

INFRASTRUCTURE

SUPPORTING MATERIAL

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INFRASTRUCTURE

1. This chapter provides supporting material for the Chapter on Infrastructure in the Commission's Report.

2. The terms of reference refer to the function of 'housing and infrastructure' but, early in the process of this Inquiry, the Commission decided that infrastructure was important enough to be examined separately.

3. The Chapter on infrastructure in the Report focuses on the provision of services in remote regions where the provision of infrastructure and associated services, taken for granted by the majority of the Australians, can be difficult and costly. It also describes how this function is intrinsically linked to other functions such as housing and health through the provision of environmental health services.

4. Further description of the way environmental health services are provided are contained later in this chapter. It also contains further detail on specific Commonwealth and State programs and describes the arrangements in place for infrastructure service delivery.

5. Measuring the relative needs of Indigenous communities for infrastructure is conceptually straightforward. It involves considering a combination of information on the availability of facilities and detailed on the ground analysis. Funds are allocated on a needs basis under NAHS and some State programs. The data gathered in the Community Housing and Infrastructure Survey (CHINS) is a useful starting point to any assessment method. Regional analysis using data from that survey is contained in this chapter.

SCOPE OF THE FUNCTION

6. A wide range of infrastructure and associated services were considered within the scope of this function.

7. The guidelines for the ATSIC Community Housing and Infrastructure Program (CHIP) Policy 1997-2000 include a number of capital and recurrent items. For community infrastructure (capital items), they cover:

- water supply systems, sewerage and waste water systems;
- community energy supply (generators, fuel storage tanks);
- rubbish disposal (trucks, trailers, fencing of tips);

- flood abatement (stormwater, drainage, sea walls), community landscaping (parks, windbreaks and trees);
- internal access roads (kerbing, guttering, street signs) and external transport access (roads, jetties, boat ramps, airstrips);
- communal kitchen and ablution blocks;
- fire control equipment, radio communications and community workshops;
- plant, machinery and tools for infrastructure repair; and
- project management costs, staff housing for grantee organisations, motor vehicles and administration buildings (including essential office equipment).

8. For municipal services (recurrent items), the guidelines cover:

- essential and routine repairs to infrastructure and non-housing assets;
- operational costs associated with infrastructure and municipal services;
- home living skills training, dog health programs and the employment of environmental health workers;
- development of town plans, community fire prevention and upkeep of equipment;
- refuse disposal and maintenance of tips, the upkeep of community landscaping; and
- rates and taxes for buildings used for municipal services, leasing of essential service vehicles and insurance on assets for municipal services.

9. For this Inquiry, the Commission could have defined infrastructure broadly and in a holistic way (as ATSIIC does) or more narrowly. The Commission decided to define infrastructure broadly, to include the following elements:

- (i) *Community infrastructure* — provision of water and power supply, sewerage and waste water systems, transport facilities, and ongoing support for operation and maintenance of these facilities.
- (ii) *Municipal services* — planning, regulation and building control, rubbish disposal, maintenance of local roads and drainage.
- (iii) *Environmental health services* — provision of public health care, the preparation of community management plans, community education, home living skills assistance, and employment of essential service and environmental health workers.

10. Infrastructure and associated services are closely related to the provision of housing. Effective housing requires reliable water and power supplies, efficient removal of waste and environmental health services. Municipal and environmental health services are needed to plan and maintain a healthy living environment.

ISSUES ARISING FROM SUBMISSIONS AND CONFERENCES

11. The States generally agreed with the Commission's proposed definition of infrastructure, and several States noted difficulties in providing services (particularly for water) to outstations. They indicated that the decisions about the location of outstations often had nothing to do with availability of water and other services.

12. New South Wales and Queensland indicated that the Commission's consideration of infrastructure should not be limited to communities in remote locations.

13. The South Australian Local Government Association submitted that there is no general liaison mechanism between either the three spheres of Government, or between State and Local Government. It stated that infrastructure services to Indigenous people living on Aboriginal Land Trust lands were an area of past neglect, but stated that there were many areas (road maintenance, rubbish collection, immunisation) that could present co-operative opportunities in the future.

14. Western Australia noted that there are some small communities in that State where neither the Commonwealth nor the State accept responsibility for the provision of infrastructure. It also commented that some communities had been paying rates for many years and still did not receive municipal type services. Western Australia also raised the issue of the difficulty of measuring the emerging needs of new formations of households and family groups.

ENVIRONMENTAL HEALTH

15. This section aims to provide an overview of 'environmental health' as it relates to this Inquiry. Specific initiatives in health, housing and infrastructure can be compromised by the absence of ongoing co-ordination of maintenance and monitoring which often falls under the heading of environmental health.

16. A World Health Organisation (WHO) report¹ concluded, among other things, that:

- environmental quality is an important direct and indirect determinant of human health;
- impoverished populations living in rural and remote areas are at the greatest risk — the cumulative effects of inadequate and hazardous shelter, overcrowding, lack of water supply and sanitation, unsafe food, air and water pollution and high accident rates, impact heavily on these groups;

¹ WHO, *Health and Environment in Sustainable Development: Five Years after the Earth Summit in 1997*, 1997.

- poor environmental quality is directly responsible for around 25 per cent of all preventable ill health in the world; and
- children’s health is most damaged by poor environmental quality — as much as two-thirds of all preventable ill health due to environmental conditions occurs among children.

17. While these conclusions are drawn at an international level, they underpin concerns in Australia in relation to conditions faced by many Indigenous communities, particularly those in more remote areas. This is a critical contextual point as most Australians are not confronted by the basic environmental issues faced by many Indigenous communities.

18. More recently, the WHO has found that some countries achieved very good health outcomes at relatively little cost, adding 15 to 20 years to life expectancy at birth in a span of just two decades. In these cases, there was a very strong commitment to assuring a minimum level of all health services, food and education, along with an adequate supply of safe water and basic sanitation².

19. The WHO divides environmental threats to health into two categories, *traditional hazards* associated with underdevelopment, and *modern hazards* associated with unsustainable development. Modern hazards are not discussed here. Traditional hazards relate to poverty and ‘insufficient’ development and include lack of access to safe drinking water; inadequate basic sanitation in the house and in the community; indoor air pollution from cooking and heating and inadequate solid waste disposal.

20. In Australia, the ‘traditional hazards’ are largely associated with rural and remote Indigenous communities. In urban areas across Australia, residents normally do not have to concern themselves with whether the water is safe, whether sewage and other waste water is effectively removed and treated, that food is prepared or stored hygienically, or whether animals are controlled. It is also generally taken as given that people understand the links between good health and how facilities are used.

21. Housing is of central importance to quality of life and effective housing removes most traditional hazards, however numerous factors in the home environment can influence health negatively. Lack of access to piped water and the lack of sanitary facilities are key indicators of ‘unhealthy’ housing, leading to high disease rates.

22. In 1987, the Nganampa Health Council in South Australia published a report on environmental health issues³. It identified nine healthy living practices that are necessary to improve health. They are:

- (i) washing people, particularly children under five years of age;
- (ii) washing clothes and bedding;

² WHO, *World Health Report, 2000*.

³ South Australian Committee of Review on Environmental and Public Health in the Anangu Pitjantjatjara Lands, *Report of Uwankara Palyanyku Kanyintjaku*, Adelaide, 1987.

- (iii) removing wastewater, sewage and rubbish from the living environment;
- (iv) improving nutrition — maintaining hygiene and the ability to store, prepare and cook food;
- (v) reducing crowding and the potential for the spread of disease;
- (vi) reducing contact between people and animals, vermin or insects;
- (vii) reducing the negative impact of dust;
- (viii) temperature control; and
- (ix) reducing the risk of trauma (or minor injury) around the house.

23. This was followed by the report *Housing for Health*⁴ in 1993 which added design and maintenance of housing, and life threatening safety issues, to the list. Further work in this area has been undertaken by Pholeros *et al*⁵, as a firm that undertakes healthy housing projects throughout Australia (around 2000 houses located in South Australia, North Queensland and New South Wales have been part of this exercise to date). More recently, ATSIC has funded \$3.6 million for 1999-2000 and 2000-01 for the Fixing Houses for Better Health project, covering 1000 houses (about 200 houses in each of five States). The project provides about \$3 000 per house for repairs and includes the compilation of a detailed data set to monitor outcomes.

24. Table 1 shows the broad areas of infrastructure service delivery that impact on health and housing outcomes, who delivers those services and what associated environmental health processes or activities are provided.

25. In general, the Commonwealth's role in environmental health focuses on strategic direction at a national level, while the States and local government have direct responsibility for the management of environmental health and public health activities as prescribed by their Public Health legislation. Environmental health is highly inter-sectoral, embracing a broad range of subjects and stakeholders.

26. ***Commonwealth government input.*** Environment Australia undertakes a number of environmental activities with Indigenous communities. Landcare assists some Indigenous communities in a similar way.

27. The enHealth Council was established in 1999 to oversee the National Environmental Health Strategy. The enHealth Council has conducted three workshops on Indigenous Environmental Health. Major directions and recommendations arising from these workshops include:

- adoption of rigorous inspection of all works, either as part of the funding process or through local government supervision;

⁴ HealthHabitat, *Housing for Health, Towards a Healthy Living Environment for Aboriginal Australia*, 1993.

⁵ Pholeros, P., Rainow, S. and Torzillo, P., *A Strategy for WellBeing*, 1999.

- development of a national Environmental Health Worker strategy to improve training and employment opportunities, and develop career paths;
- examination of legislative and institutional obstacles with the intention of developing national environmental health standards;
- establishment of a national steering committee to promote a whole of government approach to Indigenous environmental health; and
- environmental health in remote communities was the single highest priority for government.

Table 1 OVERVIEW OF ENVIRONMENTAL HEALTH ISSUES, PROVIDERS AND ACTIVITIES

Service type or issue	Providing agencies	Environmental health activities
Primary Health Care	DHAC, State and local government	Health prevention programs, immunisation, links to other providers
Public Health Care	State and local government	Inspection of food and accommodation premises, swimming pools, dog control, employment of Environmental Health Officers
Housing	ATSIC, DFACS through State government and Indigenous housing authorities	Ongoing maintenance for effective use of housing, health housing initiatives, defining building standards
Water	ATSIC and State governments	Water testing, functionality in the home
Sewerage	ATSIC and State governments	Ongoing maintenance, septic management
Solid Waste Removal	ATSIC and local governments	Collection and management – often via CDEP
Dust	ATSIC and local governments	Landscaping and traffic management
Aboriginal Environmental Health Workers (AEHW)	State and local government	Employment and training of AEHWs whose role is to monitor, fix or co-ordinate work in communities
Building approval and inspection services	Local government	Building and infrastructure work, inspections against standards
The development of community or town plans	ATSIC and/or State governments should co-ordinate	Planning that takes account of cultural issues, the location and environmental issues
Use of appropriate technology	ATSIC and other agencies	Research and adoption of appropriate technologies or practices

Source: Commonwealth Grants Commission

28. In terms of service delivery, the key Commonwealth approach can be described, loosely, under the National Aboriginal Health Strategy (NAHS). The ATSIC Community Housing and Infrastructure Program (CHIP) and NAHS, and the TSRA provide housing and infrastructure in Indigenous communities. Under CHIP, Regional Councils also manage Municipal Services funds that provide for ongoing running and maintenance of infrastructure, and many services in rural and remote communities. In a single community, a NAHS project may provide new housing, repairs and maintenance to existing housing, associated infrastructure (new sewerage system or upgrade of roads), and training to provide community organisations with the skills to better manage their resources. The ATSIC—Army Community Advancement Program (AACAP) is an extension of NAHS, using the Australian Army, and has links to primary health.

29. The Department of Education, Training and Youth Affairs (DETYA) and the Australian National Training Authority (ANTA) have an important role in the provision of education and training for Aboriginal Environmental Health Workers (AEHWs). Their national approach, built on core competencies and skills courses with accreditation in this area, is an important step in gaining professional recognition for AEHWs and to build and skill the required workforce.

30. In summary, the Commonwealth provides overall leadership in wider environmental matters and is attempting to play a greater co-ordination role through enHealth. It provides specific health and housing capital and recurrent funding focussed largely in rural and remote areas.

31. ***State government input.*** State governments have responsibility for laws concerning public health, as well as laws empowering local governments to undertake public health activities.

32. The Queensland Government has a strategy that provides a ‘framework for the co-ordination of actions that aim to have a positive impact on Indigenous health outcomes’⁶. The stimulus for the strategy arose in response to the enHealth workshops and has six key action areas:

- (i) community participation and control;
- (ii) co-ordination and collaboration between agencies;
- (iii) a sustainable environmental health workforce;
- (iv) healthy housing and infrastructure;
- (v) information networks; and
- (vi) optimal environmental health programs.

The Strategy notes the importance of co-ordination and commitment from stakeholders, acknowledges the need for change and foreshadows increased resources.

⁶ Queensland Health, *Aboriginal and Torres Strait Islander Environmental Health Strategy 2001-2004*.

33. The Western Australian Government, as part of a detailed report into health services in the Kimberley region⁷, has just released a report into environmental health. It makes a number of important recommendations that are likely to be applicable in remote and rural areas across Australia.

34. The Report found that current arrangements for the provision of environmental health services to Aboriginal communities in the Kimberley region are *ad hoc*, poorly co-ordinated, lacking in both goals and appropriate methods of assessment, and generally ineffective in improving the living conditions, health and general wellbeing of Aboriginal people.

35. The report identified the following inadequacies with respect to the current environmental health programs operating in the Kimberley region:

- Programs are initiated and implemented at the Commonwealth, State, and local government level, and by a number of different agencies, creating constant overlapping of programs and little co-operation or exchange of information.
- Local governments are either expressly lacking in statutory powers or are unclear of their jurisdiction in the area of environmental health in Indigenous communities.
- Funding for environmental health programs is generally only for short term projects of less than a year, and projects cease when funding ceases, resulting in the rapid loss of any benefits obtained from them.
- The training, qualifications, pay arrangements, reporting relationships and career structures for AEHWs are inadequate.
- There is a need for local governments to take a more active role in Indigenous communities in the areas of public health education and dog control.
- Malnutrition and a lack of fresh healthy food continue to be serious problems for Indigenous children in the Kimberley region.

36. The report noted that the expenditure of limited public funds to purchase expensive acute care hospital facilities, or employ large numbers of highly skilled medical staff in all towns in the Kimberley is not the most effective way of addressing Indigenous health problems. Greater gains can be made by concentrating a greater percentage of total health expenditure on improving environmental health conditions.

37. Central to the report's recommendations was the view that local governments be given primary responsibility for implementing environmental health programs and

⁷ Western Australian Legislative Council, *Report of the Standing Committee on Estimates and Financial Operations in Relation to Environmental Health in the Aboriginal Communities in the Kimberley Region*, Perth, 2000.

enforcing environmental health standards in all Indigenous communities within their boundaries.

38. The (Northern) Territory Health Services (THS) have an *Aboriginal Public Health Strategy (1997-2002)* containing five result action areas — support community action; build the public health workforce; organise Territory Health Services; co-ordinate public health; and develop legislation and policy. THS has also produced a detailed resource book targeted to workers in community settings in the Territory.

39. State governments have also been developing essential services agreements with ATSIC and the Commonwealth to deliver or maintain infrastructure in Indigenous communities (for example the Remote Area Essential Services Programs in Western Australia and South Australia, and agreements with the Torres Strait Regional Authority).

40. In addition, some State governments have specific programs in place that focus on improved environmental health for Indigenous communities through infrastructure related programs. For example, the Aboriginal Community Development Program (ACDP) in New South Wales, the Aboriginal and Torres Strait Islander Infrastructure Program (ATSIIIP) in Queensland and the Aboriginal Community Strategic Investment Program (ACSIP) in Western Australia.

41. A number of States have also developed detailed databases used to assist in identifying need and to better plan and monitor progress. These include the Western Australian Environmental Health Needs database, the Northern Territory's Environmental Health Infrastructure Maintenance System database. New South Wales uses Community Housing and Environmental Health Plans and Queensland has developed Total Management Plans that focus on infrastructure requirements in 34 Indigenous communities.

42. The employment and training of AEHWs varies between the States. The Health Department of Western Australia has 34 AEHWs located throughout the State. Queensland has partly funded AEHWs in most large communities using CDEP, and commented that that no State authority is willing to fund more services. Arrangements in other States vary but most have some AEHWs.

43. Table 2, based on CHINS data, shows the number of environmental health workers in each State. It shows that over 70 per cent of all communities (with a population of 50 or more) are without the assistance of environmental health workers.

44. **Local government input.** Local government generally has the legislative power to develop local laws relating to environmental health issues. For example, public health and building construction, maintenance, and safety standards.

National Environmental Health Strategy

45. The National Environmental Health Strategy (NEHS)⁸ is the first national approach to the management of environmental health issues in Australia. It acknowledges

⁸ Approved by the Australian Health Ministers Conference in August 1999 and launched by the Federal Health and Aged Care Minister, on 7 October 1999.

that Environmental Health involves a broad range of subject areas and involves a wide variety of stakeholders. It provides a basis for bringing the stakeholders together nationally.

Table 2 ENVIRONMENTAL HEALTH WORKERS, COMMUNITIES WITH A POPULATION OF 50 OR MORE

	Communities with environmental health worker			Communities with no environmental health worker	Total communities
	Working	Training	Total		
New South Wales	–	–	–	58	58
Queensland	16	10	26	18	44
Western Australia	40	7	47	38	85
South Australia	5	–	5	22	27
Northern Territory	15	4	19	112	131
Australia^(a)	76	22	98	250	348

(a) Victoria and Tasmania are included with Australia.

Note: Community based environmental health workers do not operate in all States, with New South Wales and Victoria relying on regionally based environmental health officers.

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSIIC, Australia, 1999.

46. The Strategy also provides a framework for increasing the capacity of those providing environmental health services in Australia, by outlining clear processes for improving the assessment, prevention, control and management of environmental health hazards. At the heart of the Strategy is the Australian Charter of Environmental Health, which identifies the basic entitlements and responsibilities for individuals and communities, business and industry to live in safe and healthy environments.

47. One of the tasks of the enHealth Council is the implementation of the NEHS. This has resulted in the launch of the National Environmental Health Strategy Implementation Plan in July 2000. The Implementation Plan is divided into three domains:

Environmental Health Justice

- Indigenous environmental health; and
- Sustainable development.

Environmental Health Systems

- Economic analysis;
- Health impact and health risk assessment;
- Information and research;
- Standards and guidelines; and
- Workforce.

Human-Environment Interface

- Air and Water (drinking and recreational);
- Built Environment; and
- Vector-Borne Disease.

48. Indigenous environmental health is the first issue within the domain of Environmental Health Justice. There is significant existing activity addressing Indigenous health issues, with principle carriage lying with other agencies such as the Aboriginal and Torres Strait Islander Commission, and the Office of Aboriginal and Torres Strait Islander Health, as well as regional and community organisations.

49. Guided by the recommendations contained in the 1999 Report of the Second National Indigenous Environmental Health Workshop⁹, the Implementation Plan targets the provision of support for Environmental Health Workers in Indigenous communities as an issue that has not received the attention it deserves and where national action was needed.

50. An important recommendation of the Workshop incorporated into the NEHS Implementation Plan was the formation of the National Indigenous Environmental Health Forum. The aims of the forum are:

- to provide a mechanism for Indigenous Environmental Health Workers to participate in decision making and information sharing;
- to be a reference group for the enHealth Council to comment on issues and information referred by the enHealth Council, or identified by the forum, that impact on the work of Indigenous Environmental Health;
- to facilitate community representation and consultation; and
- to convene the National Indigenous Environmental Health Conference.

51. The following figures illustrate the importance of environmental health by showing the number of Indigenous hospital separations per 1000 persons for some key environment related conditions in Queensland, Western Australia and the Northern Territory.

⁹ EnHealth, *Indigenous Environmental Health: Report of the Second National Workshop (20-21 May 1999, Broome, Western Australia)*, Canberra, 2000.

Figure 1 HOSPITAL SEPARATIONS FOR ENVIRONMENT RELATED CONDITIONS, INDIGENOUS AUSTRALIANS, QUEENSLAND 1996-97

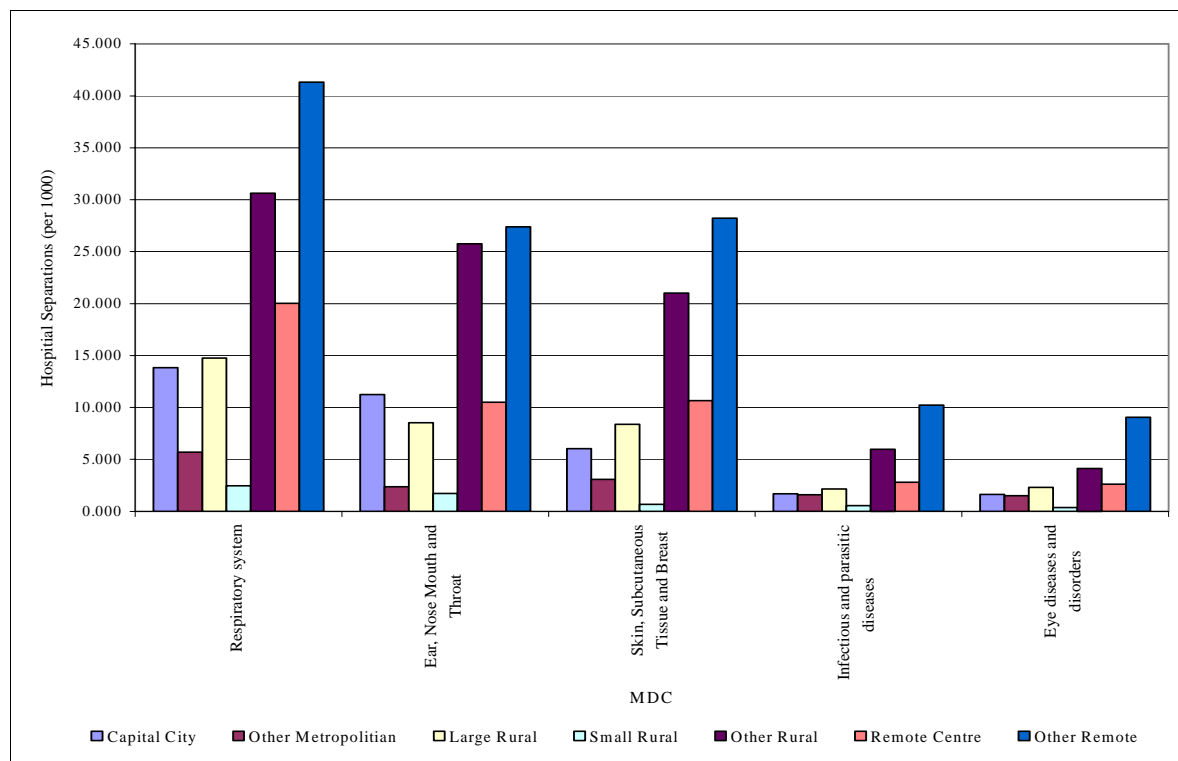


Figure 2 HOSPITAL SEPARATIONS FOR ENVIRONMENT RELATED CONDITIONS, INDIGENOUS AUSTRALIANS, WESTERN AUSTRALIA 1996-97

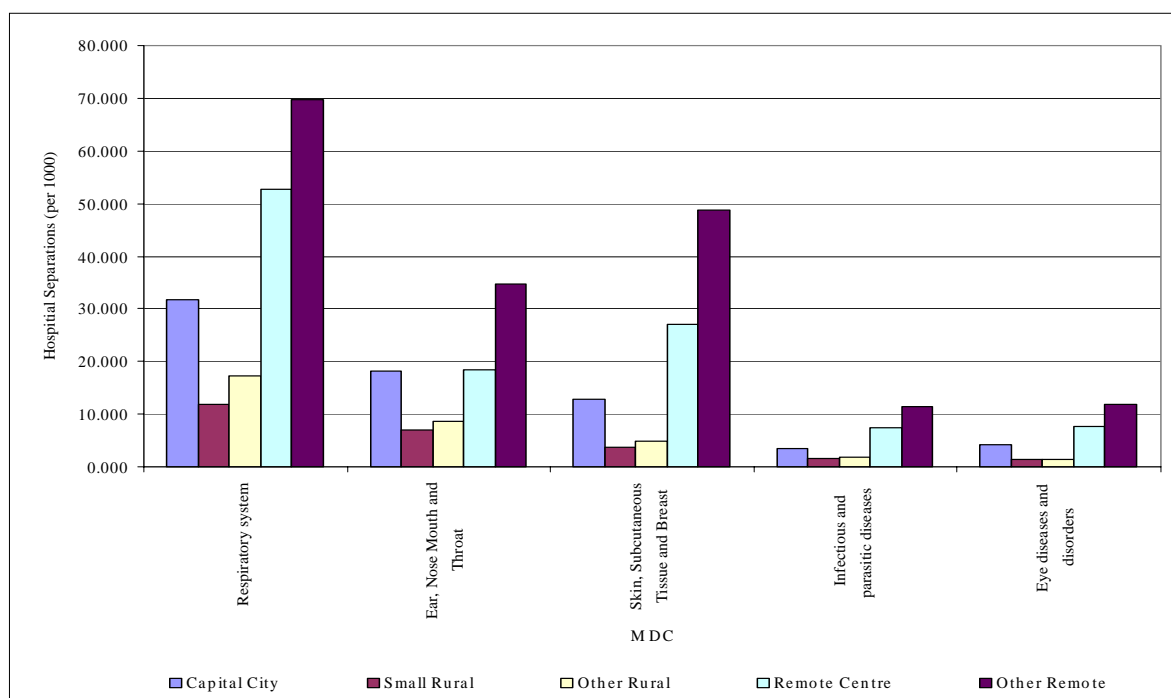
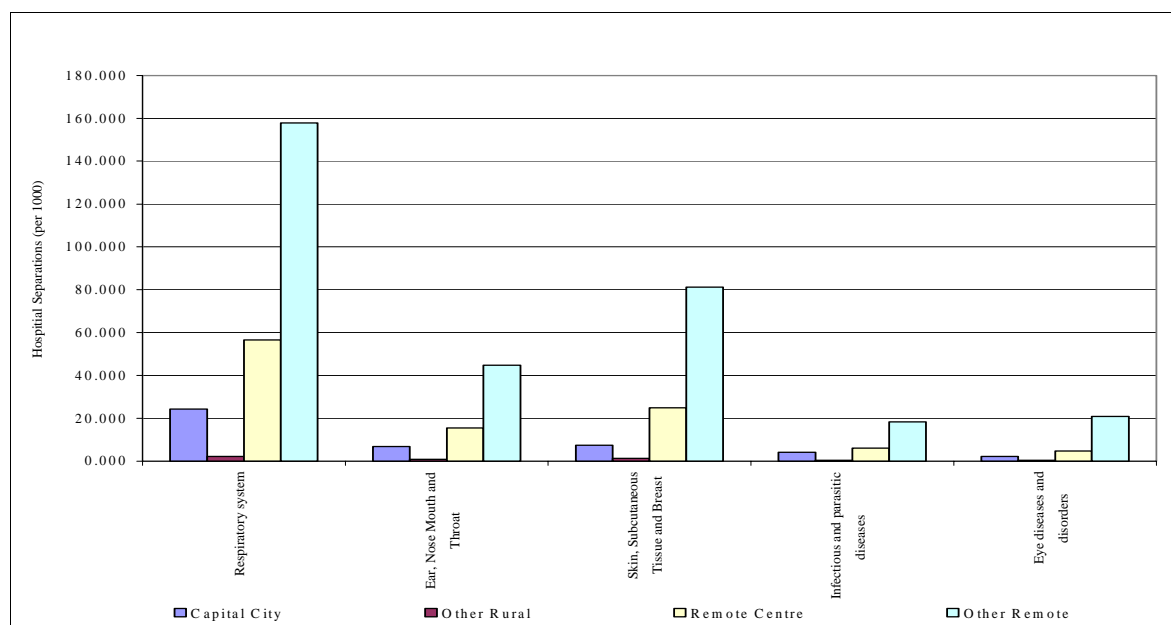


Figure 3 HOSPITAL SEPARATIONS FOR ENVIRONMENT RELATED CONDITIONS, INDIGENOUS AUSTRALIANS, NORTHERN TERRITORY 1996-97



INDIGENOUS-SPECIFIC INFRASTRUCTURE PROGRAMS

52. Commonwealth involvement with Indigenous-specific housing and infrastructure programs began in the late 1960s when it provided supplementary funding for infrastructure because some State and local governments were reluctant or unable to provide services for Indigenous communities in rural or remote areas.

53. Most Commonwealth support for infrastructure for Indigenous communities is through ATSIC's Community Housing and Infrastructure Program (CHIP)¹⁰. The objective of this program is 'to increase the number of Aboriginals and Torres Strait Islanders with access to adequate housing, infrastructure facilities and essential municipal services consistent with, and appropriate to, their expressed needs.'

54. About half of the expenditure under CHIP is through ATSIC Regional Councils and half is nationally managed through NAHS. Under CHIP, funds are provided to Regional Councils for Community Infrastructure and Municipal Services, while large scale environmental health projects are funded through the NAHS.

¹⁰ A similar approach is adopted by the TSRA.

55. In early 1994, ATSIC commissioned a review of CHIP, which identified a number of problems in funding allocation:

- Regional Councils did not have adequate information to allow sound judgement on the relative merits of projects.
- There was a lack of technical expertise by both ATSIC and the Regional Councils.
- There were concerns about the lack of co-ordination between CHIP and State infrastructure programs.

56. As a result of this work, and using new funds provided through NAHS, ATSIC began allocating funds in 1995-96 for a pilot program — the Health Infrastructure Priorities Program (HIPP) — for project managed delivery of housing and infrastructure to communities in the greatest need. Thus, HIPP was a pilot program for NAHS.

National Aboriginal Health Strategy

57. ***Distribution of NAHS funding.*** The current NAHS program provides capital funding for large infrastructure and housing projects, which are difficult to fund through Regional Councils. The aim is to improve environmental health by upgrading or providing new, sustainable infrastructure and priority housing.

58. It is intended that NAHS funding be targeted to those communities where greatest need exists. This is identified by housing needs surveys, organisations waiting lists, Census data, Health Impact Assessments and reports by project managers.

59. ATSIC adopted a competitive selection process to select an internationally recognised engineering and project management group as the national project manager. The assessment methods devised by the national manager to prioritise communities for funding involve calculating an Evaluation Score, which is obtained by summing across four indices. These are:

- Relative Change Index, based on the relative change in housing and infrastructure improvements after the provision of HIPP infrastructure;
- HIPP Index, based on the change in score factored by the number of equivalent persons benefiting and divided by the total project cost;
- the Living Environment Index — a measure of how sophisticated the state of infrastructure would become after installation; and
- the Project Characteristics Index, which rates the community on its management skills and its commitment to maintain the infrastructure.

60. The Relative Change Index involved scoring eleven housing and infrastructure items and weighting each by a health related weight as shown in Table 3. The Health Weights were based on research by O'Connor¹¹.

Table 3 WEIGHTS USED IN DERIVING THE EVALUATION SCORE

Item	HIPP Weight	Item	HIPP Weight
Water Supply	5	Internal Roads	2
Waste Water Disposal	4.5	Rubbish Disposal	2
Housing – Occupancy	4	Landscaping, Dust Control	
– Type	4	Health Service	2
– Maintenance	4	Community/Recreational Facilities	1
Power Supply	3	External Access	1.5

Source: ATSIIC

61. *Selection of priority NAHS communities.* Planning under the NAHS for the current triennium of funding (July 2000 to June 2003) was undertaken by Contracted Program Managers (CPMs) in each State, who undertook Health Impact Assessments (HIAs) for each identified community. Communities to be assessed were identified by Regional Councils, Regional Offices and relevant State government departments.

62. The HIAs were first used under HIPP and include a desktop study, agency consultations, site investigations and the development of a prioritised project list.

63. The allocation of total NAHS funding to each State is based on a weighted funding distribution that uses bedroom need and infrastructure need factors from the 1992 Housing and Infrastructure Needs Survey (HINS), weighted to take account of cost of service provision. The allocation of projects within each State is based on the list of priority communities, and communities are funded down the list until funds are used.

64. Over the three years 2000-01 to 2002-03, approximately \$196 million will be distributed through NAHS, as follows:

New South Wales	\$ 22.60 m	11.52 per cent
Victoria	\$ 2.94 m	1.50
Queensland	\$ 39.91 m	20.34
Western Australia	\$ 35.47 m	18.08
South Australia	\$ 9.88 m	5.04
Tasmania	\$ 1.00 m	0.51
Northern Territory	\$ 84.41 m	43.02
Total	\$196.21 m	100.00

¹¹ O'Connor, R. and Associates, *Development of the Health Effects Scale, a trial instrument based on expert judgement for rating the effect of environmental factors on the health of Aboriginal households*, ATSIIC 1994.

65. Projects funded are generally large. Minimum size for projects was initially \$500 000, but this has been lowered to \$300 000 to cover possible work in Victoria and Tasmania. Although advice from ATSIC suggests very few projects below \$500 000 are funded. The average level of project funding is about \$2 million.

66. Those communities whose needs are determined to be less than \$500 000, or those who are listed but with lower priority, need to rely on other ongoing programs (CHIP and ARHP) for funding.

67. By June 2000 both ATSIC and the TSRA had completed some 146 projects valued at about \$372 million under HIPP/NAHS, the Army has undertaken 6 projects valued at \$11.6 million. Table 4 shows total CHIP/NAHS funding for infrastructure and housing over the period 1995-96 to 1999-2000 (including expenditure of equivalent funds by the Torres Strait Regional Authority). It shows that over this period, about 43 per cent of expenditure was for infrastructure projects while about 48 per cent was for housing (the balance was for project management fees).

68. Of the infrastructure projects, water reticulation and installation of sewerage systems were the most important accounting for over 70 per cent of funds. Table 4 also shows that 5 ATSIC Regions (Cooktown and the Torres Strait in Queensland, Warburton in Western Australia, Port Augusta in South Australia and Aputula in the Northern Territory) had infrastructure projects of more than \$10 million each over the period. These 5 Regions account for close to 50 per cent of the total funds for infrastructure under NAHS.

69. **Audit evaluations of NAHS.** The ATSIC Office of Evaluation and Audit reviewed both CHIP and HIPP in February 1999¹². In part, the audit used a survey of Indigenous people living in ‘urban’ as well as ‘other urban’ and ‘rural/remote’¹³ areas as a basis for their comparisons. Despite shortcomings in the data, it concluded ‘ATSIC and other government agencies need to increase, or at least maintain housing infrastructure assistance to the rural areas where many still live in improvised dwellings with substandard housing and infrastructure provisions’. It also commented that ‘the focus of government housing and infrastructure programs like CHIP and HIPP on rural/remote areas have had a positive impact’.

70. In May 1999, the Australian National Audit Office (ANAO) reviewed ATSIC’s management of the NAHS component of CHIP. The ANAO concluded that ‘contracted program management arrangements implemented by ATSIC, for NAHS, are effective in delivering major housing and infrastructure projects to Indigenous communities’¹⁴. The audit made seven recommendations, largely relating to necessary improvements to project planning and performance measurement. In their key findings ANAO commented ‘ATSIC’s approach to the identification and determination of needs and priorities for major infrastructure projects in communities has taken account of a number of relevant information sources, including from communities. As a result the construction of

¹² ATSIC Office of Evaluation and Audit, *Evaluation of the Health Infrastructure Priority Projects Program (HIPP)*, Canberra, 1999.

¹³ ABS, *National Aboriginal and Torres Strait Islander Survey (NATSIS)*, Canberra, 1994.

¹⁴ ANAO, *National Aboriginal Health Strategy — Delivery of Housing and Infrastructure to Aboriginal and Torres Strait Islander Communities, Audit Report No.39 1998-99*, Canberra, 1999.

housing, water sewerage and related systems was better targeted to address effectively major environmental health needs’.

Table 4 ATSIC HIPP/NAHS FUNDS RELEASED, 1995-96 to 1999-2000

ATSIC Region	Water	Power	Roads	Sew'ge	Rub Tip	Other Infra	Total Infra	Total Housing	Total Expend ^(a)
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Sydney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3 600.0	4 000.0
Queanbeyan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2 440.9	2 550.0
Binaal Billa	0.0	0.0	0.0	40.0	0.0	0.0	40.0	2 728.5	3 185.0
Murdi Paaki	0.0	50.0	435.0	210.0	0.0	170.0	865.0	9 020.0	11 170.0
Kamilaroi	110.0	0.0	840.0	168.0	0.0	0.0	1 118.0	5 601.0	7 243.0
Many Rivers	201.3	16.0	170.0	16.0	0.0	0.0	403.3	4 142.4	5 006.0
Total New South Wales	311.3	66.0	1 445.0	434.0	0.0	170.0	2 426.3	27 532.8	33 154.0
Binjirru	98.4	11.0	0.0	184.6	103.1	36.5	433.5	1 382.0	2 065.5
Tumbukka	121.7	117.0	0.0	12.1	5.0	0.0	255.8	721.2	1 125.0
Total Victoria	220.1	128.0	0.0	196.7	108.1	36.5	689.3	2 103.2	3 190.5
South East Queensland	0.0	0.0	0.0	200.0	0.0	0.0	200.0	1 135.0	1 465.0
Goolburri	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2 900.0	3 190.0
Central Queensland	1 500.0	0.0	0.0	0.0	0.0	0.0	1 500.0	1 300.0	3 017.0
Townsville	2 723.1	0.0	0.0	2 798.3	0.0	0.0	5 521.4	749.1	6 837.3
Cairns and District	1 212.0	174.4	0.0	200.0	0.0	91.0	1 677.4	500.0	2 336.4
Gulf and West Queensland	20.0	0.0	0.0	200.0	0.0	50.0	270.0	12 966.0	14 421.0
Peninsula	6 530.0	680.0	3 943.0	1 567.0	0.0	120.0	12 840.0	3 560.2	18 252.2
Torres Strait Area	17 461.0	0.0	2 693.0	4 212.0	0.0	0.0	24 366.0	5 332.0	30 203.0
Total Queensland	29 446.1	854.4	6 636.0	9 177.3	0.0	261.0	46 374.8	28 442.3	79 721.9
Perth Noongar	0.0	70.9	0.0	32.0	0.0	0.0	102.9	1 299.8	1 500.0
Kaata Wangkinyiny	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yamatji	2 914.5	185.0	990.0	1 561.0	85.0	406.0	6 141.5	2 050.0	9 139.5
Ngarda Ngarli Yarndu	368.0	326.0	149.1	969.1	0.0	115.0	1 927.2	1 740.0	4 319.1
Kullari	2 171.0	367.5	493.0	2 081.8	68.0	170.0	5 351.4	9 350.4	16 222.0
Malarabah	2 382.0	788.5	1 281.0	1 727.0	0.0	408.0	6 586.5	11 987.0	20 391.0
Wunan	3 186.1	1 075.0	1 150.0	2 615.9	0.0	563.2	8 590.2	5 713.1	15 977.6
Western Desert	3 238.0	624.5	521.0	5 170.9	70.0	585.6	10 210.1	2 153.5	13 906.0
Wongatha	0.0	100.0	495.0	550.0	0.0	60.0	1 205.0	3 479.2	5 165.9
Total Western Australia	14 259.7	3 537.4	5 079.1	14 707.8	223.0	2 307.9	40 114.8	37 772.8	86 621.1
Patpa Warra Yunti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wangka Willurrara	3 903.9	494.0	617.9	250.0	40.0	849.1	6 154.9	1 230.5	8 181.5
Nulla Wimila Kutju	3 270.2	130.0	2 988.0	2 670.5	1 150.0	759.0	10 967.6	2 244.0	14 567.0
Total South Australia	7 174.1	624.0	3 605.9	2 920.5	1 190.0	1 608.1	17 122.5	3 474.5	22 748.5
Tasmania	570.0	475.0	0.0	125.0	0.0	218.9	1 388.9	721.1	2 285.5
Total Tasmania	570.0	475.0	0.0	125.0	0.0	218.9	1 388.9	721.1	2 285.5
Yilli Rreung	954.3	0.0	1 000.0	0.0	0.0	92.0	2 046.3	8 923.8	12 240.0
Jabiru	1 246.0	2 134.0	1 340.0	620.0	43.0	128.0	5 511.0	17 210.0	24 887.0
Miwatj	113.0	200.0	1 122.5	2 050.0	0.0	0.0	3 485.5	16 776.2	22 361.5
Garrak Jarru	613.9	358.3	400.0	6 594.6	0.0	452.8	8 419.5	18 649.1	29 678.5
Yapakurlangu	225.0	225.0	1 038.2	3 731.1	110.0	280.0	5 609.3	10 772.0	18 036.6
Papunya	2 165.0	3 609.0	490.0	15 581.5	0.0	230.0	22 075.5	6 285.0	31 363.3
Alice Springs	300.0	0.0	0.0	4 200.0	0.0	0.0	4 500.0	700.0	5 710.0
Total Northern Territory	5 617.2	6 526.3	5 390.7	32 777.2	153.0	1 182.8	51 647.6	79 316.1	144 276.9
Australia	57 598.3	12 211.1	22 156.6	60 338.4	1 674.1	5 785.1	159 763.6	179 362.8	371 999.0

(a) Total includes project management fees.

Source: ATSIC and TSRA unpublished data.

ATSIC CHIP Community Infrastructure and Municipal Services Program

71. The community infrastructure component of CHIP is divided into National and Regional Council Programs and is designed to increase Indigenous people's access to appropriate infrastructure. Capital funding through Regional Councils is provided to severely disadvantaged rural and remote communities. Projects are usually of a smaller scale than those provided under the NAHS. As part of the negotiations on the housing bilateral agreements, ATSIC has canvassed the possible integration of related infrastructure projects to streamline service delivery arrangements.

72. Close to half of total CHIP expenditure over the last decade has been on infrastructure and associated running costs, an estimated \$989 million of the \$2 billion. The majority of the expenditure is in remote areas where the States or local government do not provide services to communities.

73. The recurrent funding necessary to cover running costs and maintenance, is provided through the municipal service component of CHIP. The aim of this component are similar to those of the community infrastructure component — that is, to supplement the efforts of State and local government to ensure that Indigenous people achieve equitable access to community facilities and essential services.

74. To achieve that aim it provides funding (usually grants) for operating and maintaining essential services such as water, sewerage, power, roads, rubbish disposal and town management to 265 Indigenous organisations that administer municipal services in rural and remote localities. It also facilitates agreements with State governments on the provision and maintenance of essential municipal services to Indigenous communities.

75. In 1999-2000, expenditure on community infrastructure and municipal services was \$101.6 million. \$57.9 million was for capital infrastructure and \$43.2 million was for recurrent or municipal type services.

76. Table 5 shows expenditure from NAHS and the Infrastructure and Municipal Services components of CHIP for 1996-97 to 1998-99.

ATSIC—Army Community Assistance Program (AACAP)

77. The ATSIC—Army project commenced in 1997-98 as a co-operative program involving the Department of Health and Aged Care (DHAC) and ATSIC, utilising the Army as a project co-ordinator to provide infrastructure and associated services to remote Indigenous communities, with an emphasis on improved environmental health outcomes. Initial projects totalled \$11.6 million but, in 1998-99, DHAC and ATSIC each agreed to contribute an additional \$20 million over four years, commencing in 1999-2000.

78. ATSIC administers the funds under its Community Housing and Community Infrastructure and Municipal Services outputs and report on outcomes. The funds are pooled to provide capital elements of projects with recurrent management and construction costs being absorbed by the Army.

Table 5 ATSIC FUNDING FOR INFRASTRUCTURE AND MUNICIPAL SERVICES 1996-97 TO 1998-99

	1996-97	1997-98	1998-99
	\$m	\$m	\$m
NAHS/HIPP INFRASTRUCTURE			
Water	10.9	9.5	10.5
Sewerage	14.4	19.2	16.0
Roads	3.6	6.7	5.4
Power	1.6	4.1	3.4
Landcare/Environmental	4.2	3.3	3.4
COMMUNITY/MUNICIPAL SERVICES			
Capital	6.4	14.5	15.9
Admin/Waste disposal Etc	47.4	38.6	39.2
OTHER			
Remote Area Essential Services	11.1	9.2	12.5
Local Government Policy	0.5	1.4	2.0
Total	99.6	106.5	108.3

Source: ATSIC Annual Reports.

Remote Area Essential Services Programs (RAESP)

79. ATSIC has Agreements with Western Australia and South Australia on State assistance for essential services to communities in remote areas. The importance of these Agreements is not just in their capacity to deliver services, but also in their provision of models for inter-government agreements on defining responsibility and joint planning.

80. ***Western Australia.*** ATSIC and the Western Australian Government signed the *Agreement for the Provision of Essential Services to Indigenous Communities* in September 2000. It provides for repair and maintenance services for power, water and waste water infrastructure in 67 remote Indigenous communities in Western Australia. It will be expanded to cover up to 72 communities in 2000-01. The Western Australian Government has committed \$9.55 million in 2000-01 and ATSIC \$9.1 million.

81. For the 67 large permanently established remote communities recognised under the agreement, the parties agreed that:

- the State Government is responsible for planned maintenance and repairs to communal power, water and waste water systems;
- community eligibility for funding is based on the Environmental Health Survey or its updates, with eligibility to be reviewed every three years;
- ATSIC will contribute funding for capital works and upgrading of essential services infrastructure;

- ATSIC will continue to fund operating costs in communities, including fuel for power plants; and
- ATSIC will provide funding for maintenance and repair of essential services to emerging communities with populations of between 40 and 49 persons.

82. The parties agreed to collaborate on programs providing major infrastructure and essential services, including the:

- National Aboriginal Health Strategy (ATSIC);
- Remote Area Essential Services Program – Capital Works (ATSIC);
- ATSIC—Army Community Assistance Program;
- Remote Area Essential Services Program – Repairs and Maintenance (Ministry of Housing);
- Aboriginal Community Strategic Investment Program (Ministry of Housing); and
- Environmental Health Package (Ministry of Housing).

83. For town based communities, the parties agreed to provide:

- or upgrade power, water and waste water services to equal those of residents of mainstream towns;
- meters and levy charges, and to provide a metering education program; and
- communal facilities and street lighting through local government.

84. Regional RAESP service providers visit the communities every 6-8 weeks to service water, power and waste water services and to rectify problems. They also provide an emergency call-out service for breakdowns and water quality testing is done regularly.

85. *South Australia.* The *Agreement for the Provision of Essential Services Infrastructure in Aboriginal Communities in South Australia* between ATSIC and the South Australian Department of State Aboriginal Affairs (DoSAA) was signed in 1997. It covers the provision of essential services infrastructure in 18 Indigenous communities.

86. These communities are all within Land Holding Authorities areas (Anangu Pitjantjatara, Maralinga Tjarutja and Aboriginal Lands Trust). The essential services provided under the Agreement include the management, operation and maintenance of power, water, waste disposal, roads for dwellings and other facilities within a community.

87. The Agreement is a triennial funding program. ATSIC and DoSAA initially agreed to provide matching amounts of at least \$2.7 million each, annually, with these funding levels to be subject to a review on completion of the triennium. A Triennial Plan has been developed to identify projects requiring capital works and to establish a program for funds allocation. In 1999-2000, the State and Commonwealth contributions were reduced to \$1.4 million.

88. A committee has been established to oversee and provide advice on the programs being funded under the agreement. The committee comprises a representative from each of Anangu Pitjantjatara, Maralinga Tjarutja, Aboriginal Lands Trust, South Australian Aboriginal Housing Authority Council, DoSAA and ATSIC.

STATE INDIGENOUS-SPECIFIC PROGRAMS

89. In the course of the Inquiry, the Commission collected information on Indigenous-specific programs for infrastructure and associated services in the States.

New South Wales — Aboriginal Communities Development Program (ACDP)

90. The ACDP is an Indigenous-specific capital construction and infrastructure upgrade program which aims to raise the health and living standards of Aboriginal communities that have a major identified health need. The Department of Aboriginal Affairs has overall responsibility for the program and the Department of Works and Services has been appointed program manager. It commenced in July 1998 and \$200 million will be spent over a seven year period.

91. The objectives of the program are to:

- provide essential infrastructure which targets high levels of need in housing, water, sewerage and roads, and sporting, recreational and cultural facilities;
- ensure community involvement through Community Working Parties;
- provide appropriate and affordable solutions;
- target select communities;
- provide opportunities for progressive community development; and
- focus on skills development.

92. Tools available to assist identify communities most in need include:

- ATSIC Health Impact Statements (NAHS);
- Community Housing and Infrastructure Survey (CHINS 1999);
- measures of housing affordability and adequacy (Census data);
- data supplied by the NSW Aboriginal Housing Office and the Department of Urban Affairs and Planning; and
- ATSIC Regional Council plans.

93. The ACDP is to be implemented in stages following the identification of the Indigenous communities that are in most need of housing and infrastructure development.

Queensland — Aboriginal and Torres Strait Islander Infrastructure Program (ATSIIP)

94. ATSIIP was established in 1995-96 to address shortfalls in basic services and infrastructure and is administered by the Department of Aboriginal and Torres Strait Islander Policy and Development (DATSIPD). In 1998-99, \$27.5 million was provided to Indigenous communities, mainly for upgrading water and sewerage facilities. In that year, Palm Island was the greatest recipient with \$13.5 million spent on constructing a new dam to augment the water supply.

95. The ATSIIP is also a major contributor to water and sewerage upgrades in the Torres Strait through the Major Infrastructure Program.

96. In prioritising communities based on need, DATSIPD places importance on the development of Community Settlement Plans and Total Management Plans that can be used to determine infrastructure needs and costs. It also works closely with the Aboriginal Coordinating Council and the Island Coordinating Council in the Torres Strait.

Western Australia — Aboriginal Communities Strategic Investment Program (ACSIP)

97. This program, which commenced in 1996, with Jigalong in the East Pilbara and Oombulgurri in the East Kimberley selected as trials. It seeks to achieve sustainable improvements in the health, living standards and quality of life of people in remote Aboriginal communities. Initiatives include road sealing, housing construction, drainage improvements and other community facilities being upgraded or replaced, with community members involved in all aspects of the projects.

98. The Western Australian Government has committed \$25 million to ACSIP over seven years from 1996-97, and continues to draw in additional communities each year. In 2000-01, major projects will include:

- construction of new barge landing at Oombulgurri (\$400 000);
- upgrade of administration office facilities at Jigalong and Mugarinya (\$300 000);
- upgrade of the environmental health managers house at Jigalong (\$400 000);
- upgrade the airstrip, refuse disposal area and staff housing at Jigalong (\$140 000);
- improve community management, structures and systems at Kalumburu, Wirramanu and Bidyadanga (\$300 000); and
- Upgrade the power station at Burringurrah (\$20 000).

99. Selection of communities for inclusion in ACSIP is on the basis that the community:

- must be large and remote with a permanent population of over 200;

- accepts that the objective of the program is normalisation of service delivery (this may involve local government involvement, training, support in management, etc).
- has a high level of needs in environmental health, social or community development problems;
- is already targeted by HIPP/NAHS which ACSIP can complement;
- is endorsed by the regional ATSIC Council and key Commonwealth and State organisations;
- has secure land tenure; and
- has the management ability to successfully drive the program.

Western Australia — Environmental Health Package

100. This initiative, launched early in 1999 under the auspices of ACSIP, is designed to help combat health problems in remote Aboriginal communities.

101. Key initiatives include sealing internal roads for dust abatement, the greening of communities, reticulation and the provision of recreational facilities including swimming pools and basketball courts. The focus on recreation is intended to provide a practical alternative to boredom, despair and substance abuse among Indigenous youth. It will also provide training and employment opportunities during construction and in the ongoing management and maintenance of facilities.

MEASURING NEEDS IN INDIGENOUS COMMUNITIES

102. In the Report, the Commission assumed that the provision of infrastructure and associated services to Indigenous people living in urban areas is adequately catered for under mainstream programs. It found that service provision is inadequate in some remote areas, particularly in small communities. The Community Housing and Infrastructure Survey (CHINS) is a valuable tool for assessing the relative needs of Indigenous communities. The 1997 survey of Environmental Health Needs of Aboriginal Communities in Western Australia and the recently completed survey of Aboriginal Communities in the Northern Territory are also helpful aids for those States. The Western Australian survey incorporated a practical way of weighting populations and different types of infrastructure that could be further developed.

103. A comparison of populations from the 1996 Census and the CHINS indicates that the Indigenous population living in discrete communities is a small proportion of all Indigenous Australians although this varies between States as shown below.

Table 6 POPULATIONS AT CENSUS AND IN COMMUNITIES IN CHINS

ATSI Region	1996 Census population	1999 CHINS community population
Sydney	37 117	430
Many Rivers (Lismore)	27 127	2 728
Kamilaroi (Tamworth)	11 595	2 066
Queanbeyan	9 855	1 020
Murdi Paaki (Bourke)	7 951	1 526
Binaal Billa (Wagga Wagga)	19 535	1 333
Total New South Wales	113 180	9 103
Tumbukka (western Victoria)	11 660	120
Binjirru (eastern Victoria)	10 938	130
Total Victoria	22 598	250
SEQ Indigenous (Brisbane)	30 325	47
Central Queensland (Rockhampton)	12 436	1 100
Gulf and West Queensland (Mt Isa)	7 306	3 508
Townsville	16 107	3 160
Cairns and District	16 144	3 512
Peninsula (Cairns)	6 184	8 789
Goolburri (Roma)	9 661	2 500
Torres Strait Area	6 654	6 824
Total Queensland	104 817	29 440
Patpa Warra Yunti (Adelaide)	13 686	640
Nulla Wimila Kutju (Port Augusta)	6 351	3 805
Wangka Willurrara (Ceduna)	2 014	809
Total South Australia	22 051	5 254
Perth Noongar	19 765	280
Kaata Wangkinyiny (Perth)	6 814	40
Wongatha (Kalgoorlie)	3 462	634
Western Desert	2 952	2 909
Yamatji (Geraldton)	5 497	756
Ngarda Ngarli Yarndu (South Hedland)	4 721	1405
Malarabah (Derby)	4 347	4 142
Wunan (Kununurra)	4 887	3 996
Kullari (Broome)	3 760	2 999
Total Western Australia	56 205	17 161
Tasmanian Aboriginal	15 322	70
Total Tasmania	15 322	70
Yilli Rreung (Darwin)	10 078	1 246
Jabiru (Darwin)	8 685	11 491
Miwatj (Nhulunbuy)	7 848	10 274
Garrak Jarru (Katherine)	7 986	8 866
Yapakurlangu (Tennant Creek)	3 866	4 073
Alice Springs	4 986	2 745
Papunya (Alice Springs)	8 427	10 021
Total Northern Territory	51 876	48 716
Total	38 6049	10 9994

Source: ABS Census 1996 and CHINS 1999.

104. The 1999 CHINS surveyed 1 291 ‘discrete’ Indigenous communities throughout Australia¹⁵. It shows that most communities are small — Table 7 shows that about 75 per cent of the communities surveyed had a usual population of 50 persons or less. Most of these are located in the remote northern parts of Australia.

Table 7 DISCRETE INDIGENOUS COMMUNITIES, 1999

	NSW ^(a)	Vic	Qld	WA	SA	Tas	NT	Total
Total number of communities	67	2	149	285	106	1	681	1 291
Usual population	9 103	250	29 440	17 161	5 254	70	48 716	109 994
Average population per community	136	125	198	60	50	70	72	85.2
Number of communities with less than 50 people	9	0	105	200	79	0	550	943
Proportion of communities with less than 50 people (per cent)	13.4	0.0	68.5	70.2	74.5	0.0	80.8	73.0

(a) ACT is included in NSW.

Source: ATSIIC (produced by ABS) *Community Housing and Infrastructure Survey, 1999*.

105. Table 8 summarises 1999 CHINS data for communities with a usual population of 50 or more (the larger communities). It shows that, Australia wide, 59 per cent of those communities experienced sewage overflows or leakages in the previous year, 35 per cent had water restrictions and 30 per cent had 10 or more power interruptions.

106. Inadequate sewerage facilities were common in all States. Apart from Tasmania, which has only 1 community with a population larger than 50, communities in Queensland, South Australia and Western Australia were the worst with failure rates of 75, 72 and 68 per cent. Fifty per cent of communities in Queensland experienced 10 or more power interruptions during the previous year and 57 per cent of communities in Queensland experienced water restrictions in the previous year. Western Australia, at 40 per cent, also had a high proportion of communities with inadequate water supplies.

107. Table 9 to Table 11 are reproduced from the Report. They show similar information to that shown in Table 8 except that they present the number of persons (rather than communities) in each ATSIIC Region affected by inadequate water, power or sewerage infrastructure. (Note that in the following tables, traditional names of Regions have not been used because of space restrictions.)

108. Detailed maps covering the main source of supply for water and power and the main type of sewerage system in the communities can be found in the volume of Consultant’s Reports.

¹⁵ A discrete Indigenous community is defined by the ABS as a geographical location bounded by physical or cadastral (legal) boundaries, and inhabited or intended to be inhabited predominantly by Indigenous people, with housing or infrastructure that is either owned or managed on a community basis.

Table 8 SUMMARY OF CHINS FINDINGS, DISCRETE INDIGENOUS COMMUNITIES

ATSIC Region	Total comm-unities	Usual Pop	Communities with a usual population of 50 or more						
			No. of Comm-unities	Water restrictions		10 or more power cuts		With sewerage leakages	
				No.	No.	%	No.	%	No.
Queanbeyan	4	1020	4	2	50	-	-	2	50
Murdi Paaki	15	1 526	14	5	36	4	290	6	43
Many Rivers	22	2 728	19	-	-	1	5	7	37
Sydney	3	430	3	1	33	-	-	2	67
Kamilaroi	9	2 066	9	5	56	3	33	8	89
Binaal Billa	14	1 333	9	6	67	1	11	7	78
Total New South Wales	67	9 103	58	19	33	9	16	32	55
Binjirru	1	130	1	-	-	-	-	1	100
Tumbukka	1	120	1	-	-	-	-	-	-
Total Victoria	2	250	2	-	-	-	-	1	50
South East Queensland	1	47	0	-	-	-	-	-	-
Cairns and District	6	3 512	5	1	20	1	20	2	40
Gulf and West Queensland	37	3 508	4	1	25	2	50	1	25
Peninsula	83	8 789	13	7	54	6	46	10	77
Central Queensland	1	1 100	1	1	100	1	100	1	100
Goolburri	1	2 500	1	-	-	-	-	-	-
Torres Strait Area	18	6 824	18	15	83	11	61	17	94
Townsville	2	3 160	2	-	-	1	50	2	100
Total Queensland	149	29 440	44	25	57	22	50	33	75
Perth Noogar	3	280	3	1	33	-	-	2	67
Kullari	67	2 999	6	-	-	3	50	5	83
Wunan	72	3 996	17	7	41	4	24	10	59
Western Desert	31	2 909	20	8	40	4	20	17	85
Kaata Wangkinyiny	2	40	0	-	-	-	-	-	-
Ngarda Ngarli Yarndu	29	1 405	8	3	38	2	25	4	50
Malarabah	58	4 142	21	7	33	9	43	15	71
Wongatha	10	634	5	3	60	3	60	3	60
Yamatji	13	756	5	5	100	1	20	2	40
Total Western Australia	285	17 161	85	34	40	26	31	58	68
Patpa Warra Yunti	6	640	4	1	25	1	25	2	50
Wangka Willurra	13	809	6	-	-	-	-	1	17
Nulla Wimila Kutju	87	3 805	17	7	41	8	47	11	65
Total South Australia	106	5 254	27	8	30	9	33	14	52
Tasmania	1	70	1	1	100	1	100	-	-
Total Tasmania	1	70	1	1	100	1	100	-	-
Alice Springs	48	2 745	16	2	13	-	-	4	25
Jabiru	142	11 491	20	10	50	9	45	9	45
Garrak Jarru	110	8 866	23	4	17	12	52	13	57
Papunya	181	10 021	35	5	14	5	14	15	43
Miwatj	123	10 274	18	11	61	9	50	14	78
Yapakurlangu	60	4 073	13	2	15	4	31	9	69
Yilli Rreung	17	1 246	6	-	-	-	-	2	33
Total Northern Territory	681	48 716	131	34	26	39	30	66	50
Australia	1 291	109 994	348	121	35	106	30	204	59

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSIC, Australia, 1999.

Table 9 NUMBER OF PEOPLE IN COMMUNITIES WHICH HAD SUFFERED WATER RESTRICTIONS^(a), 1999

ATSIC Region	Persons	ATSIC Region	Persons	ATSIC Region	Persons	ATSIC Region	Persons
Nhulunbuy	4 787	Port Augusta	500	South Hedland	92	Brisbane	0
Torres Strait	2 397	Bourke	460	Adelaide	60	Roma	0
Cooktown	2 240	Derby	320	Wagga	50	Townsville	0
Jabiru	1 333	Geraldton	312	Ceduna	15	Perth	0
Rockhampton	1 100	Mt Isa	280	Queanbeyan	0	Broome	0
Katherine	993	Kalgoorlie	202	Coffs Harbour	0	Narrogin	0
Aputula	875	Cairns	200	Sydney	0	Hobart	0
Warburton	687	Tamworth	130	Wangaratta	0	Alice Springs	0
Kununurra	505	Tennant Creek	118	Ballarat	0	Darwin	0

(a) Includes only people in communities which had restrictions three or more times in the previous year.

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSIC, Australia, 1999.

Table 10 NUMBER OF PEOPLE IN COMMUNITIES WITH NO SEWERAGE SYSTEM, OR AN INADEQUATE SYSTEM, 1999

ATSIC Region	Persons	ATSIC Region	Persons	ATSIC Region	Persons	ATSIC Region	Persons
Nhulunbuy	1 843	Geraldton	200	South Hedland	12	Cairns	0
Torres Strait	1 388	Derby	185	Queanbeyan	0	Rockhampton	0
Jabiru	1 376	Coffs Harbour	140	Bourke	0	Roma	0
Aputula	1 126	Kununurra	139	Sydney	0	Townsville	0
Cooktown	693	Tennant Creek	119	Tamworth	0	Adelaide	0
Port Augusta	578	Ceduna	89	Wagga	0	Perth	0
Broome	515	Warburton	82	Wangaratta	0	Narrogin	0
Katherine	319	Darwin	65	Ballarat	0	Kalgoorlie	0
Mount Isa	209	Alice Springs	33	Brisbane	0	Hobart	0

Note: An inadequate sewerage system includes those reported as having 'pit', 'pan' or 'other' type of toilet.

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSIC, Australia, 1999.

Table 11 NUMBER OF PEOPLE IN COMMUNITIES WITH NO POWER SUPPLY, OR INADEQUATE SUPPLY, 1999

ATSIC Region	Persons	ATSIC Region	Persons	ATSIC Region	Persons	ATSIC Region	Persons
Cooktown	261	Warburton	22	Wangaratta	0	Port Augusta	0
Kununurra	260	Alice Springs	14	Ballarat	0	Perth	0
Nhulunbuy	206	Mount Isa	8	Brisbane	0	Narrogin	0
Aputula	202	Queanbeyan	0	Cairns	0	South Hedland	0
Ceduna	155	Bourke	0	Rockhampton	0	Derby	0
Katherine	133	Coffs Harbour	0	Roma	0	Kalgoorlie	0
Tennant Creek	122	Sydney	0	Torres Strait	0	Geraldton	0
Jabiru	80	Tamworth	0	Townsville	0	Hobart	0
Broome	35	Wagga	0	Adelaide	0	Darwin	0

Note: An inadequate power supply includes those reported as having a supply from an 'other' source.

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSIC, Australia, 1999.

109. In many communities, access, whether by road, air or sea was an important issue in terms of cost, convenience and security. This was particularly the case in remote northern parts of Australia subject to monsoonal weather patterns. In those communities, roads and barge landings often require major maintenance or replacement. Table 12 and Table 13 show populations of Indigenous people in ATSI Regions where difficulty of access is an issue.

Table 12 POPULATION WHOSE MAIN ACCESS IS BY ROAD, AFFECTED BY MORE THAN TWO ROAD CLOSURES IN THE PREVIOUS YEAR.

ATSI Region	ATSI Region	ATSI Region	ATSI Region
Persons	Persons	Persons	Persons
Katherine 3 453	Mt Isa 341	Darwin 60	Roma 0
Aputula 1 580	Warburton 321	Queanbeyan 0	Torres Strait 0
Broome 1 510	Kununurra 311	Bourke 0	Adelaide 0
Cooktown 800	Cairns 280	Sydney 0	Ceduna 0
Port Augusta 790	Geraldton 280	Wagga Wagga 0	Perth 0
Tennant Creek 640	Townsville 160	Wangaratta 0	Narrogin 0
Tamworth 585	Coffs Harbour 100	Ballarat 0	Kalgoorlie 0
South Hedland 434	Nhulunbuy 73	Brisbane 0	Hobart 0
Derby 360	Jabiru 67	Rockhampton 0	Alice Springs 0

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSI, Australia, 1999.

Table 13 POPULATION OF COMMUNITIES WHOSE MAIN ACCESS IS VIA SEA OR AIR

ATSI Region	ATSI Region	ATSI Region	ATSI Region
Persons	Persons	Persons	Persons
Torres Strait 6 674	Derby 10	Ballarat 0	Warburton 0
Jabiru 5 947	Adelaide 5	Brisbane 0	Narrogin 0
Nhulunbuy 5 129	Queanbeyan 0	Cairns 0	South Hedland 0
Townsville 3 000	Bourke 0	Rockhampton 0	Kalgoorlie 0
Cooktown 2 142	Coffs Harbour 0	Roma 0	Geraldton 0
Mt Isa 1 134	Sydney 0	Ceduna 0	Alice Springs 0
Kununurra 875	Tamworth 0	Port Augusta 0	Katherine 0
Darwin 250	Wagga Wagga 0	Perth 0	Aputula 0
Hobart 70	Wangaratta 0	Broome 0	Tennant Creek 0

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSI, Australia, 1999.

110. Table 14 and Table 15 show populations of Indigenous people in ATSI Regions where disposal of rubbish and disposal of grey water is an issue. This illustrates Regions where environmental health issues may be a high priority.

Table 14 PERSONS IN COMMUNITIES WITH NO RUBBISH COLLECTION.

ATSI Region	ATSI Region	ATSI Region	ATSI Region
Persons	Persons	Persons	Persons
Coffs Harbour 420	Port Augusta 70	Sydney 0	Torres Strait 0
Tamworth 286	Aputula 59	Wangaratta 0	Townsville 0
Nhulunbuy 244	Wagga Wagga 54	Ballarat 0	Adelaide 0
Warburton 125	Ceduna 38	Brisbane 0	Perth 0
Broome 119	Alice Springs 20	Cairns 0	Narrogin 0
Jabiru 104	South Hedland 12	Mt Isa 0	Geraldton 0
Derby 83	Kununurra 7	Cooktown 0	Hobart 0
Kalgoorlie 75	Queanbeyan 0	Rockhampton 0	Tennant Creek 0
Katherine 75	Bourke 0	Roma 0	Darwin 0

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSI, Australia, 1999.

Table 15 PERSONS IN COMMUNITIES THAT DISPOSE OF GREY WATER BY OPEN RUN OFF OR SOAK PIT

ATSI Region	ATSI Region	ATSI Region	ATSI Region
Persons	Persons	Persons	Persons
Nhulunbuy 996	Darwin 80	Wangaratta 0	Adelaide 0
Aputula 561	Kalgoorlie 75	Ballarat 0	Ceduna 0
Torres Strait 375	Derby 35	Brisbane 0	Port Augusta 0
Kununurra 355	Katherine 29	Cairns 0	Perth 0
Tamworth 286	Bourke 20	Mt Isa 0	Warburton 0
Geraldton 140	Queanbeyan 0	Cooktown 0	Narrogin 0
Alice Springs 100	Coffs Harbour 0	Rockhampton 0	South Hedland 0
Jabiru 99	Sydney 0	Roma 0	Hobart 0
Broome 94	Wagga Wagga 0	Townsville 0	Tennant Creek 0

Source: *Community Housing and Infrastructure Needs Survey*, produced by ABS on behalf of ATSI, Australia, 1999.

111. These tables support the Commission's findings in the Report that poor infrastructure services are experienced most in the remote and sparsely populated areas (particularly those in the northern parts of Australia).

