in WA is an additional 7 per cent of the state's land mass—over 2 per cent of the total Australian land mass. This estimate is considered to be conservative because there are a further eight determinations in WA covering 309,618 square kilometres (12% of WA and 4% of Australia) that have in part recognised that exclusive possession native title exists within the determination area. However, these determinations have also found that either a right of non-exclusive possession or non-exclusive native title rights and interests also exist within other parts of the determination area.⁷ Unfortunately data is not readily available that can disaggregate the area of land made up by these separate parcels within determined areas.

In summing up our quantitative analysis of the Indigenous estate, and in the absence of more accurate and reliable data, we adopt Pollack's (2001: 30) upper-bound estimate of 18 per cent as being representative of the amount of Indigenous land currently held under statutory title in Australia. In addition to this, our rudimentary analysis of available data on determinations in Western Australia allows for a conservative estimate of a further minimum two per cent added to the Indigenous estate through native title. Therefore, the size of the Indigenous estate as at 30 June 2007 can be estimated as at least 20 per cent of the Australian land mass, or 1.5 million square kilometres.⁹

NATIVE TITLE, LAND RIGHTS AND INTERCULTURALITY

The inclusion of native title in a definition and estimate of the Indigenous estate is a complex issue due to its *sui generis* (i.e. unique) nature, the diverse range and combination or 'bundle of rights' that can be included in a native title determination, and the related notions of 'partial extinguishment' and 'coexistence' of native title with other forms of title (especially pastoral leasehold, which covers over 40% of Australia). The contribution of native title to this estate is debatable in terms of how, if at all, it might equate with a mainstream notion of holding title to land, even in the case of exclusive possession native title. Unlike land rights, native title is not a title to land granted or transferred by the state: rather it is recognition by the Australian legal system of traditional rights and interests in land. Such rights and interests are translated from traditional law and custom and incorporated into Australian property law through the concept of native title, but they do not equate to any existing categories of property within that law (Martin 2004: 68). The *sui generis* nature of native title was described by Justice Brennan in *Mabo*:

Native title has its origin in and is given its content by the traditional laws acknowledged by and the traditional customs observed by the indigenous inhabitants of a territory. The nature and incidents of native title must be ascertained as a matter of fact by reference to those laws and customs. The ascertainment may present a problem of considerable difficulty ...

Brennan also stated in his judgment that where the traditional rights of a community included a right to exclusively occupy land, they held a proprietary interest in that land and as such, 'land is susceptible of ownership' (cited in Pearson 2004: 97). However, since *Mabo*, and in particular since the passage of the NTA, there has been much debate about the nature of native title as it might relate to ownership of land.

It has been argued widely in the literature that the High Court's decision in *Western Australia v Ward* (Ward) in 2002 confirmed the view of native title as a bundle of rights rather than an underlying title to land (ATSISJC 2005: 39; Glaskin 2003: 83; Russell 2006: 377; Tehan 2003: 559; c.f. Pearson 2004; Strelein 2006: 66). Such a bundle could include rights to possess, occupy, use and/or enjoy an area as per the native title holders' traditional laws and customs—for example, a bundle may include rights to live or to camp on land, to mine ochre, to hunt, fish and gather food, or to conduct ceremonies or to visit important sites. A bundle of rights may be so extensive as to amount to a right of exclusive possession, which includes the right to control access to, and use of, an area (Meyers 2000; NNTT 2006a; Strelein 2001). From this perspective native title determinations (even individual native title determinations) may include rights and interests in land that span the entire spectrum mentioned above, from a strong right of exclusive possession through to weaker partial native title rights of, for example, visitation or hunting.

A partial answer to how exclusive possession native title might equate with other titles to land lies amidst the 'proximity and opacity' (Russell 2006: 377) of the Ward decision. In the joint majority judgment it is stated that 'where native title rights amount to a right against the whole world, to possession, occupation, use and enjoyment of land or waters ... [the holder] may control access to it by others and, in general, decide how the land will be used' (*Western Australia v Ward* [51–52]). However, the Ward decision effectively rejected a notion of possessory native title as a right of property ownership which includes 'the right to develop the land in non-traditional ways' (Russell 2006: 377–8). It also rejected the earlier finding by Justice Lee in the Federal Court of a contemporary native title right to own or use commercially-valuable resources such as minerals and petroleum. Rather, the High Court, taking the NTA as its guide, prescribed a 'frozen rights approach' that limited any control over and use of land to the extent of its consistency with traditional law and customs (Russell 2006: 378; Strelein 2006: 67).¹⁰ Defined as such, exclusive possession native title in itself—that is, short of its surrender or suspension—precludes the use of land by native title holders for economic benefit outside the non-commercial (customary and domestic) domains. Such limited, anachronistic rights 'are isolated from the day to day lives of communities' and inhibit native title holders' ability 'to participate in the modern management or economic exploitation of their land' (ATSISJC 2005: 43). The day-to-day reality for Indigenous communities residing on the Indigenous estate is one of interculturality (Hinkson & Smith 2005) whereby Indigenous people, to varying degrees influenced by colonial history, abide by both western and customary value systems and hold aspirations that comprise aspects of both. The anachronistic, frozen rights approach of the High Court majority in Ward effectively denies this intercultural reality and is seen by Strelein (2006) as a case of 'compromised jurisprudence' aimed at protecting the interests of the Crown.

The processes for gaining *de jure* rights to land involve an institutional codification of 'traditions and customs' for making claims over unalienated (available) Crown land. For example, s.3 of the ALRA requires that Aborigines demonstrate that they are a local descent group with primary spiritual responsibility for sacred sites and for land and are entitled 'as a right to forage over the land claimed'. And s.223 of the NTA requires claimants to demonstrate continuity of rights and interests under traditional laws acknowledged and traditional customs observed; and the maintenance of connection with lands and waters since colonisation. Through these requirements Indigenous Australians have become trapped in a western legal definition of pre-colonial authenticity to gain formal title to their ancestral lands and the onus is on them to prove this.

This process is aptly captured by the notion of 'repressive authenticity' (Wolfe 1999)—it ignores colonial history and creates a false dichotomy. Either Indigenous claimants are frozen in some pre-contact fiction as 'tribal' or 'traditional' (which qualifies them to claim land) or else they are 'modern' and hence cease to be different from other Australians and cease to qualify for land rights. This mutually-exclusive categorisation is misplaced and unhelpful. In fact Indigenous Australians today live in a manner that can be described neither in terms of some essentialised traditionality nor essentialised modernity. The lack of recognition of interculturality—that Indigenous people who are traditional owners of land increasingly abide by two sets of laws, both western and customary and have aspirations that comprise aspects of both—is at the heart of the highly problematic public and policy understanding of the relationship between Indigenous people and land. There is a considerable emerging legal and anthropological literature that highlights the problems associated with presenting Indigenous tradition and law to accord with western legal requirements (see *inter alia* Kolig 2005; Pearson 2004; Strelein 2006; Weiner & Glaskin 2006). There is also clear empirical evidence that attachment to land remains of fundamental importance to Indigenous people, hence the almost total coverage of the available parts of the Australian continent by registered native title claims.

The intercultural reality is evident in the emergence of post-colonial hybrid economies that currently sustain livelihoods and reduce economic risk in Indigenous communities (Altman 2007a). Within these hybrid economies there exist varying degrees of linkages and interdependencies between the customary sector and the state (welfare) and market sectors (Altman 2005, 2007a; Altman, Buchanan & Biddle 2006). However, the repressive authenticity evident in native title and land rights regimes denies this economic reality. A clear example of the false dichotomy that this creates is the dilemma faced by native title holders who, in order to use their land to sustain and develop livelihoods, are required to choose between two options. They may either pursue commercial opportunities through the suspension or surrender of their native title by consenting to the grant of a statutory title (e.g. freehold or leasehold) through an ILUA (ATSISJC 2005: 77), or otherwise seek economic benefits through non-commercial customary activities.

The emergence of innovative solutions to such dilemmas indicates that—despite the critical pessimism that has surrounded discussion of native title following cases such as Yorta Yorta and Ward—there is room for some optimism. As Strelein (2006: 141) notes, through alternative approaches such as agreement making traditional owners and other parties 'have already begun to look for ways to work around the doctrinal constraints of native title'. One way in which some Indigenous communities appear to be doing this

successfully, in our view, is through state- or privately-sponsored natural and cultural resource management of the Indigenous estate. The strength of rights and interests and the high degree of control held by Indigenous Australians over 20 per cent of the continent's land mass has important implications for different forms of economic development on this land. In particular, as Baker, Davies and Young (2001: 8) note, it has 'profound implications for working on country'.

ENVIRONMENTAL CONSTRAINTS AND THE INDIGENOUS ESTATE

The Indigenous estate is where Indigenous rights and interests in land, while at times significantly compromised, are strongest. It is also predominantly where mainstream settlement and development has been most severely constrained by a range of geographical factors including climate, soil quality, topography and the availability of water. Ultimately, through land rights and native title, Indigenous Australians have received belated recognition of a diverse and often compromised set of rights and interests over what are primarily commercially-marginal areas of land—land left over after more than 200 years of settlement, development and extinguishment. This view is clearly and strongly expressed by Pearson (2003) in his description of the principles of native title as articulated by the High Court since *Mabo*:

... the three principles of native title are that the white fellas do not only get to keep all that they have accumulated, but the blacks only get a fraction of *what is left over* and only get to share a coexisting *and subservient title* where they are able to surmount the most unreasonable and unyielding burdens of proof—and indeed only where they prove that they meet white Australia's cultural and legal prejudices about what constitutes 'real Aborigines' (Pearson 2003: 6; emphasis added).

In a similar vein, the Aboriginal and Torres Strait Islander Social Justice Commissioner (ATSISJC 2007) notes:

While there is no doubt that the Indigenous 'estate' is now considerable, *most of the land that has been returned to Indigenous people since the 1970s is remote, inhospitable and marginal*. The process of colonisation over two centuries ensured that *the best land was granted, taken or purchased by non-Indigenous Australians*. The Crown land that was still unallocated by the 1970s remained so for good reason (ATSISJC 2007: 42; emphasis added).¹¹

The end result is that the pursuit of mainstream economic development on the Indigenous estate by its Indigenous owners is (i) constrained institutionally by the legal rules of settler society; and (ii) constrained environmentally by the very factors that, to a large extent, settler society, culture and technology has found insurmountable for over two centuries.

The vast majority of the Indigenous estate lies within Australia's rangelands. The rangelands cover approximately 75 per cent of the continent, dominated by the arid interior and the northern tropics. The area categorized as remote and very remote Australia in Fig. 3 provides a proximate picture of Australia's rangelands. The particular challenges and constraints facing settlement and development on the rangelands

have long been noted. Writing over a century ago on the geographical factors controlling the development of Australia, Gregory (1906: 135, 139) referred to the 'Dead Heart of Australia' as those 'vast tracts of the interior, which are, at the present time, of no use for anything'. This view has been echoed in more recent times by Diamond (2005: 383) and by the National Land and Water Resources Audit (NLWRA 2001) in terms of the lack of potential for agricultural development across much of the continent. Gregory (1906: 134) noted then what has been the case for much of the century since: that the economic development of the majority of the Australian rangelands has been 'necessarily left in the main to the pastoralist and the miner'. However, the growth in both presence and influence of the Indigenous landholder, the conservationist, and the tourist in more recent times can be seen as signalling something of 'a post-productivist transition' in Australia's rangelands (Holmes 2002: 362).

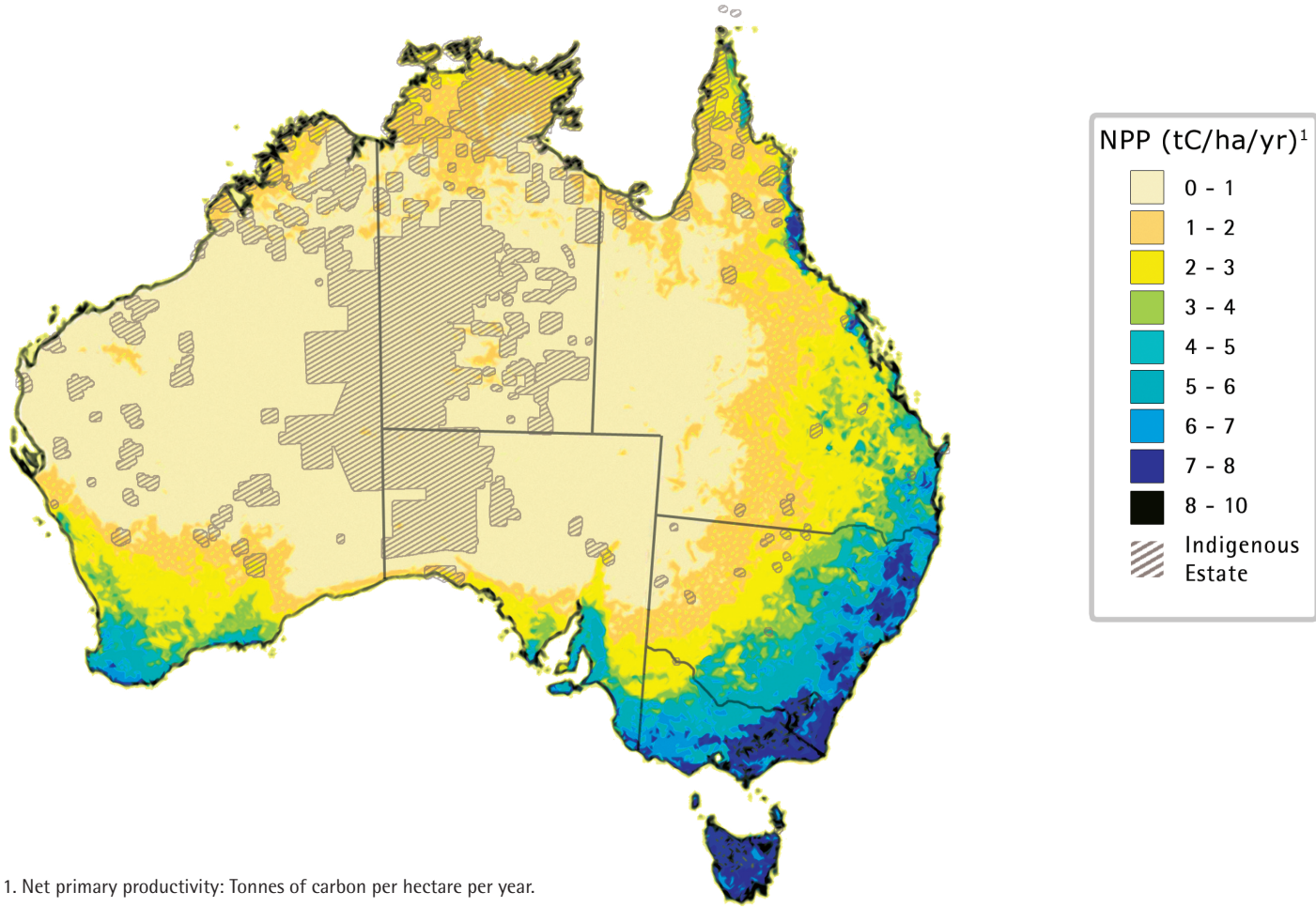
Whilst pessimistic about the possibilities for settlement in the arid interior, Gregory (1910: 675) expressed greater optimism about the potential for the 'colonisation' and agricultural development of the tropical north of Australia:

... there is nothing in the climate of tropical Australia to prevent its colonization by the white races ... there is no region in the tropics which the European could not colonize, provided it be sufficiently fertile and productive to enable the colonists to live under suitable conditions ...the north [of the Northern Territory] has a rich soil and ample rainfall, and can unquestionably grow cotton and other high-priced tropical produce, and contains mineral deposits that must some day be a source of wealth (Gregory 1910: 675).

Such optimism about the productive potential of tropical Australia has been echoed more recently by Senator Bill Heffernan as chair of the Australian Government's North Australia Land and Water Taskforce (ABC 2007a). The NLWRA (2001) notes similar optimism expressed by Northern Territory Government resources planners, who estimated 'that the area of irrigated agriculture [in the Top End] could expand 30 to 40 times greater than its present level'. According to the planners' assessment, this expansion would require no construction of in-stream dams, would provide adequate environmental flows, and would require little land clearance in river basins (Northern Territory Department of Lands, Planning and Environment, cited in NLWRA 2001).

However, claims that northern Australia could or should become a major source of food and water for the continent and for Asia have been challenged on the basis of significant environmental constraints on further agricultural development of the region and the high global conservation value of Australia's tropical savannas (Woinarski et al. 2007). Woinarski et al. (2007: 107) note that due to 'the limitations and challenges of climate (including cyclones and floods), water availability, and very limited areas of fertile soils' there are only a few, scattered and isolated areas of land in northern Australia suitable for further horticultural development and/or plantations. The vast majority of land in northern Australia is characterised by 'thin and infertile soils' that have been 'leached of nutrients by intense tropical rains over millennia' (Woinarski et al. 2007: 10; see also Diamond 2005; McKenzie et al. 2004; NLWRA 2001). Although there is higher annual rainfall and runoff across the north, its concentration and intensity in the wet season has 'great erosive power' (Woinarski et al. 2007: 10). Combined with the great evaporative power of the dry season and the

Fig. 4. Mean annual net primary productivity with current climate and agricultural inputs and the Indigenous estate



Source: Department of the Environment & Water Resources and Indigenous Land Corporation.

resultant 'water deficit' (Woinarski et al. 2007: 30), this presents a major challenge to agricultural activity—and to horticultural activity in particular—in much of the region.

The water (or saturation) deficit associated with the monsoonal climate and the nutrient poverty of most soils present means that Australia's 'northern regions [that is, the Timor Sea and Gulf of Carpentaria drainage divisions (see Fig. 10 below)] have a low net primary productivity despite their high annual rainfall' (NLWRA 2001).¹² Fig. 4 shows that the net primary productivity of Indigenous estate land is low, especially when compared to agricultural areas in southern Australia. This difference in net primary productivity in the agricultural regions of the south is explained in part by the addition of nutrients and irrigation water in those regions since European settlement. In contrast, the Indigenous estate—and much of the rest of the continent—has experienced little or no change in productivity over this time (NLWRA 2001).

The NLWRA (2001) states that its findings should not be interpreted as saying 'that irrigation potential is limited' in the northern regions. However, it also states that the 'climatic influences' behind the lower productivity of the northern regions 'cannot be removed by irrigation or nutrient inputs, and is a fundamental limitation on plant growth in northern Australia'. This suggests that while irrigation and nutrient inputs are likely to increase productivity to some extent, in most areas such management inputs would have to be substantial and their effectiveness would continue to be constrained considerably by environmental factors. In terms of nutrient inputs, the NLWRA (2001) suggests that production benefits would eventually 'approach a plateau or a point of diminishing returns' while environmental costs (e.g. reduced water quality) would 'tend to increase progressively and more steeply as nutrient inputs increase'.

Spanning the tropical north and the arid interior, climate, soil quality, topography and water availability place substantial constraints on the agronomic potential of much of the Indigenous estate. However, it is important to note that this is a very coarse, broad-scale analysis of the agricultural potential of that estate. It is also important not to confuse discussion of net primary productivity with the ecological intactness, species richness, or environmental significance of that land—a point hinted at by Hamblin (2001: 93) in terms of requirements for native versus agricultural plant production in Australia:

... soils are frequently described as 'infertile' or 'impoverished', when this really only refers to the assessment of their suitability for agricultural production. Many Australian native plants have highly specialized mechanisms for efficient scavenging of sparse nutrients, while others use alternative pathways, symbiotic or parasitic habits, or associations with various micro-organisms, to overcome these deficiencies.

The generally low productivity of the Indigenous estate by agricultural standards does not necessarily equate with a low value based on environmental measures. As will be discussed in more detail below, naturally low productivity may instead be seen to reflect the fact that much of the Indigenous estate remains relatively ecologically intact due to the absence of significant agricultural inputs and development impacts.

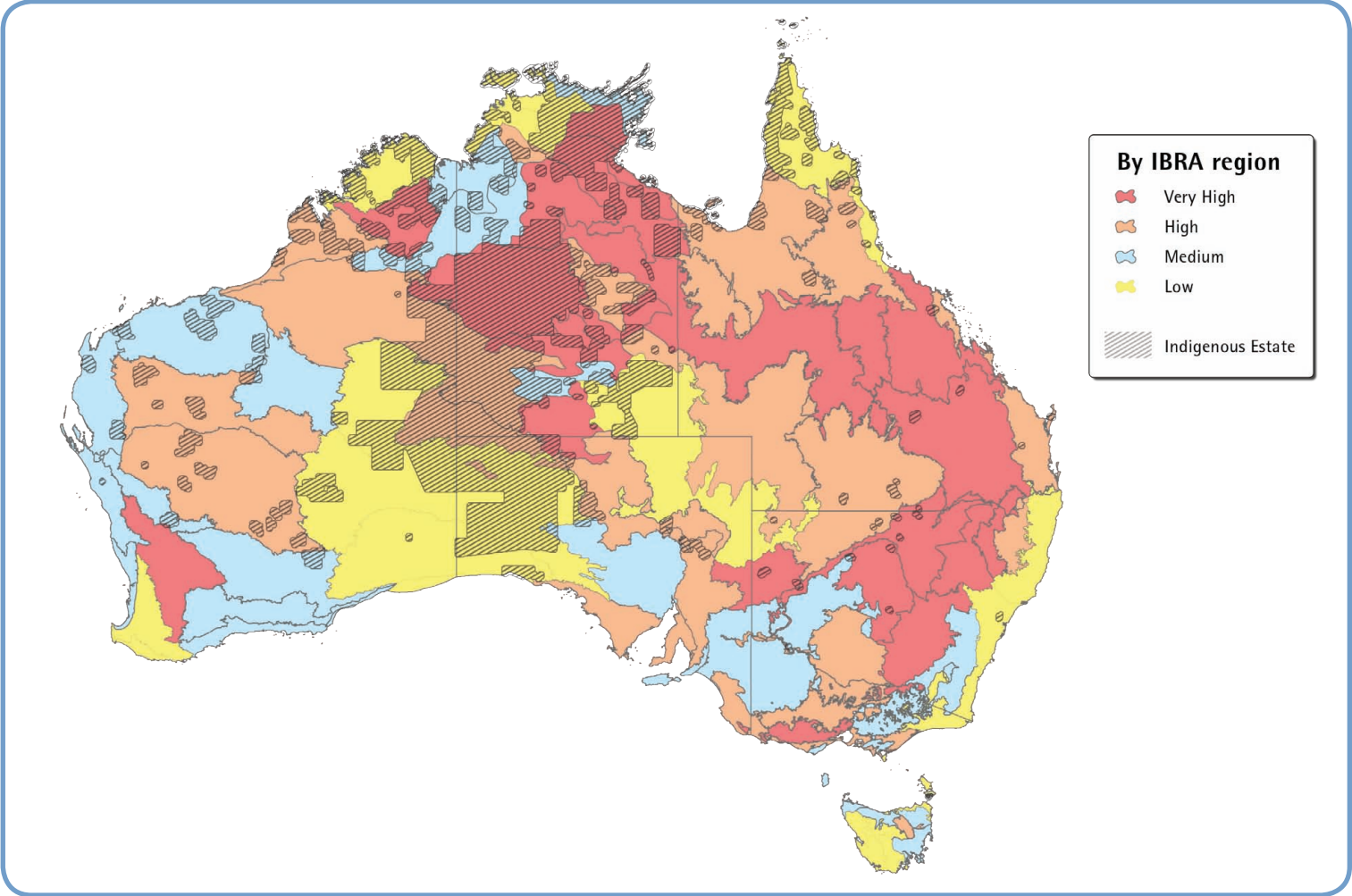
The following sections explore the environmental significance of the Indigenous estate and the related alternate development possibilities for Indigenous Australians living and working on country.

THE STATE OF THE ENVIRONMENT AND THE INDIGENOUS ESTATE

As with providing a clear national picture of the Indigenous estate, so too providing a clear national picture of the state of Australia's environment is made extremely difficult by 'the lack of accurate, nationally consistent' data (Beeton et al. 2006: 3). Providing a clear national picture of the environmental values of the Indigenous estate is, therefore, doubly challenging. No national study or reviews have yet been undertaken that provide a specific measure of the conservation value or biodiversity status of the Indigenous estate (Smyth & Sutherland 1999)—this would be an enormous, but extremely valuable, undertaking. As a first step towards such an undertaking, this paper provides a broad overview of some of the key conservation values of the Indigenous estate utilising existing studies, analyses and planning frameworks. We visually represent the relationship between the Indigenous estate and conservation values through a series of maps which apply a template of the Indigenous estate provided by the ILC to existing maps of conservation priorities and environmental qualities provided by Land and Water Australia (LWA) and the Department of the Environment and Water Resources (DEW). Undertaking this task has proved to be both complex and problematic in terms of data quality, data availability, national consistency and inter-agency coordination. Due to the vastness of the Indigenous estate and the variety of environments located therein, our overview is intentionally general in nature. This is an experimental analysis and caution needs to be exercised in drawing hard and fast conclusions from the maps we have developed.

It is important to note that the template of the Indigenous estate used here only shows parcels of Indigenous land over 50 square kilometres in area, and does not include any areas of exclusive possession native title or any other types of native title determinations. The template under represents the Indigenous estate as being only approximately 16 per cent of the Australian land mass, rather than our minimum estimate of 20 per cent. Smaller parcels of land that have high conservation value, especially in the south-east of Australia, are unfortunately hidden using this scale of analysis. The area of land where Indigenous people have rights and interests in the management and customary use of natural resources—covering the entire spectrum of property rights and interests—is much greater than indicated by these maps, and extends beyond the Indigenous estate as it is defined here. We strongly encourage further research to both identify and map the specific conservation values of the Indigenous estate at local, landscape and national scales in partnership with Indigenous landholders. Nevertheless, it is our view that the maps reproduced here are extremely useful for making general observations about the conservation values of the Indigenous estate, and will contribute to much more informed debate regarding the role of Indigenous Australians in land management, biodiversity conservation, the management of water resources, and in addressing emerging climate change issues. This role is formally recognised by Australia's key piece of environmental legislation, the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), in terms of 'a partnership approach to environmental protection and biodiversity conservation' that recognises and promotes 'indigenous peoples' role in, and knowledge of, the conservation and ecologically sustainable use of biodiversity' (s. 3(2)(g)(iii)).

Fig. 5. Priority bioregions for developing the NRS and the Indigenous estate



Source: Department of the Environment & Water Resources and Indigenous Land Corporation.

CONSERVATION PRIORITIES AND THE INDIGENOUS ESTATE

The value of Australia's environment—like the value of the Indigenous estate—is multidimensional. It consists of a range of economic, social, cultural, natural and other values which are essentially incalculable (Cork, Sattler & Alexander 2006; Williams et al. 2001). Determining conservation values and priorities is, therefore, a complex task (McNeely 1990). Conservation priorities can be established based on environmental measures such as species richness and diversity, threatened species and ecosystems, endemism, and the connectivity of protected landscapes at regional and landscape scales (Humphries, Williams & Vane-Wright 1995; Soule et al. 2004). Within Australia, the most comprehensive analyses to date that have identified such values and priorities at a national scale include: the Australian Terrestrial Biodiversity Assessment 2002; the State of Environment reports (national and state) produced in 1996, 2001 and 2006; the assessment of biodiversity priorities through the National Land and Water Resources Audit (an initiative of the National Heritage Trust); and the Interim Biogeographic Regionalisation of Australia framework used in the development of Australia's National Reserve System.

The National Reserve System (NRS) is largely synonymous with, and forms the substantial part of, what we refer to here as the conservation estate. The NRS is defined as representing:

... the collective efforts of the States, Territories, the Australian Government, non-government organisations and *Indigenous landholders* to achieve an Australian system of terrestrial protected areas as a major contribution to the conservation of our native biodiversity. It aims to contain samples of all regional ecosystems, their constituent biota and associated conservation values (Natural Resource Management Ministerial Council (NRMMC) 2004a: 13; emphasis added).

As the current national and regional planning framework for Australia's NRS, the Interim Biogeographic Regionalisation of Australia (IBRA) is used to identify both deficiencies in the NRS and priorities for the inclusion of further areas within it (NRMMC 2004a: 27). Fig. 5 shows the priority regions for inclusion in the NRS and the relation of these regions to the Indigenous estate based on IBRA version 5.1.¹³ What this map shows is that significant portions of the Indigenous estate coincide with regions of high or very high priority for inclusion within the NRS—though this observation is not new (see, for example, Orchard, Ross & Young 2003: 430; Szabo & Smyth 2003: 7; Thackway & Cresswell 1995: 13). However, as has been noted elsewhere, the IBRA essentially provides a 'coarse level snapshot at a national scale' and is not in itself a sufficient basis for assessing NRS priorities and gaps (NRMMC 2004a: 27). Finer, 'within-region and local-scale', assessment is required to identify priority areas, some of which may exist within what are perceived as 'low priority' bioregions when viewed on a national scale (Thackway & Cresswell 1995: 16–18). It is also important to note that the IBRA is not without its critics as an adequate framework for the development of the Australian NRS. For example, through WildCountry, The Wilderness Society (2005: 13) has put forward an alternative framework for national, regional and local conservation planning based on large-scale ecological connectivity with a focus on seven underlying processes: 'strongly interactive species; hydroecology; long-distance biological movement; fire regimes; climate change and variability; land/coastal zone fluxes; and refuges'.

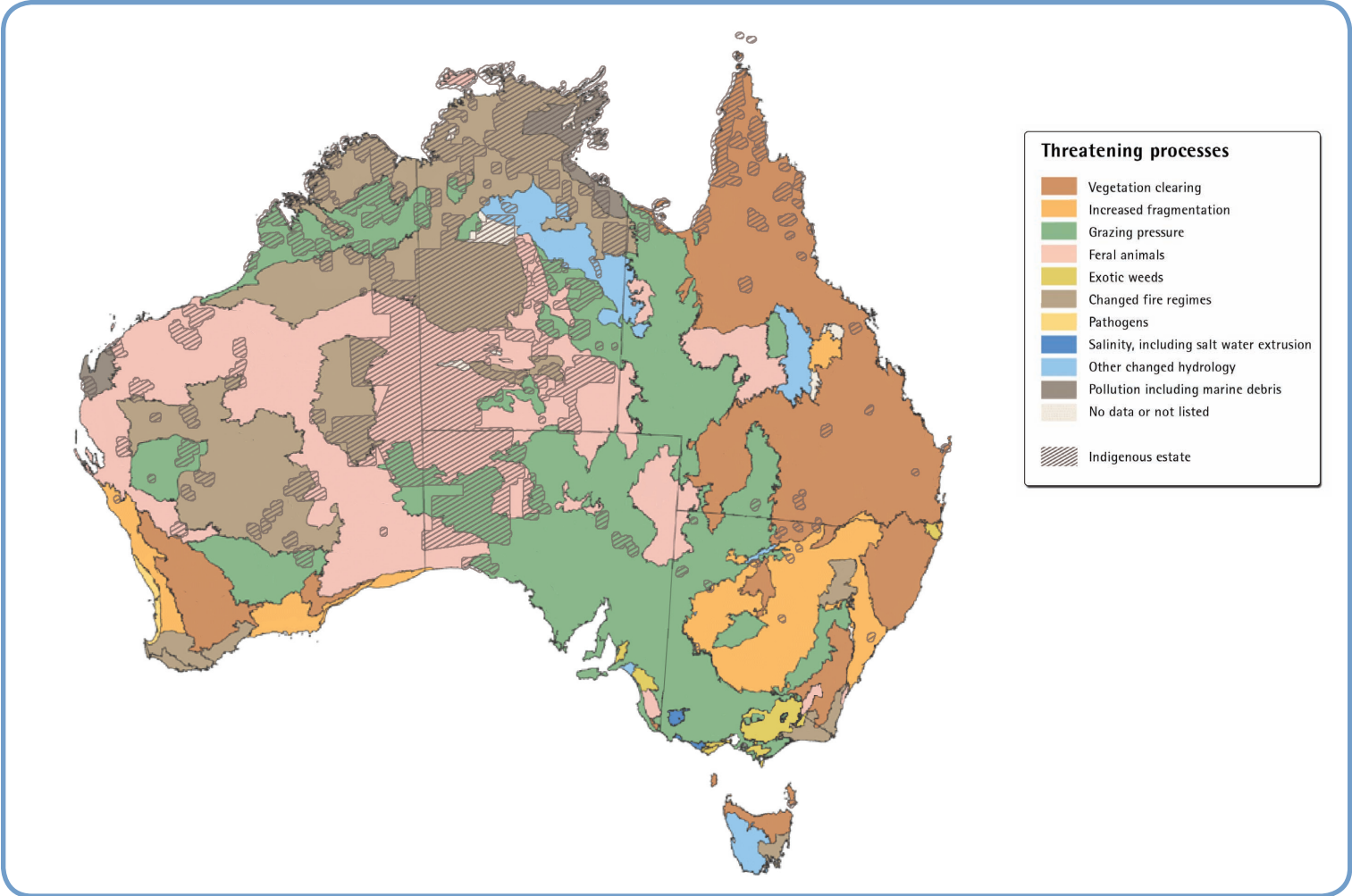
Our analysis reveals that through any lens the Indigenous estate can be seen to contain large areas that are of high conservation value based on four key observations:

1. The Indigenous estate includes an enormously rich diversity of ecosystems spanning a continental-scale climatic gradient from some of the wettest areas in the monsoonal tropics in the north of Australia to some of the driest desert areas in the arid centre.
2. Significant portions of the Indigenous estate remain relatively ecologically intact and have not been subjected to the intense level of development pressure experienced in many other areas, particularly in southern Australia.
3. Much of the Indigenous estate features vast areas of relatively undisturbed, connected and ecologically healthy functioning environments and waterways that provide a variety of habitats and ecosystems services.
4. Much of the Indigenous estate is environmentally intact, which has allowed the persistence of species that have declined or become regionally extinct elsewhere in Australia.

Outstanding examples of the diversity within Indigenous lands include the Anangu Pitjantjatjara Yankunytjatjara Lands, which contain some of the least disturbed ecosystems in South Australia and are renowned for supporting a rich array of native plants and animals (including one of the highest levels of reptile diversity in the world) (Aboriginal Lands Integrated Natural Resource Management Group (ALINRMG) 2004; Wilson et al. 2005). The sandstone massif of western Arnhem Land also harbours a highly endemic biota, including approximately 50 vascular plant species, many terrestrial and aquatic invertebrates, as well as diverse fish and frog species (Wilson et al. 2005; Woinarski, Milne & Wanganeen 2001). The North Kimberley Bioregion is identified as an Australian Biodiversity Hotspot, based on its species richness and a high presence of threatened and endemic species and communities (Baker, Price & Connors 2001). And finally, Cape York Peninsula (which contains significant areas of Indigenous-owned land) is documented as being of national and international conservation significance, containing some of Australia's highest concentrations of rare and threatened species as well as restricted endemics. It is also an important area for species richness, particularly for invertebrates, freshwater fish, mangroves, seagrass and orchids (Abrahams et al. 1995; Mackey, Nix & Hitchcock 2001).

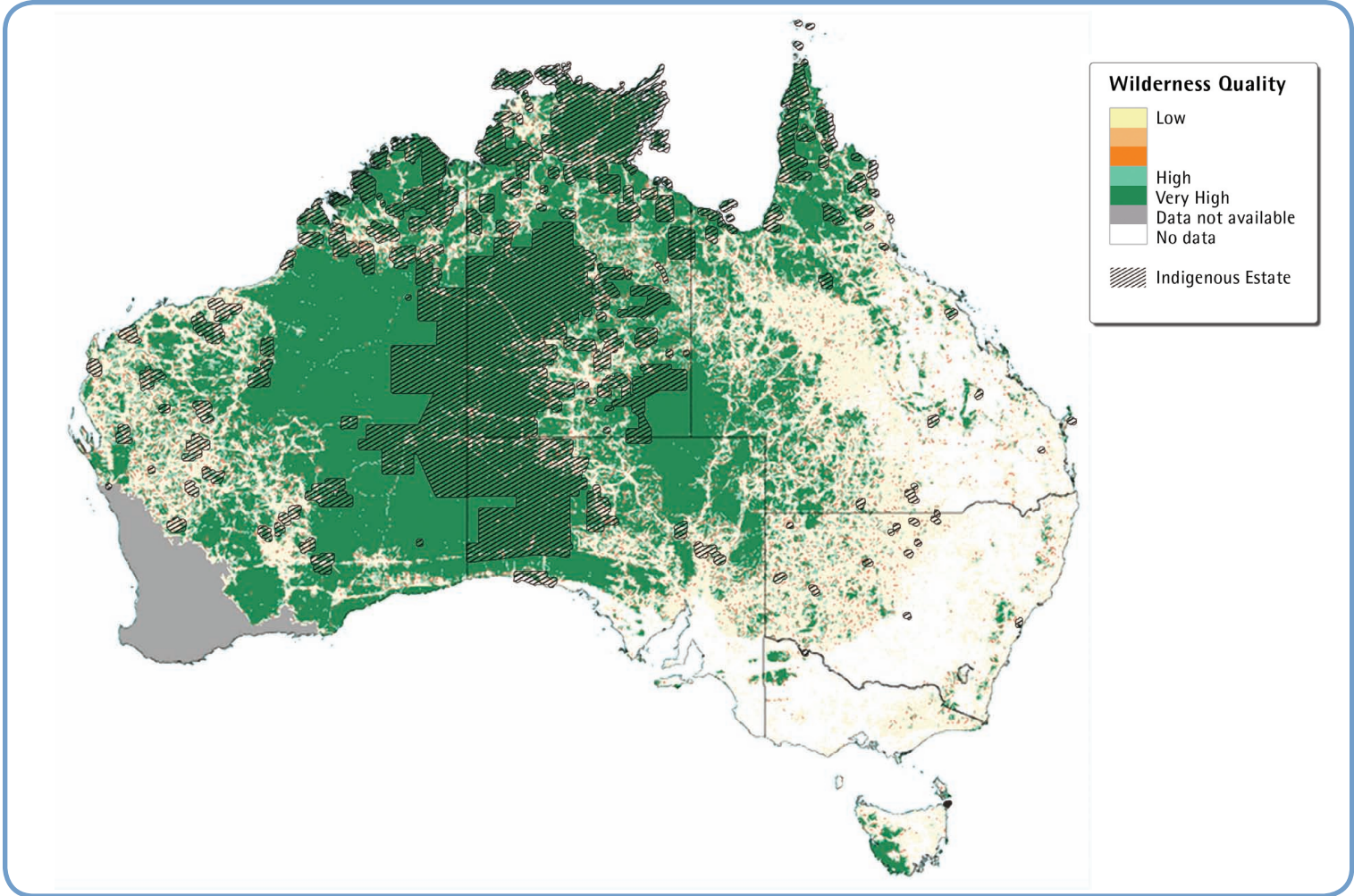
The significance of the Indigenous estate in terms national, regional and local priorities for conservation is expected to become even more pronounced in the future, with continuing development and land-use pressures across Australia, increasing water scarcity, and the projected impacts of climate change on species composition and distribution across the continent (Steffen 2006). Despite being relatively intact, the Indigenous estate is likely to be increasingly subject to a number of threatening processes including changed fire regimes, the introduction and spread of feral animals and invasive weeds, land disturbance including vegetation clearing and overgrazing, and marine debris and pollution (see Fig. 6).

Fig. 6. Ten most threatening processes and the Indigenous estate



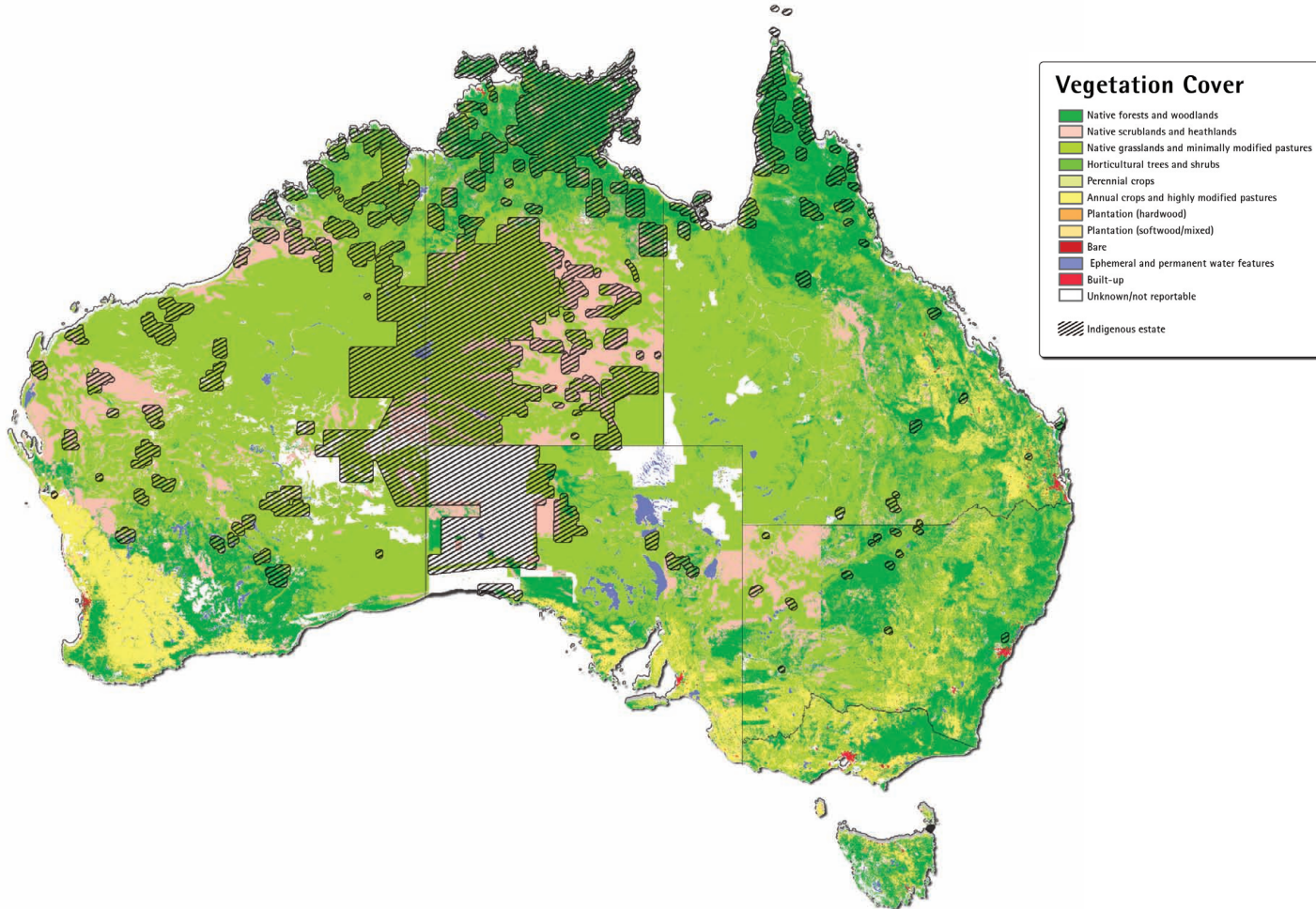
Source: Department of the Environment & Water Resources and Indigenous Land Corporation.

Fig. 7. Extent of land disturbance and the Indigenous estate



Source: Department of the Environment & Water Resources and Indigenous Land Corporation.

Fig. 8. Vegetation cover and the Indigenous estate



Source: Department of the Environment & Water Resources and Indigenous Land Corporation.

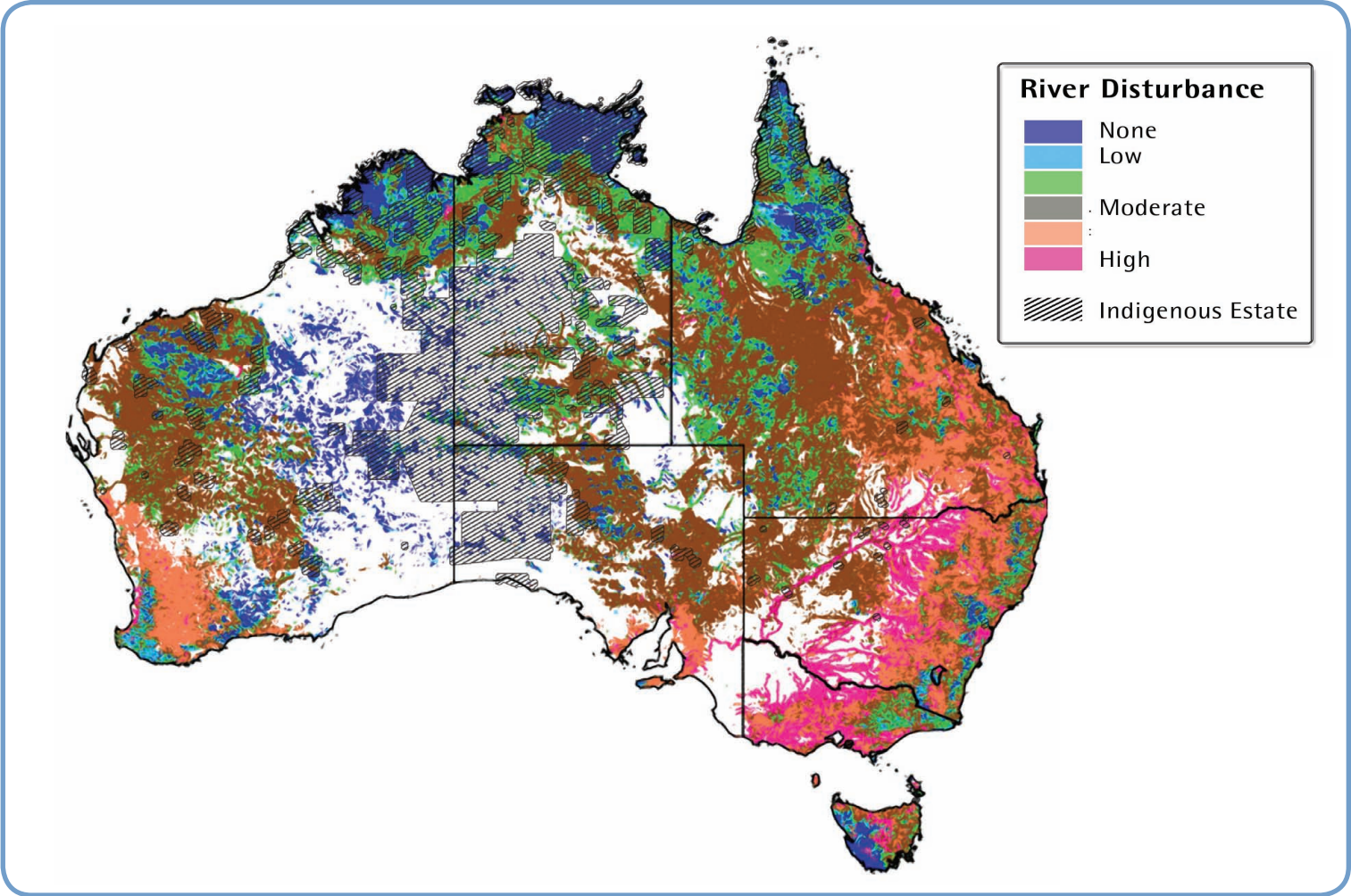
CURRENT AND EMERGING THREATS TO THE CONSERVATION VALUE OF THE INDIGENOUS ESTATE

LAND AND VEGETATION

The clearing, destruction and fragmentation of native vegetation are key factors contributing to biodiversity loss in Australia. Once vegetation communities and their associated fauna have been fragmented they become more susceptible to other threatening processes such as invasive plant species and feral animals (Beeton et al. 2006; Saunders et al. 1996). The clearing of vegetation such as woodlands can be particularly destructive for bird species. Comparative estimates of the population density of woodland birds indicate that between 1,000 and 2,000 birds permanently lose their habitat for every square kilometre of woodland cleared (Glanzig & Kennedy 2000). Fig. 7 shows that the extent of land disturbance on the Indigenous estate is very low.¹⁴ Fig. 8 shows that large tracts of native forests and woodlands are still found on the Indigenous estate. For example, only 6 per cent of land has been cleared in the Northern Territory, where a significant portion of the Indigenous estate is found, compared to over 60 per cent of land in New South Wales (NSW) and Victoria (Northern Land Council (NLC) 2006). Located at the Top End of the Northern Territory, the Arnhem Land region is Indigenous-owned and covers an area of 97,000 square kilometres—making it larger in land area than Switzerland. Within this ecologically significant portion of the Indigenous estate, the Arnhem Coast and Arnhem Plateau Bioregions have 98.3 per cent and 99.9 per cent respectively of their original native vegetation remaining (Sattler & Creighton 2002).

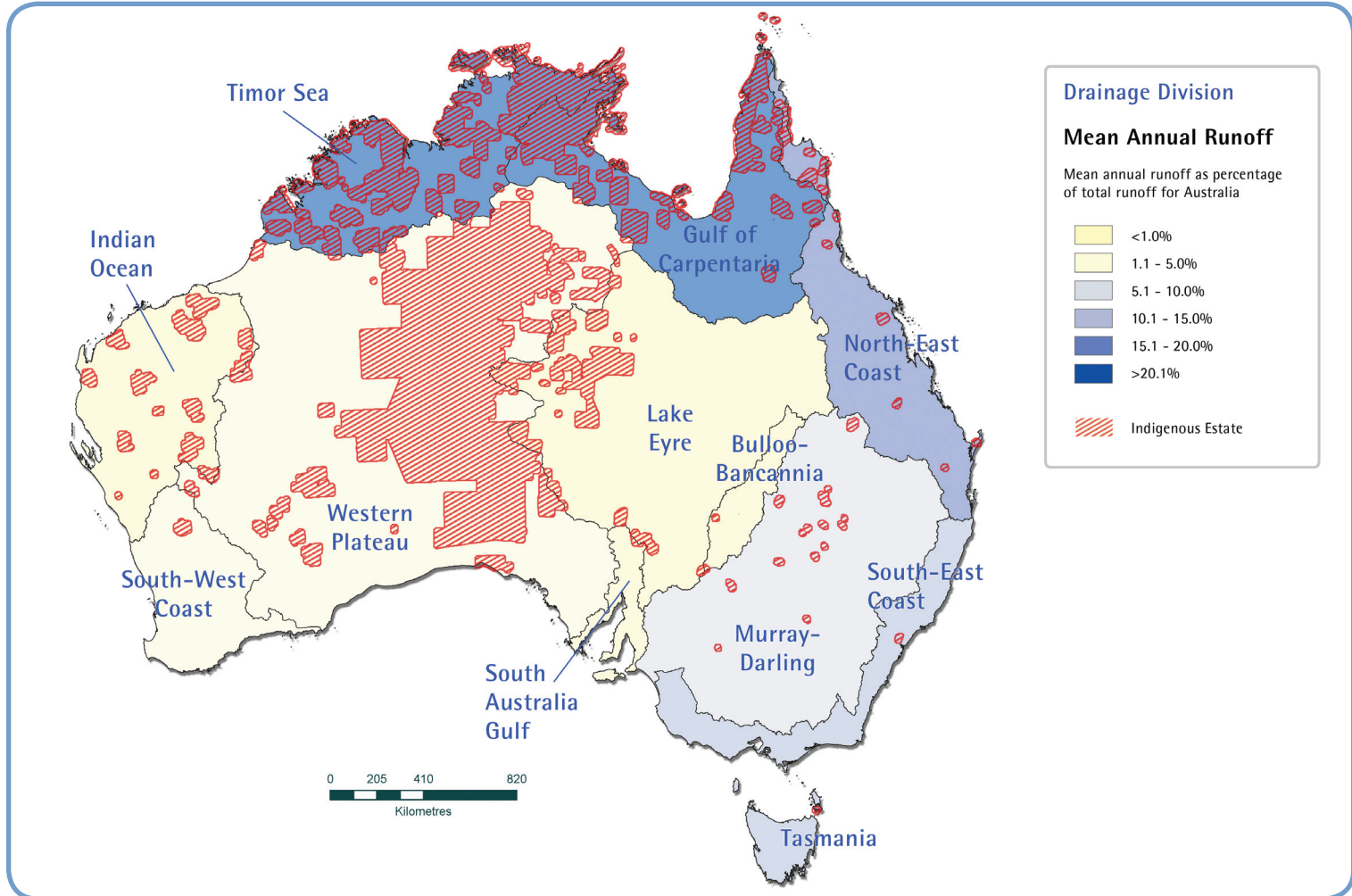
The Indigenous estate contains large and relatively intact contiguous areas of land and water that are of great importance in the maintenance of landscape-scale ecological processes and in the provision of critical habitats for mobile species – especially for migratory species that move over long distances and require regular refuges as well as breeding and nesting habitats (Mackey, Nix & Hitchcock 2001; Price, Woinarski & Robinson 1999; Woinarski et al. 1992). Much of the conservation estate in remote Australia abuts the Indigenous estate, and obviously many species migrate across these estate boundaries. For example, conservation of mobile species found in Kakadu National Park, an Aboriginal-owned national park located in the Northern Territory, benefits from these species having access to intact habitats on adjacent Aboriginal-owned land in western Arnhem Land (Altman 2001b). However, these ecological benefits to species generated from habitat maintenance on the Indigenous estate are not sufficiently recognised and remain largely unquantified and unremunerated— whilst being dependent on Indigenous land management.

Fig. 10. River disturbance and the Indigenous estate



Source: Department of the Environment & Water Resources and Indigenous Land Corporation.

Fig. 11. Mean annual runoff, Australian drainage divisions and the Indigenous estate



Source: National Water Commission and Indigenous Land Corporation.

INLAND WATERS

The north Australian wetlands are extremely important for migratory birds (Hill 2004). Some of Australia's most significant wetlands are located on the Indigenous estate (Abrahams et al. 1995; McKenzie, May & McKenna 2002; Whitehead & Chatto 1996; Wilson et al. 2005). Arnhem Land wetlands are known to support the world's largest breeding colonies of magpie geese, with up to 50,000 nests and 500,000 individual birds in some swamps. Kakadu National Park contains wetlands of international significance as listed under the Ramsar Convention (Finlayson et al. 2006). The Kimberley wetlands in north-west Western Australia are noted for their high levels of endemism of freshwater fauna (Rangelands NRM Coordinating Group 2004). In contrast, many wetlands in southern Australia have been extensively modified—90 per cent of floodplain wetlands in the Murray–Darling Basin, 50 per cent of coastal wetlands in New South Wales, and 75 per cent of wetlands on the Swan Coastal Plain in south-west Western Australia have been lost due to altered flow regimes (Beeton et al. 2006).

Many areas of the Indigenous estate contain ecological intact riparian zones, such as Indigenous-owned parts of Cape York Peninsula—which is recognised as an area of global significance for its hydrological processes (Mackey, Nix & Hitchcock 2001). This is in marked contrast to southern Australia where many rivers have been largely modified by water resource development schemes, including dams for urban water use and agricultural irrigation projects. Figs 9 and 10 both illustrate that the more degraded rivers are located along the east coast and in the south-east and the south-west of Australia. This situation is currently exacerbated by drought, which is leading to extra pressure on already stressed river systems and has had serious impacts on biodiversity in some regions (Beeton et al. 2006). Although in relatively good condition, the maintenance of ecologically healthy riparian zones on the Indigenous estate will require management of a number of emerging threats such as exotic weeds, feral animals and changed fire regimes; all of which can alter vegetation cover and influence water flow and quality.

It is estimated that over 65 per cent of Australia's total surface water run-off drains from the three main drainage areas in northern Australia: the Timor, Gulf of Carpentaria, and North-Eastern drainage basins (National Land and Water Resources Audit (NLWRA) 2002). Fig. 11 shows that a large proportion of these drainage divisions are located on the Indigenous estate. Amidst national concern about water scarcity and water quality issues in Australia there has been growing interest in the possible utilisation of water supplies from these drainage basins and in opportunities for agricultural development in tropical northern Australia because of the region's relatively intact catchments and rivers. These concerns saw the Council of Australian Governments (COAG) develop the National Water Initiative (NWI). More recently, interest in exploring future land and water development possibilities in north Australia was expressed by the Prime Minister in an address to the National Press Club in January 2007. This address outlined a 10-Point Plan to address water scarcity which included the development of the Australian Government's North Australia Taskforce (Howard 2007; Shanahan 2007; Trute 2007). The consequences of such developments for Indigenous livelihoods, customary resource management systems and property rights have received little attention (Altman 2004a; Altman &

Cochrane 2003; Jackson & O'Leary 2006). As owners of large tracts of land with significant water resources in north Australia, Indigenous people will be significant stakeholders in future water policy and emerging property rights and water markets (Altman 2004a; Altman & Cochrane 2003; Jackson & Morrison 2006).

COASTS, OCEANS AND ESTUARIES

The coastal areas of the Indigenous estate and the adjacent marine environment are also largely in relatively pristine condition and have not been subjected to the same development pressures as more developed areas of Australia. The Kimberley region coastline is approximately 2,500 kilometres long, with in excess of 3,000 islands that provide habitats for migratory waders and breeding seabirds (Rangelands NRM Coordinating Group 2004). Threatened marine species including dugongs and marine turtles are found in waters off the Indigenous estate and many important nesting sites for marine turtles are located on Indigenous land (Smyth 2006a: 65). The six species of marine turtles that occur in Australian waters are all listed under the EPBC Act. Some of the listed threats to marine turtles such as coastal development pressures, marine pollution, and habitat destruction are relatively absent on and adjacent to the coastal Indigenous estate.

The National Land and Water Resources Audit (NLWRA 2002) found that the highest percentage of estuaries in 'near pristine' condition were located in the Northern Territory. With approximately 85 per cent of the Northern Territory coastline being Aboriginal-owned, the majority of these estuaries are located on the Indigenous estate. Estuaries located on the Indigenous estate in the Northern Territory contribute significantly to important fisheries including large commercial barramundi and mud crab fisheries along the north-east coast and the Gulf of Carpentaria.¹⁵

CLIMATE CHANGE

All of the aforementioned threats are likely to be exacerbated by the future impacts of climate change and global warming (Gitay et al. 2002). According to the Millennium Ecosystem Assessment (2005), climate change is likely to be the main driver of global biodiversity loss by the end of the century. Within Australia climate change is predicted to result in large-scale biodiversity loss (NRMMC 2004b). Current projections estimate an increase in annual national average temperatures of between 0.4° and 2.0°C by 2030 and of between 1.0° and 6.0°C by 2070, as well as reductions in average rainfall and run-off in southern and much of eastern Australia and increases in average rainfall across much of the tropical north by 2030 (CSIRO 2001a; CSIRO 2001b; Steffen 2006). *The National Biodiversity and Climate Change Action Plan 2004–2007* (NRMMC 2004b) highlights that within Australia climate change will have significant impacts on species distribution, changes in pollination of plants species, timing of reproduction and migration events, and will lead to an increase in the frequency of pest and disease outbreaks as well as wildfires. The risk of extinction will increase for many vulnerable species, especially those with limited climatic and habitat ranges. Patterns of biodiversity in the landscape may change over timeframes as short as decades, and species that are currently protected in existing reserves may not be adequately protected in the future. The projected

declines in precipitation over much of Australia will place further pressure on water resources. Agricultural as well as commercial and residential uses of water are likely to increase pressure on tropical rivers located on the Indigenous estate in north Australia. The vast wetlands and inland aquatic ecosystems located on the Indigenous estate are particularly vulnerable to climate change (McCarthy et al. 2001; NRMCC 2004b).

The National Biodiversity and Climate Change Action Plan 2004–2007 (NRMCC 2004b) states that given the shifting species and changing ecosystems expected to result from climate change, strategies for preserving species and ecosystems in their current locations may need to be modified. The Plan states that the conservation estate needs to be expanded in order to increase the capacity of reserves to act as refuges for vulnerable terrestrial species amidst climate change. The Plan also states that planning and management of the conservation estate needs to take a broader landscape approach to biodiversity conservation that allows the movement of species across bioclimatic gradients (NRMCC 2004b). The incorporation of the Indigenous estate—twice the size of the conservation estate—into these strategies will be crucial in achieving these goals.

PEOPLE ON COUNTRY

There is emerging evidence that suggests that threats to the environment and biodiversity can be exacerbated where there are too few people actively managing the landscape (see, for example, Woinarski et al. 2007). This evidence also suggests that in situations where Indigenous Australians are living on country there are associated biodiversity benefits from their caring for country—including a range of activities such as 'patchy burning' fire regimes, monitoring and control of exotic weed infestations, early detection of diseases that might affect livestock, and culling of feral animals (Altman & Whitehead 2003; Armstrong 2004; Armstrong, Yu & Morrison 2004; Burgess et al. 2005; Department of Infrastructure, Planning and Environment (DIPE) 2005; Whitehead 1999; Wilson et al. 2005; Yibarbuk et al. 2001). Indigenous affairs policies that focus on mainstreaming and urbanisation of remote outstation residents (Vanstone 2005; see critique in Altman 2006a) pose a threat to the conservation values of the Indigenous estate. For example, bushfires account for approximately half of the Northern Territory's greenhouse gas emissions. However, appropriate customary fire regimes can reduce this figure substantially. Reduction in customary burning has caused an increase in large-scale fires in parts of the Northern Territory (NLC 2006). Customary burning practices result in a mosaic of preserved habitats and plant and animal species as well as an overall reduction in greenhouse gas emissions associated with wild fires (Altman & Whitehead 2003; Armstrong 2004; Armstrong, Yu & Morrison 2004; Burgess et al. 2005; Whitehead 1999; Yibarbuk et al. 2001). In view of this, the recent Senate Inquiry into Australia's National Parks, Conservation Reserves and Marine Protected Areas found that the disruption of customary burning regimes in north Australia was a threat to biodiversity conservation (Senate Standing Committee on Environment, Communications, Information Technology and the Arts 2007).

THE ECONOMICS OF CONSERVATION AND ALTERNATIVE DEVELOPMENT ON THE INDIGENOUS ESTATE

Environmental economics and the economic valuation of the environment, its biodiversity and related ecosystem services are increasingly being used in environmental decision-making worldwide, particularly through the notion of total economic value (see, for example, Grafton et al. 2004). Total economic value attempts to capture market and non-market values which are usually divided into four value categories: direct use (e.g. consumption of wild resources); indirect use (e.g. carbon sequestration); future use (e.g. the option to use conserved resources in the future); and non-use (e.g. spiritual values) (Grafton et al. 2004; Pearce, Markandya & Barbier 1989). Total economic value seeks to address the failure of the market to adequately value both the benefits of positive externalities (e.g. carbon sequestration) and the cost of negative externalities (e.g. pollution) (Pearce & Turner 1990). The idea of payment for environmental services (PES) has emerged as one means of addressing this market failure. Environmental services are positive externalities generated by maintaining or increasing the quality of natural resources. PES effectively seeks to create markets for environmental services such as carbon sequestration, biodiversity conservation, and watershed services. PES schemes generally involve a voluntary, conditional agreement between at least one 'seller' and one 'buyer' over a well-defined environmental service or a land presumed to produce that service (Wunder 2007). PES creates positive economic incentives for land managers to behave in ways that increase or maintain environmental functions. A particular appeal of PES is its potential in promoting economic growth, ecological sustainability and poverty alleviation simultaneously (Bishop 2005; Hope, Porras & Miranda 2005; Wunder 2007).

As well as growing recognition of the economic value of environmental services there is also an emerging recognition of an economic rationality relating to the relative cost-effectiveness of different types of environmental management responses. There are two broad groups of management responses for delivering conservation: the first group is made up of preventative or protective management responses; the second group consists of responses that seek to repair or rehabilitate (Sattler & Creighton 2002). The first group of management responses have been shown to be the more cost-effective strategies with prevention being easier than cure in the case of environmental protection and biodiversity conservation (MEA 2005; Morton et al. 2002). Therefore, there is significantly greater economic value in the prevention of degradation of land that is currently relatively intact than there is in the repair of already degraded land. This suggests that in general terms, a greater return on investment can be expected from funding conservation efforts on those vast areas of the Indigenous estate that are relatively intact than on other similar yet more degraded areas.

As owners and managers of some of the most biodiverse and ecologically intact land in the nation, including vast areas of coastline in Australia's remote north, there are significant opportunities for the provision of environmental services by Indigenous Australians on the Indigenous estate. These services can and do provide considerable national benefits in terms of carbon abatement projects, weed and feral animal management, quarantine services, water resource management, coastal surveillance, and wildlife and fire management

(Altman & Larsen 2006a; Altman & Whitehead 2003; Mackey 2006). Managing remote areas is one of Australia's most significant environmental management challenges, and Indigenous people are ideally placed to be able to deliver valuable environmental services there (Whitehead 1999). The recent 2006 Bilateral Agreement between the Northern Territory and Australian governments recognises the important role that Indigenous people have in managing the landscape in the Northern Territory (Commonwealth of Australia & the Northern Territory Government 2005: Schedule 2.5).

In remote and very remote Australia labour markets and commercial opportunities are often missing or are extremely limited. Governments have been largely unsuccessful in addressing Indigenous poverty in these areas, either through mainstream approaches based primarily on market engagement through mining and the pastoral industry, or through state subvention of service delivery. PES offers an alternative, sustainable economic development option for Indigenous people living on the Indigenous estate. PES effectively delivers economic benefits to Indigenous people living on the Indigenous estate through the creation of linkages between the customary sector and the state and/or market sectors which also deliver national benefits at a relatively low cost. While it is likely that the mining and pastoral industries will continue to play some economic role on the Indigenous estate, the addition of PES to the economic mix would provide an opportunity for Indigenous people to maintain diverse livelihood options and develop alternate livelihood strategies—if adequately resourced.

These livelihood strategies tend to recognise a role for both conservation and development on the Indigenous estate. However, this is not to say that there are not inherent tensions between these roles. Such tension is evident in recent debate about efforts to protect relatively pristine Queensland river systems through the passage of the *Wild Rivers Act 2005* (Qld). Some Cape York traditional owners and their representatives have argued that while they support environmental protection measures, such measures are not in themselves—through such things as ecotourism, ranger programs and land management—sufficient to sustain Indigenous peoples' livelihoods in the region (N. Pearson & G. Pearson, ABC 2007b; Koch 2007). According to this argument, a serious deficiency of such measures is the failure to recognise or deliver economic (property) rights to water and other resources to Indigenous landholders (G. Pearson, ABC 2007b).

The above discussion demonstrates that the aspirations of Indigenous landholders for their land in terms of either conservation or development cannot be assumed, dichotomised or essentialised. A recent national survey of traditional owners and their representatives found that, for the majority of the very limited sample of the Indigenous estate's traditional owners and managers surveyed, 'the importance of caring for land, living on land, and the recognition of ownership of land and seas has priority above all other purposes or activities' (ATSISJC 2007: 22). While less than 13 per cent of respondents 'identified economic development as a first priority for land', its importance was overwhelmingly acknowledged (ATSISJC 2007: 22–3). This survey of Indigenous perspectives on land and land use highlights yet another gap in data which needs to be filled in any detailed mapping exercise exploring the conservation potential of the Indigenous estate—namely, the need for 'consistent and reliable research' that maps 'the needs and aspirations of traditional owners by location' (ATSISJC 2007: 37). There is evidence to suggest that many Indigenous people find

employment in 'caring for country' to be an attractive adjunct to living on and maintaining contact with traditional lands. Indigenous ranger programs are a standout success in a long history of failed Indigenous labour market programs in remote Australia (Department of the Environment and Water Resources (DEW) 2007a; Gilligan 2006a; NLC 2006).

'Caring for country' refers to more than the physical management of a geographical area—it encompasses looking after all of the values, places, resources, stories, and cultural obligations associated with that area, as well as associated processes of spiritual renewal, connecting with ancestors, food provision, and maintaining kin relations (Burgess et al. 2005; Myers 1986; Rose 1996; Smyth 1994). Burgess (2007) provides preliminary biomedical evidence that high levels of Indigenous engagement in natural and cultural resource management are associated with significantly better health outcomes for participants. Schedule 2.5 of the *Overarching Agreement on Indigenous Affairs between the Commonwealth of Australia and the Northern Territory of Australia 2005–2010* (Commonwealth of Australia & the Northern Territory Government 2005) acknowledges the range of socio-cultural and economic benefits provided by the engagement of Indigenous people in land and sea management such as increased self-esteem and confidence, reduced social alienation and the promotion of health benefits in remote communities. Paradoxically, this position contradicts public statements by Vanstone (2005) who was the federal Minister at the time of the signing of the Overarching Agreement. *The Northern Territory Indigenous Economic Development Strategy 2005* identifies natural and cultural resource management as a key sector for economic development. This is representative of the growing recognition, supported by evidence, that Indigenous people living on country and participating in land and sea management activities generate significant environmental, economic and social outcomes at the local, regional and national levels (Altman 2003a, 2003b, 2004a, 2004b; Burgess et al. 2005; Burgess 2007; Gilligan 2006a; McDermott et al. 1998).

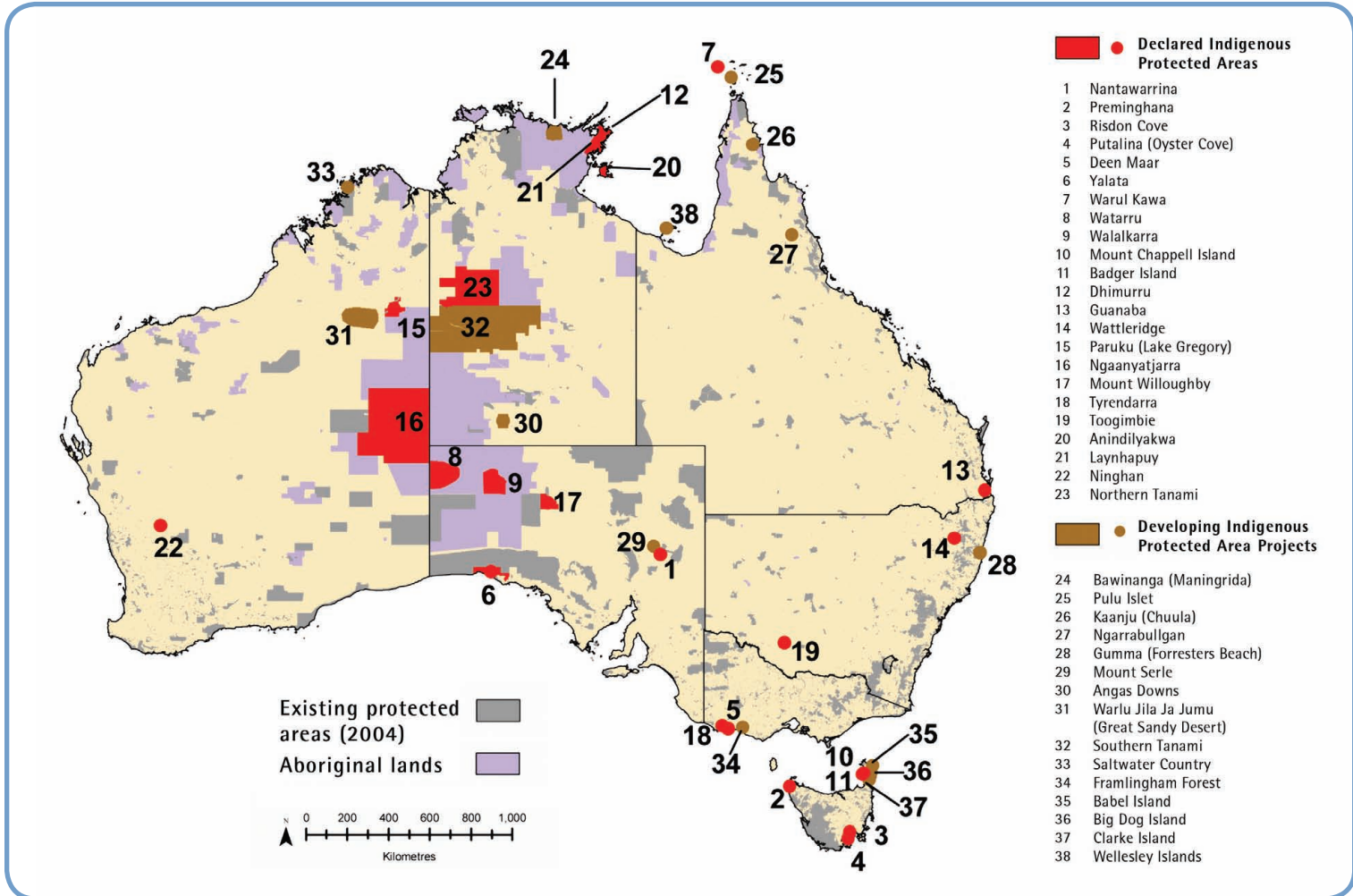
INDIGENOUS NRM PROGRAMS AND INITIATIVES IN AUSTRALIA

This growing recognition is evident in new and emerging programs on the Indigenous estate. Three key programs and initiatives are discussed in this section.

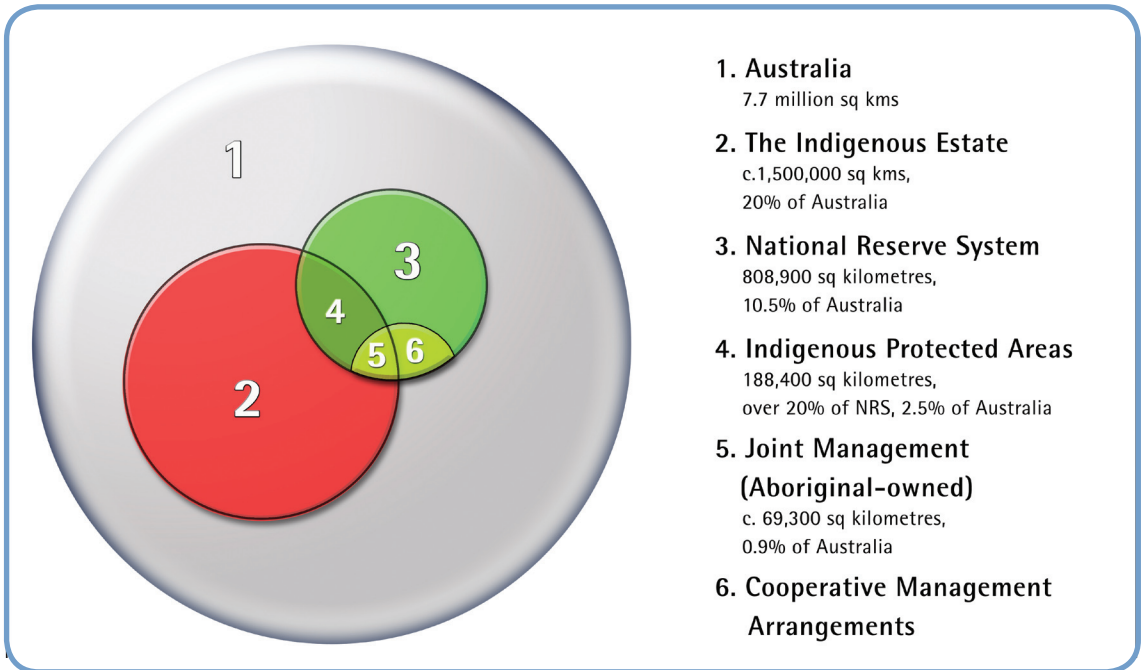
INDIGENOUS PROTECTED AREAS

The Indigenous Protected Area (IPA) Programme was established in 1997 as a means to 'provide a planning and land management framework for Indigenous owned lands to be managed as part of the NRS' (Gilligan 2006a: 2). Under the IPA Programme, Indigenous landholders enter into a voluntary agreement with a view to promoting the conservation of biodiversity and cultural resources of a specified area of their land. The operation of the IPA Programme over the past decade has seen large areas of high biodiversity value incorporated into the NRS that would not otherwise have been incorporated under current State-based protected area systems (Altman & Larsen 2006b; Smyth 2006b). IPAs include some of the most biodiverse and highly valued of all NRS properties and make a significant contribution to the NRS (Gilligan 2006a),

Fig. 12. Indigenous Protected Areas and the Indigenous estate, May 2007



Source: Department of the Environment & Water Resources.

Fig. 13. Relationship between the Indigenous estate and the conservation estate

Source: Altman 2006b.

with 23 declared IPAs covering nearly 190,000 square kilometres and a further 15 IPAs in the process of development as at May 2007. The NRS itself covers approximately 10.5 per cent of Australia's land mass (Gilligan 2006b). Declared IPAs represent approximately 2.5 per cent of Australia's land mass—over 20 per cent of the NRS (see Fig. 12).

In 1996 the Australian Government established the National Reserve System Programme—not to be confused with the NRS itself—which sought to assist governments, non-government organisations and Indigenous and non-Indigenous landholders with the maintenance of, and addition of land to, the NRS. Over the 10 years of the NRS Programme's operation, IPAs have contributed over 67 per cent of new NRS areas (Gilligan 2006a). Fig. 13 highlights the relationship between the Indigenous estate and the NRS showing that both IPAs and Aboriginal-owned national parks, such as Kakadu National Park and Uluru-Kata Tjuta National Park in the Northern Territory, account for a substantial portion of the NRS (approximately 24%). The largest IPA, Ngaanyatjarra IPA in Western Australia, covers an area of 98,129 square kilometres. Some IPAs cover 100 per cent of particular IBRA bioregions and others, such as the Lajamanu IPA, are located in bioregion types with extremely low representation in the NRS—with less than 1 per cent representation in the case of the Lajamanu IPA (Gilligan 2006a).

As well as environmental outcomes a recent evaluation of the IPA Programme reported that IPAs deliver a wide range of social, economic and educational outcomes for Indigenous communities:

- 95 per cent of IPA communities reported economic participation and development benefits from involvement with the Programme
- 60 per cent of IPA communities reported positive outcomes for early childhood development from their IPA activities
- 85 per cent of IPA communities reported that IPA activities improve early school engagement
- 74 per cent of IPA communities reported that their IPA management activities make a positive contribution to the reduction of substance abuse, and
- 74 per cent of IPA communities reported that their participation in IPA work contributes to more functional families by restoring relationships and reinforcing family and community structures (Gilligan 2006a: 4).

Being self-assessed, these reported outcomes do not necessarily represent an objective appraisal of the IPA Programme. However, at the very least, they do indicate a high level of community regard for the program represented by participant communities' perceptions of significant benefits being the direct result of their involvement in it.

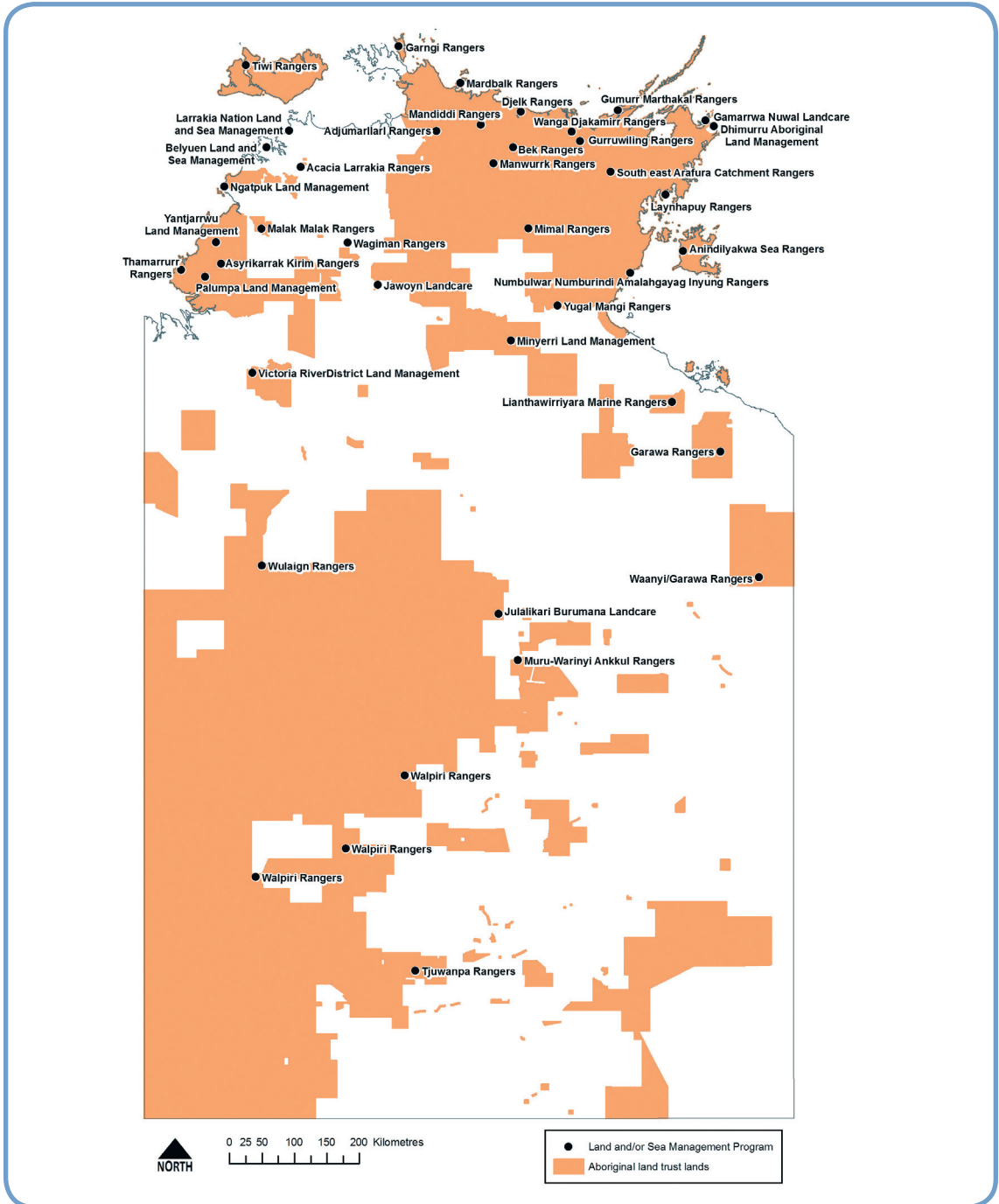
Another strong message to come out of the IPA Programme evaluation was the reliance of IPAs on the Australian Government's Community Development Employment Projects (CDEP) scheme to provide the base-level income for IPA Indigenous rangers—a situation seen to be common to the operation of Indigenous ranger programs in Australia generally (Gilligan 2006a). This has particularly been the case for Indigenous community-based ranger groups across northern and central Australia.

INDIGENOUS COMMUNITY-BASED RANGER GROUPS

Indigenous community-based ranger groups are involved with caring for country projects over vast regions in the Kimberley, Arnhem Land, the Gulf of Carpentaria, Cape York Peninsula, central Australia and the Torres Strait. These groups are generally supported by Land Councils, Native Title Representative Bodies, or regional outstation resource agencies. They network with each other across jurisdictions through forums such as the North Australian Indigenous Land and Sea Management Alliance (NAILSMA).

The Caring for Country Unit (CFCU) supported by the NLC was established in 1995 to build the capacity of Indigenous landowners to address land and sea management challenges and to support the development of sustainable commercial enterprises (Altman 2003b, 2004b; NLC 2006). The CFCU supports the delivery of education, training and resources to ranger groups, and has forged partnerships with external organisations which have allowed expansion of its activities to the point where it is now one of the largest operating units

Fig. 14. Northern Territory Indigenous ranger groups



Source: Northern Land Council.

within the NLC (NLC 2006). The establishment of community-based Aboriginal ranger groups has been a central part of the CFCU's work. The number of participants and ranger groups supported by the CFCU has grown from five ranger groups with 50 participants in 1996 to 35 ranger groups with over 400 participants in 2006 (NLC 2006). Fig. 14 shows the location of the ranger groups across the Top End. These ranger groups have provided a base from which economic initiatives, such as the development small-scale wildlife-based enterprises, have been developed (NAILSMA 2005; NLC 2006).

In some locations these groups have developed into well-established organisations, have developed their own NRM Plans, and now have considerable expertise in NRM, including the development of IPAs. They have also developed fruitful partnerships with research and government organisations. Some key examples include Dhimurru Aboriginal Corporation based at Nhulunbuy and the Djelk Rangers at Maningrida. Dhimurru is involved in coastal surveillance, marine debris clean-up and rescue through a ghostnet program. Dhimurru has recently developed an IPA and as well as a regional sea country plan: *Yolnguwu Monuk Gapu Wanga Sea Country Plan – A Yolngu Vision and Plan for Sea Country Management in North-East Arnhem Land, Northern Territory* (Dhimurru 2006). The Djelk Rangers form part of the Bawinanga Aboriginal Corporation and have been operating for over 11 years. The Djelk Rangers are involved with *Mimosa pigra* control, fire management and coastal surveillance in conjunction with Northern Territory Government agencies (Cochrane 2005).

CARBON ABATEMENT SCHEMES ON THE INDIGENOUS ESTATE

Also within the Northern Territory, the West Arnhem Land Fire Abatement (WALFA) project is an example of how private investment can not only abate carbon, but also generate jobs for Indigenous people in remote regions while assisting in environmental management (Altman 2007b; Tropical Savannas CRC 2007, Woinarski et al. 2007).¹⁶ The scheme is principally funded by Darwin Liquefied Natural Gas Pty Ltd (DLNG), a subsidiary of multinational Conoco Phillips, and has been implemented to partially offset its emissions from its liquefied natural gas plant at Wickham Point in Darwin Harbour. DLNG has committed \$1 million per annum for the next 17 years to this goal. The project began in 1997 and struggled for years to gain access to ongoing funding and recognition—initially under the Australian Greenhouse Office's Greenhouse Gas Abatement Project—but to no avail. Funding for the development of the project has been stitched together in an ad hoc manner from year to year from a variety of sources, including the National Heritage Trust, the Northern Territory Government, the Australian Greenhouse Office, and Indigenous organisations, with much technical expertise provided by the soon to be de-funded Tropical Savannas Management Cooperative Research Centre (Tropical Savannas CRC) in Darwin.

WALFA is based on payment for an environmental service: in this case, 30 Indigenous people are paid to undertake fire management that will produce greenhouse gas offsets. This is a vibrant partnership between a number of Aboriginal community-based ranger groups, traditional owners and fire ecologists who are collaborating to reduce wildfires over a sparsely populated 28,000 square kilometre portion of the Arnhem

Plateau (Tropical Savannas CRC 2007). It is estimated that 40–70 per cent of this area has been affected by wildfires each year. WALFA aims to reduce this to 25–30 per cent by proactively creating fire breaks and patchy mosaics of burnt country. This proactive, managed burning is heavily reliant on both Indigenous ecological knowledge and western technology. The WALFA project has abated 256,000 tonnes in its first two years of operation, and has an agreed target of 100,000 tonnes abatement per year. These levels of abatement have shown WALFA to be a highly efficient and cost-effective carbon abatement scheme which also delivers significant employment and economic development outcomes (Altman 2007b). Opportunities may exist for similar schemes to be developed elsewhere on the Indigenous estate, particularly in the fire-prone tropical savannas, which would deliver similar local, national and international benefits.

UNDER-INVESTMENT ON THE INDIGENOUS ESTATE

This discussion paper has documented the extent of the Indigenous estate and its conservation values. It has also provided some examples of Indigenous provision of environmental services already underway in remote, low-population regions where there are few mainstream employment opportunities. Further, payment for environmental services on an equitable basis could provide opportunities to ameliorate Indigenous poverty while simultaneously addressing the investment deficit in environmental management on the Indigenous estate (Altman & Dillon 2004). The investment deficit in managing the conservation values of the Indigenous estate may well have adverse spill-overs onto adjacent NRS and pastoral properties. According to Woinarski et al. (2007), \$725 per square kilometre is spent on land management in Kakadu National Park compared with less than \$1 per square kilometre spent on land management in adjacent western Arnhem Land. Although Kakadu has a far higher visitation rate (approximately 200,000 visitors per annum) the two regions are ecologically interdependent, especially in terms of migratory species (Whitehead 2002). The depopulation of the lands adjacent to Kakadu National Park and the lack of funding for land management has left threatening processes 'mostly unchecked' (Woinarski et al. 2007: 81). Given the ecological interdependence and linkages between these areas, leaving lands unpopulated and unmanaged provides 'the ongoing genesis for feral animals, weeds or fires to spread back to more intensively-managed lands' (Woinarski et al. 2007: 82).

Of the total of close to \$1.5 billion in Australian Government Natural Heritage Trust 1 funds, only \$37 million or 2.5 per cent has been directed to Indigenous groups (Hassall & Associates Pty Ltd 2005: ix). While this might be proportionally representative of the Indigenous population, it significantly under-represents the 20 per cent of Australian land held by Indigenous Australians. Significant under-investment in conservation on the Indigenous estate is also highlighted by the recent IPA Programme evaluation (Gilligan 2006a). Given the substantial contribution that IPAs have made to the NRS through the NRS Programme, they are chronically under-funded (Altman & Larsen 2006b). Publicly available figures from DEW show that, while having contributed 67 per cent of new NRS land over the 10 years of the NRS Programme operation, IPAs have received only 16 per cent of Australian Government funding under the Programme—amounting to

Table 6. Partner contributions of land and funds to the National Reserve System Programme, 1996–2007

Land Partner	Area (ha)	Aust Govt Funds	Own Funds	Total Funds	Aust Govt Funds per ha	Total Funds per ha	% of Total Area	% of Aust Govt Funds
State/Territory Govt	5,376,325	\$51,998,987	\$56,843,663	\$108,842,650	\$9.67	\$20.24	24.69	59.06
Conservation NGO	1,747,823	\$15,974,824	\$19,633,595	\$35,608,419	\$9.14	\$20.37	8.03	18.15
Local Govt	912	\$4,916,774	\$9,743,550	\$14,660,324	\$5,391.20	\$16,074.92	0.00	5.58
Community Group	10,778	\$1,220,248	\$1,035,780	\$2,256,028	\$113.22	\$209.32	0.05	1.39
Private	185	\$244,491	\$157,200	\$401,691	\$1,321.57	\$2,171.30	0.00	0.28
Indigenous Protected Areas	14,640,571	\$13,684,100		\$13,684,100	\$0.93	\$0.93	67.23	15.54

Source: DEW (2007b).

less than \$1.00 of Australian Government funding per hectare contributed (DEW 2007b; see Table 6). An evaluation of the CFCU at the NLC found that lack of funding and complicated funding arrangements inhibit the continued growth of the program (NLC 2006). Considerable administrative resources have to be devoted to applying for funding and subsequent reporting back. Most Indigenous ranger programs (including those within IPAs) are mainly supported by the CDEP work-for-the-dole program. Of 19 IPAs listed in the IPA Review (totalling 146,405 km²) there are 138 CDEP ranger positions. The Laynhapuy IPA employs 20 rangers who live on the homelands through CDEP (Morphy & Marika 2005).

Despite the apparent success of the IPA Programme in achieving national conservation goals—vastly increasing the coverage of the NRS—and evidence of significant under-funding, the Australian Government's 2007–08 Budget did not include an anticipated increase to the IPA Programme budget. However, the 2007–08 Budget did see the Australian Government commit an extra \$47.6 million over the next four years to a new Working on Country Programme to be administered by DEW. It is anticipated that 100 jobs for Indigenous rangers will be funded in 2007–08 as the program is established, and that this figure will increase to 200 full-time jobs (or equivalent) per annum from 2010–11 (Altman 2007c). The program will fund Indigenous rangers with ongoing salaries for managing Indigenous-owned land and resources. In many instances and for many years Indigenous rangers have been carrying out these management activities on CDEP income. The Working on Country Programme represents a symbolic and practical breakthrough in recognising, respecting, and recurrently resourcing innovative community-based resource management efforts on the Indigenous estate. This more realistic funding will also assist Australia to meet local, regional, national and international environment protection and biodiversity conservation obligations.

However, there is cause for concern as to whether this funding commitment gives adequate recognition to the magnitude of threatening processes and climate change and the limited employment opportunities for Indigenous people on their estate. Further expansion of the Working on Country Programme and the IPA Programme could address Indigenous poverty and natural resource management over vast tracts of land simultaneously. The challenge will be to get evidence of environmental outcomes from such investments, a challenge already faced by all who work either on the conservation estate or Indigenous estate (Altman 2007c).

SUMMARY AND CONCLUSION

This paper has set out to do three things. First, it assesses the extent of the Indigenous estate today. Second, it examines the biodiversity value of this estate and outlines some of the threats to this biodiversity. Third, it explores some of the environmental services provided by Indigenous people on their lands and considers the potential for expanding such activity.

The paper confirms that the Indigenous estate covers at least 20 per cent of Australia, some 1.5 million square kilometres. This estimate is conservative, primarily because it focuses only on land held under statutory forms of freehold title and native title determinations that are exclusive and that can be readily demarcated. Most of this land is in very remote parts of Australia. The nature of statutory tenure is diverse, varying from State to State. The high benchmark that we set for including land in our definition of the Indigenous estate means that it is likely to be larger than our estimate. We recognise that more fine-grained research is needed to more accurately map the precise nature of determinations. We are confident, however, that this estate will expand given the large number of registered native title claims and the extent of their geographic coverage.

To assess the environmental significance of the Indigenous estate we have overlain a minimalist template of this estate (one that covers approximately 16 per cent of Australia) over a series of official natural resource atlas maps. By its very nature, this exercise is somewhat coarse-grained. However, it indicates that the Indigenous estate includes some of the highest conservation priority lands in Australia, including many of the most intact and nationally important wetlands, riparian zones, forests, and rivers. Mapping also shows that these lands are at risk of species contraction and face major threats from feral animals, exotic weeds, changed fire regimes, pollution and overgrazing. In addition to these threats, the latest available climate science suggests that substantial biodiversity impacts on this significant part of the continental landmass are inevitable. In the face of this, an innovative national policy approach is required to support community-based efforts to ameliorate threats and minimise adverse biodiversity outcomes. This position is based on the documented recognition by CSIRO and others that effective resource management is much less expensive than environmental repair.

In this paper we have outlined a number of Commonwealth-funded programs that represent a form of payment for environmental services. These indicate that there is some emerging recognition that the Indigenous estate has environmental value and that this needs to be actively maintained. Such programs

also provide important employment opportunities for Indigenous people living in some of the remotest parts of Australia, far from mainstream labour markets. This suggests that environmental service provision might provide alternate development opportunities on the Indigenous estate beyond standard private sector industries like mining, tourism and pastoralism or publicly-funded provision of standard municipal services. Much of the PES on the Indigenous estate is publicly-funded via Commonwealth programs such as IPA Programme and through Natural Heritage Trust support for 'Caring for Country' projects. In all such instances the CDEP scheme has loomed large as the core source of support to provide wages to Indigenous labour. A very encouraging development in the 2007–08 federal budget has been the new Working on Country Programme that will provide recurrent funding for salaried Indigenous ranger positions. This development is especially positive because at a political and bureaucratic level there has been a willingness to use academic research to inform the policy development and budget submission process. There are also opportunities for private sector or private/public mixed funding of such activities. An early example of such a possibility is provided by the WALFA project in western Arnhem Land that could be a harbinger of similar developments in other parts of the tropical savanna.

If the last 30 years has been the era of land rights—when Indigenous interests succeeded to attain some recognition of their prior ownership of the continent—the next 30 years will be the era of land and resource challenges, when the nation must work to implement effective land management regimes and resource strategies. Currently, there is a documented 'investment deficit' in managing the Indigenous estate, and this may well have adverse spillovers onto adjacent conservation estate and private lands. At the same time, the Australian public is increasingly aware of the issues of climate change, water shortage, environmental degradation, and ecological sustainability. What is not yet well understood is that Indigenous interests, given their substantial land holdings, have a crucial role to play in confronting these challenges and finding solutions that are in the national interest.

As this paper is being completed, there is an unprecedented national awareness of the poverty and marginality of remote-living Indigenous Australians as a result of the Howard government's declaration, on 21 June 2007, of a 'national emergency' to address child abuse and its underlying causes. While the national spotlight has been on the Northern Territory, there is no doubt that Indigenous communities in other parts of remote Australia are experiencing similar economic marginalisation. It is our view that expanding programs, such as the IPA Programme and the new Working on Country Programme, could generate employment opportunities and contribute to Indigenous poverty alleviation. Multiple national benefits could result from such program expansion and enhanced investment. First, some of the economic costs of Indigenous disadvantage for both governments and Indigenous peoples would be addressed. Second, social benefits could be generated by highlighting the significance of Indigenous cultural contributions and counteracting threats to the nation's social fabric arising from disengaged communities. Third, environmental benefits could be generated by the engagement of Indigenous rangers working on a diversity of projects to address environmental threats on country.

There is clearly an urgent need for innovative thinking in relation to the twin challenges of addressing Indigenous disadvantage, that at times appears intractable, and of addressing in a precautionary way some of the emerging environmental risks linked to climate change. In making this observation, we are aware that there will always be competition for public resources. Already there are various stewardship programs being developed that are targeted primarily at the pastoral rather than the Indigenous estate. One of the key challenges faced by Indigenous land owners and managers is to mount a credible case that public investment in Indigenous natural resource management provides high national economic and social returns. This in turn suggests that detailed monitoring and evaluation work will be needed to demonstrate the need for existing and growing investments by the federal government. At the same time a reconceptualisation of Australia in the policy and national imaginaries that recognises the scale of the Indigenous estate, its biodiversity values and its environmental inter-linkages with the NRS is essential. A combination of both these perspectives might see investments on the Indigenous estate by governments of any persuasion at unprecedented levels. Our research strongly suggests that there may be alternate development opportunities in the provision of environmental services that Indigenous people as owners and residents of the Indigenous estate may be uniquely positioned to provide.

POSTSCRIPT

On 23 July 2007, as this paper was nearing completion, the Australian Government announced that it was abolishing the CDEP scheme in the Northern Territory as part of its Emergency Response to address child abuse (as noted above).

The CDEP scheme was established in 1977, and its abolition in the Northern Territory was both unheralded and unexpected. The views of at least one author of this discussion paper (Jon Altman) about the poor policy basis for this decision are already on the public record (see Altman 2007d) and will not be revisited here.

However, it is important to note that many of the economic development opportunities in natural resource management that we have identified in this paper are contingent on the existence of CDEP-based organisations and scheme participants. Elsewhere we have referred to some of the tensions between Indigenous affairs, employment and environment portfolios during the term of the fourth Howard government (Altman 2006b; Altman & Larsen 2006a, 2006b). Assuming that the abolition of the CDEP scheme proceeds, we anticipate two possible outcomes from its demise.

On one hand, many of the employment opportunities in natural and cultural resource management (NCRM) on the Indigenous estate that we have identified, at least in the Northern Territory, are likely to disappear. This includes 400 part-time positions identified in community-based 'caring for country' projects in the Top End of the Northern Territory alone (NLC 2006). But it will also include positions currently held in four declared IPAs and three developing IPAs in the Northern Territory (see Fig. 11). Such an outcome will clearly have major negative repercussions for NCRM on the Northern Territory Indigenous estate.

On the other hand, at least part of the Australian Government rationale for abolishing CDEP in the Northern Territory seems to be to create proper jobs for Indigenous people. Given that a new Working on Country Programme has recently been established in the 2007–08 federal budget context, this very grey cloud may have a silver lining, at least from an NCRM perspective. Again, as already noted on the public record, there may be potential to rapidly expand the Working on Country Programme to incorporate those who worked on country whilst funded by the CDEP scheme. Such a constructive approach will require a greatly enhanced financial commitment by the Commonwealth. For example, just funding the current 400 positions in the Top End would require an annual commitment of \$20 million. In short, if the Australian Government is serious about delivering real opportunity in NCRM on the Indigenous estate, given the national interests arguments made here, then there is no reason why public investments in the Indigenous estate should not be made as currently occurs on the conservation estate.

Having said this, we remain sceptical that any Australian government will be willing to provide fully-funded positions for Indigenous NCRM activities at the levels required, at least in the short to medium term. And so we would argue that based on 'the precautionary principle' the CDEP scheme should be retained in the Northern Territory and elsewhere on the Indigenous estate until the requisite investments have been committed.

NOTES

1. A cursory attempt to track the history of the term 'Indigenous estate' focused on the term 'estate', which has a legal and an anthropological usage with strong links between the two. As a legal term, the *Macquarie Dictionary* defines estate as 'an interest in land, traditionally classified as either freehold or of fixable duration, as by lease'. As an anthropological term, 'estate' has been used in a long-running and on-going debate about the nature of Aboriginal land ownership in Australia (see Hiatt 1996; Peterson & Long 1986; Stanner 1965; Sutton 2001). A.R. Radcliffe-Brown (cited in Sutton 2001: 18), an early Australian anthropologist, used the term estate to mean 'a collection of rights (whether over persons or things) with implied duties ... The corporate estate of a Kariera horde includes in the first place its rights over its territory'. Hiatt (1996: 22) notes that this definition appeared in a paper Radcliffe-Brown had published in the *Iowa Law Review* in 1935, and that the terms 'estate' and 'corporation' were used 'in broadly the sense which they are employed in Western law'. W.E.H. Stanner (1965: 2) adapted Radcliffe-Brown's concept of 'estate', defining the term more specifically:

... each territorial group was associated with both an *estate* and a *range*. The distinction is crucial. The estate was the traditionally recognized locus ('country', 'home', 'ground', 'dreaming place') ... forming the core or nucleus of the territorial group ... The range was the tract or orbit over which the group, including its nucleus and adherents, ordinarily hunted and foraged to maintain life ... Estate and range together may be said to have constituted a *domain*, which was an ecological life-space [emphasis in original].

The notion of a corporate group holding rights over territory, as developed by Radcliffe-Brown and as adapted by others, has had a significant influence on contemporary statutory requirements for land to be held by corporate bodies under land rights and native title legislation and under the eligibility requirements for granting of acquisitions by the ILC. It follows that corporate Indigenous ownership is a key feature of the land we view as forming the core of the Indigenous estate. However, we also include under this notion that smaller portion of land which is held by government and reserved for Indigenous use.

2. The policy era of 'protection' lasted from c.1880 to c.1940 (Altman & Rowse 2005: 160).
3. This includes the *Aboriginal Affairs Planning Authority Act 1972* (WA) and the *Land Administration Act 1997* (WA) under which land in Western Australia can be held by the Aboriginal Land Trust on behalf of Aboriginal people and may be granted as freehold or leasehold to 'an Aboriginal person or approved Aboriginal corporation' (ATSISJC 2005: 80). It also includes some legislation relating to the conservation estate. For example, in 1996, amendments to the *National Parks and Wildlife Act 1974* (NSW) in conjunction with the *Aboriginal Land Rights Act 1983* (NSW) provided a mechanism for Indigenous communities to claim land in national parks which is then to be leased back to the New South Wales Government. In Tasmania, lease provisions under s.48 of the *National Parks and Reserves Management Act 2002* (Tas) have recently been used to grant a 40 year lease to the Aboriginal Land Council of Tasmania over a 10.5 hectares section of Mount William National Park.
4. We do not consider here what Campbell (2000) has termed 'the sea estate'. However, see also note 15 below regarding the right to freehold title over the intertidal zone under the ALRA as recognised by the Full Federal Court's decision in *Gumana v Northern Territory* (Blue Mud Bay case).

5. The Aboriginal and Torres Strait Islander Social Justice Commissioner notes in the *Native Title Report 2005* that the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) uses the term 'legal Indigenous land interest' to describe 'land that is Indigenous-owned, -controlled or set aside for the use of Indigenous peoples' (ATSISJC 2005: 52). This term is synonymous with our use of the term 'Indigenous estate' in this paper.
6. Davies (2001) and Lane & Corbett (2005) note a very important aspect of the geography of Indigenous Australia in terms of social organisation at a broad level and land ownership. By problematising the notion of 'community' in the context of 'spatially co-located groups' of Indigenous people, these authors make a distinction between the geography of traditional ownership and the geography of Indigenous people's residence. Lane & Corbett (2005: 149) distinguish between the rights and interests of traditional owners of land as 'custodial' and the interests of residents as 'locational'. Although we do not explore this issue in detail here it is important to be aware, especially in the area of natural and cultural resource management (NCRM), that tensions may exist relating to authority for and the distribution of benefits from the use and management of land within 'communities' (Davies 2001: 21; Lane & Corbett 2005: 149).
7. Our own research attempts to gather data from individual states and territories in the initial stages of this study, highlighted the significant difficulty of compiling this data nationally. The data we obtained for Tasmania—perhaps the least complicated jurisdiction for gathering this type of data—from the Office of Aboriginal Affairs, showed that significant transfers of land under amendments to the *Aboriginal Land Act 1995* (Tas) in April 2005 had not been added to the ILC data set. The missing figures from Tasmania have been added to those provided by the ILC.
8. See, for example, *Mark Anderson on behalf of the Spinifex People v State of Western Australia [2000]* FCA 1717 (28 November 2000) where rights to exclusive and non-exclusive possession were found to exist in separate parts of the one determination area.
9. The recently released *Native Title Report 2006* (ATSISJC 2007: 42) states that the NNTT has estimated 'Indigenous Australians held communal rights and interests to land [as] encompassing 19.8 per cent of the Australian land mass' as at 30 June 2006. However, the online version of this report quotes this estimate as 23 per cent. <http://www.humanrights.gov.au/social_justice/ntreport06/chp_2.html#3>, viewed 4 July 2007.
10. Strelein (2006: 67) argues that this was clearly evident in the High Court majority's reversion to the notion of a bundle of (frozen) rights which 'did not reveal traditional laws and customs relevant to the ownership of minerals and therefore did not demonstrate a native title right to ownership or the right to use minerals and petroleum (except perhaps ochre)'. According to Strelein (2006: 68), this apparently self-contradictory approach 'has to be seen as a political compromise'.
11. It is interesting to note in the context of this paper that similar statements have been made concerning the development of Australia's conservation estate. For example, Szabo and Smyth (2003: 1) note that 'for historical, political and economic reasons, the [conservation] estate in Australia developed in a very ad hoc way, and there has been a bias for particular kinds of landscapes at the expense of others. There are plenty of rocky hilltops that have become national parks, while virtually no fertile river flats and very few native grasslands have been protected' (Szabo & Smyth 2003: 1; see also Woinarski et al. 2007).

12. The NLWRA (2001) defines net primary productivity as 'the carbon gained over time by plants through photosynthesis, minus carbon loss over time through plant respiration. It is a fundamental measure of "landscape yield" and is expressed in carbon units (e.g. tonnes of carbon per hectare per year): Net primary productivity provides an indication of the availability of light, water and nutrients which determines 'the capacity of land to produce native vegetation and agricultural yield' (NLWRA 2001).
13. IBRA version 6.1 has subsequently been developed. However, a map of priority regions based on this updated version is not currently available.
14. We stress that the term 'wilderness' in this map's title does not imply the lack of human occupation, activity and connection to the landscape as it is often defined. Such definitions tend to neglect or render invisible long-standing and ongoing connections and interactions with landscapes by Indigenous peoples. It also is not meant to imply an Aboriginal notion of wilderness such as that described by Langton (1998), being 'land without its songs and ceremonies'.
15. On 2 March 2007 the Full Federal Court handed down its decision in the case of *Gumana v Northern Territory* (Blue Mud Bay case). The court's decision recognises that the Indigenous terrestrial estate held under the ALRA extends to the low watermark (NNTT 2007). Consequently, the significant intertidal zone along the Indigenous-owned coastline of the Northern Territory and the column of water above this zone forms part of the Indigenous estate. The court also found that the *Fisheries Act 1988* (NT) 'did not apply and the Director of Fisheries had no power to grant Fisheries Act licences over those areas' (NNTT 2007). On 30 March 2007 the Northern Territory Government filed an application for special leave to appeal the Full Federal Court's decision to the High Court, which will be heard later in 2007 (Northern Territory Government 2007).
16. The details presented here in relation to the WALFA are drawn primarily from Altman (2007b) and from Tropical Savannas CRC (2007).

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