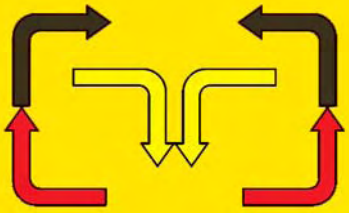


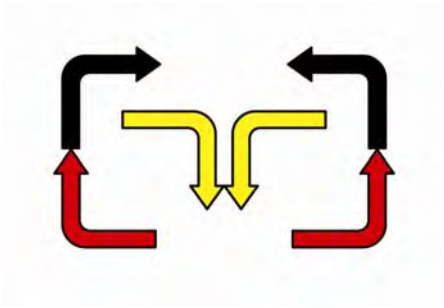
Environmental Health Needs of Aboriginal Communities in Western Australia

THE 2008 SURVEY AND ITS FINDINGS

Government of **Western Australia**
Department of **Health**
Department of **Indigenous Affairs**

tns social research

The colours of the Aboriginal flag flow through three pairs of circulating arrows. This indicates Regional, State and National levels of Government sharing information, improving coordination, and working together with Aboriginal people to achieve improvements in environmental health conditions in Aboriginal communities



Environmental Health Needs Coordinating Committee

Contributing members:
Department of Health
Department of Indigenous Affairs
Department of Housing
Department of Local Government
Western Australian Local Government Association
Australian Government Department of Health and Ageing
Australian Government Department of Family, Housing, Community Services and Indigenous Affairs

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http://www.dia.wa.gov.au/Publications

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Foreword

The conditions in which many Aboriginal people live are issues with which the governments of Western Australia and Australia have grappled over many years. The availability of adequate and functional housing, access to safe drinking water and nutritious food, a consistent electricity supply and an organised waste disposal system are basic elements that preserve and protect life. For most of the mainstream Australian population, these are taken for granted. This is not the case in many regional and remote Aboriginal communities, where the resultant poor living conditions contribute to the higher prevalence of disease, injury and premature death.

The Environmental Health Needs Survey, conducted over 2007 and 2008, is the third in a series surveying housing, services, utilities, community infrastructure and the immediate living environment in discrete Aboriginal communities in Western Australia. This report presents the findings of this survey, as well as comparison with the findings of the 1997 and 2004 reports. It provides an evidence base demonstrating the continued existence of substandard living conditions in many of these communities.

I am pleased to note that there have been a number of significant improvements in environmental health outcomes leading to improved daily lives for many people living in Aboriginal communities. Notwithstanding these gains, however, more work and coordinated effort is required.

The survey was coordinated by the Environmental Health Needs Coordinating Committee and conducted by environmental health practitioners who work with, and in, discrete Aboriginal communities. Each of the participating communities was visited by environmental health practitioners in order to survey the infrastructure and collect information from community members. This information included levels of community satisfaction and concern with the provision of essential, municipal and allied services influencing and affecting environmental health.

Since the collection of the data in this report, there has been a more concerted and collaborative effort across government in addressing the determinants of Aboriginal health disparity. Western Australia is committed to the Council of Australian Governments' (COAG) agenda of Closing the Gap on Indigenous Disadvantage. This report can inform the collective of government agencies responsible for service provision in their efforts to improve the challenging environmental health conditions typically found in discrete Aboriginal communities.

I congratulate and thank those who participated in the data collection and analysis, coordination of community participation, and preparation of this report for publication.

Dr Kim Hames MLA
Deputy Premier
Minister for Health and Indigenous Affairs

Acknowledgements

Member agencies of the Environmental Health Needs Coordinating Committee (EHNCC) wish to thank all of the Aboriginal communities who participated in this survey for sharing their time and knowledge. Similarly, gratitude is expressed to the Environmental Health Officers (EHOs), Field Support Officers (FSOs), Aboriginal Environmental Health Workers (AEHWs) and others listed below for their efforts in administering the survey instruments in these communities.

Owen Ashby (Manager Aboriginal Environmental Health) - Department of Health
Paul Mitchell (AEHW) - Bundiyarra Aboriginal Corporation
Paul Todd (EHO) - City of Canning
Kenan Bender (EHO) and Troy McKrill (FSO) - City of Kalgoorlie-Boulder
Clayton Bell (FSO) & Paul Binbusu (AEHW) - Kimberley Population Health
Patrick Tittums (AEHW) - Mid West Population Health Unit, Department of Health
Apisalome Waqa (AEHW) & Michael Jones (AEHW) - Ngaanganawilli Aboriginal Medical Service
Allan O'Shaughnessy (FSO) - Ngaanyatjarra Health Service
Chicky Clements (FSO), Geoff Wright, Ken Lowth & John Perry - Nirrumbuk Aboriginal Corporation
Paul Brown and Robert Mullane - Office of Aboriginal Health, Department of Health
Sarah Curnow (Environmental Officer) - Pilbara Population Health Unit
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Mort Wignall (EHO) - Shire of Carnarvon
Ken O'Donnell (FSO), Gordon Pickering (FSO) & Warren Fryer (EHO) - Shire of Derby-West Kimberley
Bill Hardy (EHO) - Shire of East Pilbara
Stewart Morris (AEHW) - Shire of Halls Creek
Amy Hughes (EHO) - Shire of Roebourne
Catherine Fleming (EHO) - City of Wanneroo
Kelly Cripps (nee Fewster) (EHO) - Shire of Wyndham-East Kimberley
Michael Cuvalo (EHO) - Town of Port Hedland
Roger Mongoo (AEHW) - Yulella Aboriginal Corporation

The EHNS Working Group members who designed and analysed the survey are:-
Owen Ashby - Aboriginal Environmental Health, Department of Health
Zac Alach - Environmental Health Directorate, Department of Health
John Hardy - Environmental Health Directorate, Department of Health
Stephen Jones - Department of Indigenous Affairs

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Trevor Tann of the Department of Housing for reviewing content
Norma McDonald for providing permission to use the EHNS artwork
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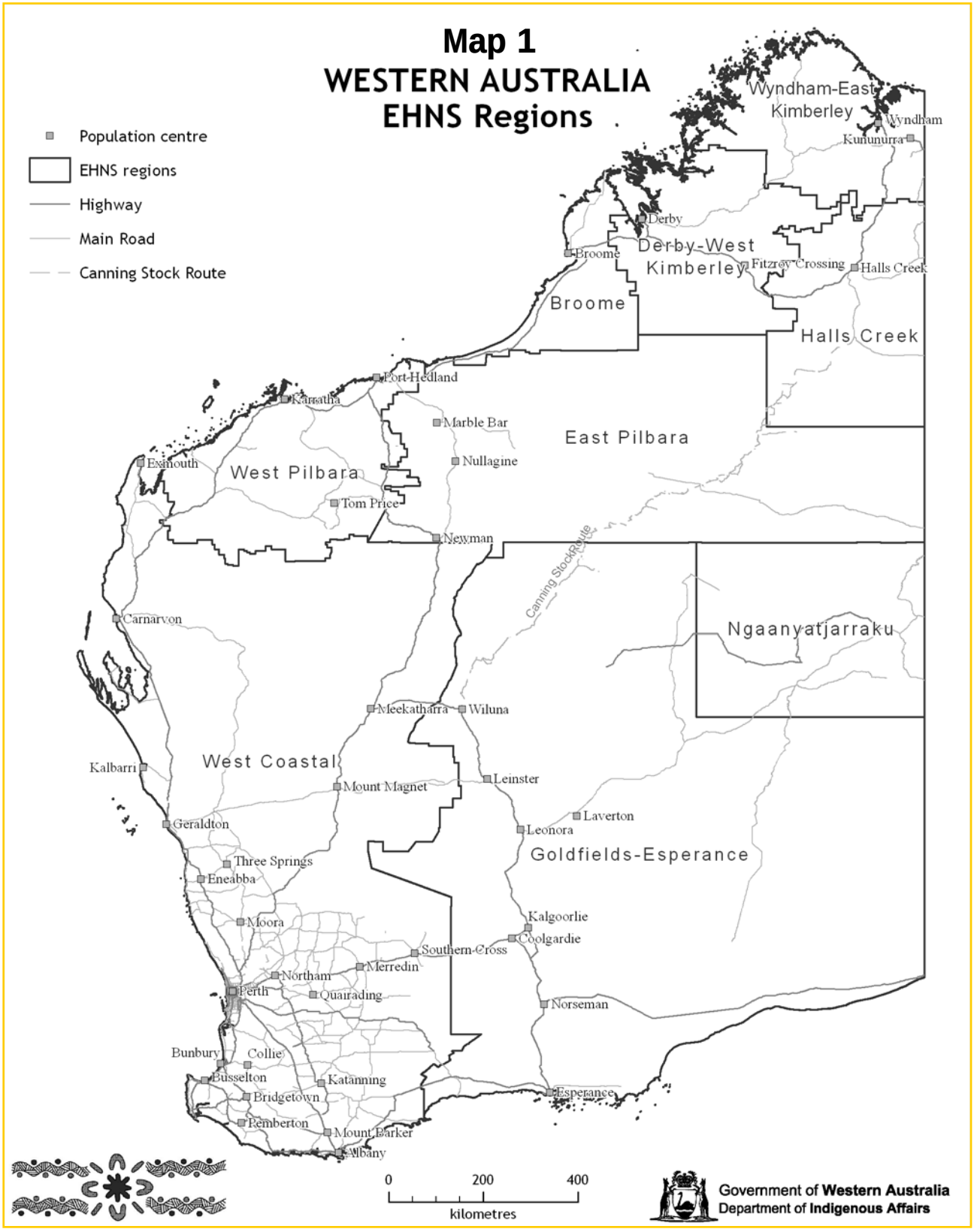
Acknowledgement also extends to both Jason Davis and Kathy O'Donoghue of TNS Social Research, who along with input from DOH and DIA, are the main authors of the 2008 EHNS report.

Western Australia EHNS Regions and Local Government Authorities



1. Executive Summary

This report contains the results of data collected from the latest Environmental Health Needs Survey (EHNS), which was conducted from the middle of July 2007 to the first part of 2008. The scope of the survey included all communities in Western Australia however remoteness, seasonal occupation and other factors have meant that not all communities were able to be included in the results. Therefore this report presents an environmental health analysis on the 15,000+ residents of some 232 occupied communities across Western Australia.

The majority of these communities are located in the remote east, central and northern parts of Western Australia. Some of these communities exist within or on the fringes of remote towns and are generally referred to as Aboriginal Town Based communities, while all other communities are generally referred to as Remote communities. All of these communities however are distinguishable from Western Australia's remote or regional towns by the fact that they rely on separate funds for the provision of some or all of their essential and municipal services.

1.1. Overview

Generally, the report found that the majority of the population (84% or 12,638 members) live in communities whose usual population was 50 or more people (83 communities), with the remaining population (2,474 members) living in smaller sized communities (149 communities).

Regardless of the size of the community however the report found that the majority of the population still rely on specific Aboriginal community funded essential and municipal services. For example:

- 76% of the population of Aboriginal communities rely on a bore for the provision of their potable and non-potable water.
- 69% of the population of Aboriginal communities rely on community generators for the provision of their electricity.
- 89% of the population of Aboriginal communities rely on a community effluent system for the disposal of their sewerage.
- 70% of the population of Aboriginal communities do not have their rubbish collection services managed by the governing shire.
- 65% of the population of Aboriginal communities live in communities that do not have a dust suppression program.
- 7% of the population of Aboriginal communities live in communities that do not have a dog program.
- 75% of the population of Aboriginal communities live in communities where no members are trained in emergency management.

In most of the above instances the essential services are managed by the Remote Aboriginal Essential Service Program (RAESP) and most of the municipal services are managed by the Municipal Services program (MUNS).

Previous reports included a significant analysis of housing in Aboriginal communities however the latest survey did not capture any housing data beyond housing stock and community satisfaction. Housing stock data from the

survey indicate that the 15,000+ population of Western Australia's Aboriginal communities are living in 2,836 permanent dwellings and 303 temporary dwellings. The adjusted population density measure[1] or people per permanent dwelling (**for all communities**) have declined from 7.0 in 1997 to 5.7 in 2008 which is consistent with observed increases in permanent dwellings (from 2,119 in 1997 to 2,836 in 2008). It is evident through this report that the main environmental health concern of communities is housing and overcrowding (69% of communities).

1.2. Changes in Aboriginal Communities since 1997

This report is the first to include an analysis of the increase in managed essential and municipal services to Aboriginal communities and the quality of those services. Since 1997, there has been a significant increase in the proportion of Western Australia's Aboriginal community population whose water, electricity and sewerage are provided for by either mainstream utility arrangements or via the RAESP program:

- Water - increase from 76% in 1997 to 90% in 2008.
- Electricity - increase from 76% in 1997 to 91% in 2008.
- Sanitation/Sewerage - increase from 69% in 1997 to 82% in 2008.

There has also been a significant increase in the provision of some of the municipal services:

- Appropriate rubbish disposal services – increase from 29% in 1997 to 61% in 2008.
- Dog programs – 78% in 1997 to 93% in 2008.

Otherwise, there has been little or no increase in the proportion that live in communities that have a dust suppression program or are sufficiently prepared for prevailing hazards (cyclones/bushfires):

- Dust programs – 35% in 1997 and in 2008.
- Prone to bushfires and have fire fighting equipment – from 32% in 2004 to 34% in 2008.
- Prone to cyclones and have evacuation plans – 41% in 1997 and in 2008.

Where data permitted and within the limit of methods[2], the survey has also been able to show that there has been an increase in the quality of these services, however it should be noted that the assessment was based on community satisfaction and not more quantifiable aspects such as service failure, incidences etc…

The proportion of the population in communities with **satisfactory managed services** has increased as follows:

- Water – from 69% of the population satisfied in 1997 to 77% in 2008.
- Electricity – from 60% of the population satisfied in 1997 to 80% in 2008.
- Sanitation/Sewerage – from 31% of the population satisfied in 1997 to 80% in 2008.
- Solid Waste – from 32% of the population living in communities with no or low litter levels in 1997 to 80% in 2008.
- Dust – from 16% of the population living in communities with no or low dust levels in 1997 to 33% in 2008.

[1] Proportion of people per permanent, including occupied and unoccupied, dwelling.

[2] See Section 2.4.2 Limitations and Section 6 Trends between the 1997, 2004 and 2008 EHNS.

- Emergency Management[3] – from 13% of the population living in communities that have members trained in emergency management in 2004 to 25% in 2008.
- Housing – from a density of 7.0 people per permanent dwelling in 1997 to 5.3 in 2008.

Further analysis also revealed that there is significant variation in satisfaction levels across the regions.

- Housing densities declined for all regions, with the most significant declines occurring in East Pilbara, Ngaanyatjarraku and Wyndham-East Kimberley.
- Broome, Halls Creek and Wyndham-East Kimberley all showed good improvement in satisfaction across the three essential services.
- Derby-West Kimberley and Ngaanyatjarraku had declining satisfaction with Water.
- Ngaanyatjarraku and West Pilbara had declining satisfaction with Electricity.
- East Pilbara and Goldfields-Esperance had declining satisfaction with Sanitation/Sewerage.
- Dust levels improved for all regions except Derby-West Kimberley and Broome.
- Solid waste (litter levels) improved for most regions, with appreciative improvements for Derby-West Kimberley and the West Coast but significant decreases for Broome and the West Pilbara.
- Training in emergency management generally improved for all regions, with Broome, Ngaanyatjarraku and Wyndham-East Kimberley showing the greatest increases.

There has been a decrease in the satisfaction of most essential and municipal services for those people living in communities that do not have these services managed for them.

- Water – from 50% of the population satisfied in 1997 to 46% in 2008.
- Electricity – from 51% of the population satisfied in 1997 to 40% in 2008.
- Sanitation/Sewerage – from 47% of the population satisfied in 1997 to 46% in 2008.
- Rubbish – from 42% of the population living in communities with no or low litter levels in 1997 to 37% in 2008.
- Dust – from 8% of the population living communities with no or low dust levels in 1997 to 20% in 2008.
- Housing – from a density of 9.9 people per permanent dwelling in 1997 to 5.6 in 2008.

Communities without managed services generally showed declining trends across most of the categories although Halls Creek was a notable exception.

- Housing densities declined for all regions, with the most significant declines occurring in Broome, Ngaanyatjarraku and Wyndham-East Kimberley.
- Halls Creek had significant improvement across both essential and municipal services.
- Derby-West Kimberley and Broome had declining satisfaction with Water, Electricity and Sanitation/Sewerage.
- Wyndham-East Kimberley had declining satisfaction with Water and Electricity.
- West Pilbara had increasing satisfaction with Electricity and Sanitation/Sewerage.
- East Pilbara had increasing satisfaction with Sanitation/Sewerage.
- Derby-West Kimberley had increasing improvements with Solid Waste (litter levels) and Dust levels.

[3] Unlike the other services all communities were assumed to have managed emergency services and therefore quality was measured by whether or not community members were trained in emergency management procedures.

- East Pilbara had significant improvements with Solid Waste (litter levels) and moderate increases with Dust levels.
- Ngaanyatjarraku and Wyndham-East Kimberley had moderate increases for Solid Waste (litter levels) but worsening Dust levels.
- West Pilbara had worsening Dust levels but improving Solid Waste (litter levels).

1.3. Environmental Health Needs Core Indicators

1.3.1. Water

The majority of communities rely on bores for the supply of their potable water supplies (80% of communities and 76% of the population). Most of the population living in communities that are not connected to town water have water that is treated (89%) and tested (88%) regularly. One-third (35%) of all communities and one-quarter (25%) of the population recorded unsatisfactory water supplies. The reason for dissatisfaction aspects relate to pressure (41% of communities), supply (35%) and maintenance (32%).

1.3.2. Electricity

Three-quarters (77%) of communities and one-third of the population (31%) are not connected to a town electricity supply. Of these communities with no connection to a town electricity supply, the majority (74%) record experiencing regular power supply interruptions with the key reasons being equipment breakdown (59%), lack of fuel (45%), equipment damage (13%) and no maintenance (10%). Interruptions occur either daily (31%), weekly (15%) or monthly (20%).

Overall, one-third (35%) of all communities record their power supply as unsatisfactory, which translates to 23% of the total population or 3,447 people.

1.3.3. Housing

The 15,112 usual population of Aboriginal community live in some 2,836 permanent dwellings and 303 temporary dwellings. There is an average of 5.7 people per permanent dwelling. This is higher for Wyndham-East Kimberley (6.6), Halls Creek (6.0), Derby-West Kimberley (6.4) and Broome (6.7) which are also the four region groups with the highest usual populations.

1.3.4. Solid Waste Disposal

Nearly all communities (96%) use an appropriate rubbish tip, which is a dug trench, dug pit, town tip or another community tip. The report however indicated mixed results for community tips; only 36% of them were fenced but the majority (64%) did have a capacity of twelve months or more and most communities (77%) were satisfied with the management of their tips.

Rubbish collection was not always reliable with one-third (33%, 75 communities) of communities experiencing a time, during the 12 months prior to the survey, where their rubbish had not been collected. This affects close to half (47%) the usual population, or 7,077 Aboriginal people.

1.3.5. Sanitation/Sewerage

Nearly all communities (97%) have an adequate sewerage treatment/disposal system although of those using septic tanks/leach drains to dispose of sewage, two-thirds (66% or 101 communities) reported not having access to appropriate pump-out equipment.

Of the communities using sewage lagoons, just over one-quarter (29%, 18 out of 63 communities) reported having inadequate fencing. One in ten (8%) communities report their sewage lagoons have either excessive or high overflow. This overflow affects 5% of the usual population of Aboriginal people. When asked their satisfaction with the maintenance of their sewage lagoon, just over one-quarter (28%) of communities recorded it to be unsatisfactory. Around one-third (31%) of communities indicated that their current sewerage system did not meet their needs.

1.3.6. Dust

Across all Aboriginal communities surveyed in Western Australia, two in five communities report they usually experience excessive (12%) or high levels (32%) of dust. This affects a total of 6,776 people (45% of the recorded population). There was however considerable variance in dust levels even for neighbouring communities, which would indicate that the survey question may not be able to consistently capture dust levels in Aboriginal communities. Three in five communities (63%) report they do not have dust suppression or revegetation programs and three-quarters of communities (77%) report they have unsealed roads within their community.

1.3.7. Emergency Management

Of the communities that are prone to bushfires, 84% record not having fire fighting equipment that works, affecting a total population of 7,714 people (66%). Of the communities that are prone to cyclones, two in five (40%) record not having an evacuation plan for cyclones, affecting a total population of 2,163 people (43%). One in eight (14%) communities report being trained in emergency procedures (e.g. fire fighting). Two in five communities (38%) report community preparation for emergency management being unsatisfactory, affecting a total population of 7,031 people (49%).

1.4. Community Needs and Services

1.4.1. Health Issues

The main environmental health concern amongst Western Australian Aboriginal communities is housing and overcrowding - with two in three (69%) communities reporting this. Dust (49%), water quality/supply (42%) and electric supply/interruptions (39%) are also frequently recorded.

Diabetes is the most frequently noted health concern overall (62%) among communities, including small (36%) and large (80%) communities. Substance abuse is the highest risk factor, recorded in approximately one-third (36%) of all communities.

A majority of communities have health programs available (68%) and nearly all (92%) of the usual population are located within 30 kilometres of a health clinic (it may be outside the immediate community). Similar proportions (63% of communities and 85% of the usual population) are located within 30 kilometres of a pharmacy or a health clinic/hospital that can dispense medicines under Section 100 of the National Health Act 1953.

1.4.2. Community Needs and Planning

Among smaller communities (<20 people) a minority (8%) have a Community Layout Plan and 6% are developing a plan. The proportion is higher among larger communities (>=20 people) where two-thirds (65%) report having a CLP and one in seven (15%) are developing one.

Overall, the most commonly identified needs for Western Australia Aboriginal communities relate to housing (new, repairs, housing for visitors and workers – 53%) and water, power, sewerage (improvements or provision – 42%) issues.

1.4.3. Provision of Community Services

Aboriginal communities are generally well supported in terms of accessibility to services, although whether or not the services adequately met their needs was not covered in the survey.

Four in five communities (82%) report there being a CDEP within the community.

Overall the need for modification of existing accommodation is greater than the need for purpose-built disability accommodation. Across all Western Australia Aboriginal communities, a total of 79 communities (34% of all communities) require modifications to existing accommodation and 15 communities (6% of all communities) require purpose-built accommodation for disabled people. Across Western Australia, there are 353 community people that require modified or purpose-built disability housing.

Overall 35% of communities (81 communities in total) have access to either a telecentre, community computer connected to the internet or a video conference facility. Two-thirds (68%) have a public payphone in their community. Of these communities, most report (92%) that the phone is in working order. One-third of communities (33%) are located within 20kms of a telecentre. However, the majority of communities (51%) are located more than 50kms away from a telecentre.

Seven in ten communities (72% and 92% of the usual population) are within 30 kilometres of a primary school. Similarly most communities (69% and 90% of the usual population) are within 30 kilometres of a high school.

Forty-two percent of communities (or 9,051 people – 60%) are within 30 kilometres of Police services.

A majority of communities (72%) and people (13,624 or 85% of the usual population) live within 30 kilometres of an airstrip.

Ten percent of Aboriginal communities (3% of usual population - 498 people) report having no access to fresh food, fruit and vegetables. Almost two-thirds of all communities (62%) and most of the usual population (84%) are within 30kms of fresh food supplies. Of the communities with stores, three in five (60%) report not having a nutrition policy.

2. The 2008 Environmental Health Needs Survey

2.1. Introduction

The 2008 Environmental Health Needs Survey is the third comprehensive survey of environmental health conditions in Aboriginal communities in Western Australia. The first survey was undertaken in 1997 and the second in 2004. All three surveys are a result of cross-government collaboration done under the auspices of the Environmental Health Needs Coordinating Committee (EHNCC), whose membership at the time of the 2004 EHNS comprised of infrastructure, service and workforce funding agencies from State, Commonwealth and local government and includes:

- the Department of Indigenous Affairs
- the Department of Health
- the Department of Housing
- the Department of Local Government
- the Commonwealth Departments of Family, Housing, Community Services and Indigenous Affairs (FaHCSIA)
- the Commonwealth Department of Health and Ageing (DoHA), and
- the Western Australian Local Government Association (WALGA).

These agencies pooled their resources to streamline previous surveys and improve coordination across the three levels of government in response to environmental health needs in Aboriginal communities.

2.2. Background

The Environmental Health Needs Survey (EHNS), when first conducted in 1997, formed part of a state-wide Environmental Health Strategy, proposed by the Environmental Health Needs Coordinating Committee (EHNCC). Member agencies met for the first time in 1995 to discuss the potential for minimising duplication of effort through improved coordination and cooperation in the planning and delivery of environmental health-related services. The agencies involved each play a key role in providing funding, personnel and/or services to discrete Aboriginal communities in the areas of health, housing and essential services.

The publication of the original survey report *Environmental Health Needs of Aboriginal Communities in Western Australia – The 1997 Survey and its Findings (1998),* followed by its successor report published in 2004, provided progressive data for use by Commonwealth, State and local government agencies. Both have been circulated widely to Aboriginal and government decision-making bodies to assist in planning processes. These EHNS publications have been able to complement the Commonwealth Government data collected through the Australian Bureau of Statistics publications, in particular through the Community Housing and Infrastructure Needs Surveys (CHINS) of 1999, 2001 and 2006. Differences in survey methodology and the survey instrument have meant that data from the CHINS and EHNS surveys have not always been directly comparable, but the information gathered from both sources has been used to verify and validate findings.

Since the 2008 EHNS was conducted, the Council of Australian Governments (COAG) has agreed to a partnership between all levels of government to work with Indigenous communities to achieve the target of 'Closing the Gap' in Indigenous disadvantage with the formation of National Partnership Agreements (NPAs) which have directed an Indigenous specific focus. The COAG Reform Council has been established specifically to assist COAG to drive its national reform agenda by strengthening accountability for the achievement of results through independent and evidenced-based monitoring, assessment and reporting of the performance of governments.

The value of information from the 2008 EHNS is significant where it can indicate change since the 1997 and 2004 surveys and the timing of the COAG agenda in addressing Indigenous health means that there is a real opportunity for the next EHNS to measure change after a concerted effort across all levels of government. This will require that the strategic direction for coordinated environmental health implementation, including any direct actions, should be widely understood and collectively applied and the role of the Department of Health may be critical for leadership and in developing an achievable environmental health action plan.

In closing, the 2008 EHNS continues a progression of monitoring environmental health needs of Western Australia's discrete Aboriginal communities and reinforces the continued cooperation between service providers in targeting these needs. It has been carried out jointly by member agencies of the former EHNCC, with the close cooperation and efforts of Environmental Health Officers and Aboriginal Environmental Health Workers in local government and non-government organisations.

2.2.1. Environmental Health Strategy – policy and operational context

The 2004 EHNS report provides a historical context for Aboriginal Environmental Health Strategy and the EHNS. The development of COAG policy since the publication of the 2004 EHNS has continued to provide a platform for strategy initiatives to direct programs and funding within Western Australia. In March 2008, the COAG Reform Council first set out the goals of its reform agenda. The National Partnership Agreement (NPA) replaced existing arrangements under Indigenous Housing and Infrastructure Agreements in which funding from the Commonwealth Aboriginal Rental Housing and the Community Housing and Infrastructure Programs was provided to States and Territories to construct, purchase and maintain housing, infrastructure and services.

Monitoring the transition from the Bilateral Agreement (that existed during the 2004 EHNS) to NPA is part of the COAG Reform Council agenda. A stressed importance of state autonomy backed by the accountability that these reforms require, is required to address Indigenous disadvantage under the heading of 'closing the gap'. The COAG Reform Council will independently assess whether states and territories have achieved the predetermined milestones and performance benchmarks in National Partnerships before incentive payments to reward reforms are made.

The COAG reforms maintain an emphasis on preventative strategies. The Telethon Institute for Child Health Research has continued to provide a direct avenue for application of EHNS data through preventive strategies via the Western Australian Aboriginal Child Health Survey (WAACHS). Since 2002, a broad and comprehensive

investigation into the health and well-being of Indigenous children, their families and communities has developed into four volumes promoting healthy development and social, emotional and academic well-being. These volumes have been published between 2004 and 2006 as the following:

- Volume 1: The Health of Aboriginal Children and Young People;
- Volume 2: The Social and Emotional Wellbeing of Aboriginal Children and Young People.
- Volume 3: Improving the Educational Experiences of Aboriginal Children and Young People; and
- Volume 4: Strengthening the Capacity of Aboriginal Children, Families and Communities

Within the National Indigenous Reform Agreement, some of the potential initiatives for direct application of EHNS core indicator priorities are identified within the schedules listed below:

- Schedule A: National Integrated Strategy for Closing the Gap in Indigenous Disadvantage
- Schedule B: National Urban and Regional Service Delivery Strategy for Indigenous Australians
- Schedule C: Closing the Gap in Indigenous life outcomes
- Schedule D: Service delivery principles for programs and services for Indigenous Australians
- Schedule E: National Investment Principles in Remote Locations
- Schedule F: Agreed data quality improvements
- Schedule G: Progress towards the Closing the Gap targets

In the National Indigenous Reform Agreement, strategies within Schedule F justify the development of data quality improvements with implied support for the continued monitoring of remote communities through the EHNS. The COAG agenda provides significant opportunities for tackling the broader issues affecting the health of Indigenous people. There is a renewed emphasis for rebuilding a more wholesome environmental health strategy, based on the collaborative participation of all agencies responsible for providing and maintaining services and infrastructure in remote communities. The identified priorities of the 2008 EHNS provide an evidence base for informing direction in service delivery and it is envisaged that this report will be incorporated into planning across government response.

An independent report released in 2009 identified that there was a need for the Department of Health to provide greater across-government leadership for Aboriginal environmental health, in order to continue to collect Aboriginal community information and to collate the evidence to inform government policy[4]. The report also found that addressing the determinants of health risks in remote Aboriginal communities and the living environments needs the cooperation and collaboration of those agencies that provide the range of essential and municipal services, utility infrastructure and associated services.

[4] Future Directions for Environmental Health in Western Australia, Public Health Advocacy Institute of WA. *This report can be found at the WA Public Health website* http://www.public.health.wa.gov.au/2/14/2/aboriginal_environmental_health.pm

2.3. Methodology and Survey Instrument

2.3.1. Methodology

The 2008 Environmental Health Needs Survey (EHNS) involved 305 discrete Aboriginal communities in Western Australia. The methodology for this survey was based on the forms utilised in the 1997 and 2004 EHNS with several modifications. Environmental Health Officers (EHOs), Field Support Officers (FSOs) and Aboriginal Environmental Health Workers (AEHWs) conducted the surveys, as they are known to the communities in their region. They also have regional knowledge, particularly on environmental health concerns, and many were involved in the previous surveys.

For the 2008 EHNS, survey forms were provided for over 300 communities. These were selected prior to the study and based on known community sites from previous EHNS and inclusive of any additional evidence where communities may have previously been abandoned. Many of the selected communities did not meet the EHNS criteria of having permanent occupancy in the community for at least nine months of the year; however data collection occurred where possible. Many survey forms were returned incomplete with varied reasons. Two communities refused to participate and at least two more communities were inaccessible, despite several attempts to visit due to locked gates and fencing. Several other communities were either unoccupied during the time of the survey visits or had been abandoned for some time. As mentioned previously a small minority of the 305 communities were known to have been abandoned while a number of other communities were known to be seasonally populated campsites.

Training sessions were conducted across the state to familiarise data collectors with the survey instrument. A collector's guide was also available for reference. EHOs worked with FSOs and AEHWs to establish prior contact with community and/or Regional Councils. After receiving approval to enter communities, the surveys were conducted in situ. Completed survey forms were sent to the Department of Health in Perth for collation, data entry and analysis.

The majority of surveys were completed in the latter part of 2007, with the final survey forms collected in June 2008. In total, 232 communities provided the data for the 2008 EHNS. Data transfer from each physical survey form into spreadsheet format was undertaken by a commercial data entry organisation. The cleaning of the data took place through a combined Department of Health/Department of Indigenous Affairs process that considered errors in logic, incorrect codes and data mismatches.

It is important to note that, when viewing the tables in this report, percentages are calculated across (in each row), unless otherwise indicated. This was usually done by calculating the proportion of the sample (n) that answered the question in a certain way, as indicated by the title of the table, versus all those who answered the question. Tables are most often presented to show either the number of communities or the usual population. A series of quality

assurance audits were conducted over samples of the tables to check on data analyses, and adjustments were made to correct issues where identified.

2.3.2. Survey Instrument

The survey instrument was a single form based on a combination of the two forms used for 'community details' and 'dwellings' in the 2004 EHNS. The merger of the two forms has seen a large reduction in the level of detail collected for each dwelling. In the 2008 EHNS, surveyors were not required to visit each dwelling.

The survey instrument requested administrative details for each community as well as comments or particular notes of relevance for the time of the survey. A range of questions on each of the core indicators was developed around a set of core questions extracted from the 2004 EHNS. The eight core indicators of environmental health used in both the 2004 EHNS and 2008 EHNS were: water, electricity, housing, solid waste disposal, sanitation/sewerage, dust, dog program and emergency management.

As in 2004, additional questions on telecommunications, nutrition, where community members go for services, type of health clinics in the community, programs and disability and mobility status/services were also asked.

2.4. Definitions and Limitations

2.4.1. Definitions

Missing population data

In the 2008 EHNS there were several communities that did not report 'usual population' figures. Without a population these communities could not be used in this report. Therefore where possible, the usual population was inferred from data supplied in previous EHNS or from the breakdown of usual population by age group.

'Surveyed' and 'Occupied' communities

A community was described as 'surveyed' if there was a community representative available to take part in the survey. Some communities were not occupied at the time but were still surveyed (i.e. an inventory of its infrastructure and the condition of that infrastructure was taken). This was achieved with the permission of a community representative. A total of 232 communities were surveyed.

Where no one was available at the time of the survey but the community was known to be occupied, it was described as 'occupied' but 'not surveyed'.

The reasons communities were not surveyed have included: being unoccupied, existing in name only, being private 'blocks', declining to participate or not being confirmed as communities in the time period available.

Often the community was vacant due to cultural reasons or seasonal conditions, but the community representative was still contactable. Any community which did not complete all relevant questions presented in a table, or

answered ‘unsure’, was excluded from that table unless otherwise noted. Incomplete survey forms were received from some communities and their data were utilised in analyses where possible.

Aboriginal Community

This refers to any place which is known locally as a discrete Aboriginal community; which has some minimal level of infrastructure (e.g. a water source, any type of housing etc.); which usually occupies Aboriginal Lands Trust land; and, where generally, power and water infrastructure is not maintained and repaired on the same basis as mainstream towns. This includes town reserves, large and well-established Aboriginal communities, small outstations and homeland communities, and emerging/unoccupied communities with infrastructure.

Adequate Sewerage

A community has an adequate sewerage system if it is connected to a town system, or has septic tanks, leach drains or community sewerage. Pit toilets are not considered adequate, although it is appreciated that in some instances this may be the only available system of waste disposal.

Adequate Dwellings

This report defines an adequate dwelling as a permanent dwelling, which excludes caravans, dongas and improvised shelters. Previous reports also required the dwellings to have connections to facilities such as electricity, water and sewerage/septic tank disposal. While such dwellings could have access to these facilities, it did not consider if the facilities were functioning or not.

Crude Population Density Measure (Crude PDM)

This is the reported usual population of the community divided by the total number of dwellings. These dwellings include caravans, dongas and improvised shelters. This provides a measure of the average number of people per dwelling for each community.

Adjusted Population Density Measure (Adjusted PDM)

This is the reported usual population of the community divided by the number of permanent dwellings. This measure excludes temporary dwellings. It provides a measure of the average number of people living in permanent dwellings per community. Where there are temporary dwellings in a community, the adjusted PDM will be higher than the crude PDM.

Core Indicators

Indicators were developed around a set of core questions extracted from the 2004 EHNS. The eight core indicators of environmental health used in the 2008 EHNS were: water, electricity, housing, solid waste disposal, Sanitation/Sewerage, dust control, dog program and emergency management. Appendix 1 shows in more detail the construction of the core indicators and how the priority communities were identified.

Priority Communities

Priority communities are identified at the State and regional level. These include communities ranked the highest (i.e. in the top 20 % of communities) according to their core indicator calculation.

The top 20% of communities at the State level are listed in Section 3 and in summary tables in the Executive Summary. In each region in Section 4, the 10 highest priority communities (with non-zero priority scores) for each indicator are listed, with those in the top 20% being bolded. Incomplete scores, due to some survey questions being unanswered, were reported separately.

Priority communities were identified from those actually taking part in this survey, answering the questions that made up the environmental health indicator and having a 'usual population'. This provided the information on the 'need' of that community for that indicator relative to other communities. Appendix 1 shows in more detail the construction of the core indicators and how the priority communities were identified.

Large versus small communities

For ease of reading, in some instances communities with larger populations (e.g. >=20 people or >=100 people) are referred to as either a 'large' or 'larger 'communities. Conversely smaller populations are referred to as 'small' or 'smaller' communities (<20 people or <100 people).

2.4.2. Limitations

There are many difficulties associated with estimating the 'usual population' of remote Aboriginal communities. These difficulties arise through a number of factors associated with:

- the methodology used in the surveys (e.g. timing of the survey; flexibility of interview timeframe);
- the highly mobile nature of Aboriginal populations due to weather, culture, employment and other factors; and,
- difficulties in establishing contact with smaller communities in remote parts of the State.

Rather than attempting a resource intensive and unreliable head count that is time consuming, the EHNS asked the community representative to estimate, using community records where available, the usual population of the community. The 'usual population' was defined as those people living in the community for nine months of the year or more. It should be noted that usual population estimates can vary considerably from other official sources such as the Australian Bureau of Statistics *Census of Population and Housing*. This is in large part to do with the differences in the definitions because the Census attempts to count the population based on a specific point in time whereas the usual population refers to the typical population level of the community. As with any population estimate, the usual population can significantly change, therefore caution should be used before assuming that the reported usual population in this report is still current and reliable.

Re-coding was required for several questions in the 2008 EHNS to make it back compatible with the 1997 and 2004 EHNS. The change from a three point response scale (Yes, No, Unsure) to a five-point satisfaction rating scale (with a neutral option) allows for a more rigorous analysis. From the perspective of a community risk assessment, the purpose is to minimise negative opinion (dissatisfaction), hence for analysis neutral responses have been included with the satisfied responses, which implies that neutral is more likely an antonym of dissatisfaction.

The 2008 EHNS has used alternate definitions for the regions used to group communities compared to the 2004 EHNS. The 2004 EHNS communities were grouped by ATSIC region which no longer has formal recognition following the closure of the *Aboriginal and Torres Strait Islander Commission*. The newly created regions of the 2008 EHNS were chosen to align communities into their relevant local government boundaries. Due to some local government areas containing a greater number of communities, several of the 2008 EHNS regions align with a single local government area while others span across several local government areas. Thus the 2008 EHNS Broome region has the exact boundary as the Broome Shire, as does Derby-West Kimberley, Wyndham-East Kimberley, Halls Creek, East Pilbara and Ngaanyatjarraku. The remaining 2008 EHNS regions are aligned to several shires. Goldfields-Esperance represents the shires of Kalgoorlie-Boulder, Coolgardie, Laverton, Leonora, Dundas, Menzies and Wiluna. West Pilbara region represents the shire of Roebourne, Port Hedland and Ashburton. West Coast region represents the shires of Upper Gascoyne, Murchison, Mullewa, Northampton, Carnarvon, Meekatharra, Quairading, Dandaragan, and the Perth metropolitan area. As a result of the change in regions for the 2008 EHNS, the trend analysis of Section 6 has required that the datasets for the 1997 and 2004 EHNS become aligned with the new local government regions for comparison.

2.4.3. Using the report

This report contains large quantities of technical information. An Executive Summary of the key findings is provided in Section 1. Section 2 provides context for the examination of environmental health in Western Australia including the methodology for the survey with the stated limitations.

The primary results reviewing the eight core indicators are presented for all Western Australia in Section 3. These primary results are divided into regions for the eight core indicators in Section 4. When reading Section 4, it may be useful for the reader to consider Appendix 1, which explains the calculation of priority scores for Sections 3 and 4.

Information regarding environmental health issues, community needs and the provision of services appear in Section 5. A trend analysis that considers common survey items between the three EHNS reports across the time period 1997–2008 is presented in Section 6.

This report has been prepared to mirror the format and methodology of the 1997 and 2004 EHNS wherever possible. The 1997 and 2004 reports can be accessed at the Department of Indigenous Affairs web site, at www.dia.wa.gov.au, under ‘Reports & Publications’.

2.5. Population and Languages

2.5.1. Distribution of Usual Population

In 2008, a total 'usual population' of 15,112[5] was surveyed from 232 Aboriginal communities across Western Australia. As shown in Table 2.1, the regions with the highest number of communities surveyed include Broome (62), Derby-West Kimberley (41), Halls Creek (35) and Wyndham-East Kimberley (35).

Table 2.2 indicates that while Broome records the highest number of communities surveyed, it does not record the highest 'usual population' (2,548), with Derby-West Kimberley recording the highest 'usual population' (3,315).

Table 2.1: Number of Communities Surveyed since 1997

Region group	1997	2004	2008	Number of communities participating in all three surveys
Wyndham-East Kimberley	34	37	35	27
Halls Creek	41	44	35	26
Derby-West Kimberley	45	51	41	34
Broome	32	74	62	19
West Pilbara	16	16	13	9
East Pilbara	11	11	9	8
Ngaanyatjarraku	10	9	9	9
Goldfields-Esperance	17	17	14	14
West Coast	7	15	14	4
Total	**213**	**274**	**232**	**150**

Base: All communities

Note on Table 2.2

The population figures from the Australian Bureau of Statistics (ABS) Census data and the EHNS usual population are not directly comparable, as the ABS Census figures are an estimate of the total number of Aboriginal and Torres Strait Islander people (i.e. in discrete communities, as well as in metropolitan, rural and other urban locations) and are adjusted for the undercounting of certain groups of Aboriginal and Torres Strait Islander people, such as young men. The EHNS figures are estimates of the usual population of communities given by community representatives or estimated by the local representatives conducting the surveying when required. Because of the difficulty in estimating large populations, the figures may be inflated for larger communities. Movement between communities may also account for some of the variation from year to year.

[5] Environmental Health Officers (EHO), field support officers and Aboriginal Environmental Health Workers (AEHW) conducted the data collection process. Usual population counts vary from being 'Actual' population counts in small communities to being estimates of the population in large communities.

Table 2.2: EHNS Population and ABS Estimated Resident Population[6] (by Region Group)

Region group	ABS ERP (entire State) 2001	ABS ERP (entire State) 2006	Population EHNS 1997	Population EHNS 2004	Population EHNS 2008
Wyndham-East Kimberley	2,691	2,780	1,844	2,163	2,018
Halls Creek	3,298	2,886	2,903	2,469	2,192
Derby-West Kimberley	4,743	4,725	3,559	3,593	3,315
Broome	4,714	4,750	2,067	3,112	2,548
West Pilbara	4,906	5,735	930	806	629
East Pilbara	1,612	1,695	1,043	941	1,076
Ngaanyatjarraku	1,393	1,306	1,749	1,557	1,537
Goldfields-Esperance	4,709	4,925	1,103	1,277	1,015
West Coast	37,875	42,158	525	1,034	782
Total	**65,940**	**70,960**	**15,723**	**16,952**	**15,112**

As shown in Table 2.3 below, the distribution of the usual population of communities indicates that there is a high number of communities with a usual population less than 20 (95 communities in total) compared to the other population brackets. Half of this figure is accounted for by Broome where 47 communities have usual populations of less than 20.

Table 2.3: Number of Surveyed Communities and their Total Population (by Usual Population)

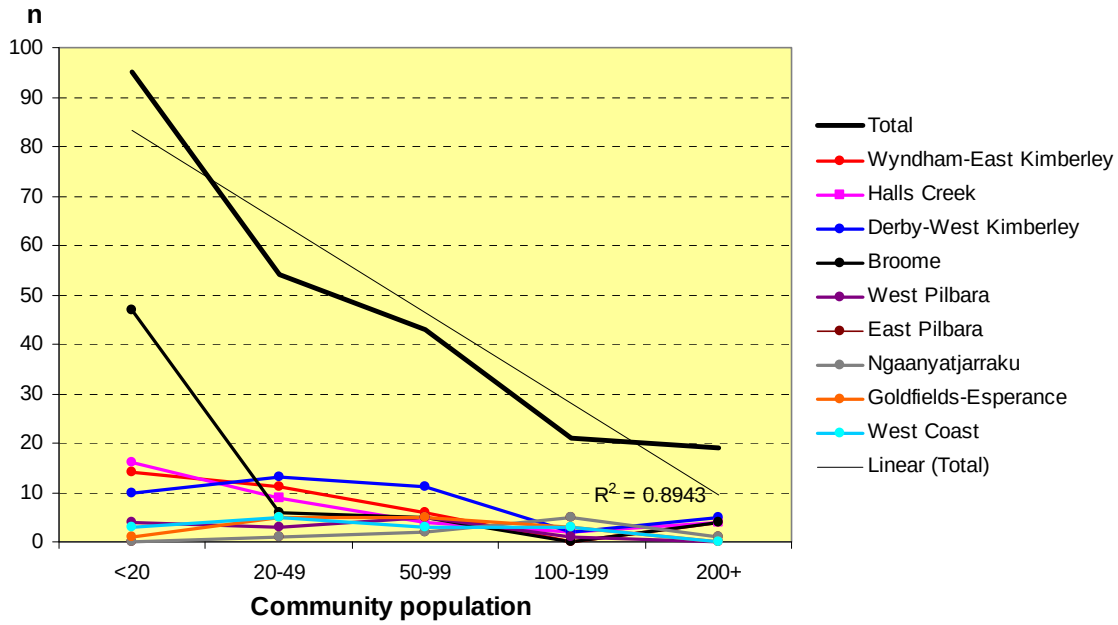
	Com pop < 20		Com pop 20-49		Com pop 50-99		Com pop 100-199		Com pop 200+	
Region group	Pop	n	Pop	n	Pop	n	Pop	n	Pop	n
Wyndham-East Kimberley	154	14	311	11	353	6	-	-	1,200	4
Halls Creek	109	16	239	9	252	4	301	2	1,291	4
Derby-West Kimberley	116	10	409	13	823	11	261	2	1,706	5
Broome	365	47	146	6	307	5	-	-	1,730	4
West Pilbara	36	4	83	3	330	5	180	1	-	-
East Pilbara	-	-	49	1	116	2	711	5	200	1
Ngaanyatjarraku	-	-	30	1	129	2	659	5	719	1
Goldfields-Esperance	15	1	203	5	405	5	392	3	-	-
West Coast	39	3	170	5	167	3	406	3	-	-
Total	**834**	**95**	**1,640**	**54**	**2,882**	**43**	**2,910**	**21**	**6,846**	**19**
2004 Total	**894**	**103**	**2,051**	**71**	**3,433**	**55**	**3,492**	**26**	**7,082**	**19**

Base: All communities

[6] ABS 1996 Census data omitted due to not being able to obtain required information

There is a correlation of 0.8943 (shown as the R^2 figure on the chart below) in the relationship between size of the community and its frequency, that is, there are numerous smaller communities and fewer larger communities. However, as referenced on the previous page, this is influenced primarily by Broome with other region groups recording a more even distribution.

Figure 2.1: Number of Surveyed Communities and their Total Population (by Usual Population)



Base: All communities

2.5.2. Languages

Aboriginal languages

There are more than 60 Aboriginal language groups in Western Australia. In 13% (29 communities) of communities surveyed, one of these 60 Aboriginal languages is the main language spoken.

As shown in Table 2.4, no community with a usual population of less than 20 is reported to have an Aboriginal language as the main language spoken.

The 2008 survey questionnaire used a different format for obtaining languages spoken within the communities and as such the 2004 data is not comparable to the 2008 data.

Table 2.4: Number of Communities where an Aboriginal Language is the Main Language Spoken by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	0	14	0.0	1	21	4.8	1	35	2.9
Halls Creek	0	16	0.0	1	17	5.9	1	33	3.0
Derby-West Kimberley	0	10	0.0	5	30	16.7	5	40	12.5
Broome	0	47	0.0	1	15	6.7	1	62	1.6
West Pilbara	0	4	0.0	1	8	12.5	1	12	8.3
East Pilbara	-	-	.	8	9	88.9	8	9	88.9
Ngaanyatjarraku	-	-	.	9	9	100.0	9	9	100.0
Goldfields-Esperance	0	1	0.0	3	13	23.1	3	14	21.4
West Coast	0	3	0.0	0	11	0.0	0	14	0.0
Total	**0**	**95**	**0.0**	**29**	**133**	**21.8**	**29**	**228**	**12.7**

Base: All communities

As shown in Table 2.5, 27% (3,829 people) of the **population** live in a community where an Aboriginal language is the main language spoken. Consistent with the communities recorded above, East Pilbara and Ngaanyatjarraku record higher proportions (95% and 100% respectively), whereas Broome (1%) and West Coast (0%) are lower.

Table 2.5: Usual population of Communities where an Aboriginal Language is the Main Language Spoken by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	0	154	0.0	250	1,864	13.4	250	2,018	12.4
Halls Creek	0	109	0.0	161	1,584	10.2	161	1,693	9.5
Derby-West Kimberley	0	116	0.0	544	3,178	17.1	544	3,294	16.5
Broome	0	365	0.0	29	2,183	1.3	29	2,548	1.1
West Pilbara	0	36	0.0	29	413	7.0	29	449	6.5
East Pilbara	-	-	-	1,027	1,076	95.4	1,027	1,076	95.4
Ngaanyatjarraku	-	-	-	1,537	1,537	100.0	1,537	1,537	100.0
Goldfields-Esperance	0	15	0.0	252	1,000	25.2	252	1,015	24.8
West Coast	0	39	0.0	0	743	0.0	0	782	0.0
Total	**0**	**834**	**0.0**	**3,829**	**13,578**	**28.2**	**3,829**	**14,412**	**26.6**

Base: Count of all community members

English

In 86% (199 communities) of communities surveyed, English is the main language spoken. All (100%) communities with populations of less than 20 list English as the main language spoken in the community. Of these communities, 54% report that one or more Aboriginal languages are also spoken by community members.

Corresponding with the higher recorded proportions of an Aboriginal language as their main language in East Pilbara and Ngaanyatjarraku, these region groups record the lowest levels of listing English as the main language spoken in the community group (11% and 0% respectively). In comparison West Coast, Broome and Wyndham-East Kimberley record the highest proportion of communities listing English as their main language.

Table 2.6: Communities that List English as the Main Languages Spoken in the Community by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	14	14	100.0	20	21	95.2	34	35	97.1
Halls Creek	16	16	100.0	16	19	84.2	32	35	91.4
Derby-West Kimberley	10	10	100.0	25	31	80.6	35	41	85.4
Broome	47	47	100.0	14	15	93.3	61	62	98.4
West Pilbara	4	4	100.0	7	9	77.8	11	13	84.6
East Pilbara	.	.	.	1	9	11.1	1	9	11.1
Ngaanyatjarraku	.	.	.	0	9	0.0	0	9	0.0
Goldfields-Esperance	1	1	100.0	10	13	76.9	11	14	78.6
West Coast	3	3	100.0	11	11	100.0	14	14	100.0
Total	**95**	**95**	**100.0**	**104**	**137**	**75.9**	**199**	**232**	**85.8**

Base: All communities

3. Core Indicators of Environmental Health Needs

3.1. Water

Safe Water

The World Health Organisation recognises that "Access to safe drinking-water is essential to health, a basic human right and a component of effective policy for health protection"[7]. The National Environmental Health Strategy[8] recognises that there are two keys to the provision of safe drinking water "1. Good management of catchments and storage areas" and "2. Good treatment, disinfection and distribution systems."

The core indicators of environmental health in respect to water are:

- Type of main water **source** accessed — refer Section 3.1.1
- **Adequacy** of water supply — refer Section 3.1.2
- **Treatment/disinfection** of water (excluding town supply water) — refer Section 3.1.4
- Frequency of water **testing** (excluding town supply water) — refer Section 3.1.5
- **Satisfaction** with water supply — refer Section 3.1.6

Summary of the key indicators

Compared to that recorded in 2004, there are now more communities with a usual population of less than 20 using **bores** as their main water source (75% 2004, 87% 2008) and **town supply** (5% 2004, 6% 2008). Corresponding with this, there are fewer using **carted** (13% 2004, 3% 2008) and **soak** (3% 2004, 1% 2008).

Overall, 17% of communities are classified as having **inadequate water supplies** which translates to 10% of the total population.

Among all communities, one-third (35%) of communities and one-quarter (25%) of the population record **unsatisfactory water supplies**. The reason for dissatisfaction aspects relate to **pressure** (41% of communities), **supply** (35%) and **maintenance** (31%).

Of the 195 communities who are not connected to a town water supply, half (49%) of communities have **untreated drinking water** (which is 10% of the population). This equates to 94 communities and 1,168 people.

Among the communities not connected to town water, half (52%) of communities and 11% of the population are without **regular monthly testing**. This equates to 99 communities and 1,328 people.

[7] World Health Organisation, 2008, Guidelines for drinking-water quality [electronic resource]: incorporating 1st and 2nd addenda, Vol.1, Recommendations. – 3rd ed. http://www.who.int/water_sanitation_health/dwq/fulltext.pdf

[8] Commonwealth Department of Health and Ageing, 1999, http://www.health.gov.au/internet/main/publishing.nsf/content/ohp-environ-envstrat.htm

3.1.1. Main Water Supply

Five major water sources are identified in 2008 for Aboriginal communities in Western Australia – soaks, bores, town, rainwater tanks and carted. Of the main water sources used in communities **with less than 20 residents** (Tables 3.1 and 3.2), **bore water** is most prevalent in nearly all communities with the exceptions of:

- West Pilbara - where there is equal usage of bore and town water sources among the four communities in this region group.
- Goldfields-Esperance - where town water sources are used by the community.
- West Coast - where town water and soaks are used by the three communities.

Compared to that recorded in 2004, there are now *more* communities with a usual population of less than 20 using **bores** as their main water source (75% 2004, 87% 2008) and **town supply** (5% 2004, 6% 2008). There are *fewer* using **carted** (13% 2004, 3% 2008) and **soak** (3% 2004, 1% 2008).

Table 3.1: Frequency of Main Water Source Used by Number of Communities (usual population <20) by Region Group[9]

	Soak		Bore		Town		Carted		Other		Total
Region group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Wyndham-East Kimberley	-	-	12	85.7	-	-	-	-	2	14.3	14
Halls Creek	-	-	15	93.8	-	-	1	6.3	-	-	16
Derby-West Kimberley	-	-	8	88.9	1	11.1	-	-	-	-	9
Broome	-	-	45	95.7	-	-	2	4.3	-	-	47
West Pilbara	-	-	2	50.0	2	50.0	-	-	-	-	4
East Pilbara	-	-	-	-	-	-	-	-	-	-	-
Goldfields-Esperance	-	-	-	-	1	100.0	-	-	-	-	1
West Coast	1	33.3	-	-	2	66.7	-	-	-	-	3
Total	**1**	**1.1**	**82**	**87.2**	**6**	**6.4**	**3**	**3.2**	**2**	**2.1**	**94**
2004 Total	**3**	**3**	**77**	**75**	**5**	**5**	**13**	**13**	**2**	**2**	**103**

Base: All communities (usual population <20)

[9] Note that East Pilbara and Ngaanyatjarraku are not shown in Table 3.1 as they have no communities with usual populations of less than 20.

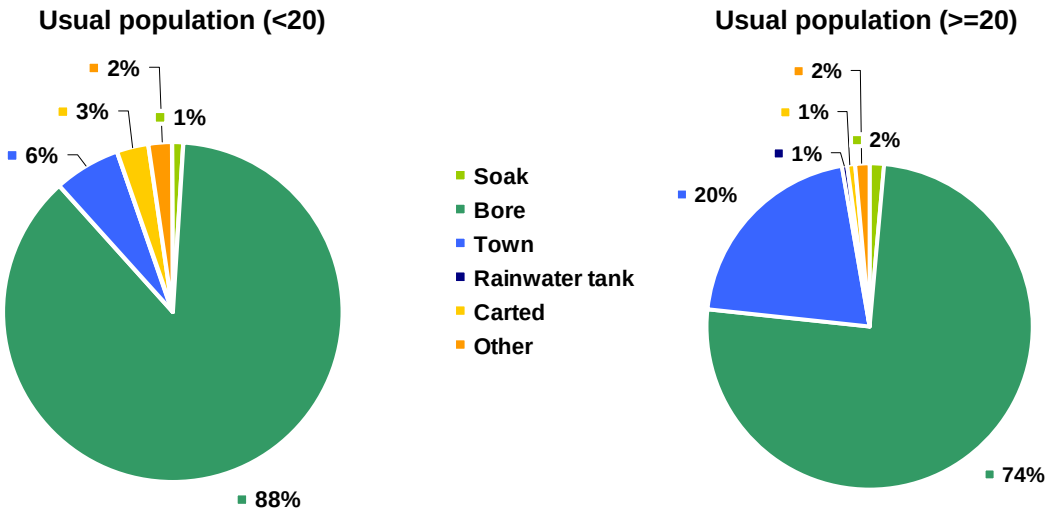
Table 3.2: Usual population and the Main Water Source for Communities (usual population <20) by Region Group

Region group	Soak		Bore		Town		Carted		Other		Total Pop
	n	%	n	%	n	%	n	%	n	%	n
Wyndham-East Kimberley	-	-	142	92.2	-	-	-	-	12	7.8	154
Halls Creek	-	-	104	95.4	-	-	5	4.6	-	-	109
Derby-West Kimberley	-	-	99	90.0	11	10.0	-	-	-	-	110
Broome	-	-	356	97.5	-	-	9	2.5	-	-	365
West Pilbara	-	-	18	50.0	18	50.0	-	-	-	-	36
East Pilbara	-	-	-	-	-	-	-	-	-	-	-
Goldfields-Esperance	-	-	-	-	15	100.0	-	-	-	-	15
West Coast	1	2.6	-	-	38	97.4	-	-	-	-	39
Total	**1**	**0.1**	**719**	**86.8**	**82**	**9.9**	**14**	**1.7**	**12**	**1.4**	**828**
2004 Total	**23**	**3**	**697**	**78**	**68**	**8**	**76**	**9**	**5**	**1**	**894**

Base: Count of all community members (usual population <20)

As depicted in Figure 3.1, **bore water** is the most prevalent water source used in both small and large communities.

Figure 3.1: Frequency of Main Water Source Used by Number of Communities - Total by usual population



Base: All communities

In the regions with communities of **20 or more residents**, nearly all communities use either **bore** (73%) or **town** (23%) as their main water sources, with 4% using other methods (soak wells, rainwater tanks, carted or other).

Table 3.3: Frequency of Main Water Source Used by Number of Communities (usual population >=20) by Region Group

	Soak		Bore		Town		Rainwater Tank		Carted		Other		Total
Region group	n	%	n	%	n	%	n	%	n	%	n	%	n
Wyndham-East Kimberley	2	9.5	13	61.9	4	19.0	1	4.8	-	-	1	4.8	21
Halls Creek	-	-	15	78.9	4	21.1	-	-	-	-	-	-	19
Derby-West Kimberley	-	-	25	80.6	6	19.4	-	-	-	-	-	-	31
Broome	-	-	13	86.7	2	13.3	-	-	-	-	-	-	15
West Pilbara	-	-	5	55.6	3	33.3	-	-	1	11.1	-	-	9
East Pilbara	-	-	6	66.7	3	33.3	-	-	-	-	-	-	9
Ngaanyatjarraku	-	-	9	100.0			-	-	-	-	-	-	9
Goldfields-Esperance	-	-	6	46.2	6	46.2	-	-	-	-	1	7.7	13
West Coast	-	-	8	72.7	3	27.3	-	-	-	-	-	-	11
Total	**2**	**1.5**	**100**	**73.0**	**31**	**22.6**	**1**	**0.7**	**1**	**0.7**	**2**	**1.5**	**137**
2004 Total	**1**	**1**	**123**	**72**	**37**	**22**	**NA**		**5**	**3**	**1**	**1**	**171**

Base: All communities (usual population >=20)

There is one community that **carts** water within **West Pilbara** which has a population of 29. One community in **Wyndham-East Kimberley** relies on **rainwater tank** and two in the same region that rely on **soak** for a joint population of 250 (Tables 3.3 and 3.4).

Table 3.4: Usual Population and the Main Water Source for Communities (usual population >=20) by Region Group

	Soak		Bore		Town		Rainwater Tank		Carted		Other		Total Pop
Region group	n	%	n	%	n	%	n	%	n	%	n	%	n
Wyndham-East Kimberley	250	13.4	482	25.9	599	32.1	33	1.8	-	-	500	26.8	1,864
Halls Creek	-	-	1,657	79.5	426	20.5	-	-	-	-	-	-	2,083
Derby-West Kimberley	-	-	2,603	81.4	596	18.6	-	-	-	-	-	-	3,199
Broome	-	-	2,066	94.6	117	5.4	-	-	-	-	-	-	2,183
West Pilbara	-	-	356	60.0	208	35.1	-	-	29	4.9	-	-	593
East Pilbara	-	-	817	75.9	259	24.1	-	-	-	-	-	-	1,076
Ngaanyatjarraku	-	-	1,537	100.0	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	-	-	392	39.2	528	52.8	-	-	-	-	80	8.0	1,000
West Coast	-	-	478	64.3	265	35.7	-	-	-	-	-	-	743
Total	**250**	**1.8**	**10,388**	**72.8**	**2,998**	**21.0**	**33**	**0.2**	**29**	**0.2**	**580**	**4.1**	**14,278**
2004 Total	**20**	**0**	**11,776**	**73**	**3,247**	**20**	**NA**		**175**	**1**	**90**	**1**	**16,058**

Base: Count of all community members (usual population >=20)

Tables 3.5 and 3.6 below records main water sources for all communities (regardless of population size). Consistent with the previously mentioned results, the main water sources being used by nearly all communities are **bore** (79%, 182 communities) and **town water** (16%, 37 communities). Only a small proportion (5%, 9 communities) rely on alternative water sources such as rainwater tanks, soaks, carting water and other.

Table 3.5: Frequency of Main Water Source Use by All Communities by Region Group

Region group	Soak		Bore		Town		Rainwater Tank		Carted		Other		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
Wyndham-East Kimberley	2	5.7	25	71.4	4	11.4	1	2.9	-	-	3	8.6	35
Halls Creek	-	-	30	85.7	4	11.4	-	-	1	2.9	-	-	35
Derby-West Kimberley	-	-	33	82.5	7	17.5	-	-	-	-	-	-	40
Broome	-	-	58	93.5	2	3.2	-	-	2	3.2	-	-	62
West Pilbara	-	-	7	53.8	5	38.5	-	-	1	7.7	-	-	13
East Pilbara	-	-	6	66.7	3	33.3	-	-	-	-	-	-	9
Ngaanyatjarraku	-	-	9	100.0	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	-	-	6	42.9	7	50.0	-	-	-	-	1	7.1	14
West Coast	1	7.1	8	57.1	5	35.7	-	-	-	-	-	-	14
Total	**3**	**1.3**	**182**	**78.8**	**37**	**16.0**	**1**	**0.4**	**4**	**1.7**	**4**	**1.7**	**231**
2004 Total	**4**	**1**	**200**	**73**	**42**	**15**	**NA**		**18**	**7**	**3**	**1**	**274**

Base: All communities

Table 3.6: Usual Population and the Main Water Source for Communities by Region Group

Region group	Soak		Bore		Town		Rainwater Tank		Carted		Other		Total Pop
	n	%	n	%	n	%	n	%	n	%	n	%	n
Wyndham-East Kimberley	250	12.4	624	30.9	599	29.7	33	1.6	-	-	512	25.4	2,018
Halls Creek	-	-	1,761	80.3	426	19.4	-	-	5	0.2	-	-	2,192
Derby-West Kimberley	-	-	2,702	81.7	607	18.3	-	-	-	-	-	-	3,309
Broome	-	-	2,422	95.1	117	4.6	-	-	9	0.4	-	-	2,548
West Pilbara	-	-	374	59.5	226	35.9	-	-	29	4.6	-	-	629
East Pilbara	-	-	817	75.9	259	24.1	-	-	-	-	-	-	1,076
Ngaanyatjarraku	-	-	1,537	100.0	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	-	-	392	38.6	543	53.5	-	-	-	-	80	7.9	1,015
West Coast	1	0.1	478	61.1	303	38.7	-	-	-	-	-	-	782
Total	**251**	**1.7**	**11,107**	**73.5**	**3,080**	**20.4**	**33**	**0.2**	**43**	**0.3**	**592**	**3.9**	**15,106**
2004 Total	**43**	**0**	**12,473**	**74**	**3,315**	**20**	**NA**		**251**	**1**	**95**	**1**	**16,952**

Base: Count of all community members

3.1.2. Summary of Water Supply by Region

One-third (35%, 78 communities) of all communities and one-quarter (25%, 3,754 people) of the population are affected by unsatisfactory water supplies. Three region groups are most affected in terms of the **number of communities**:

- **Wyndham-East Kimberley:** Half (49%) of communities in this region group record unsatisfactory water supplies.
  - As shown in Table 3.8 overleaf, Wyndham-East Kimberley records higher levels of **no disinfection** and **no monthly testing.**
- **Ngaanyatjarraku:** Two in five (44%) of communities in this region group record unsatisfactory water supplies.
  - In this region, there are higher numbers of **inadequate source**, but not of disinfection or monthly testing.
- **Broome:** Two in five (42%) of communities in this region group record unsatisfactory water supplies.
  - Broome records a high level of **inadequate source**, **no disinfection** and **no monthly testing**.

Since 2004 there has been a slight decrease in the proportion of population affected by inadequate water supply, unsatisfactory water supply, no disinfection of water supply and no regular testing of water supply.

Table 3.7: Summary of Water Supply by Region Group – Number of Communities

	Inadequate source			No disinfection			No monthly testing			Unsatisfactory		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	3	35	8.6	20	31	64.5	20	31	64.5	17	35	48.6
Halls Creek	5	35	14.3	16	32	50.0	19	32	59.4	7	35	20.0
Derby-West Kimberley	7	40	17.5	9	29	31.0	8	30	26.7	10	35	28.6
Broome	14	62	22.6	48	59	81.4	49	60	81.7	26	62	41.9
West Pilbara	3	13	23.1	2	8	25.0	1	8	12.5	4	13	30.8
East Pilbara	1	9	11.1	0	7	0.0	0	7	0.0	3	9	33.3
Ngaanyatjarraku	2	9	22.2	0	9	0.0	0	9	0.0	4	9	44.4
Goldfields-Esperance	2	14	14.3	2	8	25.0	1	8	12.5	3	14	21.4
West Coast	1	14	7.1	2	9	22.2	3	9	33.3	4	14	28.6
Total	**38**	**231**	**16.5**	**99**	**192**	**51.6**	**101**	**194**	**52.1**	**78**	**226**	**34.5**
2004 Total	**47**	**274**	**17**	**122**	**232**	**53**	**117**	**232**	**50**	**98**	**262**	**37**

Base: All communities

Three region groups are most affected in terms of **usual populations** (Table 3.9):

- **Ngaanyatjarraku:** Two-thirds (68%) of the population in this region group record unsatisfactory water supplies.
  - In this region, there are higher numbers affected by **inadequate source**, but not of disinfection or monthly testing.
- **East Pilbara:** Two in five (41%) of the population in this region group record unsatisfactory water supplies.
  - In this region, there are higher numbers affected by **inadequate source**, but not of disinfection or monthly testing.
- **Derby-West Kimberley:** One-third (31%) of the population in this region group record unsatisfactory water supplies.

Table 3.8: Summary of Water Supply by Region Group – Usual Population

Region group	Inadequate source			No disinfection			No monthly testing			Unsatisfactory		
	n	Tot	%	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	96	2,018	4.8	382	1,419	26.9	331	1,419	23.3	420	2,018	20.8
Halls Creek	207	2,192	9.4	146	1,796	8.1	181	1,796	10.1	217	2,192	9.9
Derby-West Kimberley	373	3,309	11.3	172	2,565	6.7	156	2,635	5.9	947	3,081	30.7
Broome	225	2,548	8.8	501	2,426	20.7	512	2,431	21.1	303	2,548	11.9
West Pilbara	113	629	18.0	41	403	10.2	29	403	7.2	119	629	18.9
East Pilbara	200	1,076	18.6	0	967	0.0	0	967	0.0	441	1,076	41.0
Ngaanyatjarraku	256	1,537	16.7	0	1,537	0.0	0	1,537	0.0	1042	1,537	67.8
Goldfields-Esperance	80	1,015	7.9	82	662	12.4	102	662	15.4	182	1,015	17.9
West Coast	20	782	2.6	21	479	4.4	64	479	13.4	83	782	10.6
Total	**1,570**	**15,106**	**10.4**	**1,345**	**1,2254**	**11.0**	**1,375**	**1,2329**	**11.2**	**3,754**	**14,878**	**25.2**
2004 Total	**1,828**	**16,952**	**11**	**1,845**	**13,637**	**14**	**1,744**	**13,637**	**13**	**4,321**	**16,573**	**26**

Base: Count of all community members

3.1.3. Adequacy of Water Supply

An inadequate water source for a community is one where the water needs to be carted, supply is interrupted from a dry or collapsed bore, the pump is not working or it dries up due to a drought.

Overall, 17% (38 communities) of communities are classified as having inadequate water supplies - which translates to 10% (1,570 people) of the total population (refer to Tables 3.9 and 3.10)**.** This compares with results recorded in 2004 when 17% of communities and 11% of the total population were classified in this regard.

Regions most affected by inadequate water sources in 2008 are **West Pilbara** (23% of communities affected), **Broome** (23%) and **Ngaanyatjarraku** (22%).

The calculation of inadequate water source in this report has been done differently to the 2004 report; however recalculated 2004 totals indicate that there has been no change in the proportion of communities with an inadequate water source.

Table 3.9: Number of Communities with an Inadequate Water Source by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	1	14	7.1	2	21	9.5	3	35	8.6
Halls Creek	3	16	18.8	2	19	10.5	5	35	14.3
Derby-West Kimberley	2	9	22.2	5	31	16.1	7	40	17.5
Broome	10	47	21.3	4	15	26.7	14	62	22.6
West Pilbara	1	4	25.0	2	9	22.2	3	13	23.1
East Pilbara	-	-	-	1	9	11.1	1	9	11.1
Ngaanyatjarraku	-	-	-	2	9	22.2	2	9	22.2
Goldfields-Esperance	0	1	0.0	2	13	15.4	2	14	14.3
West Coast	0	3	0.0	1	11	9.1	1	14	7.1
Total	**17**	**94**	**18.1**	**21**	**137**	**15.3**	**38**	**231**	**16.5**
2004 Total*	**25**	**103**	**24**	**22**	**171**	**13**	**47**	**274**	**17**

Base: All communities

**** The 2004 totals have been recalculated according to the 2008 methodology.***

Table 3.10: Usual Population that have an Inadequate Water Source by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	17	154	11.0	79	1,864	4.2	96	2,018	4.8
Halls Creek	15	109	13.8	192	2,083	9.2	207	2,192	9.4
Derby-West Kimberley	33	110	30.0	340	3,199	10.6	373	3,309	11.3
Broome	74	365	20.3	151	2,183	6.9	225	2,548	8.8
West Pilbara	12	36	33.3	101	593	17.0	113	629	18.0
East Pilbara	-	-	-	200	1,076	18.6	200	1,076	18.6
Ngaanyatjarraku	-	-	-	256	1,537	16.7	256	1,537	16.7
Goldfields-Esperance	0	15	0.0	80	1,000	8.0	80	1,015	7.9
West Coast	0	39	0.0	20	743	2.7	20	782	2.6
Total	**151**	**828**	**18.2**	**1,419**	**14,278**	**9.9**	**1,570**	**15,106**	**10.4**
2004 Total*	**195**	**894**	**22**	**1,633**	**16,058**	**10**	**1,828**	**16,952**	**11**

Base: Count of all community members

**** The 2004 totals have been recalculated according to the 2008 methodology.***

3.1.4. Water Disinfection

In 2008, there were 197 communities (with a population of 12,396) that are not connected to a town water supply and therefore, disinfection of their drinking is an important issue. The majority of these 197 communities are reliant on **bore water** as their main water source (185 out of 197 - 94%), and a minority rely on carted water (4 out of 197 - 2%), soaks (3 out of 197 - 2%), rainwater tanks (1 out of 197 - 0.5%) and other (4 out of 197 - 2%).

Of the 197 communities that are not connected to a town water supply, half (49%) have untreated drinking water which is 10% of the population. This equates to 94 communities and 1,168 people.

Those most affected by untreated drinking water are:

- **Smaller communities** with usual populations of less than 20 (87% affected relative to 18% among communities with usual populations of equal to or greater than 20).
- **Broome:** in terms of its smaller (94%) and larger (39%) communities, and four in five (81%) affected overall.
- **Wyndham- East Kimberley:** in terms of its larger communities (41%), and two fifths (58%) affected overall.

There have been decreases between 2004 and 2008 in the proportion of communities and population whose drinking water is not treated.

Table 3.11: Number of Communities with no Disinfection of Drinking Water by Region Group (excluding communities who are connected to a town supply)

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	11	14	78.6	7	17	41.2	18	31	58.1
Halls Creek	14	16	87.5	1	15	6.7	15	31	48.4
Derby-West Kimberley	5	7	71.4	4	24	16.7	9	31	29.0
Broome	43	46	93.5	5	13	38.5	48	59	81.4
West Pilbara	1	2	50.0	1	6	16.7	2	8	25.0
East Pilbara	-	-	-	0	6	0.0	0	6	0.0
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	-	-	-	0	7	0.0	0	7	0.0
West Coast	1	1	100.0	1	8	12.5	2	9	22.2
Total	**75**	**86**	**87.2**	**19**	**105**	**18.1**	**94**	**191**	**49.2**
2004 Total*	**83**	**98**	**85**	**39**	**134**	**29**	**122**	**232**	**53**

Base: Communities that are not connected to a town supply drinking water

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

Table 3.12: Usual Population that have no Disinfection of Drinking Water by Region Group (excluding communities who are connected to a town supply)

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	112	154	72.7	195	1,265	15.4	307	1,419	21.6
Halls Creek	101	109	92.7	25	1,657	1.5	126	1,766	7.1
Derby-West Kimberley	61	92	66.3	111	2,573	4.3	172	2,665	6.5
Broome	330	360	91.7	171	2,066	8.3	501	2,426	20.7
West Pilbara	12	18	66.7	29	385	7.5	41	403	10.2
East Pilbara	-	-	-	0	817	0.0	0	817	0.0
Ngaanyatjarraku	-	-	-	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	-	-	-	0	472	0.0	0	472	0.0
West Coast	1	1	100.0	20	478	4.2	21	479	4.4
Total	**617**	**734**	**84.1**	**551**	**11,250**	**4.9**	**1,168**	**11,984**	**9.7**
2004 Total*	**707**	**826**	**86**	**1,138**	**12,811**	**9**	**1,845**	**13,637**	**14**

Base: Count of all community members that are not connected to a town supply drinking water

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

3.1.5. Water Testing

Among the communities not connected to town water, half (52%) of communities and 11% of the population are living without regular monthly testing. This equates to 99 communities and 1,328 people.

Of communities affected by untested (therefore untreated) drinking water, most are:

- **Smaller communities** with usual populations of less than 20 (90% no monthly testing to 20% among communities with usual populations of equal to or greater than 20).
- **In Wyndham-East Kimberley:** Two-thirds (65%) of communities and one-quarter (23%) of population in the region group are living without regular monthly testing of water.

Since 2004 there has been an increase in the proportion of small communities not receiving monthly testing of their water supply (increase from 83% in 2004 to 90% in 2008). In contrast there has been a decrease in large communities where regular monthly water testing has not been conducted (drop from 27% in 2004 to 20% in 2008).

Table 3.13: Number of Communities with no Monthly Testing of Water Supply by Region Group (excluding communities who are connected to a town supply)

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	13	14	92.9	7	17	41.2	20	31	64.5
Halls Creek	16	16	100.0	1	15	6.7	17	31	54.8
Derby-West Kimberley	4	7	57.1	4	23	17.4	8	30	26.7
Broome	44	47	93.6	5	13	38.5	49	60	81.7
West Pilbara	0	2	0.0	1	6	16.7	1	8	12.5
East Pilbara	-	-	-	0	6	0.0	0	6	0.0
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	-	-	-	1	7	14.3	1	7	14.3
West Coast	1	1	100.0	2	8	25.0	3	9	33.3
Total	**78**	**87**	**89.7**	**21**	**104**	**20.2**	**99**	**191**	**51.8**
2004 Total*	**81**	**98**	**83**	**36**	**134**	**27**	**117**	**232**	**50**

Base: Communities that are not connected to a town supply drinking water

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

Table 3.14: Usual Population that have no Monthly Testing of Water Supply by Region Group (excluding communities who are connected to a town supply)

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	136	154	88.3	195	1,265	15.4	331	1,419	23.3
Halls Creek	109	109	100.0	25	1,657	1.5	134	1,766	7.6
Derby-West Kimberley	46	92	50.0	110	2,543	4.3	156	2,635	5.9
Broome	341	365	93.4	171	2,066	8.3	512	2,431	21.1
West Pilbara	0	18	0.0	29	385	7.5	29	403	7.2
East Pilbara	-	-	-	0	817	0.0	0	817	0.0
Ngaanyatjarraku	-	-	-	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	-	-	-	102	472	21.6	102	472	21.6
West Coast	1	1	100.0	63	478	13.2	64	479	13.4
Total	**633**	**739**	**85.7**	**695**	**11,220**	**6.2**	**1,328**	**11,959**	**11.1**
2004 Total*	**681**	**826**	**83**	**1,063**	**12,811**	**8**	**1,744**	**13,637**	**13**

Base: Count of community members that are not connected to a town supply drinking water

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

3.1.6. Satisfaction with Water Supply

One-third (35%) of communities and one-quarter (25%) of the usual population record unsatisfactory water supplies. This equates to 78 communities and 3,754 people. This result is similar to that recorded in the preceding 2004 report where 37% of communities and 26% of the usual population recorded unsatisfactory water supplies.

Those most likely to record unsatisfactory water supplies are:

- **Smaller communities** with usual populations of less than 20 (46% unsatisfactory compared with 26% among communities with usual populations of equal to or greater than 20).
  - Particularly small communities in Wyndham-East Kimberley (71%), West Coast (67% and West Pilbara (50%).
- **Ngaanyatjarraku:** with 44% of its communities recording unsatisfactory water supplies and two-thirds (68%) of its population.
- **Derby-West Kimberley:** in terms of its usual population, with one-third (31%) recording unsatisfactory water supplies.
- **East Pilbara:** in terms of its population, with two in five (41%) recording unsatisfactory water supplies.
- **Wyndham-East Kimberley:** in terms of its smaller and larger communities (71% and 33% respectively) and 49% overall in the region group. However, this equates to 21% of its population, which is lower than that for the 25% recorded for the total population referenced earlier.
- **Broome:** is more likely at a community level (42% recording unsatisfactory water supplies overall - 47% of smaller communities, 27% larger communities).

Table 3.15: Number of Communities Reporting an Unsatisfactory Water Supply by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	10	14	71.4	7	21	33.3	17	35	48.6
Halls Creek	5	16	31.3	2	19	10.5	7	35	20.0
Derby-West Kimberley	2	8	25.0	8	27	29.6	10	35	28.6
Broome	22	47	46.8	4	15	26.7	26	62	41.9
West Pilbara	2	4	50.0	2	9	22.2	4	13	30.8
East Pilbara	-	-	-	3	9	33.3	3	9	33.3
Ngaanyatjarraku	-	-	-	4	9	44.4	4	9	44.4
Goldfields-Esperance	0	1	0.0	3	13	23.1	3	14	21.4
West Coast	2	3	66.7	2	11	18.2	4	14	28.6
Total	**43**	**93**	**46.2**	**35**	**133**	**26.3**	**78**	**226**	**34.5**
2004 Total	**45**	**96**	**47**	**53**	**166**	**32**	**98**	**262**	**37**

Base: All communities

Table 3.16: Usual Population of Communities Reporting an Unsatisfactory Water Supply by Region Group

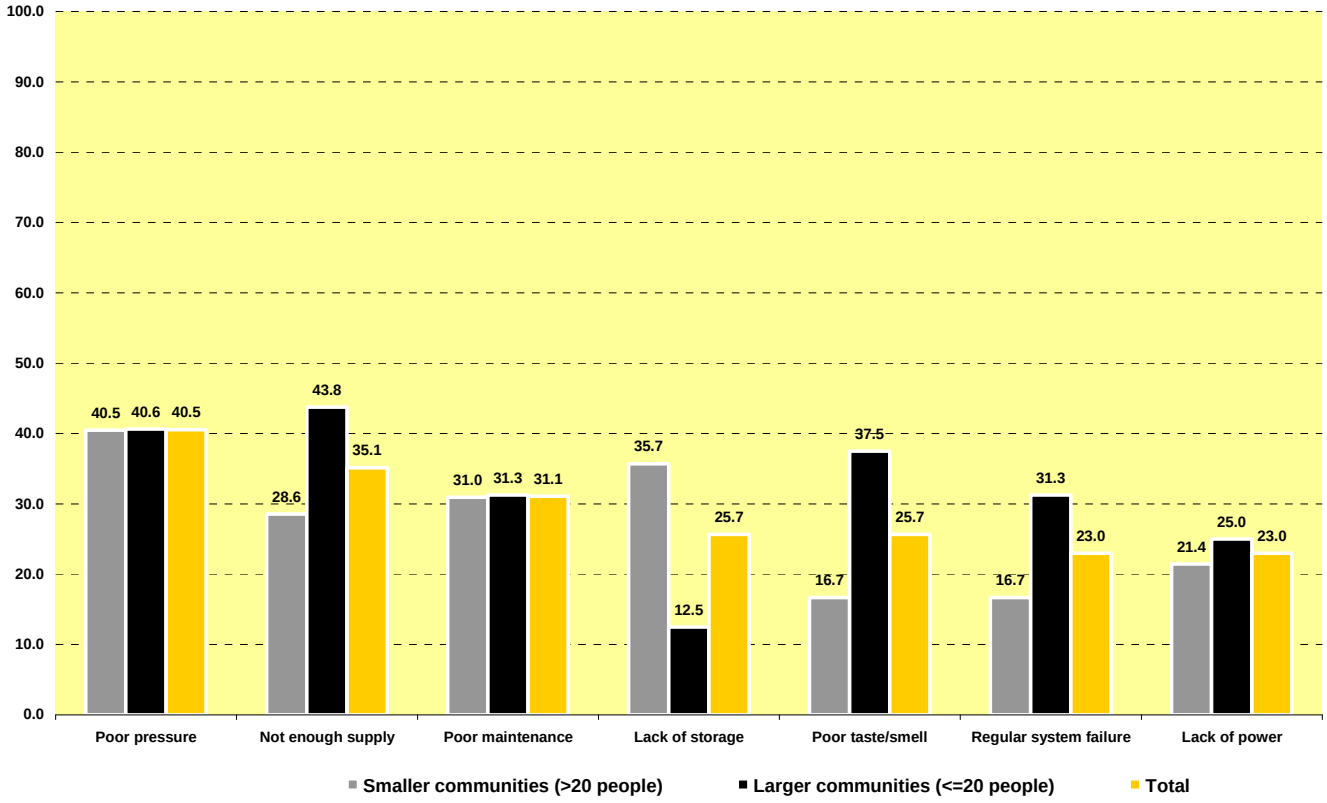
	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	123	154	79.9	297	1,864	15.9	420	2,018	20.8
Halls Creek	25	109	22.9	192	2,083	9.2	217	2,192	9.9
Derby-West Kimberley	33	103	32.0	914	2,978	30.7	947	3,081	30.7
Broome	152	365	41.6	151	2,183	6.9	303	2,548	11.9
West Pilbara	18	36	50.0	101	593	17.0	119	629	18.9
East Pilbara	-	-	-	441	1,076	41.0	441	1,076	41.0
Ngaanyatjarraku	-	-	-	1,042	1,537	67.8	1,042	1,537	67.8
Goldfields-Esperance	0	15	0.0	182	1,000	18.2	182	1,015	17.9
West Coast	20	39	51.3	63	743	8.5	83	782	10.6
Total	**371**	**821**	**45.2**	**3,383**	**14,057**	**24.1**	**3,754**	**14,878**	**25.2**
2004 Total	**353**	**874**	**40**	**3,968**	**15,699**	**25**	**4,321**	**16,573**	**26**

Base: Count of all community members

Reason for Dissatisfaction

As shown below, when surveyed as to the **reason for dissatisfaction with water supply**, the most recorded aspects relate to **pressure (41% of communities)**, **supply (35%)** and **maintenance (31%).**

Figure 3.2 Reasons for Dissatisfaction with Water Supply (2008)



Base: Communities that are dissatisfied with water supply (n=78)

3.1.7. State Priorities - Water

The priority tables below are constructed by applying scores to responses on the key questions related to water. This provides a single priority score for each community surveyed in 2008[10]. A high score signifies that water should be a priority to address within the community.

Table 3.17 below shows the top 20% in terms of communities with a usual population of >=100 that would be considered a priority.

Table 3.17: Water Priority Usual Population >= 100

Region group	Community	Population	Score
East Pilbara	Jigalong	200	11.0
Ngaanyatjarraku	Warburton	719	10.8
Ngaanyatjarraku	Wingellina	147	6.6

Base: Top 20% of communities identified

[10] For further information on priority calculations please refer to Appendix 1

Table 3.18 shows the top 20% in terms of communities with a usual population of <100 that would be considered a priority.

Table 3.18: Water Priority Usual Population < 100

Region group	Community	Population	Score
Broome	Billard	72	10.1
Wyndham-East Kimberley	Alligator Hole	33	8.6
Wyndham-East Kimberley	Molly Springs	46	6.0
West Pilbara	Mingullatharndo	29	5.8
Derby-West Kimberley	Koorabye	89	4.5
Broome	Embulgun	29	4.1
Derby-West Kimberley	Cone Bay	30	3.6
Broome	Ngamakoon	30	3.6
Derby-West Kimberley	Joy Springs	73	3.3
Derby-West Kimberley	Kadjina	70	3.2
Wyndham-East Kimberley	Cockatoo Springs	30	2.6
Derby-West Kimberley	Bungardi	30	2.4
Derby-West Kimberley	Biridu	30	2.4
Broome	Gulumonon	20	2.4
Wyndham-East Kimberley	Four Mile	24	2.3
Wyndham-East Kimberley	Bell Springs	22	2.2
Halls Creek	Lamboo Station	25	2.0
West Coast	Gidgee Gully	20	1.9
Broome	Gnylmarung	15	1.9
Derby-West Kimberley	Yulumbu	15	1.7
Wyndham-East Kimberley	Hollow Springs	19	1.7
Wyndham-East Kimberley	Honeymoon Beach	17	1.7
Wyndham-East Kimberley	Nulla Nulla	20	1.6
Wyndham-East Kimberley	Yirralallem	20	1.6
Broome	Wanamulnyndong	20	1.6
Goldfields-Esperance	Coonana	80	1.6
Goldfields-Esperance	Windidda	35	1.6

Base: Top 20% of communities identified

3.2. Electricity

Many communities do not have access to the main electricity supply grid or to a Town Based supply and need to be self sufficient in providing their own power. A reliable supply of electricity is essential to ensure adequate refrigeration of perishable and potentially hazardous food stuffs, power to bores and water supply pumps, lighting, hot water and communications.

The core indicators of environmental health in respect to electricity are:

- **Access** to an electricity source — refer Section 3.2.1
- Connection to **town electricity** — refer Section 3.2.2
- **Interruptions** to power supply — refer Section 3.2.3
- **Satisfaction** with electricity supply — refer Section 3.2.4

Summary of the key indicators

Of the communities surveyed in 2008, three are noted as not having an electricity source to the community area. These three communities each have populations of 5 or less, affecting a total of 11 people.

Three-quarters (77%) of communities are not connected to a town electricity supply. Of these communities with no connection to a town electricity supply, the majority (74%) record experiencing regular **power supply interruptions** with the key reasons being equipment breakdown (59%), lack of fuel (45%), equipment damage (14%) and no maintenance (10%). Interruptions occur either daily (31%), weekly (15%) or monthly (20%).

Overall, one-third (36%) of all communities record their power supply as **unsatisfactory**, which translates to 23% of the total population or 3,452 people.

3.2.1. Electricity Source

Of the communities surveyed in 2008, three communities are noted as not having an electricity source to the community area (Table 3.19). These are three smaller communities (each with populations of 5 or less, Table 3.20) in **Halls Creek**, **Derby-West Kimberley** and **Broome** affecting a total of 11 people.

Table 3.19: Number of Communities with no Source of Electricity by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	0	14	0.0	0	21	0.0	0	35	0.0
Halls Creek	1	16	6.3	0	19	0.0	1	35	2.9
Derby-West Kimberley	1	9	11.1	0	31	0.0	1	40	2.5
Broome	1	47	2.1	0	15	0.0	1	62	1.6
West Pilbara	0	4	0.0	0	9	0.0	0	13	0.0
East Pilbara	-	-	-	0	9	0.0	0	9	0.0
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	0	1	0.0	0	13	0.0	0	14	0.0
West Coast	0	3	0.0	0	11	0.0	0	14	0.0
Total	**3**	**94**	**3.2**	**0**	**137**	**0.0**	**3**	**231**	**1.3**
2004 Total	**12**	**102**	**12**	**1**	**171**	**1**	**13**	**273**	**5**

Base: All communities

Table 3.20: Usual population that have no Source of Electricity by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	0	154	0.0	0	1,864	0.0	0	2,018	0.0
Halls Creek	5	109	4.6	0	2,083	0.0	5	2,192	0.2
Derby-West Kimberley	5	110	4.5	0	3,199	0.0	5	3,309	0.2
Broome	1	365	0.3	0	2,183	0.0	1	2,548	0.0
West Pilbara	0	36	0.0	0	593	0.0	0	629	0.0
East Pilbara	-	-	-	0	1,076	0.0	0	1,076	0.0
Ngaanyatjarraku	-	-	-	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	0	15	0.0	0	1,000	0.0	0	1,015	0.0
West Coast	0	39	0.0	0	743	0.0	0	782	0.0
Total	**11**	**828**	**1.3**	**0**	**14,278**	**0.0**	**11**	**15,106**	**0.1**
2004 Total	**45**	**889**	**5**	**28**	**16,058**	**0.2**	**73**	**16,947**	**0.4**

Base: Count of all community members

3.2.2. Town Electricity

Table 3.21 shows the number of communities and their population that are connected to a town electricity supply. **One-quarter (23%, 54 communities) are connected to a town electricity supply.** This is similar to that recorded in 2004 where 60 out of 274 communities (22%) were connected to a town electricity supply.

Table 3.21: Number of Communities (and their populations) that are Connected to a Town Electricity Supply by Region Group

	Com pop <20		Com pop >=20		Total	
Region group	**n**	**Tot**	**n**	**Tot**	**n**	**Tot**
Wyndham-East Kimberley	2	37	5	621	7	658
Halls Creek	0	0	5	457	5	457
Derby-West Kimberley	2	18	13	1,969	15	1,987
Broome	1	16	2	117	3	133
West Pilbara	1	8	3	208	4	216
East Pilbara	0	0	3	259	3	259
Ngaanyatjarraku	0	0	0	0	0	0
Goldfields-Esperance	1	15	6	528	7	543
West Coast	3	39	7	395	10	434
Total	**10**	**133**	**44**	**4,554**	**54**	**4,687**
2004 Total	**8**	**78**	**52**	**4,888**	**60**	**4,966**

Base: Communities (n) and their population (tot) which are connected to a town electricity supply

3.2.3. Interruptions of Power Supply

Communities that are not connected to a town supply rely on generators to provide their electricity. In many instances these generators are run only when required; and therefore communities do not have a continuous source of electricity. Other causes for interruptions include fuel shortages, overloads, generators breaking down and natural hazards (e.g. lighting).

As shown in Table 3.22, three in four communities (74%, 127 communities) that are not connected to a town electricity supply experience regular supply interruptions.

Those most likely to record electricity supply interruptions are:

- **Smaller communities** with usual populations of less than 20 (81% regular interruptions in small communities, compared to 68% in larger communities).
- But some regions consisting of **larger communities** with usual populations of more than 20 also record high proportions of interruptions, namely **East Pilbara** (93%), **Ngaanyatjarraku** (88%), **Wyndham-East Kimberley** (86%), **West Pilbara** (87%) and **Halls Creek** (79%).

Since 2004 there has been an eighteen percentage point increase in the proportion of communities where the electricity supply is regularly interrupted and a twenty-three percentage point increase in the proportion of population affected by regular interruptions.

Table 3.22: Number of Communities where the Electricity Supply is Regularly Interrupted by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	9	12	75.0	12	16	75.0	21	28	75.0
Halls Creek	13	14	92.9	13	14	92.9	26	28	92.9
Derby-West Kimberley	5	6	83.3	9	16	56.3	14	22	63.6
Broome	35	45	77.8	6	13	46.2	41	58	70.7
West Pilbara	3	3	100.0	4	6	66.7	7	9	77.8
East Pilbara	-	-	-	5	6	83.3	5	6	83.3
Ngaanyatjarraku	-	-	-	7	9	77.8	7	9	77.8
Goldfields-Esperance	-	-	-	4	7	57.1	4	7	57.1
West Coast	-	-	-	2	4	50.0	2	4	50.0
Total	**65**	**80**	**81.3**	**62**	**91**	**68.1**	**127**	**171**	**74.3**
2004 Total	**50**	**83**	**60**	**62**	**116**	**53**	**112**	**199**	**56**

Base: Communities which are not connected to a town electricity supply

Table 3.23: Usual population where the Electricity Supply is Regularly Interrupted by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	93	117	79.5	1,076	1,243	86.6	1,169	1,360	86.0
Halls Creek	94	99	94.9	1,267	1,626	77.9	1,361	1,725	78.9
Derby-West Kimberley	72	87	82.8	464	1,140	40.7	536	1,227	43.7
Broome	241	348	69.3	198	2,066	9.6	439	2,414	18.2
West Pilbara	28	28	100.0	331	385	86.0	359	413	86.9
East Pilbara	-	-	-	761	817	93.1	761	817	93.1
Ngaanyatjarraku	-	-	-	1,350	1,537	87.8	1,350	1,537	87.8
Goldfields-Esperance	-	-	-	293	472	62.1	293	472	62.1
West Coast	-	-	-	92	348	26.4	92	348	26.4
Total	**528**	**679**	**77.8**	**5,832**	**9,634**	**60.5**	**6,360**	**10,313**	**61.7**
2004 Total	**442**	**751**	**59**	**4,190**	**11,096**	**38**	**4,632**	**11,847**	**39**

Base: Count of community members which are not connected to a town electricity supply

Frequency of interruption

Of the communities not connected to a town electricity supply experiencing regular supply interruptions, two-thirds of communities report interruptions happening either daily (31%), weekly (15%) or monthly (20%). The remaining one-third (34%) note it has happened a few times in the past 12 months. **Smaller communities** (<20 people) are more likely to have electricity interruptions on a daily basis compared to larger communities (43% vs. 18% respectively).

Reasons for interruptions to power supply

Overall, the key cited reasons for interruptions to towns not connected to a town electricity supply include:

- Equipment breakdown (59% of mentions);
- Lack of fuel (45%);
- Equipment damage (14%); and,
- No maintenance (10%).

Across all reasons for interruptions, there have been large increases between 2004 and 2008; however results should be interpreted relative to response option changes (in 2008 an *'other please describe'* option was omitted).

Table 3.24: Reasons for Electricity Supply being Regularly Interrupted by Region Group

	Equipment Breakdown			No fuel			Equipment damage			Not maintained		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	4	15	26.7	10	15	66.7	3	15	20.0	1	15	6.7
Halls Creek	20	24	83.3	4	24	16.7	6	24	25.0	1	24	4.2
Derby-West Kimberley	10	13	76.9	3	13	23.1	1	13	7.7	1	13	7.7
Broome	15	39	38.5	28	39	71.8	3	39	7.7	8	39	20.5
West Pilbara	5	6	83.3	3	6	50.0	0	6	0.0	0	6	0.0
East Pilbara	2	4	50.0	0	4	0.0	2	4	50.0	0	4	0.0
Ngaanyatjarraku	5	5	100.0	0	5	0.0	0	5	0.0	0	5	0.0
Goldfields-Esperance	3	3	100.0	1	3	33.3	0	3	0.0	0	3	0.0
West Coast	1	1	100.0	0	1	0.0	0	1	0.0	0	1	0.0
Total	**65**	**110**	**59.1**	**49**	**110**	**44.5**	**15**	**110**	**13.6**	**11**	**110**	**10.0**
2004 Total	**23**	**109**	**21**	**16**	**109**	**15**	**1**	**109**	**1**	**3**	**109**	**3**

Base: Communities not connected to a town supply and experience regular supply interruption

Table 3.25: Usual Population for Electricity Supply being Regularly Interrupted by Region Group

Region group	Equipment Breakdown			No fuel			Equipment damage			Not maintained		
	n	Tot	%	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	112	488	23.0	197	488	40.4	258	488	52.9	46	488	9.4
Halls Creek	835	873	95.6	36	873	4.1	215	873	24.6	12	873	1.4
Derby-West Kimberley	476	523	91.0	41	523	7.8	18	523	3.4	15	523	2.9
Broome	139	426	32.6	331	426	77.7	41	426	9.6	114	426	26.8
West Pilbara	324	330	98.2	198	330	60.0	0	330	0.0	0	330	0.0
East Pilbara	365	606	60.2	0	606	0.0	241	606	39.8	0	606	0.0
Ngaanyatjarraku	1,258	1,258	100.0	0	1,258	0.0	0	1,258	0.0	0	1,258	0.0
Goldfields-Esperance	213	213	100.0	35	213	16.4	0	213	0.0	0	213	0.0
West Coast	40	40	100.0	0	40	0.0	0	40	0.0	0	40	0.0
Total	**3,762**	**4,757**	**79.1**	**838**	**4,757**	**17.6**	**773**	**4,757**	**16.2**	**187**	**4,757**	**3.9**
2004 Total	**1,022**	**4,663**	**22**	**537**	**4,663**	**12**	**4**	**4,663**	**0.1**	**195**	**4,663**	**4**

Base: Count of community members not connected to a town supply and experience regular supply interruption

3.2.4. Community Satisfaction with Power Supply

Of all communities, one-third (36%, 81 communities) consider their power supply unsatisfactory, which translates to 23% (3,452 people) of the total population. This result is lower than in the 2004 report where 40% of communities considered their power supply unsatisfactory, translating to 25% of the population.

Those most likely to record unsatisfactory power supplies are:

- **Smaller communities** with usual populations of less than 20 (53% unsatisfactory compared with 24% among communities with usual populations of equal to or greater than 20).
  - Particularly small communities in Broome (62%).
- **Wyndham-East Kimberley:** 43% of its communities record unsatisfactory power supply, which translates to 17% of the region group's population.
- **Broome:** 57% of its communities record unsatisfactory power supply, which translates to 16% of the region group's population.
- **West Pilbara:** 31% of the region group's communities record unsatisfactory power supply, which translates to 30% of the region group's population.
- **Ngaanyatjarraku:** 33% of the region group's communities record unsatisfactory power supply, which translates to 65% of the region group's population.
- No **West Coast** community records unsatisfactory power supply.

Of the communities that report unsatisfactory power supply, most (66%) have a **community generator** as their power supply or a **solar hybrid system** (15%). The reasons cited for dissatisfaction are:

- Electricity interruptions (95%);
- No fuel (53%);
- Equipment breakdown (45%).

Table 3.26: Unsatisfactory Electricity Supply as reported by Communities by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	7	14	50.0	8	21	38.1	15	35	42.9
Halls Creek	8	15	53.3	3	19	15.8	11	34	32.4
Derby-West Kimberley	3	7	42.9	5	30	16.7	8	37	21.6
Broome	29	47	61.7	6	15	40.0	35	62	56.5
West Pilbara	1	4	25.0	3	9	33.3	4	13	30.8
East Pilbara	-	-	-	2	9	22.2	2	9	22.2
Ngaanyatjarraku	-	-	-	3	9	33.3	3	9	33.3
Goldfields-Esperance	0	1	0.0	3	13	23.1	3	14	21.4
West Coast	0	3	0.0	0	11	0.0	0	14	0.0
Total	**48**	**91**	**52.7**	**33**	**136**	**24.3**	**81**	**227**	**35.7**
2004 Total	**48**	**91**	**53**	**52**	**162**	**32**	**100**	**253**	**40**

Base: All communities

Table 3.27: Usual Population with an Unsatisfactory Electricity Supply by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	90	154	58.4	254	1,864	13.6	344	2,018	17.0
Halls Creek	57	104	54.8	239	2,083	11.5	296	2,187	13.5
Derby-West Kimberley	41	98	41.8	694	3,139	22.1	735	3,237	22.7
Broome	206	365	56.4	198	2,183	9.1	404	2,548	15.9
West Pilbara	12	36	33.3	176	593	29.7	188	629	29.9
East Pilbara	-	-	-	276	1,076	25.7	276	1,076	25.7
Ngaanyatjarraku	-	-	-	996	1,537	64.8	996	1,537	64.8
Goldfields-Esperance	0	15	0.0	213	1,000	21.3	213	1,015	21.0
West Coast	0	39	0.0	0	743	0.0	0	782	0.0
Total	**406**	**811**	**50.1**	**3,046**	**14,218**	**21.4**	**3,452**	**15,029**	**23.0**
2004 Total	**421**	**850**	**50**	**3,574**	**15,227**	**23**	**3,995**	**16,127**	**25**

Base: Count of all community members

3.2.5. State Priorities - Electricity

Similar to the water priority table listed previously, the priority tables listed below and overleaf have been constructed by applying scores to different responses on key electricity questions (source of electricity and interruption of electricity). A high score signifies that electricity supply is an issue within the community and may need addressing.

As shown in the Table 3.28 **Warburton** (Ngaanyatjarraku), **Kalumburu** (Wyndham-East Kimberley) and **Balgo** (Halls Creek) are the highest priorities (among communities with a usual population >=100) with respect to

electricity source and interruption of electricity. Communities listed in Table 3.28 and Table 3.29 all indicated they suffer from regular power interruptions.

The list below and overleaf show the top 20% ranked communities state-wide by size of usual population according to electricity priority.

Table 3.28: Electricity Priority Usual Population >= 100

Region group	Community	Population	Score
Ngaanyatjarraku	Warburton	719	28.8
Wyndham-East Kimberley	Kalumburu	500	20.0
Halls Creek	Balgo	460	18.4
Halls Creek	Mindibungu	220	8.8

Base: Top 20% of communities identified

Table 3.29: Electricity Priority Usual Population <100

Region group	Community	Population	Score
Derby-West Kimberley	Koorabye	89	3.6
Goldfields-Esperance	Coonana	80	3.2
Derby-West Kimberley	Jarlmadangah	78	3.1
Goldfields-Esperance	Mt Margaret	76	3.0
Derby-West Kimberley	Djugerari	74	3.0
Wyndham-East Kimberley	Glen Hill	72	2.9
West Pilbara	Wakathuni	72	2.9
Broome	Billard	72	2.9
Derby-West Kimberley	Kadjina	70	2.8
Ngaanyatjarraku	Tjirrkarli	62	2.5
Halls Creek	Yiyili	58	2.3
West Coast	Yulga Jinna	52	2.1
Wyndham-East Kimberley	Wuggun	50	2.0
Wyndham-East Kimberley	Dodnun	50	2.0
West Pilbara	Innawonga	50	2.0
Halls Creek	Wurrenranginy	50	2.0
Wyndham-East Kimberley	Molly Springs	46	1.8
West Coast	Pia Wadjari	40	1.6
Derby-West Kimberley	Ngurtuwarta	40	1.6

Base: Top 20% of communities identified

3.3. Housing

The core indicators of environmental health in respect to housing are:

- Dwelling type — refer Section 3.3.1
- Population density — refer Section 3.3.2

Summary of the key indicators

Nine in ten (90%) dwellings are **permanent**.

Approximately eighty four per cent of dwellings have **occupied tenancies** (77% are permanent dwellings and 6% are temporary dwellings).

Halls Creek and Broome have the highest proportions of temporary dwellings (14% and 23% respectively), but also the highest proportions of dwellings currently **under construction** (7% and 5%).

Halls Creek also has a high proportion of **derelict** dwellings (7%), as do Goldfields-Esperance (14%) and West Coast (9%).

Three in five communities (59%; or 55% of usual population) report their housing being unsatisfactory.

Of the dwellings classified as adequate (the adjusted Population Density Measure), there is an average of 5.7 people living in or sharing each dwelling. This is higher for Wyndham-East Kimberley (6.6), Halls Creek (6.1), Derby-West Kimberley (6.4) and Broome (6.7) which are also the four region groups with the highest usual populations.

3.3.1. Dwelling Type

Nine in ten (90%, 3,073 dwellings) dwellings are permanent. However, this is lower in **Halls Creek** and **Broome** where there are a higher proportion of temporary dwellings (14% and 23% temporary dwellings – caravans, improvised shelters or dongas – respectively). These region groups also record the highest proportion of dwellings under construction (7% Halls Creek, 5% Broome).

Approximately eighty four per cent of dwellings have occupied tenancies (77% are permanent dwellings and 6% are temporary dwellings). The proportions of occupied tenancies are lower in:

- **Halls Creek:** which has a higher proportion of **unoccupied** (9% total, 7% permanent and 2% temporary), **derelict** (7% total, 5% permanent and 2% temporary) and dwellings **under construction** (7% total, 7% permanent, 0% temporary).
- **Broome:** where one in ten (10%) dwellings are **unoccupied** (5% permanent, 5% temporary).
- **West Pilbara:** where one-quarter (24%) of dwellings are **unoccupied** (19% permanent, 5% temporary).
- **Goldfields:** where one in seven (13%) are **unoccupied** (10% permanent, 3% temporary) and one in seven (14%) are **derelict (**13% permanent, 1% temporary).
- **West Coast:** where one in ten (9%) are **derelict** (9% permanent, 0% temporary).

Refer to Table 3.30 for further information by region groups.

Due to changes in the question response options, comparison between 2004 and 2008 is not possible.

Table 3.30: Numbers and Percentages of Dwellings in Communities by Type by Region Group

Dwelling Type	Wyndham-East Kimberley		Halls Creek		Derby-West Kimberley		Broome		West Pilbara		East Pilbara		Ngaanyatjarraku		Goldfields-Esperance		West Coast		TOTAL	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Permanent																				
Occupied	308	81.5	362	67.4	514	91.0	383	66.4	133	67.2	215	87.8	337	86.9	210	70.5	181	77.0	2,643	77.3
Unoccupied	15	4.0	37	6.9	12	2.1	26	4.5	38	19.2	10	4.1	14	3.6	30	10.1	11	4.7	193	5.6
Derelict/ Abandoned	11	2.9	26	4.8	8	1.4	8	1.4	7	3.5	15	6.1	13	3.4	39	13.1	21	8.9	148	4.3
Under Construction	8	2.1	36	6.7	6	1.1	27	4.7	2	1.0	0	0.0	4	1.0	0	0.0	6	2.6	89	2.6
Subtotal	**342**	**90.5**	**461**	**85.8**	**540**	**95.6**	**444**	**76.9**	**180**	**90.9**	**240**	**98.0**	**368**	**94.8**	**279**	**93.6**	**219**	**93.2**	**3,073**	**89.8**
Temporary																				
Occupied	19	5.0	54	10.1	23	4.1	82	14.2	8	4.0	3	1.2	13	3.4	7	2.3	8	3.4	217	6.3
Unoccupied	13	3.4	10	1.9	2	0.4	31	5.4	9	4.5	2	0.8	3	0.8	9	3.0	7	3.0	86	2.5
Derelict/ Abandoned	2	0.5	12	2.2	0	0.0	16	2.8	1	0.5	0	0.0	2	0.5	3	1.0	0	0.0	36	1.1
Under Construction	2	0.5	0	0.0	0	0.0	4	0.7	0	0.0	0	0.0	2	0.5	0	0.0	1	0.4	9	0.3
Subtotal	**36**	**9.5**	**76**	**14.2**	**25**	**4.4**	**133**	**23.1**	**18**	**9.1**	**5**	**2.0**	**20**	**5.2**	**19**	**6.4**	**16**	**6.8**	**348**	**10.2**
TOTAL	**378**	**100.0**	**537**	**100.0**	**565**	**100.0**	**577**	**100.0**	**198**	**100.0**	**245**	**100.0**	**388**	**100.0**	**298**	**100.0**	**235**	**100.0**	**3,421**	**100.0**

Base: All communities

3.3.2. Population Density Measures (PDM)

The population density measure (PDM) table records the average number of people living in or sharing a dwelling type by region group. The crude PDM score is calculated by dividing the total dwelling types (permanent and temporary structures) by the population within the region. The adjusted PDM is calculated in a similar manner, however only dwellings that are permanent and occupied are used in this calculation.

Of the dwellings classified as adequate (adjusted PDM), there is an average of 5.7 people living in or sharing each dwelling. This is higher in Wyndham-East Kimberley (6.6), Halls Creek (6.1), Derby-West Kimberley (6.4) and Broome (6.7) which are also the four region groups with the highest usual populations.

Table 3.31: Housing Population Density Measure (PDM) by Region Group

Region group	Pop	Crude			Adjusted	
		Permanent dwellings	Total dwellings	PDM	Adequate dwellings	PDM
Wyndham-East Kimberley	2,018	342	378	5.3	308	6.6
Halls Creek	2,192	461	537	4.1	362	6.1
Derby-West Kimberley	3,315	540	565	5.9	514	6.4
Broome	2,548	444	577	4.4	383	6.7
West Pilbara	629	180	198	3.2	133	4.7
East Pilbara	1,076	240	245	4.4	215	5.0
Ngaanyatjarraku	1,537	368	388	4.0	337	4.6
Goldfields-Esperance	1,015	279	298	3.4	210	4.8
West Coast	782	219	235	3.3	181	4.3
Total	**15,112**	**3,073**	**3,421**	**4.4**	**2,643**	**5.7**
2004 Total*	**16,705**	**2,451**	**2,801**	**6.0**	**2,286**	**7.3**

Base: All communities

**** In 2004 adequate dwellings were calculated from individual dwelling records and only included dwellings with connections to power, water and sewerage.***

3.3.3. Community Satisfaction with Housing

In 2008, communities are asked to rate whether their housing is satisfactory or not. As seen in Table 3.32, three in five communities (59%; or 55% of usual population) report their housing being unsatisfactory. Communities within the Broome and Goldfields-Esperance regions have the highest level of housing being unsatisfactory (77% and 71% respectively).

Due to the addition of this new question in 2008, no comparison can be made to the 1997 or 2004 EHNS.

Table 3.32: Unsatisfactory Housing as Reported by Communities by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	2	14	14.3	10	21	47.6	12	35	34.3
Halls Creek	5	16	31.3	16	19	84.2	21	35	60.0
Derby-West Kimberley	3	7	42.9	18	30	60.0	21	37	56.8
Broome	38	47	80.9	9	14	64.3	47	61	77.0
West Pilbara	1	4	25.0	5	8	62.5	6	12	50.0
East Pilbara	-	-	-	5	9	55.6	5	9	55.6
Ngaanyatjarraku	-	-	-	3	9	33.3	3	9	33.3
Goldfields-Esperance	1	1	100.0	9	13	69.2	10	14	71.4
West Coast	2	3	66.7	6	11	54.5	8	14	57.1
Total	**52**	**92**	**56.5**	**81**	**134**	**60.4**	**133**	**226**	**58.8**

Base: All communities

Table 3.33: Usual Population Reporting Unsatisfactory Housing by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	14	154	9.1	423	1,864	22.7	437	2,018	21.7
Halls Creek	35	109	32.1	2,005	2,083	96.3	2,040	2,192	93.1
Derby-West Kimberley	34	85	40.0	1,300	3,078	42.2	1,334	3,163	42.2
Broome	274	365	75.1	1,721	1,913	90.0	1,995	2,278	87.6
West Pilbara	6	36	16.7	251	521	48.2	257	557	46.1
East Pilbara	-	-	-	710	1,076	66.0	710	1,076	66.0
Ngaanyatjarraku	-	-	-	206	1,537	13.4	206	1,537	13.4
Goldfields-Esperance	15	15	100.0	642	1,000	64.2	657	1,015	64.7
West Coast	20	39	51.3	352	743	47.4	372	782	47.6
Total	**398**	**803**	**49.6**	**7,610**	**13,815**	**55.1**	**8,008**	**14,618**	**54.8**

Base: Count of all community members

3.3.4. State Priorities - Housing

Below is a summary of crude and adjusted PDMs at an individual community name level. The list below shows the top 20% ranked communities state-wide according to average number of people living in or sharing a dwelling type[11].

Table 3.34: Housing Priority Table Usual Population >= 100

Region group	Community	Population	Crude PDM	Adjusted PDM
Halls Creek	Mardiwah Loop	252	3.6	10.5
East Pilbara	Warralong	155	8.2	10.3
Wyndham-East Kimberley	Mirima	250	9.6	9.6
Wyndham-East Kimberley	Nullywah	250	9.6	9.6
Goldfields-Esperance	Wongatha Wonganarra	190	8.3	9.5
Halls Creek	Balgo	460	7.3	8.5
Derby-West Kimberley	Bayulu	500	8.3	8.3
Goldfields-Esperance	Bondini	100	4.5	7.7

Base: Top 20% of communities identified
PDM figures should be used with caution as they are calculated using the reported usual population of the community, which can be over-estimated at times.

Table 3.35: Housing Priority Table Usual Population < 100

Region group	Community	Population	Crude PDM	Adjusted PDM
Wyndham-East Kimberley	Alligator Hole	33	11.0	33.0
Broome	Ngamakoon	30	3.8	30.0
Broome	Goolarabooloo	63	7.9	21.0
Wyndham-East Kimberley	Honeymoon Beach	17	4.3	17.0
Derby-West Kimberley	Windjingayre	30	15.0	15.0
Broome	Gnylmarung	15	2.5	15.0
Derby-West Kimberley	Bidijul	15	3.8	15.0
Derby-West Kimberley	Budulah	35	7.0	11.7
Derby-West Kimberley	Bungardi	30	7.5	10.0
Broome	Nyumwah	10	3.3	10.0
Broome	Munget	10	2.0	10.0
Wyndham-East Kimberley	Nulla Nulla	20	5.0	10.0
Derby-West Kimberley	Biridu	30	4.3	10.0
Derby-West Kimberley	Galamanda	20	5.0	10.0
Halls Creek	Bawoorrooga	10	2.5	10.0

Base: Top 20% of communities identified
PDM figures should be used with caution as they are calculated using the reported usual population of the community, which can be over-estimated at times.

[11] The crude PDM score is calculated by dividing the total dwelling types (permanent and temporary structures) by the population within the region. The adjusted PDM is calculated in a similar manner, however only dwellings that are permanent and occupied are used in this calculation

3.4. Solid Waste Disposal

Solid waste disposal is an important indicator as adequate rubbish collection and disposal are essential to minimise potential breeding grounds for vermin such as rats and cockroaches which negatively impact health.

The core indicators of environmental health in respect to solid waste disposal are:

- Rubbish collection — refer Section 3.4.1
- Rubbish tips — refer Section 3.4.2
- Fencing of rubbish tips — refer Section 3.4.3
- Capacity of rubbish tips — refer Section 3.4.5
- Satisfaction with rubbish tip management — refer Section 3.4.6
- Litter — refer Section 3.4.7

Summary of the key indicators

One-third of all communities (33%, 75 communities) recorded a time during the 12 months prior to the survey, where their rubbish had *not* been collected. This affects close to half (47%) of the usual population, or 7,077 Aboriginal people.

Nine communities (4% of total communities), affecting a total of 921 Aboriginal people, have an **inappropriate rubbish tip** within their community.

In three out of five communities (64%), the dumping area/rubbish tip is **not well fenced**.

One-third of all communities (36%, 60 communities) have a **rubbish tip capacity of 12 months or less**.

Of those communities that have a rubbish tip, one in five of them (23%), are **dissatisfied** with its management.

One in eight (13%) communities has **high or excessive levels of litter** around the community.

3.4.1. Rubbish Collection

One-third (33%, 75 communities) of communities experienced a time, during the 12 months prior to the survey, where their rubbish had *not* been collected. This affects close to half (47%) the usual populations, or 7,077 Aboriginal people. This is higher than that recorded in 2004, when 27% (72 communities) and 29% of the usual population, or 4,851 Aboriginal people were affected.

Those most likely to record rubbish *not* being collected over the past 12 months include:

- **Larger communities** with usual populations of equal to or more than 20 (42% compared with 20% among communities with usual populations of less than 20).
  - This is particularly evident in the large communities of **Ngaanyatjarraku** (100%) and **East Pilbara** (67%) affecting a total of 1,537 and 722 Aboriginal people respectively.
- Four out of seven (57%) **smaller communities in Derby-West Kimberley**.

For communities where rubbish has not been collected the main reasons include;

- **not having access to a suitable vehicle** (59%);
- **no workers available** (27%); or,
- **the community not being well organised** for the rubbish collection process (13%).

Table 3.36: Number of Communities where Rubbish is not Collected Sometimes by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	4	13	30.8	8	21	38.1	12	34	35.3
Halls Creek	4	15	26.7	7	19	36.8	11	34	32.4
Derby-West Kimberley	4	7	57.1	13	31	41.9	17	38	44.7
Broome	6	47	12.8	7	15	46.7	13	62	21.0
West Pilbara	0	4	0.0	1	9	11.1	1	13	7.7
East Pilbara	-	-	-	6	9	66.7	6	9	66.7
Ngaanyatjarraku	-	-	-	9	9	100.0	9	9	100.0
Goldfields-Esperance	-	-	-	5	13	38.5	5	13	38.5
West Coast	0	3	0.0	1	11	9.1	1	14	7.1
Total	**18**	**89**	**20.2**	**57**	**137**	**41.6**	**75**	**226**	**33.2**
2004 Total	**23**	**97**	**24**	**49**	**168**	**29**	**72**	**265**	**27**

Base: All communities

Table 3.37: Usual Population affected by Rubbish Sometimes not being Collected by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	47	148	31.8	693	1,864	37.2	740	2,012	36.8
Halls Creek	26	101	25.7	682	2,083	32.7	708	2,184	32.4
Derby-West Kimberley	62	98	63.3	1,608	3,199	50.3	1,670	3,297	50.7
Broome	55	365	15.1	1,071	2,183	49.1	1,126	2,548	44.2
West Pilbara	0	36	0.0	180	593	30.4	180	629	28.6
East Pilbara	-	-	-	722	1,076	67.1	722	1,076	67.1
Ngaanyatjarraku	-	-	-	1,537	1,537	100.0	1,537	1,537	100.0
Goldfields-Esperance	-	-	-	374	1,000	37.4	374	1,000	37.4
West Coast	0	39	0.0	20	743	2.7	20	782	2.6
Total	**190**	**787**	**24.1**	**6,887**	**14,278**	**48.2**	**7,077**	**15,065**	**47.0**
2004 Total	**134**	**830**	**16**	**4,717**	**15,967**	**30**	**4,851**	**16,797**	**29**

Base: Count of all community members

3.4.2. Appropriate Rubbish Tips

An inappropriate rubbish tip is one that is either a natural depression, or a surface tip.

Nine communities (4% of total communities), affecting a total of 921 Aboriginal people, have an inappropriate rubbish tip within their community. Minimal differences are noted between 2004 and 2008 results.

Table 3.38: Number of Communities with an Inappropriate Rubbish Tip by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	1	13	7.7	0	21	0.0	1	34	2.9
Halls Creek	3	16	18.8	0	19	0.0	3	35	8.6
Derby-West Kimberley	0	8	0.0	0	30	0.0	0	38	0.0
Broome	0	47	0.0	0	15	0.0	0	62	0.0
West Pilbara	1	4	25.0	0	9	0.0	1	13	7.7
East Pilbara	-	-	-	0	9	0.0	0	9	0.0
Ngaanyatjarraku	-	-	-	1	9	11.1	1	9	11.1
Goldfields-Esperance	0	1	0.0	2	13	15.4	2	14	14.3
West Coast	0	2	0.0	1	10	10.0	1	12	8.3
Total	**5**	**91**	**5.5**	**4**	**135**	**3.0**	**9**	**226**	**4.0**
2004 Total*	**6**	**103**	**6**	**9**	**168**	**5**	**15**	**274**	**5**

Base: All communities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

Table 3.39: Usual Population Affected by an Inappropriate Rubbish Tip by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	3	148	2.0	0	1,864	0.0	3	2,012	0.1
Halls Creek	19	109	17.4	0	2,083	0.0	19	2,192	0.9
Derby-West Kimberley	0	103	0.0	0	3,139	0.0	0	3,242	0.0
Broome	0	365	0.0	0	2,183	0.0	0	2,548	0.0
West Pilbara	6	36	16.7	0	593	0.0	6	629	1.0
East Pilbara	-	-	-	0	1,076	0.0	0	1,076	0.0
Ngaanyatjarraku	-	-	-	719	1,537	46.8	719	1,537	46.8
Goldfields-Esperance	0	15	0.0	134	1,000	13.4	134	1,015	13.2
West Coast	0	38	0.0	40	678	5.9	40	716	5.6
Total	**28**	**814**	**3.4**	**893**	**14,153**	**6.3**	**921**	**14,967**	**6.2**
2004 Total*	**48**	**894**	**5**	**545**	**16,058**	**6**	**593**	**16,952**	**3**

Base: Count of all community members

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

3.4.3. Fencing of Rubbish Tips

Fencing of rubbish tips is important as it prevents both rubbish being blown around and access to the tip by children and animals.

In three in five communities (64%, 108 communities), the rubbish tip is not well fenced. This is lower than that recorded in 2004 when 72% of communities recorded tip areas that were not well fenced.

The communities most likely *not* to have their rubbish tip area well-fenced include:

- **West Pilbara:** where no community records a rubbish tip area that is well fenced.
- **Ngaanyatjarraku:** where only one of the nine communities records a rubbish tip area that is well fenced.
- **East Pilbara:** where four in five (83%) communities do not have a rubbish tip area that is well fenced
- **Broome:** where four in five (80%) communities do not have a rubbish tip area that is well fenced.

Table 3.40: Number of Communities where the Rubbish Tip is not Properly Fenced by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	7	8	87.5	6	12	50.0	13	20	65.0
Halls Creek	13	16	81.3	5	15	33.3	18	31	58.1
Derby-West Kimberley	4	5	80.0	3	20	15.0	7	25	28.0
Broome	37	43	86.0	8	13	61.5	45	56	80.4
West Pilbara	4	4	100.0	4	4	100.0	8	8	100.0
East Pilbara	-	-	-	5	6	83.3	5	6	83.3
Ngaanyatjarraku	-	-	-	8	9	88.9	8	9	88.9
Goldfields-Esperance	1	1	100.0	2	8	25.0	3	9	33.3
West Coast	-	-	-	1	4	25.0	1	4	25.0
Total	**66**	**77**	**85.7**	**42**	**91**	**46.2**	**108**	**168**	**64.3**
2004 Total*	**68**	**87**	**78**	**88**	**129**	**68**	**156**	**216**	**72**

Base: Communities with rubbish tip facilities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

Table 3.41: Usual Population where the Rubbish Tip is not Properly Fenced by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	72	77	93.5	191	1,123	17.0	263	1,200	21.9
Halls Creek	89	109	81.7	475	1,657	28.7	564	1,766	31.9
Derby-West Kimberley	46	64	71.9	84	2,203	3.8	130	2,267	5.7
Broome	283	334	84.7	661	2,066	32.0	944	2,400	39.3
West Pilbara	36	36	100.0	263	263	100.0	299	299	100.0
East Pilbara	-	-	-	617	817	75.5	617	817	75.5
Ngaanyatjarraku	-	-	-	1,507	1,537	98.0	1,507	1,537	98.0
Goldfields-Esperance	15	15	100.0	127	564	22.5	142	579	24.5
West Coast	-	-	-	40	348	11.5	40	348	11.5
Total	**541**	**635**	**85.2**	**3,965**	**10,578**	**37.5**	**4,506**	**11,213**	**40.2**
2004 Total*	**609**	**756**	**81**	**7,096**	**12,524**	**57**	**7,705**	**13,280**	**58**

Base: Count of communities with rubbish tip facilities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

3.4.4. Capacity of Rubbish Tips

Rubbish tip capacity is an indicator of length of time in which it would be reasonably expected for it to be full to capacity.

One-third (36%, 60 communities) of all communities record less than 12 months of rubbish tip capacity. This result is lower than that recorded in 2004, where 46% (92 communities) recorded a rubbish tip capacity of less than 12 months.

The majority of those communities with rubbish tip capacity of less than 12 months are in the Broome (39%, 22 communities) and Halls Creek (45%, 14 communities) regions. However, it also affects 4 out of 7 communities in West Pilbara and 4 out of 6 communities in East Pilbara.

Table 3.42: Number of Communities that had a Rubbish Tip Capacity of less than 12 months by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	4	7	57.1	4	12	33.3	8	19	42.1
Halls Creek	8	16	50.0	6	15	40.0	14	31	45.2
Derby-West Kimberley	3	5	60.0	4	20	20.0	7	25	28.0
Broome	18	43	41.9	4	13	30.8	22	56	39.3
West Pilbara	3	4	75.0	1	3	33.3	4	7	57.1
East Pilbara	-	-	-	4	6	66.7	4	6	66.7
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	0	1	0.0	0	8	0.0	0	9	0.0
West Coast	-	-	-	1	4	25.0	1	4	25.0
Total	**36**	**76**	**47.4**	**24**	**90**	**26.7**	**60**	**166**	**36.1**
2004 Total*	**43**	**76**	**57**	**49**	**122**	**40**	**92**	**198**	**46**

Base: Communities with rubbish tip facilities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

Table 3.43: Usual Population that had a Rubbish Tip Capacity of less than 12 months by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	37	71	52.1	143	1,123	12.7	180	1,194	15.1
Halls Creek	55	109	50.5	733	1,657	44.2	788	1,766	44.6
Derby-West Kimberley	35	64	54.7	148	2,203	6.7	183	2,267	8.1
Broome	141	334	42.2	931	2,066	45.1	1,072	2,400	44.7
West Pilbara	26	36	72.2	29	233	12.4	55	269	20.4
East Pilbara	-	-	-	561	817	68.7	561	817	68.7
Ngaanyatjarraku	-	-	-	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	0	15	0.0	0	564	0.0	0	579	0.0
West Coast	-	-	-	40	348	11.5	40	348	11.5
Total	**294**	**629**	**46.7**	**2,585**	**10,548**	**24.5**	**2,879**	**11,177**	**25.8**
2004 Total*	**384**	**679**	**57**	**4,141**	**12,325**	**34**	**4,525**	**13,004**	**35**

Base: Count of communities with rubbish tip facilities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

3.4.5. Unsatisfactory Rubbish Tip Management

When asked to rate how well their tip is managed, one in four communities (23%, 39 communities) report dissatisfaction. This is slightly lower than that recorded in 2004 when dissatisfaction was recorded at 25.

Dissatisfaction is higher in **East Pilbara** (83% dissatisfied), **Goldfields-Esperance** (56%), **West Pilbara** (38%) and **Derby-West Kimberley** (31%). Overall, it is higher in communities with a larger population (32%) as compared to those with a smaller population (13%).

Table 3.44: Number of Communities with Unsatisfactory Rubbish Tip Management by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	1	7	14.3	3	12	25.0	4	19	21.1
Halls Creek	3	16	18.8	2	15	13.3	5	31	16.1
Derby-West Kimberley	2	6	33.3	6	20	30.0	8	26	30.8
Broome	1	43	2.3	6	13	46.2	7	56	12.5
West Pilbara	2	4	50.0	1	4	25.0	3	8	37.5
East Pilbara	0	0	.	5	6	83.3	5	6	83.3
Ngaanyatjarraku	0	0	.	1	9	11.1	1	9	11.1
Goldfields-Esperance	1	1	100.0	4	8	50.0	5	9	55.6
West Coast	0	1	0.0	1	4	25.0	1	5	20.0
Total	**10**	**78**	**12.8**	**29**	**91**	**31.9**	**39**	**169**	**23.1**
2004 Total*	**17**	**74**	**23**	**32**	**126**	**25**	**49**	**200**	**25**

Base: Communities with rubbish tip facilities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

Table 3.45: Usual Population with Unsatisfactory Rubbish Tip Management by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	16	71	22.5	293	1,123	26.1	309	1,194	25.9
Halls Creek	27	109	24.8	81	1,657	4.9	108	1,766	6.1
Derby-West Kimberley	30	79	38.0	465	2,203	21.1	495	2,282	21.7
Broome	16	334	4.8	1,831	2,066	88.6	1,847	2,400	77.0
West Pilbara	14	36	38.9	29	263	11.0	43	299	14.4
East Pilbara	-	-	-	652	817	79.8	652	817	79.8
Ngaanyatjarraku				30	1,537	2.0	30	1,537	2.0
Goldfields-Esperance	15	15	100.0	270	564	47.9	285	579	49.2
West Coast	0	1	0.0	40	348	11.5	40	349	11.5
Total	**118**	**645**	**18.3**	**3,691**	**10,578**	**34.9**	**3,809**	**11,223**	**33.9**
2004 Total*	**141**	**660**	**21**	**3,214**	**12,408**	**26**	**3,355**	**13,065**	**26**

Base: Count of communities with rubbish tip facilities

**** The 2004 totals have been recalculated to improve consistency of 2004 data with the 2008 data cleansing processes.***

3.4.6. Litter

One in eight (13%, 30 communities) communities has high or excessive levels of litter around the community.

Larger communities (21%) are more likely than smaller communities (3%) to report high or excessive litter levels. Larger communities which record higher than average proportions are within the **East Pilbara** (56%), **West Pilbara** (50%), **Ngaanyatjarraku** (44%) and **Broome** (33%) regions.

Table 3.46: Number of Communities with High Litter Levels by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	1	14	7.1	1	20	5.0	2	34	5.9
Halls Creek	0	16	0.0	0	19	0.0	0	35	0.0
Derby-West Kimberley	1	8	12.5	5	29	17.2	6	37	16.2
Broome	1	47	2.1	5	15	33.3	6	62	9.7
West Pilbara	0	4	0.0	4	8	50.0	4	12	33.3
East Pilbara	-	-	-	5	9	55.6	5	9	55.6
Ngaanyatjarraku	-	-	-	4	9	44.4	4	9	44.4
Goldfields-Esperance	0	1	0.0	3	13	23.1	3	14	21.4
West Coast	0	3	0.0	0	10	0.0	0	13	0.0
Total	**3**	**93**	**3.2**	**27**	**132**	**20.5**	**30**	**225**	**13.3**
2004 Total	**3**	**98**	**3**	**24**	**163**	**15**	**27**	**261**	**10**

Base: All communities

Table 3.47: Usual Population with High Litter Levels by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	18	154	11.7	250	1,844	13.6	268	1,998	13.4
Halls Creek	0	109	0.0	0	2,083	0.0	0	2,192	0.0
Derby-West Kimberley	15	103	14.6	395	3,086	12.8	410	3,189	12.9
Broome	2	365	0.5	1,447	2,183	66.3	1,449	2,548	56.9
West Pilbara	0	36	0.0	280	543	51.6	280	579	48.4
East Pilbara	-	-	-	559	1,076	52.0	559	1,076	52.0
Ngaanyatjarraku	-	-	-	1,064	1,537	69.2	1,064	1,537	69.2
Goldfields-Esperance	0	15	0.0	272	1,000	27.2	272	1,015	26.8
West Coast	0	39	0.0	0	703	0.0	0	742	0.0
Total	**35**	**821**	**4.3**	**4,267**	**14,055**	**30.4**	**4,302**	**14,876**	**28.9**
2004 Total	**69**	**865**	**8**	**3,730**	**15,664**	**24**	**3,799**	**16,529**	**23**

Base: Count of all community members

3.4.7. State Priorities – Solid Waste Disposal

The list below show the top 20% ranked communities state-wide by size of usual population according to solid waste disposal priority. It takes into account rubbish tip capacity (i.e. it can only hold up to 12 months worth of rubbish), poor management of the tip and/or problems with rubbish collection within the community. Higher priority scores indicate a greater problem with inappropriate waste disposal.

Table 3.48: Solid Waste Disposal Priority Table Usual Population >= 100

Region group	Community	Population	Score
Ngaanyatjarraku	Warburton	719	107.9
Broome	Bidyadanga	800	80.0
Halls Creek	Balgo	460	46.0
Broome	Bardi	400	32.0
Derby-West Kimberley	Bayulu	500	30.0

Base: Top 20% of communities identified

Table 3.49: Solid Waste Disposal Priority Table Usual Population < 100

Region group	Community	Population	Score
Derby-West Kimberley	Djugerari	74	8.9
Broome	Billard	72	8.6
Wyndham-East Kimberley	Glen Hill	72	8.6
Goldfields-Esperance	Cosmo Newberry	87	7.8
West Coast	Pia Wadjari	40	7.6
Goldfields-Esperance	Kutkabubba	47	7.1
Derby-West Kimberley	Kadjina	70	5.6
East Pilbara	Kunawarritji	56	5.0
Wyndham-East Kimberley	Dodnun	50	5.0
Goldfields-Esperance	Coonana	80	4.8
Goldfields-Esperance	Mt Margaret	76	4.6
Derby-West Kimberley	Joy Springs	73	4.4
Ngaanyatjarraku	Tjukurla	67	4.0
Broome	Embulgun	29	3.8
Ngaanyatjarraku	Tjirrkarli	62	3.7
Goldfields-Esperance	Mulga Queen	45	3.6
Halls Creek	Red Hill	60	3.6
East Pilbara	Parnpajinya	60	3.6
Halls Creek	Wurrenranginy	50	3.5
Halls Creek	Yiyili	58	3.5
Wyndham-East Kimberley	Bow River	21	3.4
Derby-West Kimberley	Ngurtuwarta	40	3.2

Base: Top 20% of communities identified

3.5. Sanitation/Sewerage

The improper disposal of human faecal waste and sewage is a major factor that can threaten the health of persons where satisfactory sewerage systems and proper sanitation are not available.

The core indicators of environmental health in respect to Sanitation/Sewerage are:

- Adequacy of sewerage treatments/disposal systems — refer Section 3.5.1
- Access to pump-out equipment — refer Section 3.5.2
- Sewage lagoons — refer Section 3.5.3
- Sewerage system — refer Section 3.5.6

Summary of the key indicators

Across all Aboriginal communities within Western Australia, 3% report **not having adequate sewerage treatment/disposal system**. This equates to 7 communities, of which 6 are smaller communities in Broome affecting a total of 32 people

Of the communities using septic tanks/leach drains to dispose of sewage, two-thirds (66%, 101 communities) reported **not having access to appropriate pump-out equipment**.

Of the communities using sewage lagoons, just over one-quarter (29%, 18 out of 63 communities) reported having **inadequate fencing**.

One in ten (8%) communities reported their sewage lagoons as having **either excessive or high overflow**. This overflow affects 5% of the usual population of Aboriginal people

When asked their satisfaction with the maintenance of their sewage lagoon, **just over one-quarter (28%) of communities** recorded it to be unsatisfactory

Communities were asked whether their sewerage system meet their current needs. Around **one-third (31%) of communities recorded that it doesn't**.

3.5.1. Adequacy of Sewerage Treatment/Disposal System

Communities with inadequate sewerage treatment/disposal systems are those that do not have access to town or community sewerage systems, a septic tank/leach drains and only have access to pit toilets. It is noted that in some instances this may be the only suitable system, however, for the purposes of this report they are deemed inadequate.

Across all Aboriginal communities within Western Australia, 3% report not having adequate sewerage treatment/disposal system. This equates to 7 communities, of which 6 are smaller communities in Broome affecting a total of 32 people.

This result is lower than that recorded in 2004 where one in five (20%) communities reported no adequate sewerage treatment/disposal system.

Table 3.50: Communities Reporting no Adequate Sewerage Treatment/Disposal System by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	0	14	0.0	0	21	0.0	0	35	0.0
Halls Creek	1	16	6.3	0	19	0.0	1	35	2.9
Derby-West Kimberley	0	7	0.0	0	31	0.0	0	38	0.0
Broome	6	47	12.8	0	15	0.0	6	62	9.7
West Pilbara	0	4	0.0	0	9	0.0	0	13	0.0
East Pilbara	-	-	-	0	9	0.0	0	9	0.0
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	0	1	0.0	0	13	0.0	0	14	0.0
West Coast	0	3	0.0	0	11	0.0	0	14	0.0
Total	**7**	**92**	**7.6**	**0**	**137**	**0.0**	**7**	**229**	**3.1**
2004 Total	**30**	**97**	**31**	**23**	**168**	**14**	**53**	**265**	**20**

Base: All communities

Table 3.51: Usual Population Reporting no Adequate Sewerage Treatment/Disposal System by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	0	154	0.0	0	1,864	0.0	0	2,018	0.0
Halls Creek	5	109	4.6	0	2,083	0.0	5	2,192	0.2
Derby-West Kimberley	0	98	0.0	0	3,199	0.0	0	3,297	0.0
Broome	32	365	8.8	0	2,183	0.0	32	2,548	1.3
West Pilbara	0	36	0.0	0	593	0.0	0	629	0.0
East Pilbara	-	-	-	0	1,076	0.0	0	1,076	0.0
Ngaanyatjarraku	-	-	-	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	0	15	0.0	0	1,000	0.0	0	1,015	0.0
West Coast	0	39	0.0	0	743	0.0	0	782	0.0
Total	**37**	**816**	**4.5**	**0**	**14,278**	**0.0**	**37**	**15,094**	**0.2**
2004 Total	**211**	**830**	**25**	**1,167**	**15,928**	**7**	**1,378**	**16,758**	**8**

Base: Count of all community members

3.5.2. Access to Pump-Out Equipment

Of the communities using septic tanks/leach drains to dispose of sewage, two-thirds (66%, 101 communities) reported not having access to appropriate pump-out equipment.

Those most likely to record no access to appropriate pump out equipment include:

- **Halls Creek:** where 95% of communities (20 out of 21) using septic tanks/leach drains to dispose of sewage do not have access.
- **West Pilbara and Goldfields-Esperance**: where six out of seven (86%) in both region groups do not have access.
- **Broome**: where four in five (80%, 40 out of 50 communities) do not have access.
- **West Coast**: where seven out of nine (78%) do not have access.

Table 3.52: Communities with no Access to Septic Tank or Leach Drain Pump-out Equipment by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	3	14	21.4	5	14	35.7	8	28	28.6
Halls Creek	13	14	92.9	7	7	100.0	20	21	95.2
Derby-West Kimberley	4	5	80.0	6	16	37.5	10	21	47.6
Broome	30	38	78.9	10	12	83.3	40	50	80.0
West Pilbara	2	3	66.7	4	4	100.0	6	7	85.7
East Pilbara	-	-	-	3	5	60.0	3	5	60.0
Ngaanyatjarraku	-	-	-	1	5	20.0	1	5	20.0
Goldfields-Esperance	-	-	-	6	7	85.7	6	7	85.7
West Coast	2	2	100.0	5	7	71.4	7	9	77.8
Total	**54**	**76**	**71.1**	**47**	**77**	**61.0**	**101**	**153**	**66.0**
2004 Total	**39**	**64**	**61**	**47**	**108**	**44**	**86**	**172**	**50**

Base: Communities who have septic tank/leach drain

Table 3.53: Usual Population with no Access to Septic Tank or Leach Drain Pump-out Equipment by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	16	154	10.4	201	480	41.9	217	634	34.2
Halls Creek	95	100	95.0	631	631	100.0	726	731	99.3
Derby-West Kimberley	54	72	75.0	359	888	40.4	413	960	43.0
Broome	257	316	81.3	1,516	1,796	84.4	1,773	2,112	83.9
West Pilbara	18	28	64.3	133	133	100.0	151	161	93.8
East Pilbara	-	-	-	260	575	45.2	260	575	45.2
Ngaanyatjarraku	-	-	-	30	415	7.2	30	415	7.2
Goldfields-Esperance	-	-	-	466	568	82.0	466	568	82.0
West Coast	20	20	100.0	220	287	76.7	240	307	78.2
Total	**460**	**690**	**66.7**	**3,816**	**5,773**	**66.1**	**4,276**	**6,463**	**66.2**
2004 Total	**311**	**543**	**57**	**2,123**	**5,449**	**39**	**2,434**	**5,992**	**41**

Base: Count of communities who have septic tank/leach drain

3.5.3. Fencing of Sewage Lagoons

In some communities sewage lagoons are used to capture/store sewage. In order for it to be safe to the community's population, the lagoon needs to be fenced and/or gated adequately.

Of the communities using sewage lagoons, just over one-quarter (29%, 18 communities) reported having inadequate fencing.

Those most likely to record inadequate fencing include:

- **Broome:** where 75% of communities (6 out of 8) with sewage lagoons do not have adequate fencing.
- **Halls Creek:** where two in five communities (42%, 8 out of 19 communities) with sewage lagoons do not have adequate fencing.
- **Wyndham-East Kimberley:** where two in five communities (40%) with sewage lagoons do not have adequate fencing.

Due to question wording changes in 2008, comparisons between 2004 and 2008 is not possible.

Table 3.54: Number of Communities and the Usual Population Affected by an Inadequately Fenced Lagoon by Region Group

Region group	Communities			Population		
	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	2	5	40.0	97	864	11.2
Halls Creek	8	19	42.1	79	1,577	5.0
Derby-West Kimberley	2	12	16.7	101	2,287	4.4
Broome	6	8	75.0	1,117	1,787	62.5
West Pilbara	0	2	0.0	0	252	0.0
East Pilbara	0	3	0.0	0	441	0.0
Ngaanyatjarraku	0	4	0.0	0	1,122	0.0
Goldfields-Esperance	0	6	0.0	0	420	0.0
West Coast	0	4	0.0	0	327	0.0
Total	**18**	**63**	**28.6**	**1,394**	**9,077**	**15.4**

Base: Communities and usual population using sewage lagoons

3.5.4. Level of Sewage Lagoon Overflow

One in ten (8%, 4 communities) communities report their sewage lagoons have either excessive or high overflow. This overflow affects 5% (453 people) of the usual population of Aboriginal people. Highest overflow occurs in the East Pilbara and Wyndham-East Kimberley regions.

Table 3.55: Number of Communities with Excessive/High Sewage Lagoon Overflow by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	-	-	-	1	4	25.0	1	4	25.0
Halls Creek	0	1	0.0	1	8	12.5	1	9	11.1
Derby-West Kimberley	-	-	-	1	12	8.3	1	12	8.3
Broome	0	2	0.0	0	4	0.0	0	6	0.0
West Pilbara	-	-	-	0	1	0.0	0	1	0.0
East Pilbara	-	-	-	1	3	33.3	1	3	33.3
Ngaanyatjarraku	-	-	-	0	4	0.0	0	4	0.0
Goldfields-Esperance	0	1	0.0	0	5	0.0	0	6	0.0
West Coast	0	1	0.0	0	3	0.0	0	4	0.0
Total	**0**	**5**	**0.0**	**4**	**44**	**9.1**	**4**	**49**	**8.2**
2004 Total	**0**	**1**	**0**	**2**	**45**	**4**	**2**	**46**	**4**

Base: Communities with sewage lagoons

Table 3.56: Usual Population of Communities with Excessive/High Sewage Lagoon Overflow by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	-	-	-	67	839	8.0	67	839	8.0
Halls Creek	0	4	0.0	161	1,455	11.1	161	1,459	11.0
Derby-West Kimberley	-	-	-	95	2,287	4.2	95	2,287	4.2
Broome	0	14	0.0	0	1,730	0.0	0	1,744	0.0
West Pilbara	-	-	-	0	72	0.0	0	72	0.0
East Pilbara	-	-	-	130	441	29.5	130	441	29.5
Ngaanyatjarraku	-	-	-	0	1,122	0.0	0	1,122	0.0
Goldfields-Esperance	0	15	0.0	0	405	0.0	0	420	0.0
West Coast	0	19	0.0	0	308	0.0	0	327	0.0
Total	**0**	**52**	**0.0**	**453**	**8,659**	**5.2**	**453**	**8,711**	**5.2**
2004 Total	**0**	**15**	**0**	**276**	**8,995**	**3**	**276**	**9,010**	**3**

Base: Count of community members with sewage lagoons

3.5.5. Satisfaction with Sewage Lagoon Maintenance

Just over one-quarter (28%, 14 communities) of communities record maintenance of their sewage lagoon to be unsatisfactory. Communities within the East Pilbara, West Pilbara and Broome region are most dissatisfied with the level of sewage lagoon maintenance.

Since 2004 there has been an increase in the number of communities reporting the maintenance of their sewage lagoon as unsatisfactory (increase from 13% in 2004 to 28% in 2008).

Table 3.57: Number of Communities with Unsatisfactory Sewage Lagoon Maintenance by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	-	-	-	0	4	0.0	0	4	0.0
Halls Creek	0	1	0.0	3	9	33.3	3	10	30.0
Derby-West Kimberley	-	-	-	3	12	25.0	3	12	25.0
Broome	1	2	50.0	2	4	50.0	3	6	50.0
West Pilbara	-	-	-	1	2	50.0	1	2	50.0
East Pilbara	-	-	-	2	3	66.7	2	3	66.7
Ngaanyatjarraku	-	-	-	0	4	0.0	0	4	0.0
Goldfields-Esperance	0	1	0.0	2	5	40.0	2	6	33.3
West Coast	0	1	0.0	0	3	0.0	0	4	0.0
Total	**1**	**5**	**20.0**	**13**	**46**	**28.3**	**14**	**51**	**27.5**
2004 Total	**0**	**1**	**0**	**6**	**45**	**13**	**6**	**46**	**13**

Base: Communities with sewage lagoons

Table 3.58: Usual Population with Unsatisfactory Sewage Lagoon Maintenance by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	-	-	-	0	839	0.0	0	839	0.0
Halls Creek	0	4	0.0	652	1,486	43.9	652	1,490	43.8
Derby-West Kimberley	-	-	-	296	2,287	12.9	296	2,287	12.9
Broome	5	14	35.7	1,070	1,730	61.8	1,075	1,744	61.6
West Pilbara	-	-	-	72	252	28.6	72	252	28.6
East Pilbara	-	-	-	241	441	54.6	241	441	54.6
Ngaanyatjarraku	-	-	-	0	1,122	0.0	0	1,122	0.0
Goldfields-Esperance	0	15	0.0	146	405	36.0	146	420	34.8
West Coast	0	19	0.0	0	308	0.0	0	327	0.0
Total	**5**	**52**	**9.6**	**2,477**	**8,870**	**27.9**	**2,482**	**8,922**	**27.8**
2004 Total	**0**	**15**	**0**	**773**	**8,665**	**9**	**773**	**8,680**	**9**

Base: Count of community members with sewage lagoons

3.5.6. Satisfaction with Sewerage System

One-third (31%, 62 communities) of communities record that their sewerage system *doesn't* meet their current needs with smaller communities (<20 people) being more critical of the sewerage system than larger communities (>=20 people). Communities within the Broome region have a higher dissatisfaction with their sewerage system than other communities.

Due to changes to question response scales, comparisons between 2004 and 2008 results are not discussed within this section. Comparisons between years however can be found in Section 6.6 of the report.

Table 3.59: Unsatisfactory Sewerage System within Community by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	3	13	23.1	3	20	15.0	6	33	18.2
Halls Creek	3	14	21.4	2	17	11.8	5	31	16.1
Derby-West Kimberley	0	3	0.0	3	17	17.6	3	20	15.0
Broome	27	46	58.7	9	15	60.0	36	61	59.0
West Pilbara	1	4	25.0	0	9	0.0	1	13	7.7
East Pilbara	-	-	-	2	9	22.2	2	9	22.2
Ngaanyatjarraku	-	-	-	1	8	12.5	1	8	12.5
Goldfields-Esperance	0	1	0.0	6	13	46.2	6	14	42.9
West Coast	0	3	0.0	2	11	18.2	2	14	14.3
Total	**34**	**84**	**40.5**	**28**	**119**	**23.5**	**62**	**203**	**30.5**

Base: All communities

Table 3.60: Usual population of Communities with Unsatisfactory Sewerage System by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	37	148	25.0	127	1,839	6.9	164	1,987	8.3
Halls Creek	14	99	14.1	88	2,037	4.3	102	2,136	4.8
Derby-West Kimberley	0	38	0.0	205	2,530	8.1	205	2,568	8.0
Broome	221	363	60.9	784	2,183	35.9	1,005	2,546	39.5
West Pilbara	12	36	33.3	0	593	0.0	12	629	1.9
East Pilbara	-	-	-	186	1,076	17.3	186	1,076	17.3
Ngaanyatjarraku	-	-	-	147	1,470	10.0	147	1,470	10.0
Goldfields-Esperance	0	15	0.0	468	1,000	46.8	468	1,015	46.1
West Coast	0	39	0.0	215	743	28.9	215	782	27.5
Total	**284**	**738**	**38.5**	**2,220**	**13,471**	**16.5**	**2,504**	**14,209**	**17.6**

Base: Count of all community members

Reason why Sewerage System is Unsatisfactory

The main reasons for reporting that a community's sewerage system doesn't currently meet their needs are due to an inadequate size for their community (45%) and lack of maintenance (37%).

Due to changes in question response options, comparisons between 2004 and 2008 are not possible.

Table 3.61: Reasons for Unsatisfactory Sewerage System by Region Group

Region group	System inadequate for size of community			Lack of maintenance			Inadequate disposal facilities		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	1	5	20.0	2	5	40.0	2	5	40.0
Halls Creek	2	5	40.0	3	5	60.0	0	5	0.0
Derby-West Kimberley	0	3	0.0	0	3	0.0	3	3	100.0
Broome	24	36	66.7	7	36	19.4	5	36	13.9
West Pilbara	0	1	0.0	1	1	100.0	0	1	0.0
East Pilbara	0	1	0.0	1	1	100.0	0	1	0.0
Ngaanyatjarraku	0	1	0.0	1	1	100.0	0	1	0.0
Goldfields-Esperance	0	6	0.0	6	6	100.0	0	6	0.0
West Coast	0	2	0.0	1	2	50.0	1	2	50.0
Total	**27**	**60**	**45.0**	**22**	**60**	**36.7**	**11**	**60**	**18.3**

Base: Communities who have unsatisfactory sewerage system in the community

Table 3.62: Usual Population for Unsatisfactory Sewerage System by Region Group

Region group	System inadequate for size of community			Lack of maintenance			Inadequate disposal facilities		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	12	104	11.5	37	104	35.6	55	104	52.9
Halls Creek	65	102	63.7	37	102	36.3	0	102	0.0
Derby-West Kimberley	0	205	0.0	0	205	0.0	205	205	100.0
Broome	637	1,005	63.4	64	1,005	6.4	304	1,005	30.2
West Pilbara	0	12	0.0	12	12	100.0	0	12	0.0
East Pilbara	0	56	0.0	56	56	100.0	0	56	0.0
Ngaanyatjarraku	0	147	0.0	147	147	100.0	0	147	0.0
Goldfields-Esperance	0	468	0.0	468	468	100.0	0	468	0.0
West Coast	0	215	0.0	150	215	69.8	65	215	30.2
Total	**714**	**2,314**	**30.9**	**971**	**2,314**	**42.0**	**629**	**2,314**	**27.2**

Base: Count of community members who have unsatisfactory sewerage system in the community

3.5.7. State Priorities – Sanitation/Sewerage

The list below show the top 20% ranked communities state-wide by size of usual population according to Sanitation/Sewerage priority. Higher scores represent a greater level of sewage overflow within the community, no connection to a sanitary disposal system or a non-functioning one.

Table 3.63: Sanitation/Sewerage Priority Table Usual Population >= 100

Region group	Community	Population	Score
Ngaanyatjarraku	Warburton	719	28.8
Wyndham-East Kimberley	Kalumburu	500	20.0
Derby-West Kimberley	Bayulu	500	20.0
Derby-West Kimberley	Looma	450	18.0
Broome	Bidyadanga	800	16.0

Base: Top 20% of communities identified

Table 3.64: Sanitation/Sewerage Priority Table Usual Population < 100

Region group	Community	Population	Score
Derby-West Kimberley	Mindi Rardi	95	5.7
Wyndham-East Kimberley	Woolah	67	4.0
Derby-West Kimberley	Kurnangki	80	3.2

Base: Top 20% of communities identified

3.6. Dust

Dust levels are known to contribute to and exacerbate respiratory illness and eye diseases.

The core indicators of environmental health in respect to dust are:

- Dust levels — refer Section 3.6.1
- Revegetation programs — refer Section 3.6.2
- Road surface — refer Section 3.6.3

Summary of the key indicators

Across all Aboriginal communities surveyed in Western Australia, two in five communities report they usually experience **excessive** (12%) or **high levels** (32%) of dust. This affects a total of 6,776 people (45% of the recorded population).

Three in five communities (63%) report they do not have **dust suppression or revegetation programs**.

Three-quarters of communities (77%) report they have **unsealed roads** within their community.

3.6.1. Dust Levels

Across all Aboriginal communities surveyed in Western Australia, two in five (102 communities) report they usually experience excessive (12%) or high levels (32%) of dust. This affects a total of 6,776 people (45% of the recorded population).

Those most likely to record high dust levels include:

- **Larger communities** with populations of greater than or equal to 20 (53% of communities, affecting a population of 6,458) compared than smaller communities (31%).
- **Ngaanyatjarraku** (7 out of 9 communities, 78% affecting a total of 1,302 people).
- **Goldfields-Esperance and West Coast** (each with 10 out of 14 communities, 71%).
- **Derby-West Kimberley** (23 out of 39 communities, 59% affecting a total of 1,610 people).
- **Wyndham-East Kimberley** (20 out of 35 communities, 57% affecting a total of 829 people).

Comparison across regions, and from 2004 to 2008, should be done with caution as the dust levels differed considerably, even between neighbouring communities, which therefore suggest that the survey measured perceived dust levels rather than actual dust levels.

Table 3.65: Number of Communities Reporting High or Excessive Dust Levels by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	6	14	42.9	14	21	66.7	20	35	57.1
Halls Creek	2	16	12.5	6	19	31.6	8	35	22.9
Derby-West Kimberley	4	8	50.0	19	31	61.3	23	39	59.0
Broome	11	47	23.4	4	15	26.7	15	62	24.2
West Pilbara	3	4	75.0	2	9	22.2	5	13	38.5
East Pilbara	-	-	-	4	9	44.4	4	9	44.4
Ngaanyatjarraku	-	-	-	7	9	77.8	7	9	77.8
Goldfields-Esperance	0	1	0.0	10	13	76.9	10	14	71.4
West Coast	3	3	100.0	7	11	63.6	10	14	71.4
Total	**29**	**93**	**31.2**	**73**	**137**	**53.3**	**102**	**230**	**44.3**
2004 Total	**45**	**103**	**44**	**109**	**170**	**64**	**154**	**273**	**56**

Base: All communities

Table 3.66: Usual Population Reporting High or Excessive Dust Levels by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	81	154	52.6	748	1,864	40.1	829	2,018	41.1
Halls Creek	9	109	8.3	715	2,083	34.3	724	2,192	33.0
Derby-West Kimberley	59	103	57.3	1,551	3,199	48.5	1,610	3,302	48.8
Broome	104	365	28.5	381	2,183	17.5	485	2,548	19.0
West Pilbara	26	36	72.2	95	593	16.0	121	629	19.2
East Pilbara	-	-	-	462	1,076	42.9	462	1,076	42.9
Ngaanyatjarraku	-	-	-	1,302	1,537	84.7	1,302	1,537	84.7
Goldfields-Esperance	0	15	0.0	734	1,000	73.4	734	1,015	72.3
West Coast	39	39	100.0	470	743	63.3	509	782	65.1
Total	**318**	**821**	**38.7**	**6,458**	**14,278**	**45.2**	**6,776**	**15,099**	**44.9**
2004 Total	**400**	**894**	**45**	**9,909**	**16,026**	**62**	**10,309**	**16,920**	**61**

Base: Count of all community members

3.6.2. Revegetation or Dust Suppression Programs

In order to minimise the impact dust has on a community, revegetation or dust suppression programs can be undertaken.

Three in five communities (63%, 142 communities) have recorded that they do not have dust suppression or revegetation programs.

Those most likely not to have dust suppression or revegetation programs include:

- **Larger communities** with populations of greater than or equal to 20 (73% of communities, affecting a population of 9,137) compared than smaller communities (48%).
- **East Pilbara** (9 out of 9 communities, affecting 1,076 people).
- **Halls Creek** (30 out of 35 communities, affecting 2,080 people).
- **West Coast** (11 out of 13 communities, affecting 606 people).
- **Derby-West Kimberley** (31 out of 37 communities, affecting 2,772 people).
- **Goldfields-Esperance** (11 out of 14 communities, affecting 633 people).

Table 3.67: Number of Communities having no Dust Suppression or Revegetation Program by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	2	14	14.3	10	20	50.0	12	34	35.3
Halls Creek	13	16	81.3	17	19	89.5	30	35	85.7
Derby-West Kimberley	6	6	100.0	25	31	80.6	31	37	83.8
Broome	17	47	36.2	7	15	46.7	24	62	38.7
West Pilbara	2	4	50.0	6	9	66.7	8	13	61.5
East Pilbara	-	-	-	9	9	100.0	9	9	100.0
Ngaanyatjarraku	-	-	-	6	9	66.7	6	9	66.7
Goldfields-Esperance	1	1	100.0	10	13	76.9	11	14	78.6
West Coast	3	3	100.0	8	10	80.0	11	13	84.6
Total	**44**	**91**	**48.4**	**98**	**135**	**72.6**	**142**	**226**	**62.8**
2004 Total	**86**	**101**	**85**	**130**	**168**	**77**	**216**	**269**	**80**

Base: All communities

Table 3.68: Usual Population having no Dust Suppression or Revegetation Program by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	9	154	5.8	379	1,614	23.5	388	1,768	21.9
Halls Creek	86	109	78.9	1,994	2,083	95.7	2,080	2,192	94.9
Derby-West Kimberley	86	86	100.0	2,686	3,199	84.0	2,772	3,285	84.4
Broome	160	365	43.8	768	2,183	35.2	928	2,548	36.4
West Pilbara	14	36	38.9	360	593	60.7	374	629	59.5
East Pilbara	-	-	-	1,076	1,076	100.0	1,076	1,076	100.0
Ngaanyatjarraku	-	-	-	689	1,537	44.8	689	1,537	44.8
Goldfields-Esperance	15	15	100.0	618	1,000	61.8	633	1,015	62.4
West Coast	39	39	100.0	567	693	81.8	606	732	82.8
Total	**409**	**804**	**50.9**	**9,137**	**13,978**	**65.4**	**9,546**	**14,782**	**64.6**
2004 Total	**765**	**886**	**86**	**10,438**	**15,958**	**65**	**11,203**	**16,844**	**67**

Base: Count of all community members

3.6.3. Road Surface

The use of vehicles on unsealed roads can exacerbate dust problems within communities.

Roads into the community

Across all Aboriginal communities surveyed, most have either dirt (59%, 134 communities) or gravel/formed roads (26%, 59 communities). Communities with the highest level of dirt roads into their community include Broome (94%) and Halls Creek (71%). One in six communities (15%, 35 communities) report having a paved road into their community.

Due to the addition of this new question in 2008, no comparison can be made to the 1997 or 2004 EHNS.

Table 3.69: Road Surface Type into Communities by Region Group

Region group	Dirt		Gravel/Formed		Paved		Total
	n	%	n	%	n	%	n
Wyndham-East Kimberley	18	54.5	14	42.4	1	3.0	33
Halls Creek	25	71.4	8	22.9	2	5.7	35
Derby-West Kimberley	17	43.6	15	38.5	7	17.9	39
Broome	58	93.5	-	-	4	6.5	62
West Pilbara	4	30.8	2	15.4	7	53.8	13
East Pilbara	2	22.2	5	55.6	2	22.2	9
Ngaanyatjarraku	4	44.4	4	44.4	1	11.1	9
Goldfields-Esperance	2	14.3	6	42.9	6	42.9	14
West Coast	4	28.6	5	35.7	5	35.7	14
Total	**134**	**58.8**	**59**	**25.9**	**35**	**15.4**	**228**

Base: All communities

Table 3.70: Usual Population of Road Surface Type into Communities by Region Group

Region group	Dirt		Gravel/Formed		Paved		Total
	n	%	n	%	n	%	n
Wyndham-East Kimberley	613	40.4	860	56.7	45	3.0	1,518
Halls Creek	1,291	58.9	565	25.8	336	15.3	2,192
Derby-West Kimberley	731	22.1	1,595	48.3	976	29.6	3,302
Broome	1,568	61.5	.	.	980	38.5	2,548
West Pilbara	54	8.6	192	30.5	383	60.9	629
East Pilbara	167	15.5	699	65.0	210	19.5	1,076
Ngaanyatjarraku	306	19.9	1,111	72.3	120	7.8	1,537
Goldfields-Esperance	117	11.5	370	36.5	528	52.0	1,015
West Coast	134	17.1	237	30.3	411	52.6	782
Total	**4,981**	**34.1**	**5,629**	**38.6**	**3,989**	**27.3**	**14,599**

Base: Count of all community members

Roads within the community

Three-quarters of communities (77%, 175 communities) report having unsealed roads[12] within their community. Those most likely to have unsealed roads include:

- **Smaller communities** with usual populations of less than 20 (98% of communities, affecting a population of 795) compared with larger communities (63%).
- But, some **larger communities** are also affected in Wyndham-East Kimberley (76%), Halls Creek (74%), Broome (73%) and Derby-West Kimberley (71%).

Table 3.71: Number of Communities having Unsealed Roads by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	14	14	100.0	16	21	76.2	30	35	85.7
Halls Creek	16	16	100.0	14	19	73.7	30	35	85.7
Derby-West Kimberley	8	8	100.0	22	31	71.0	30	39	76.9
Broome	44	46	95.7	11	15	73.3	55	61	90.2
West Pilbara	4	4	100.0	1	9	11.1	5	13	38.5
East Pilbara	-	-	-	4	7	57.1	4	7	57.1
Ngaanyatjarraku	-	-	-	5	9	55.6	5	9	55.6
Goldfields-Esperance	1	1	100.0	7	13	53.8	8	14	57.1
West Coast	3	3	100.0	5	11	45.5	8	14	57.1
Total	**90**	**92**	**97.8**	**85**	**135**	**63.0**	**175**	**227**	**77.1**
2004 Total	**99**	**102**	**97**	**125**	**168**	**74**	**224**	**270**	**83**

Base: All communities

[12] Within the questionnaire selection allows for communities to choose if their internal road/s is sealed, unsealed or partially sealed. This percentage represents communities reporting having an unsealed road.

Table 3.72: Usual Population having Unsealed Roads by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	154	154	100.0	619	1,864	33.2	773	2,018	38.3
Halls Creek	109	109	100.0	767	2,083	36.8	876	2,192	40.0
Derby-West Kimberley	103	103	100.0	1,092	3,199	34.1	1,195	3,302	36.2
Broome	339	353	96.0	1,396	2,183	63.9	1,735	2,536	68.4
West Pilbara	36	36	100.0	30	593	5.1	66	629	10.5
East Pilbara	-	-	-	480	890	53.9	480	890	53.9
Ngaanyatjarraku	-	-	-	415	1,537	27.0	415	1,537	27.0
Goldfields-Esperance	15	15	100.0	488	1,000	48.8	503	1,015	49.6
West Coast	39	39	100.0	170	743	22.9	209	782	26.7
Total	**795**	**809**	**98.3**	**5,457**	**14,092**	**38.7**	**6,252**	**14,901**	**42.0**
2004 Total	**856**	**892**	**96**	**8,049**	**15,982**	**50**	**8,905**	**16,874**	**53**

Base: Count of all community members

3.6.4. State Priorities - Dust

The priority tables below and overleaf assess each community based on the type of internal community roads (unsealed and partly sealed), dust levels (excessive, high, and moderate) and whether there is a revegetation or dust suppression program in place. After taking these factors into consideration, an overall score is calculated. The tables below and overleaf show the top 20% ranked communities state-wide by size of usual population. The larger the score, the more of a priority the implementation of a program becomes.

Table 3.73: Dust Priority Table Usual Population >= 100

Region group	Community	Population	Score
Broome	Bidyadanga	800	24.0
Ngaanyatjarraku	Warburton	719	21.6
Halls Creek	Balgo	460	18.4
Broome	Djarindjin	260	13.0
Derby-West Kimberley	Bayulu	500	10.0
East Pilbara	Kiwirrkurra	165	9.9
Halls Creek	Mindibungu	220	8.8
Derby-West Kimberley	Mowanjum	286	8.6

Base: Top 20% of communities identified

Table 3.74 Dust Priority Table Usual Population < 100

Region group	Community	Population	Score
Derby-West Kimberley	Mindi Rardi	95	4.8
Derby-West Kimberley	Pandanus Park	94	4.7
Derby-West Kimberley	Koorabye	89	4.5
Derby-West Kimberley	Djugerari	74	4.4
Goldfields-Esperance	Cosmo Newberry	87	4.4
Broome	Billard	72	4.3
Derby-West Kimberley	Kadjina	70	4.2
Goldfields-Esperance	Coonana	80	4.0
Goldfields-Esperance	Kurrawang	92	3.7
Derby-West Kimberley	Joy Springs	73	3.7
Halls Creek	Red Hill	60	3.6
Goldfields-Esperance	Mt Margaret	76	3.0
Wyndham-East Kimberley	Ngallagunda	60	3.0
Wyndham-East Kimberley	Guda Guda	54	2.7
Wyndham-East Kimberley	Woolah	67	2.7
Ngaanyatjarraku	Tjukurla	67	2.7
Halls Creek	Yardgee	84	2.5
Wyndham-East Kimberley	Wuggun	50	2.5
Halls Creek	Wurrenranginy	50	2.5
Derby-West Kimberley	Kupungarri	50	2.5
Ngaanyatjarraku	Tjirrkarli	62	2.5
Derby-West Kimberley	Imintji	60	2.4
Goldfields-Esperance	Kutkabubba	47	2.4
Derby-West Kimberley	Jarlmadangah	78	2.3
Wyndham-East Kimberley	Molly Springs	46	2.3
Goldfields-Esperance	Mulga Queen	45	2.3
Wyndham-East Kimberley	Glen Hill	72	2.2
West Coast	Billinue	43	2.2
Goldfields-Esperance	Ninga Mia Village	70	2.1
Wyndham-East Kimberley	Dodnun	50	2.0
West Coast	Pia Wadjari	40	2.0
West Coast	Wandanooka	40	2.0
West Pilbara	Tkalka Boorda	66	2.0

Base: Top 20% of communities identified

3.7. Dog Programs

While dogs provide benefits to the community (e.g. companionship, protection) they also present health (e.g. increase in skin infection, dog urine and faeces can spread disease), environmental (e.g. scavenging dogs may spread garbage) and safety issues (dogs fighting, human attacks). The dog program is designed to improve the health and wellbeing of the communities.

3.7.1. Estimated Dogs in the Community

Communities having a dog program (81%, 187 communities) are asked to estimate the number of dogs within their community. As seen in Table 3.75, the average number of dogs across each region varies between 15 and 92 dogs. The East Pilbara Region has the highest number of dogs, with an average of 92 dogs within each of its six communities.

Due to changes in the question response options, comparison between 2004 and 2008 is not possible.

Table 3.75: Average Number of Dogs within Communities by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**Avg**	**Max**	**n**	**Avg**	**Max**	**n**	**Avg**	**Max**	**n**
Wyndham-East Kimberley	5.0	10	9	27.6	120	17	19.8	120	26
Halls Creek	3.6	8	11	72.7	500	15	43.5	500	26
Derby-West Kimberley	7.0	10	2	50.1	100	14	44.7	100	16
Broome	2.5	9	32	75.4	600	11	21.1	600	43
West Pilbara	3.8	5	4	19.4	50	9	14.6	50	13
East Pilbara	-	-	-	91.7	140	6	91.7	140	6
Ngaanyatjarraku	-	-	-	51.6	100	9	51.6	100	9
Goldfields-Esperance	-	-	-	37.3	100	11	37.3	100	11
West Coast	0.0	0	1	19.8	100	9	17.8	100	10
Total	**3.3**	**10**	**59**	**48.2**	**600**	**101**	**31.6**	**600**	**160**[13]

Base: Communities with dog program

3.7.2. Use of Dog Programs

Of the communities surveyed, one in five (19%, 43 communities) do not have a dog program which affects 7% (1,080 people) of the population, indicating that there may be dog-related health problems in these communities**.** The result is higher in smaller communities where one-quarter (26%) of communities were without a dog program.

[13] Table based on valid communities. A valid community must have a dog program and have recorded there to be one or more dogs. n=27 communities have a dog program however list no dogs being at the community.

Of the communities with a dog program, the following are used:

- Ivomec 97%;
- Euthanasia program 86%;
- Covinan 58%; and
- Sterilisation 22%.

These programs are mostly implemented by AEHW staff (72%), followed by EHO (24%) and rangers (4%).

Table 3.76: Number of Communities with no Dog Program by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	4	13	30.8	2	20	10.0	6	33	18.2
Halls Creek	3	16	18.8	1	19	5.3	4	35	11.4
Derby-West Kimberley	4	10	40.0	7	31	22.6	11	41	26.8
Broome	11	47	23.4	3	15	20.0	14	62	22.6
West Pilbara	0	4	0.0	0	9	0.0	0	13	0.0
East Pilbara	0	0	.	2	9	22.2	2	9	22.2
Ngaanyatjarraku	0	0	.	0	9	0.0	0	9	0.0
Goldfields-Esperance	1	1	100.0	2	13	15.4	3	14	21.4
West Coast	1	3	33.3	2	11	18.2	3	14	21.4
Total	**24**	**94**	**25.5**	**19**	**136**	**14.0**	**43**	**230**	**18.7**
2004 Total	**22**	**54**	**41**	**30**	**147**	**20**	**52**	**201**	**26**

Base: All communities

Table 3.77: Usual Population with no Dog Program by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	23	146	15.8	45	1,831	2.5	68	1,977	3.4
Halls Creek	15	109	13.8	21	2,083	1.0	36	2,192	1.6
Derby-West Kimberley	38	116	32.8	241	3,199	7.5	279	3,315	8.4
Broome	86	365	23.6	189	2,183	8.7	275	2,548	10.8
West Pilbara	0	36	0.0	0	593	0.0	0	629	0.0
East Pilbara	0	0	.	167	1,076	15.5	167	1,076	15.5
Ngaanyatjarraku	0	0	.	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	15	15	100.0	62	1,000	6.2	77	1,015	7.6
West Coast	1	39	2.6	177	743	23.8	178	782	22.8
Total	**178**	**826**	**21.5**	**902**	**14,245**	**6.3**	**1,080**	**15,071**	**7.2**
2004 Total	**183**	**525**	**35**	**1,675**	**15,096**	**11**	**1,858**	**15,621**	**12**

Base: Count of all community members

3.7.3. Management of Dog Programs

Communities who have a dog program are asked to rate how well it is being managed. As seen in the following table, 14% of communities (26 communities or 23% of usual population) report the program to be managed in an unsatisfactory manner. Communities in Halls Creek are most critical; with three in ten communities (29%) reporting the program's management to be unsatisfactory.

As this question was only included in 2008, comparisons between 2004 and 2008 is not possible.

Table 3.78: Unsatisfactory Management of Community Dog Program by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	0	9	0.0	2	18	11.1	2	27	7.4
Halls Creek	1	13	7.7	8	18	44.4	9	31	29.0
Derby-West Kimberley	1	6	16.7	2	24	8.3	3	30	10.0
Broome	4	35	11.4	3	12	25.0	7	47	14.9
West Pilbara	0	4	0.0	1	9	11.1	1	13	7.7
East Pilbara	-	-	-	1	6	16.7	1	6	16.7
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	-	-	-	2	11	18.2	2	11	18.2
West Coast	0	2	0.0	1	9	11.1	1	11	9.1
Total	**6**	**69**	**8.7**	**20**	**116**	**17.2**	**26**	**185**	**14.1**

Base: Communities with dog program and who have unsatisfactory management of program

Table 3.79: Usual Population of Community with Unsatisfactory Management of Dog Program by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	0	123	0.0	104	1,786	5.8	104	1,909	5.4
Halls Creek	12	94	12.8	1,489	2,062	72.2	1,501	2,156	69.6
Derby-West Kimberley	15	78	19.2	73	2,958	2.5	88	3,036	2.9
Broome	34	271	12.5	1,089	1,994	54.6	1,123	2,265	49.6
West Pilbara	0	36	0.0	30	593	5.1	30	629	4.8
East Pilbara	-	-	-	130	759	17.1	130	759	17.1
Ngaanyatjarraku	-	-	-	0	1,537	0.0	0	1,537	0.0
Goldfields-Esperance	-	-	-	202	938	21.5	202	938	21.5
West Coast	0	38	0.0	40	566	7.1	40	604	6.6
Total	**61**	**640**	**9.5**	**3,157**	**13,193**	**23.9**	**3,218**	**13,833**	**23.3**

Base: Count of community members with dog program and who have unsatisfactory management of program

3.7.4. State Priorities - Dog Programs

The tables below show the top 20% ranked communities state-wide by size of usual population where communities that do not have a dog program are given a higher priority score. The larger the score, the more of a priority the implementation of a program becomes.

Table 3.80: Dog Priority Table Usual Population >= 100[14]

Region group	Community	Population	Score
West Coast	Mungullah	150	1.5
East Pilbara	Cotton Creek	111	1.1

Base: All communities identified

Table 3.81: Dog Priority Table Usual Population < 100

Region group	Community	Population	Score
Broome	Billard	72	0.7
Broome	Nillir Irbanjin	61	0.6
Derby-West Kimberley	Imintji	60	0.6
East Pilbara	Kunawarritji	56	0.6
Broome	Mallingbar	56	0.6
Derby-West Kimberley	Kupungarri	50	0.5
Goldfields-Esperance	Windidda	35	0.4
Derby-West Kimberley	Windjingayre	30	0.3
Derby-West Kimberley	Cone Bay	30	0.3
Derby-West Kimberley	Biridu	30	0.3
Goldfields-Esperance	Nambi Village	27	0.3
West Coast	Barrel Well	27	0.3
Wyndham-East Kimberley	Marunbabidi	25	0.3

Base: Top 20% of communities identified

[14] Only two communities are identified as having a priority need for a dog program.

3.8. Emergency Management

The core indicators of environmental health in respect to emergency management are:

- Access to fire-fighting equipment in regions prone to bushfires — refer Section 3.8.1
- Presence of evacuation plans in regions prone to cyclones — refer Section 3.8.2
- Training in emergency procedures — refer Section 3.8.3
- Preparedness for emergency management — refer Section 3.8.4

Summary of the key indicators

Of the communities that are prone to bushfires, 84% record not having **fire fighting equipment** that works affecting a total population of 7,714 people (66%).

Of the communities that are prone to cyclones, two in five (40%) record not having an **evacuation plan** for cyclones affecting a total population of 2,163 people (43%).

One in eight (14%) communities report being trained in emergency procedures (e.g. fire fighting).

Two in five communities (38%) report community preparation for emergency management **being unsatisfactory**.

3.8.1. Access to Fire-Fighting Equipment

Table 3.82 records the number of communities prone to bushfires by region who do not have fire-fighting equipment that works. **Of the communities that are prone to bushfires, 84% report they do not have fire fighting equipment that works, affecting a total population of 7,714 people (66%).**

Those most likely not to have fire fighting equipment include:

- **Smaller communities** with populations of greater than or equal to 20 (78 out of 84 communities – 93%, affecting a population of 666) compared to larger communities (76%, affecting 7,048 people).
- But for larger communities, **Halls Creek** (82%), **Derby-West Kimberley** (83%), **West Pilbara** (80%) and **East Pilbara** (100%) also record high proportions of communities without working fire fighting equipment.

Table 3.82: Number of Communities Prone to Bushfires who do not have Fire-fighting Equipment that works by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	11	13	84.6	12	18	66.7	23	31	74.2
Halls Creek	12	12	100.0	14	17	82.4	26	29	89.7
Derby-West Kimberley	5	6	83.3	19	23	82.6	24	29	82.8
Broome	44	47	93.6	10	13	76.9	54	60	90.0
West Pilbara	4	4	100.0	4	5	80.0	8	9	88.9
East Pilbara	-	-	-	6	6	100.0	6	6	100.0
Ngaanyatjarraku	-	-	-	1	3	33.3	1	3	33.3
Goldfields-Esperance	1	1	100.0	4	6	66.7	5	7	71.4
West Coast	1	1	100.0	4	7	57.1	5	8	62.5
Total	**78**	**84**	**92.9**	**74**	**98**	**75.5**	**152**	**182**	**83.5**
2004 Total	**80**	**89**	**90**	**79**	**104**	**76**	**159**	**190**	**84**

Base: Communities which are prone to bushfires and don't have fire fighting equipment

Table 3.83: Usual Population Living in Areas Prone to Bushfires who do not have Fire-fighting Equipment that works by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	124	148	83.8	870	1,119	77.7	994	1,267	78.5
Halls Creek	81	81	100.0	1,754	1,974	88.9	1,835	2,055	89.3
Derby-West Kimberley	67	79	84.8	1,792	2,700	66.4	1,859	2,779	66.9
Broome	342	365	93.7	803	2,066	38.9	1,145	2,431	47.1
West Pilbara	36	36	100.0	336	365	92.1	372	401	92.8
East Pilbara	-	-	-	817	817	100.0	817	817	100.0
Ngaanyatjarraku	-	-	-	109	996	10.9	109	996	10.9
Goldfields-Esperance	15	15	100.0	262	441	59.4	277	456	60.7
West Coast	1	1	100.0	305	481	63.4	306	482	63.5
Total	**666**	**725**	**91.9**	**7,048**	**10,959**	**64.3**	**7,714**	**11,684**	**66.0**
2007 Total	**697**	**779**	**90**	**5,692**	**8,746**	**65**	**6,389**	**9,525**	**67**

Base: Count of community members who are prone to bushfires and don't have fire fighting equipment

3.8.2. Cyclone Evacuation Plans

Table 3.84 records the number of communities prone to cyclones who do not have an evacuation plan for cyclones. **Of these communities, two in five (40%, 37 communities) record not having an evacuation plan for cyclones affecting a total population of 2,163 people (43%).**

Those most likely not to have evacuation plans for cyclones include:

- **Halls Creek** (100%, 2 communities and 211 people).
- **West Pilbara** (73% of communities, 8 communities and 444 people).
- **Wyndham-East Kimberley** (71% of communities, 5 communities and 545 people).

There has been a significant decrease (40 percentage points since 2004) in the proportion of communities that are prone to cyclones but do not have an evacuation plan. This decrease is largely attributable to a significant decline in the Broome Shire.

Table 3.84: Number of Communities Prone to Cyclones who do not have an Evacuation Plan for Cyclones by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	3	3	100.0	2	4	50.0	5	7	71.4
Halls Creek	-	-	-	2	2	100.0	2	2	100.0
Derby-West Kimberley	1	2	50.0	1	6	16.7	2	8	25.0
Broome	12	45	26.7	7	15	46.7	19	60	31.7
West Pilbara	3	4	75.0	5	7	71.4	8	11	72.7
East Pilbara	-	-	-	1	3	33.3	1	3	33.3
Ngaanyatjarraku	-	-	-	-	-	-	-	-	-
Goldfields-Esperance	-	-	-	-	-	-	-	-	-
West Coast	-	-	-	0	1	0.0	0	1	0.0
Total	**19**	**54**	**35.2**	**18**	**38**	**47.4**	**37**	**92**	**40.2**
2004 Total	**42**	**50**	**84**	**48**	**63**	**76**	**90**	**113**	**80**

Base: Communities which are prone to cyclones and don't have an evacuation plan

Table 3.85: Usual Population Living In Areas Prone to Cyclones who do not have an Evacuation Plan for Cyclones by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	25	25	100.0	520	590	88.1	545	615	88.6
Halls Creek	-	-	-	211	211	100.0	211	211	100.0
Derby-West Kimberley	18	29	62.1	30	545	5.5	48	574	8.4
Broome	91	349	26.1	768	2,183	35.2	859	2,532	33.9
West Pilbara	24	36	66.7	420	540	77.8	444	576	77.1
East Pilbara	-	-	-	56	411	13.6	56	411	13.6
Ngaanyatjarraku	-	-	-	-	-	-	-	-	-
Goldfields-Esperance	-	-	-	-	-	-	-	-	-
West Coast	-	-	-	0	150	0.0	0	150	0.0
Total	**158**	**439**	**36.0**	**2,005**	**4,630**	**43.3**	**2,163**	**5,069**	**42.7**
2004 Total	**348**	**426**	**82**	**3,706**	**6,848**	**54**	**4,054**	**7,274**	**56**

Base: Count of community members which are prone to cyclones and don't have an evacuation plan

3.8.3. Training in Emergency Procedures

As seen in Table 3.86 below, one in eight (14%, 31 communities) communities report being trained in emergency procedures (e.g. fire fighting); with the Ngaanyatjarraku region having the highest proportion of communities (33%) that are trained. Larger communities are more likely than smaller communities to having training in emergency procedures.

Comparisons between 2004 and 2008 show a four percentage point increase in the proportion of communities being trained in emergency procedures and eleven percentage point increase in the proportion of population living in communities that are trained.

Table 3.86: Trained in Emergency Procedures by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	1	14	7.1	4	21	19.0	5	35	14.3
Halls Creek	0	14	0.0	2	19	10.5	2	33	6.1
Derby-West Kimberley	0	8	0.0	5	30	16.7	5	38	13.2
Broome	6	46	13.0	1	15	6.7	7	61	11.5
West Pilbara	0	4	0.0	0	9	0.0	0	13	0.0
East Pilbara	-	-	-	2	9	22.2	2	9	22.2
Ngaanyatjarraku	-	-	-	3	9	33.3	3	9	33.3
Goldfields-Esperance	0	1	0.0	1	13	7.7	1	14	7.1
West Coast	0	3	0.0	6	11	54.5	6	14	42.9
Total	**7**	**90**	**7.8**	**24**	**136**	**17.6**	**31**	**226**	**13.7**
2004 Total	**13**	**102**	**13**	**14**	**162**	**9**	**27**	**264**	**10**

Base: All communities

Table 3.87: Usual Population trained in Emergency Procedures by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	12	154	7.8	775	1,864	41.6	787	2,018	39.0
Halls Creek	0	93	0.0	385	2,083	18.5	385	2,176	17.7
Derby-West Kimberley	0	103	0.0	677	3,139	21.6	677	3,242	20.9
Broome	41	363	11.3	800	2,183	36.6	841	2,546	33.0
West Pilbara	0	36	0.0	0	593	0.0	0	629	0.0
East Pilbara	-	-	-	221	1,076	20.5	221	1,076	20.5
Ngaanyatjarraku	-	-	-	392	1,537	25.5	392	1,537	25.5
Goldfields-Esperance	0	15	0.0	92	1,000	9.2	92	1,015	9.1
West Coast	0	39	0.0	318	743	42.8	318	782	40.7
Total	**53**	**803**	**6.6**	**3,660**	**14,218**	**25.7**	**3,713**	**15,021**	**24.7**
2004 Total	**133**	**884**	**15**	**1,993**	**14,806**	**13**	**2,126**	**15,690**	**14**

Base: Count of all community members

3.8.4. Preparedness for Emergency Management

Community preparedness for emergencies is important to assist with harm minimisation to people. **Two in five communities (38%, 80 communities) report preparation for emergency management being unsatisfactory.** Regions with the highest proportion of unsatisfactory preparation include West Pilbara, East Pilbara and Ngaanyatjarraku, with two-thirds of communities (67%) in these regions being unprepared

This question was not asked in previous years, thus comparisons of results are not possible.

Table 3.88: Unsatisfactory Preparation for Emergency Management by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	2	13	15.4	8	21	38.1	10	34	29.4
Halls Creek	4	8	50.0	7	15	46.7	11	23	47.8
Derby-West Kimberley	3	8	37.5	8	29	27.6	11	37	29.7
Broome	5	43	11.6	6	14	42.9	11	57	19.3
West Pilbara	3	4	75.0	5	8	62.5	8	12	66.7
East Pilbara	-	-	-	6	9	66.7	6	9	66.7
Ngaanyatjarraku	-	-	-	6	9	66.7	6	9	66.7
Goldfields-Esperance	1	1	100.0	7	13	53.8	8	14	57.1
West Coast	3	3	100.0	6	11	54.5	9	14	64.3
Total	**21**	**80**	**26.3**	**59**	**129**	**45.7**	**80**	**209**	**38.3**

Base: All communities

Table 3.89: Usual Population of Unsatisfactory Preparation for Emergency Management by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	35	145	24.1	559	1,864	30.0	594	2,009	29.6
Halls Creek	17	49	34.7	809	1,691	47.8	826	1,740	47.5
Derby-West Kimberley	40	103	38.8	467	3,070	15.2	507	3,173	16.0
Broome	62	343	18.1	1,820	2,163	84.1	1,882	2,506	75.1
West Pilbara	30	36	83.3	264	527	50.1	294	563	52.2
East Pilbara	-	-	-	747	1,076	69.4	747	1,076	69.4
Ngaanyatjarraku	-	-	-	1,293	1,537	84.1	1,293	1,537	84.1
Goldfields-Esperance	15	15	100.0	642	1,000	64.2	657	1,015	64.7
West Coast	39	39	100.0	242	743	32.6	281	782	35.9
Total	**238**	**730**	**32.6**	**6,843**	**13,671**	**50.1**	**7,081**	**14,401**	**49.2**

Base: Count of all community members

3.8.5. State Priorities - Emergency Management

The list below and overleaf show the top 20% ranked communities state-wide by size of usual population according to emergency management priority. The list assesses each community based on their being prone to cyclones and/or bushfires and their ability to deal with these occurrences. The higher the score the less likely they are to have the capacity to deal with said occurrences, thus making them a higher priority.

Table 3.90: Emergency Management Priority Table Usual Population >= 100

Region group	Community	Population	Score
Broome	Bidyadanga	800	16.0
Broome	Bardi	400	8.0
Derby-West Kimberley	Bayulu	500	5.0
Derby-West Kimberley	Looma	450	4.5
Halls Creek	Warmun	359	3.6
East Pilbara	Irrungadji	150	3.0

Base: Top 20% of communities identified

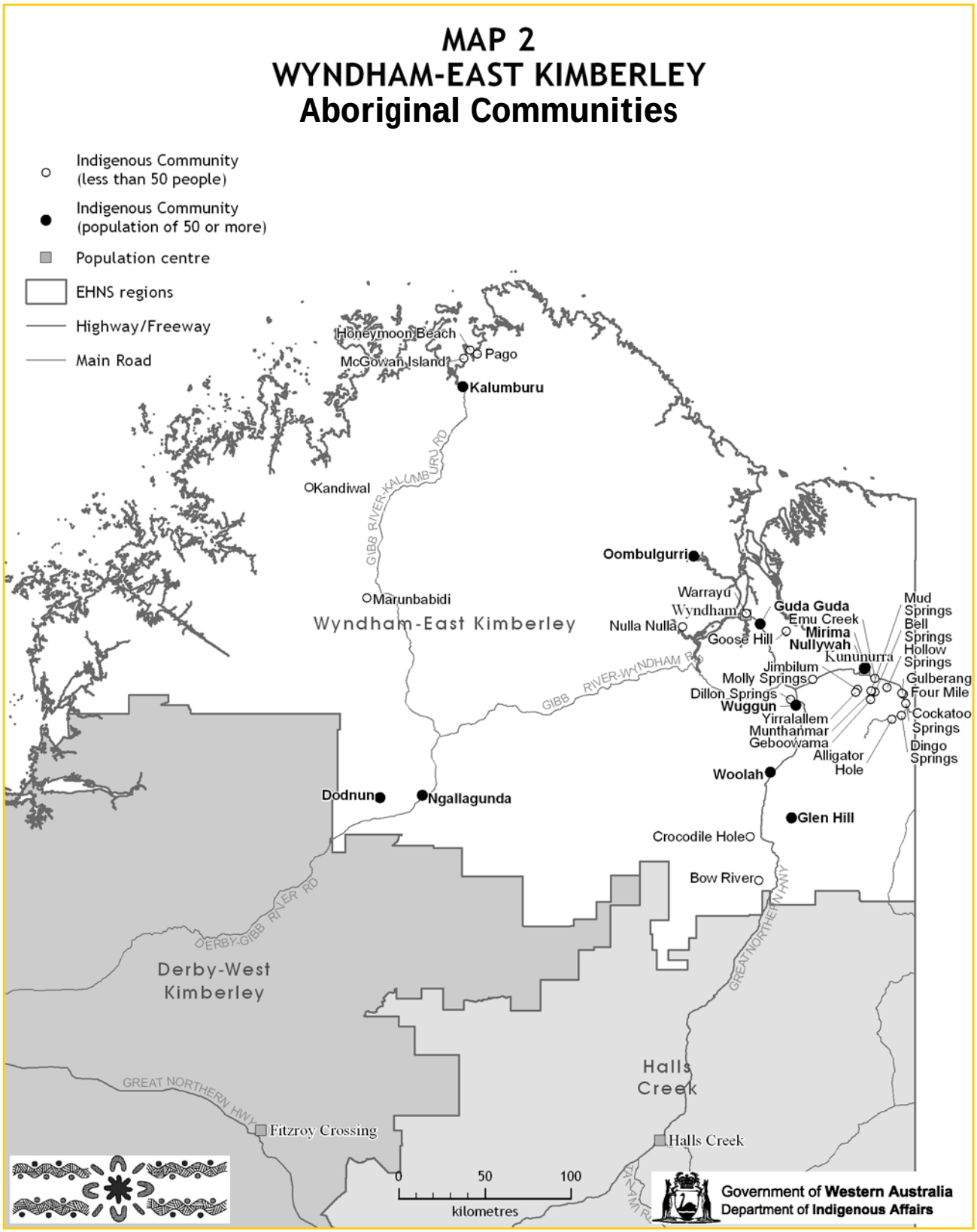
Table 3.91: Emergency Management Priority Table Usual Population < 100

Region group	Community	Population	Score
Broome	Goolarabooloo	63	1.3
East Pilbara	Parnpajinya	60	1.2
Halls Creek	Yiyili	58	1.2
Wyndham-East Kimberley	Wuggun	50	1.0
Halls Creek	Wurrenranginy	50	1.0
Derby-West Kimberley	Mindi Rardi	95	1.0
Derby-West Kimberley	Koorabye	89	0.9
Goldfields	Coonana	80	0.8
Derby-West Kimberley	Kurnangki	80	0.8
Derby-West Kimberley	Gillaroong	40	0.8
Derby-West Kimberley	Jarlmadangah	78	0.8
Goldfields	Mt Margaret	76	0.8
Derby-West Kimberley	Djugerari	74	0.7
Derby-West Kimberley	Joy Springs	73	0.7
Wyndham-East Kimberley	Glen Hill	72	0.7
Broome	Billard	72	0.7
Derby-West Kimberley	Kadjina	70	0.7
Wyndham-East Kimberley	Woolah	67	0.7
Ngaanyatjarraku	Tjukurla	67	0.7
West Pilbara	Tkalka Boorda	66	0.7
Derby-West Kimberley	Ngumpan	33	0.7

Base: Top 20% of communities identified

4. Environmental Health Needs by Region Group

4.1. Wyndham-East Kimberley



Thirty five Wyndham-East Kimberley communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 2,018. Of these, two in five have usual populations of less than 20 people (14 communities, 40%) and over half (21 communities, 60%) have a usual population of 20 or more people. Aboriginal languages were reportedly spoken in the majority of communities in the Shire, with the most common being:

- Kija;
- Kriol;
- Kwini;
- Miriwoong; and
- Ngarinyin.

Communities Participating in EHNS

Alligator Hole (33)	Goose Hill (6)	Mud Springs (19)
Bell Springs (22)	Guda Guda (54)	Munthanmar (12)
Bow River (21)	Gulberang (4)	Ngallagunda (60)
Cockatoo Springs (30)	Hollow Springs (19)	Nulla Nulla (20)
Crocodile Hole (16)	Honeymoon Beach (17)	Nullywah (250)
Dillon Springs (6)	Jimbilum (12)	Oombulgurri (200)
Dingo Springs (8)	Kalumburu (500)	Pago (3)
Dodnun (50)	Kandiwal (25)	Warrayu (45)
Emu Creek (18)	Marunbabidi (25)	Woolah (67)
Four Mile (24)	Mcgowan Island (5)	Wuggun (50)
Geboowama (9)	Mirima (250)	Yirralallem (20)
Glen Hill (72)	Molly Springs (46)	

Numbers in bracket above denotes number of community members

Service communities or towns and the number of communities they service

Argyle (2)	Mitchell Plateau (1)
Derby (6)	Mt Elizabeth Station (1)
Kalumburu (3)	Warmun (2)
Kununurra (28)	Woolah (1)
Kupungarri (1)	Wyndham (9)

Numbers in bracket above denotes number of communities serviced by that town

4.1.1. Perceived Community Need and Satisfaction

The tables overleaf display the communities' needs to improve conditions. Half of communities (49%) recorded Water, Power, and Sewerage (improvements or provision). This is the most frequently stated need group – particularly in terms of being the first stated/most salient need (in 10 communities it is the first mentioned).

Consistent with this, when prompted with a list showing environmental concerns for the community and asked to select their main concern, water and housing are the most selected areas (Table 4.2).

Table 4.1: Community Needs (spontaneous)

Identified Need	Communities	%
Water, Power, Sewerage (improvements or provision)	17	48.6
Housing (new. repairs, housing for visitors and workers)	14	40.0
Municipal services (street lighting, rubbish disposal, drain	6	17.1
No response	5	14.3
Fencing (houses, tips, sewerage ponds)	5	14.3
Access (internal and access roads, vehicles, boats, airstrip	5	14.3
Health hardware (ablutions, hot water systems, washing machine)	4	11.4
Telecommunications (phones)	3	8.6
Training (employment and business development)	2	5.7
Environmental programs (greening, dust suppression)	1	2.9
Total	**35**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

Table 4.2: Community Needs (prompted)

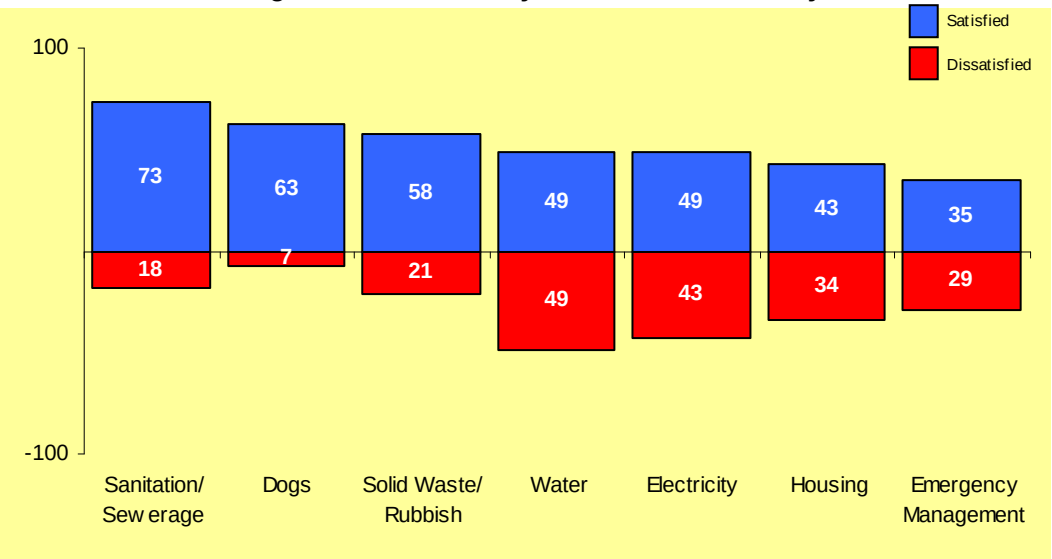
Identified Need	Communities	%
Housing/overcrowding/maintenance	25	71.4
Water quality/supply	18	51.4
Dust	18	51.4
Emergency management	16	45.7
Electricity supply/interruptions/no power	12	34.3
Other – Pests/vermin/insects	12	34.3
Dogs	11	31.4
Sewerage connections/plumbing	9	25.7
Rubbish collection	8	22.9
Total	**35**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their **satisfaction** with each of the key environmental health areas, all areas record higher proportions of satisfied versus unsatisfied.

Figure 4.1: Community Satisfaction Summary



Base: All communities

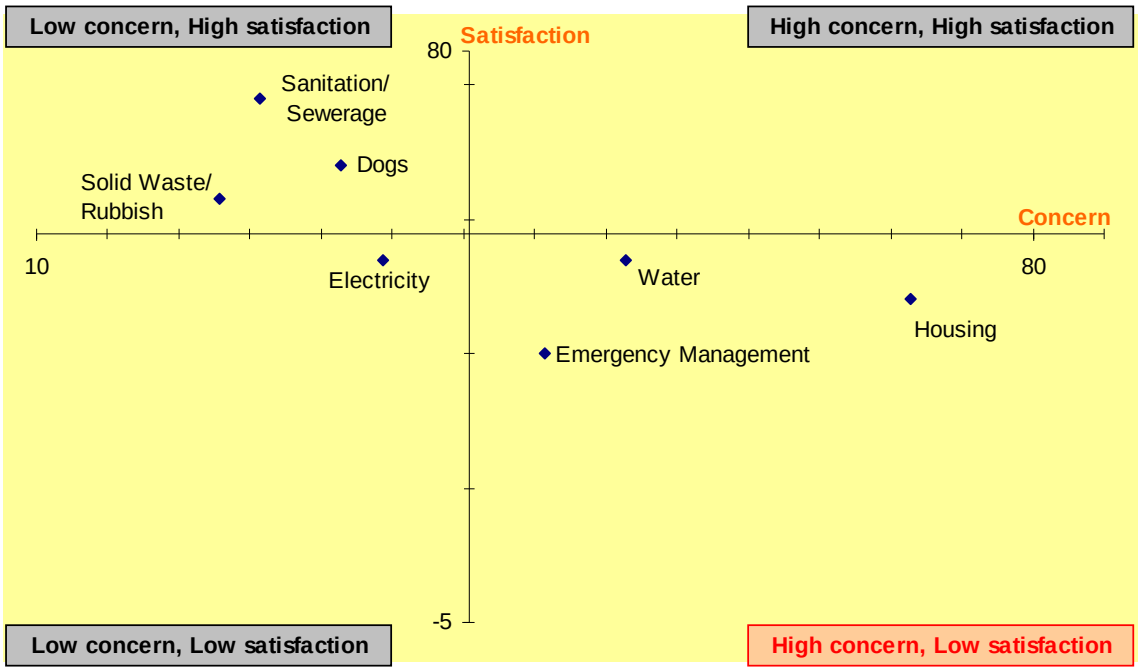
The matrix overleaf combines the measures of **concern** and **satisfaction** across the key environmental health areas. The quadrants are calculated using an average score of these measures. So for example in Figure 4.2, the average score for community concerns (x axis) across the seven environmental health measures is 40.4%. The average score across satisfaction (y axis) for the same measures is 52.9%. These averages are plotted to create a point of intersection, and, thus subsequently the four quadrants. As the average will change across each region, the point of intersection will change accordingly. This process is used throughout Section 4.

The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — **Priority** to maintain
- Bottom right — High concern, low satisfaction — **Priority** to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **emergency management** is the environmental health areas that recorded highest concern but lowest satisfaction (the bottom right quadrant in Figure 4.2) and should therefore be considered one of the key priorities at a 'relative level' in the Wyndham-East Kimberley region group. While electricity also records low satisfaction it records comparatively lower levels of concern (bottom left quadrant).

Figure 4.2: Community Concern and Satisfaction Summary



The discussion following provides further detail by individual communities in Wyndham-East Kimberley.

4.1.2. Water

Nine Wyndham-East Kimberley communities (bolded in Table 4.3 overleaf) are in the top 20% of communities in Western Australia with usual populations of <100 in which **water** would be considered an action priority.

Overall in Wyndham-East Kimberley;

- **Bores** are used by 86% of Wyndham-East Kimberley communities with <20 people and 62% of communities with >=20 people.
  - In Bell Springs and Dillon Springs this main water supply is stored in **uncovered tanks**.
- 79% of communities with usual populations of <20 record **no disinfection of drinking water** (compared to the total for this region of 65%). A smaller proportion (53%) of larger communities records **no monthly testing** (compared to the total for this region of 65%).
  - In three communities (Marunbabidi, Ngallagunda and Woolah), **water quality issues** are identified in terms of *Aesthetic (looks, smell, taste)* (for the first community) and *microbiological* (for the second two community)
- In two communities in Wyndham-East Kimberley, there is **no reticulated water supply** to each dwelling (Alligator Hole, Geboowama).

- In most of the communities, the water system is **maintained** by the *RAESP/Water Corp* (71%). A smaller proportion is maintained by the *community* (29%).

In order to achieve relatively consistent table structures throughout Section 4, all of the top 20% of priority (bolded) communities in WA are displayed for all core indicators. For regions where there are 10 or fewer communities identified as a priority, all the communities are shown within the table. For regions where there are more than 10 communities identified as a priority, only the top 10 ranked communities will be shown as appropriate. This process is used throughout Section 4.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled below.

Table 4.3: Water

Pop<100	Pop	Score
Alligator Hole	**33**	**8.6**
Molly Springs	**46**	**6.0**
Cockatoo Springs	**30**	**2.6**
Four Mile	**24**	**2.3**
Bell Springs	**22**	**2.2**
Hollow Springs	**19**	**1.7**
Honeymoon Beach	**17**	**1.7**
Nulla Nulla	**20**	**1.6**
Yirralallem	**20**	**1.6**
Mud Springs	19	1.5

Base: Top 20% of communities identified

4.1.3. Electricity

One Wyndham-East Kimberley community (bolded in Table 4.4) is in the top 20% of communities in Western Australia with usual populations of >=100 in which electricity would be considered a priority to address. Furthermore four more Wyndham-East Kimberley communities (bolded in Table 4.5 overleaf) are in the top 20% of communities in Western Australia with usual populations of <100 in which **electricity** would be considered an action priority.

In total, 43% of communities in Wyndham-East Kimberley consider the electricity supply unsatisfactory, compared to the average of 36% for all Western Australian communities. The stated reasons for this are **lack of fuel** (8 communities), **regular system failures** (4 communities), **generator too small** (3 communities), **lack of maintenance** (2 communities), and **lack of storage** (2 communities).

Overall in Wyndham-East Kimberley;

- The charges for electricity usage are most likely incurred via a **chuck in system** (16 communities).

Table 4.4: Electricity

Pop>=100	Pop	Score
Kalumburu	**500**	**20.0**
Oombulgurri	200	8.0

Base: All communities identified

Table 4.5: Electricity

Pop<100	Pop	Score
Glen Hill	**72**	**2.9**
Dodnun	**50**	**2.0**
Wuggun	**50**	**2.0**
Molly Springs	**46**	**1.8**
Alligator Hole	33	1.3
Cockatoo Springs	30	1.2
Kandiwal	25	1.0
Marunbabidi	25	1.0

Base: Top 20% of communities identified

4.1.4. Housing

Two Wyndham-East Kimberley communities with usual populations >=100 and three communities with usual populations <100 (bolded in the following table) are in the top 20% of communities in Western Australia in which **housing** would be considered an action priority. One in three communities (34%) in Wyndham-East Kimberley recorded housing in the community as unsatisfactory.

Table 4.6: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Mirima	**250**	**9.6**	**9.6**
Nullywah	**250**	**9.6**	**9.6**
Oombulgurri	200	6.1	7.4
Kalumburu	500	6.0	6.8

Base: All communities identified

Table 4.7: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Alligator Hole	**33**	**11.0**	**33.0**
Honeymoon Beach	**17**	**4.3**	**17.0**
Nulla Nulla	**20**	**5.0**	**10.0**
Molly Springs	46	9.2	9.2
Geboowama	9	3.0	9.0
Four Mile	24	6.0	8.0

Base: Top 20% of communities identified

4.1.5. Solid Waste Disposal

Three Wyndham-East Kimberley communities (bolded in Table 4.9) are in the top 20% of communities in Western Australia with usual populations of <100 in which **solid waste disposal** would be considered an action priority.

One in five (21%) communities in Wyndham-East Kimberley record **unsatisfactory rubbish tip management**, which is lower than the Western Australian average (23%).

Overall in Wyndham-East Kimberley;

- There are 15 communities that record **using a town rubbish tip**
- Four communities record a **rubbish tip capacity of less than six months** – Pago, Kandiwal Goose Hill, Bow River
- Seven communities record a **site that is not suitable** – Dodnun, Kandiwal, Bow River, Crocodile Hole, Wuggun, Marunbabidi and Pago. Only one of these communities recorded that there is no suitable alternative site.
- Twenty-four communities have unwanted cars/car bodies in the community. Bow River, Nullywah, Guda Guda, Mirima, Molly Springs and Dillon Springs each record higher than average numbers of unwanted cars/car bodies in their community (20 in each community).

Table 4.8: Solid Waste Disposal

Pop>=100	Pop	Score
Oombulgurri	200	16.0
Mirima	250	15.0

All communities identified

Table 4.9: Solid Waste Disposal

Pop<100	Pop	Score
Glen Hill	**72**	**8.6**
Dodnun	**50**	**5.0**
Bow River	**21**	**3.4**
Molly Springs	46	2.8
Kandiwal	25	2.0
Marunbabidi	25	2.0
Wuggun	50	2.0
Cockatoo Springs	30	1.8

Base: Top 20% of communities identified

4.1.6. Sanitation/Sewerage

One Wyndham-East Kimberley community with usual population >=100 and one community with usual population <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **Sanitation/Sewerage** would be considered an action priority.

Overall in Wyndham-East Kimberley:

- Three in five communities (57%, 20 communities) reported its internal **sewage reticulation system is not maintained.** One community doesn't have any one looking after its system.
- Half (50%) of communities are not satisfied with the **current condition of community ablution facilities**.
- Eighteen percent (18%) are not satisfied that the **current sewage system meets the needs of their community**. The most frequently stated reasons for dissatisfaction relate to *lack of maintenance* (2 communities) and *inadequate disposal facility* for the community (2 communities).

Table 4.10: Sanitation/Sewerage

Pop>=100	Pop	Score
Kalumburu	**500**	**20.0**

Base: All communities identified

Table 4.11: Sanitation/Sewerage

Pop<100	Pop	Score
Woolah	**67**	**4.0**
Glen Hill	72	1.4

Base: Top 20% of communities identified

4.1.7. Dust

Seven communities with a usual population <100 (bolded in Table 4.13) are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority. Seven Wyndham-East Kimberley communities are in the top 20% of communities in Western Australia with usual populations of <100 in which **dust** would be considered a priority to address.

Overall in Wyndham-East Kimberley:

- Three communities record **excessive dust problems** – namely, Nulla Nulla, Cockatoo Springs and Wuggun.
- Seventeen communities record **high dust problems**
    - Of these, eight communities record a *revegetation or dust suppression program.* The remaining nine do not have such programs. The main program used is growing lawns/garden/grass

Table 4.12: Dust

Pop>=100	Pop	Score
Mirima	250	7.5
Kalumburu	500	5.0

Base: All communities identified

Table 4.13: Dust

Pop<100	Pop	Score
Ngallagunda	**60**	**3.0**
Guda Guda	**54**	**2.7**
Woolah	**67**	**2.7**
Wuggun	**50**	**2.5**
Molly Springs	**46**	**2.3**
Glen Hill	**72**	**2.2**
Dodnun	**50**	**2.0**
Warrayu	45	1.8
Alligator Hole	33	1.7

Base: Top 20% of communities identified

4.1.8. Dogs

One Wyndham-East Kimberley community with a usual population <100 (bolded in the following table) are in the top 20% of communities in Western Australia in which **dogs** would be considered an action priority.

Overall in Wyndham-East Kimberley;

- Four of the 35 communities responding **do not have a dog program**, with all of the four communities recording dogs in their community.
- There are three communities with **high numbers of dogs** estimated in their community – Kalumburu an estimate of 120, Oombulgurri an estimate of 50 and Mirima an estimate of 50. In each of these three communities, there is a dog program for *Invomec/Moxidectin/Cydectin* and *Euthanasia*
- In all communities where there is a dog program, it is implemented by the **EHO/AEHW**
- There are nine communities that record the management of dog programs as **unsatisfactory.**

Communities with a usual population of >=100 did not have any priority needs and therefore has not been tabled.

Table 4.14: No Dog Program in Communities

Pop<100	Pop	Score
Marunbabidi	**25**	**0.3**
Nulla Nulla	20	0.2
Geboowama	9	0.1
Dillon Springs	6	0.1
Mcgowan Island	5	0.1

Base: Top 20% of communities identified

4.1.9. Emergency Management

One Wyndham-East Kimberley community with usual populations >=100 is in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Table 4.15: Emergency Management

Pop>=100	Pop	Score
Kalumburu	**500**	**5**
Mirima	250	2.5

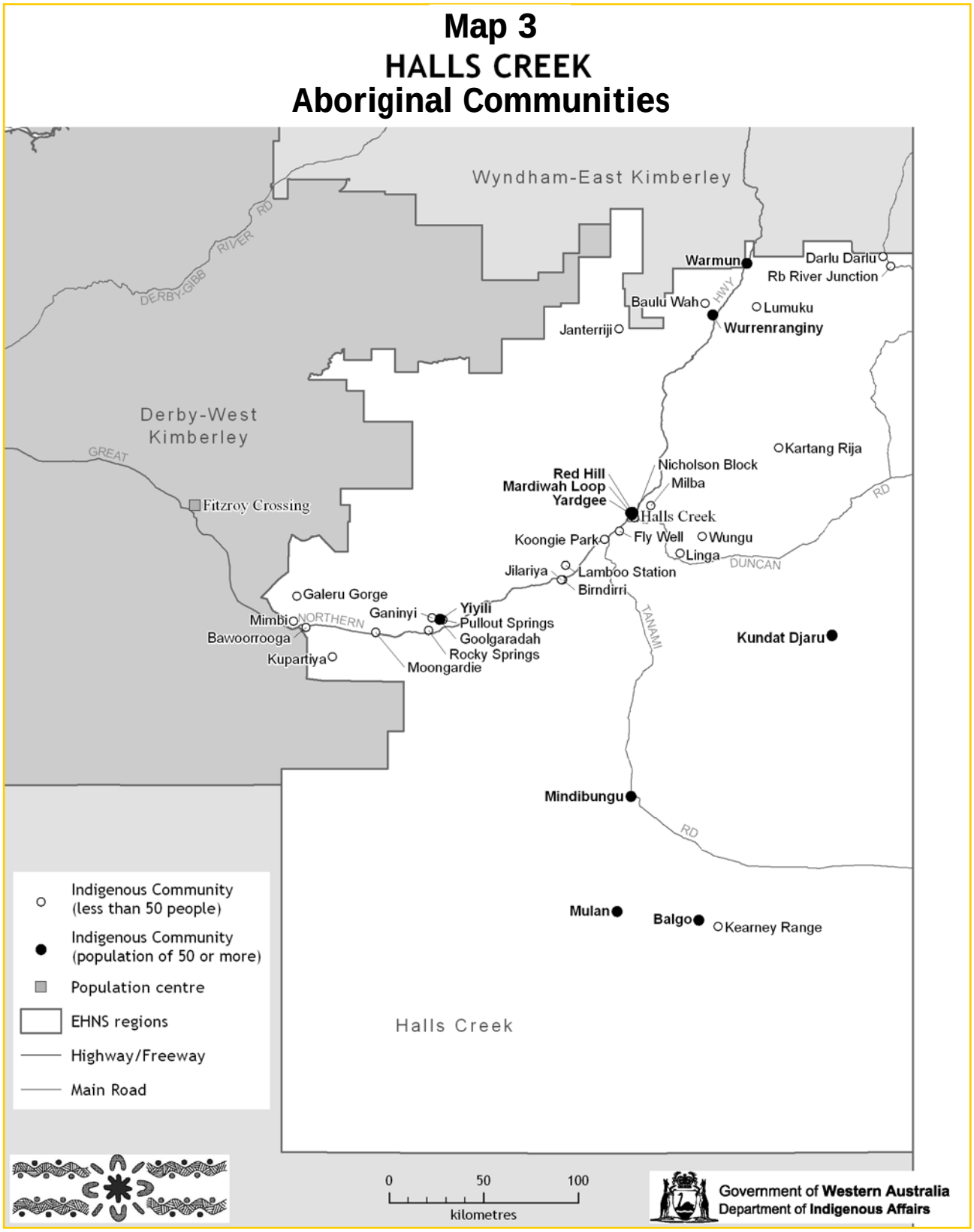
Base: All communities identified

Table 4.16: Emergency Management

Pop<100	Pop	Score
Woolah	67	0.7
Guda Guda	54	0.5
Dodnun	50	0.5
Molly Springs	46	0.5
Warrayu	45	0.5

Base: Top 20% of communities identified

4.2. Halls Creek Region



Thirty five Halls Creek communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 2,192. Of these, just under half have usual populations of less than 20 people (16 communities, 46%) and just over half (19 communities, 54%) have usual populations of 20 or more people. Aboriginal languages were reportedly spoken in the majority of communities in the Shire, with the most common being:

- Gooniyandi;
- Jaru;
- Kija; and
- Walmajarri.

Communities Participating in EHNS

Balgo (460)	Lumuku (11)
Baulu Wah (8)	Mardiwah Loop (252)
Bawoorrooga (10)	Milba (5)
Birndirri (4)	Mimbi (21)
Darlu Darlu (5)	Mindibungu (220)
Fly Well (11)	Moongardie (20)
Galeru Gorge (28)	Mulan (140)
Ganinyi (26)	Nicholson Block (30)
Goolgaradah (4)	Pullout Springs (31)
Janterriji (6)	Rb River Junction (4)
Jilariya (5)	Red Hill (60)
Kartang Rija (5)	Rocky Springs (5)
Kearney Range (10)	Warmun (359)
Koongie Park (31)	Wungu (4)
Kundat Djaru (161)	Wurrenranginy (50)
Kupartiya (27)	Yardgee (84)
Lamboo Station (25)	Yiyili (58)
Linga (12)	

Numbers in brackets above denotes number of community members

Service communities or towns and the number of communities they service

Balgo (3)	Louisa Downs Station (6)
Billiluna (3)	Red Hill (2)
Derby (1)	Spring Vale Station (1)
Fitzroy Crossing (5)	Wangkatjungka (4)
Frog Hollow (1)	Warmun (2)
Halls Creek (35)	Yiyili (5)
Kununurra (3)	

Numbers in bracket above denotes number of communities serviced by that town

4.2.1. Perceived Community Need and Satisfaction

Table 4.17 below displays the communities needs to improve conditions. One-third of communities (37%) recorded **housing (new, repairs, housing for visitors and workers)**. This is the most frequently stated need, particularly in terms of being the first stated/most salient need (in 8 communities it is the first mentioned).

- Consistent with this, when prompted with a list showing environmental concerns for the community and asked to select their main, housing is the most selected area (Table 4.18).
- The priority scores support this with 6 Halls Creek communities with usual populations >=100 in the top 20% and 6 with populations >100 in the top 20% of communities in Western Australia in terms of housing being considered an action priority.

Water, power, sewerage (improvements or provision) is also cited as a perceived area of need in 12 communities (and in 5 is the first mentioned, Table 4.17).

Table 4.17: Community Needs (spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	13	37.1
Water, Power, Sewerage (improvements or provision)	12	34.3
Municipal services (street lighting, rubbish disposal, drainage)	7	20.0
Plant/Vehicle workshop (tools, machinery, tractors, equipment)	6	17.1
Access (internal and access roads, vehicles, boats, airstrip, fuel)	6	17.1
Other	4	11.4
Health services (medical centre, detox centres, AEHWs, first aid kit)	4	11.4
Health hardware (ablutions, hot water systems, washing machines)	4	11.4
Fencing (houses, tips, sewerage ponds)	3	8.6
Meeting areas (administration facilities, general purpose building)	3	8.6
Environmental programs (greening, dust suppression)	3	8.6
Recreational facilities (sporting grounds, playgrounds)	3	8.6
Telecommunications (phones)	1	2.9
Total	**35**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When prompted, **housing** is also the highest recorded environmental health concern (71%). Electricity supply is also listed as a major concern (54%) which is consistent with the afore table findings.

Table 4.18: Community Needs (prompted)

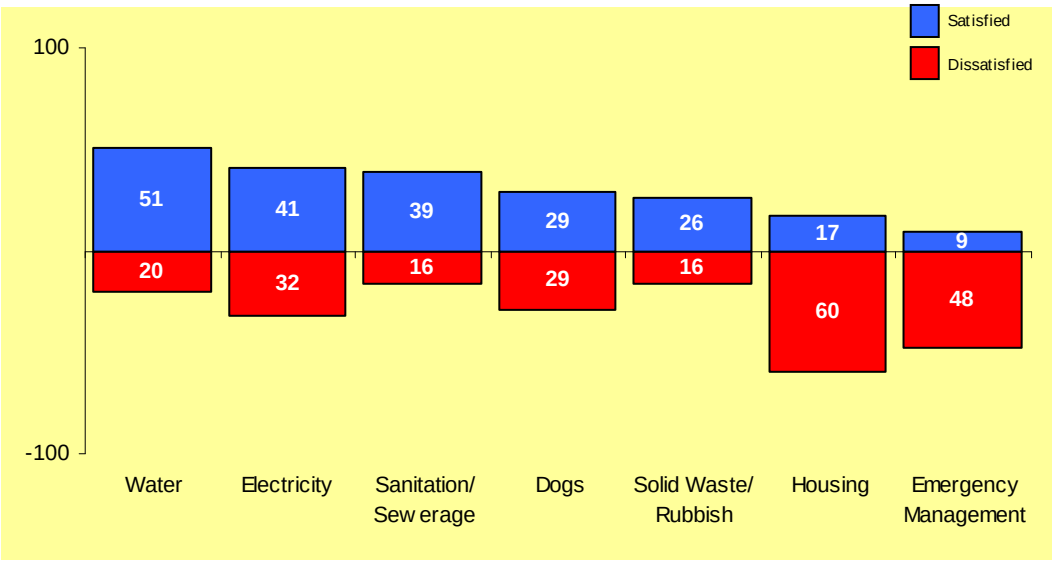
Identified Need	Communities	%
Housing/overcrowding	25	71.4
Electricity supply/interruptions	19	54.3
Water quality/supply	16	45.7
Dust	14	40.0
Rubbish collection	12	34.3
Dogs	11	31.4
Sewerage connections/lagoons	9	25.7
Emergency management	9	25.7
Other – leaking taps/showers not working	3	8.6
Total	**35**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their **satisfaction** with each of the key environmental health areas, **housing** and **emergency management** each record higher proportions of dissatisfied versus satisfied.

Figure 4.3: Community Satisfaction Summary



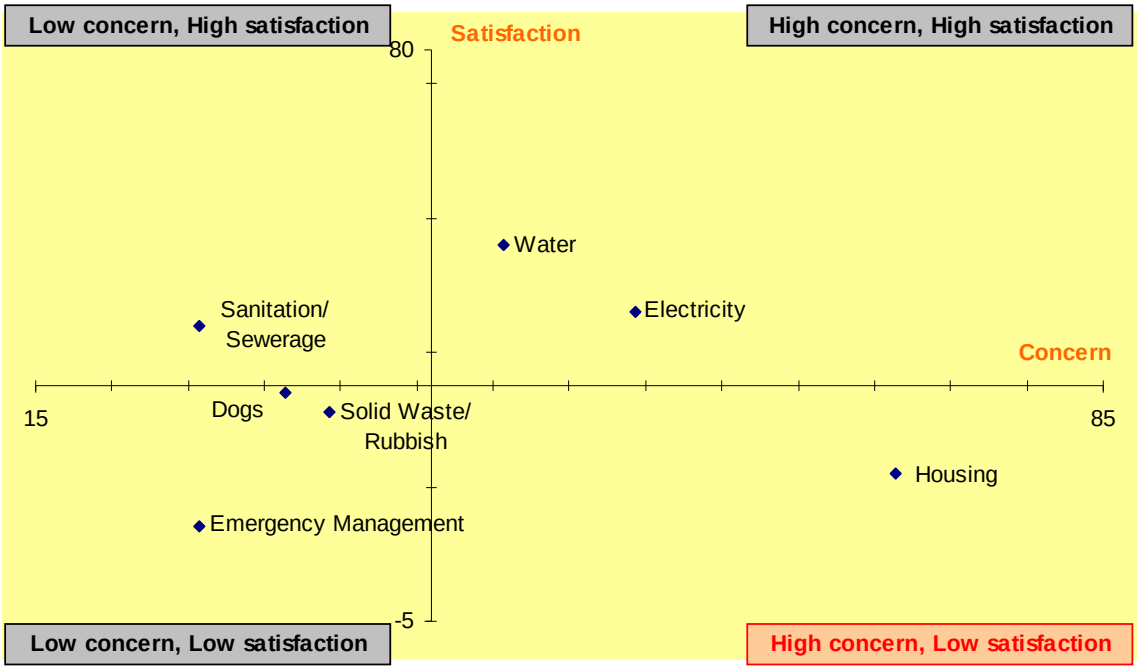
Base: All communities

The matrix below combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — **Priority** to maintain
- Bottom right — High concern, low satisfaction — **Priority** to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** is the environmental health areas that record highest concern but low satisfaction (the bottom right quadrant in Figure 4.4) and should thus be considered one of the key priorities at a 'relative level' in the Halls Creek region group. While emergency management also records low satisfaction it records comparatively lower levels of concern (bottom left quadrant).

Figure 4.4: Community Concern and Satisfaction Summary



The discussion following provides further detail by individual communities in Halls Creek.

4.2.2. Water

One Halls Creek community (bolded in Table 4.20 below) is in the top 20% of communities in Western Australia with usual population of <100 in which **water** would be considered an action priority.

Overall in Halls Creek;

- **Bores** are used by 94% of Halls Creek communities with <20 people and 79% of communities with >=20 people.
  - In Milba and Moongardie this main water supply is stored in **uncovered tanks**.
  - In one community – Rocky Springs – the main water supply is **carted**.
- 88% of communities with usual populations of <20 record **no disinfection of drinking water** (compared to the total for this region - 46%). A smaller proportion (11%) of larger communities (>=20) record **no monthly testing** (compared to the total for this region - 46%).
  - In three communities (Mulan, Balgo, Pullout Springs), **water quality issues** are identified in terms of *chemicals/heavy metals* (for the first community) and *microbiological* (for the second community) and *aesthetic (looks, smell, taste)* for the final community.
- In 2 communities in Halls Creek, there is **no reticulated water supply** to each dwelling (Lamboo Station, Rocky Springs).
- In half of communities (49%), the water system is **maintained** by the *community* (49%) and a slightly smaller proportion by *RAESP/Water Corp* (31%).

Table 4.19: Water

Pop >=100	Pop	Score
Kundat Djaru	161	1.6

Base: All communities identified

Table 4.20: Water

Pop <100	Pop	Score
Lamboo Station	**25**	**2.0**
Pullout Springs	31	1.4
Rocky Springs	5	1.3
Linga	12	1.0
Fly Well	11	0.9
Lumuku	11	0.9
Kearney Range	10	0.8
Bawoorrooga	10	0.8
Baulu Wah	8	0.6

Base: Top 20% of communities identified

4.2.3. Electricity

Two Halls Creek communities with usual populations of >=100 (bolded in Table 4.21) are in the top 20% of communities in Western Australia in which electricity would be considered an action priority. Furthermore two more Halls Creek communities (bolded in Table 4.22 below) are in the top 20% of communities in Western Australia with usual populations of <100 in which **electricity** would be considered an action priority.

As a region, 32% of communities in Halls Creek consider the electricity supply unsatisfactory, compared to 36% of all Western Australian communities. The stated reasons for this are **regular system failures** (5 communities), **generator too small** (2 communities), **lack of maintenance** (2 communities), **lack of fuel** (1 community), and **lack of storage** (1 communities).

Overall in Halls Creek;

- There are only three Western Australian communities that record **no source of electricity**, and one of these is in Halls Creek – **Rocky Springs**.
- The charges for electricity usage are most likely incurred via a **chuck in system** (24 communities).

Table 4.21: Electricity

Pop>=100	Pop	Score
Balgo	**460**	**18.4**
Mindibungu	**220**	**8.8**
Kundat Djaru	161	6.4
Mulan	140	5.6

Base: All communities identified

Table 4.22: Electricity

Pop<100	Pop	Score
Yiyili	**58**	**2.3**
Wurrenranginy	**50**	**2.0**
Pullout Springs	31	1.2
Galeru Gorge	28	1.1
Kupartiya	27	1.1
Ganinyi	26	1.0
Lamboo Station	25	1.0

Base: Top 20% of communities identified

4.2.4. Housing

Two Halls Creek communities with usual populations >=100 and one community with usual populations <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **housing** would be considered an action priority. Three in five communities (60%) in Halls Creek record housing in the community as unsatisfactory.

Table 4.23: Housing

Pop >=100	Pop	Crude PDM	Adj. PDM
Mardiwah Loop	**252**	**3.6**	**10.5**
Balgo	**460**	**7.3**	**8.5**
Kundat Djaru	161	2.8	7.3
Warmun	359	5.8	6.3
Mindibungu	220	3.7	5.6

Base: All communities identified

Table 4.24: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Bawoorrooga	**10**	**2.5**	**10.0**
Lamboo Station	25	4.2	8.3
Yardgee	84	4.4	7.0
Ganinyi	26	5.2	6.5
Wurrenranginy	50	6.3	6.3

Base: Top 20% of communities identified

4.2.5. Solid Waste Disposal

One Halls Creek community with a usual population >=100 (bolded in Table 4.25) is in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority. Three Halls Creek communities with a usual population <100 (bolded in Table 4.26) are in the top 20%.

Sixteen percent (16%) of communities in Halls Creek record **unsatisfactory rubbish tip management**, which is lower than that recorded for total Western Australia (23%).

Overall in Halls Creek;

- There are four communities that record using a **town rubbish tip**, namely Nicholson Block, Red Hill, Yardgee and Mardiwah Loop.
- Eight communities record a **rubbish tip capacity of less than six months** – Kartang Rija, Kearney Range, Birndirri, Wungu, Koongie Park, Jilariya, Fly Well and Lamboo Station.
- Eight communities record a **site that is not suitable** – Mimbi, Galeru Gorge, Ganinyi, Darlu Darlu, Kartang Rija, Birndirri, Wungu and Jilariya.
    - However, Galeru Gorge is the only one of these communities which records that there is no suitable alternative site.
- Twenty-nine communities have **unwanted cars/car bodie**s in the community. Mardiwah Loop (210 cars/car bodies), Yiyili (90), Warmun (60), Balgo (30), Mulan (30), Kundat Djaru (20), Linga (20), and Nicholson Block (12) each record higher than average numbers of unwanted cars/car bodies in their community.

Table 4.25: Solid Waste Disposal

Pop>=100	Pop	Score
Balgo	**460**	**46.0**
Mulan	140	5.6

Base: All communities identified

Table 4.26: Solid Waste Disposal

Pop<100	Pop	Score
Red Hill	**60**	**3.6**
Wurrenranginy	**50**	**3.5**
Yiyili	**58**	**3.5**
Kupartiya	27	2.7
Ganinyi	26	2.6
Koongie Park	31	2.2
Pullout Springs	31	1.9
Kearney Range	10	1.6

Base: Top 20% of communities identified

4.2.6. Sanitation/Sewerage

No Halls Creek communities are in the top 20% of communities in Western Australia in which **Sanitation/Sewerage** would be considered an action priority.

Overall in Halls Creek;

- There is one community that record **only having access to pit toilets**, namely Rocky Springs, There is only one other community outside of Halls Creek that records only having access to pit toilets, and this is in the Broome region group.
- In one-fifth of communities (21%, 7 communities) the internal **sewage reticulation system is not maintained** either by the community or by RAESP (i.e. no one maintains it).
- Six communities have access to a **drying pond for disposal of sludge.**
- Half (50%) of communities with ablution facilities are not satisfied with their **current condition**.
- Sixteen percent (16%) are not satisfied that the **current sewage system meets the needs of their community**. The most frequently stated reasons for dissatisfaction relate to *lack of maintenance* (3 communities) and *inadequate size* for the community (2 communities).

Table 4.27 Sanitation/Sewerage

Pop>=100	Pop	Score
Kundat Djaru	161	9.7
Mindibungu	220	8.8
Warmun	359	7.2

Base: All communities identified

Table 4.28 Sanitation/Sewerage

Pop<100	Pop	Score
Yiyili	58	1.2
Koongie Park	31	1.2
Goolgaradah	4	0.1

Base: Top 20% of communities identified

4.2.7. Dust

Two Halls Creek communities with usual populations >=100 and three communities with a usual population <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Overall in Halls Creek:

- Two communities record **excessive dust problems**, namely Red Hill and Balgo.
- Six communities record **high dust problems** - Nicholson Block, Yardgee, Wurrenranginy, Wungu, Pullout Springs and Jilariya.
    - Jilariya and Pullout Springs are the only communities to record a *revegetation or dust suppression program.* The remaining six do not have such programs.

Table 4.29: Dust

Pop>=100	Pop	Score
Balgo	**460**	**18.4**
Mindibungu	**220**	**8.8**
Mulan	140	5.6
Mardiwah Loop	252	5.0
Warmun	359	3.6

Base: All communities identified

Table 4.30: Dust

Pop<100	Pop	Score
Red Hill	**60**	**3.6**
Yardgee	**84**	**2.5**
Wurrenranginy	**50**	**2.5**
Nicholson Block	30	1.5
Yiyili	58	1.2
Pullout Springs	31	1.2
Koongie Park	31	1.2

Base: Top 20% of communities identified

4.2.8. Dogs

One Halls Creek community with a usual population >100 (bolded in the following table) is in the top 20% of communities in Western Australia in which **dogs** would be considered an action priority.

Overall in Halls Creek;

- Four of the 35 communities responding **do not have a dog program**, but three of the four communities record dogs in their community, namely Darlu Darlu (9 dogs), Mimbi (8 dogs) and Janterriji (2 dogs).
- There are three communities with **high numbers of dogs** estimated in their community – Mulan with an estimate of 180, Kundat Djaru with an estimate of 100 and Warmun with an estimate of 100. In each of these three communities, there is a dog program for *Invomec/Moxidectin/Cydectin* and *Euthanasia* and another community with a program for *sterilisation* and *Convinan (Proligestrone)* in Warmun.
    - In all communities where there is a dog program, it is implemented by the **EHO/AEHW/Ranger**.
- There are nine communities that record the management of dog programs as **unsatisfactory** – Balgo, Nicholson Block, Red Hill, Wurrenranginy, Yiyili, Warmun, Linga, Mardiwah Loop and Mindibungu.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.31: No Dog Program in Communities

Pop<100	Pop	Score
Mimbi	**21**	**0.2**
Janterriji	6	0.1
Darlu Darlu	5	0.1

Base: All communities identified

4.2.9. Emergency Management

All Halls Creek communities with usual populations >=100 and three communities with a usual population <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Table 4.32: Emergency Management

Pop>=100	Pop	Score
Warmun	359	3.6
Mardiwah Loop	252	2.5
Mindibungu	220	2.2
Kundat Djaru	161	1.6

Base: All communities identified

Table 4.33: Emergency Management

Pop<100	Pop	Score
Yiyili	58	1.2
Wurrenranginy	50	1.0
Koongie Park	31	0.6
Nicholson Block	30	0.6
Ganinyi	26	0.5
Mimbi	21	0.2

Base: Top 20% of communities identified

Overall in Halls Creek;

- All communities are prone to **Bush Fires**.
  - However only six have fire management plans, namely Mindibungu, Balgo, Milba, Ganinyi, Mulan and Lumuku.
  - Furthermore only three have fire-fighting equipment that works, namely Kundat Djaru, Koongie Park and Galeru Gorge.
- Of all communities in Halls Creek only two are trained in emergency procedures with one of these also trained in *FESA/fire management/fire fighting/fire drills/bushfire.*
- Only two communities in Halls Creek (6%) belong to a Local Emergency Management Committee (LEMC). These communities are Nicholson Block and Warmun.

4.2.10. Telecommunications

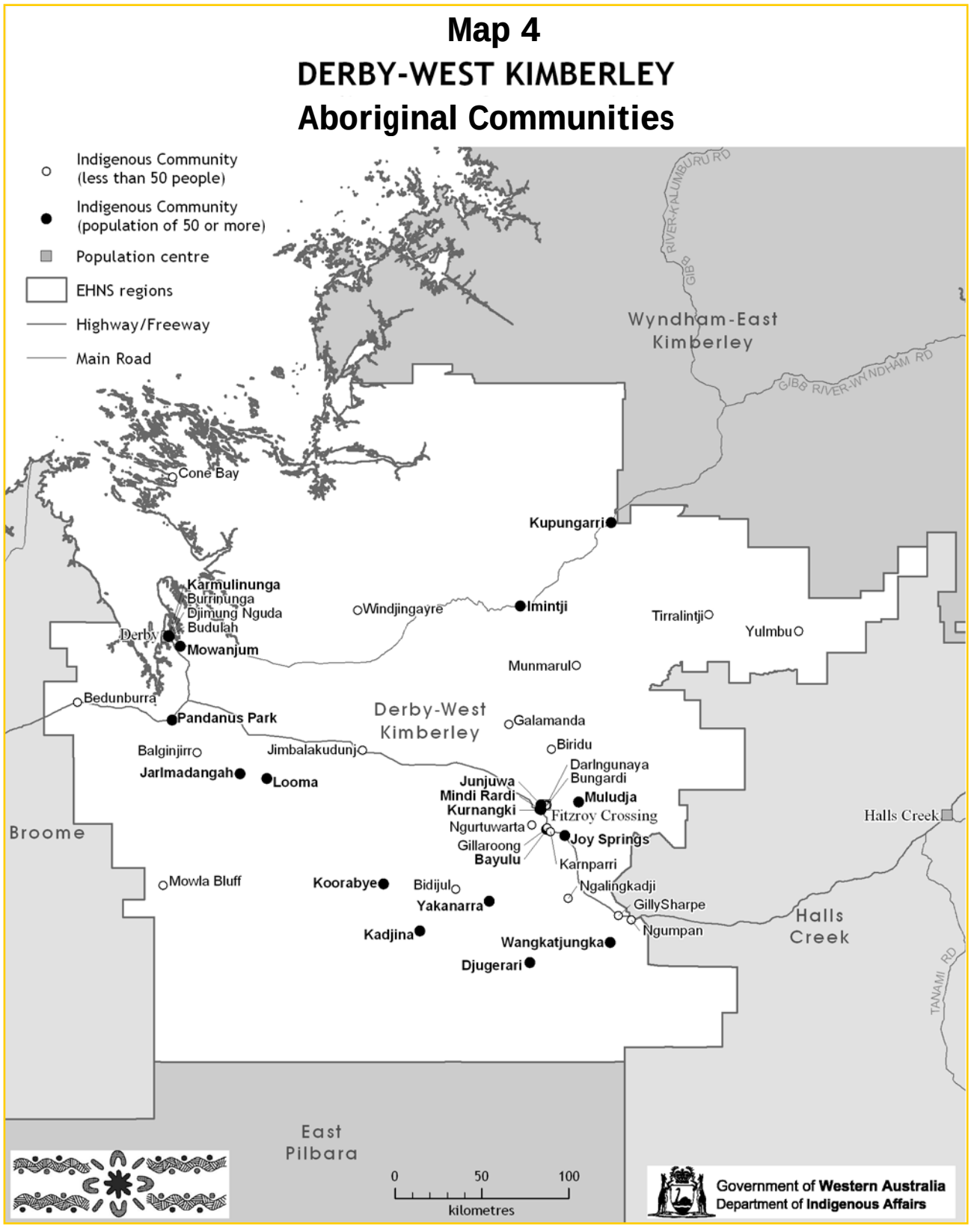
As shown in the table below, there are 11 communities in Halls Creek who **do not have access to any telephone facilities** for community members.

Table 4.34: Communities with Community Phone Access

Community	Pop	Telecentre in community	Community video-teleconference facility	Community payphone that works	Community Satellite phone
Yardgee	84	No	No	No	No
Red Hill	60	No	No	No response	No
Pullout Springs	31	No	No	No response	No
Kearney Range	10	No	No	No	No
Bawoorrooga	10	No	No	No	No
Kearney Range	10	No	No	No	No
Baulu Wah	8	No	No	No response	No
Rocky Springs	5	No	No	No	No
Jilariya	5	No	No	No	No
Birndirri	4	No	No	No	No
Wungu	4	No	No	No response	No
Total	**236**				

Base: Communities who do not have access to any telephone facilities

4.3. Derby - West Kimberley Region



Forty one Derby-West Kimberley communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 3,315. Of these, the majority (31) have usual populations of 20 or more people, and 10 have usual populations of less than 20 people.

Five of Derby-West Kimberley's larger communities (Yakanarra, Wangkatjungka, Kurnangki, Djugerari, and Ngalingkadji) have an Aboriginal language as the main language spoken within the community. Aboriginal languages were reportedly spoken in the majority of communities in the Shire, with the most common being:

- Bardi;
- Bunuba;
- Gooniyandi;
- Kriol;
- Nyikina;
- Mangala;
- Walmajarri; and
- Wangkajunga.

Communities Participating in EHNS

Balginjirr (21)	Gilly Sharpe (5)	Mowanjum (286)
Bayulu (500)	Imintji (60)	Mowla Bluff (6)
Bedunburra (12)	Jarlmadangah (78)	Muludja (121)
Bidijul (15)	Jimbalakudunj (18)	Munmarul (14)
Biridu (30)	Joy Springs (73)	Ngalingkadji (30)
Budulah (35)	Junjuwa (250)	Ngumpan (33)
Bungardi (30)	Kadjina (70)	Ngurtuwarta (40)
Burrinunga (40)	Karmulinunga (60)	Pandanus Park (94)
Cone Bay (30)	Karnparri (7)	Tirralintji (13)
Darlngunaya (30)	Koorabye (89)	Wangkatjungka (220)
Djimung Nguda (11)	Kupungarri (50)	Windjingayre (30)
Djugerari (74)	Kurnangki (80)	Yakanarra (140)
Galamanda (20)	Looma (450)	Yulumbu (15)
Gillaroong (40)	Mindi Rardi (95)	

Numbers in bracket above denotes number of community members

Service communities or towns and the number of communities they service

Bayulu (2)
Camballin (2)
Derby (18)
Fitzroy Crossing (23)
Kupungarri (1)
Looma (1)
Napier Downs (1)
Noonkanbah (1)
Wangkatjungka (1)

Numbers in bracket above denotes number of communities serviced by that town

4.3.1. Perceived Community Need and Satisfaction

The table below displays the communities' needs to improve conditions. Two-thirds (63%) recorded **housing (new, repairs, housing for visitors and workers)** and this is considerably higher than any other spontaneously mentioned need. **Access** (39%) and **water, power, sewerage** (32%) are the second 'tier' of needs recorded.

Table 4.35: Community Needs (spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	26	63.4
Access (internal and access roads, vehicles, boats, airstrips, fuel)	16	39.0
Water, Power, Sewerage (improvements or provision)	13	31.7
Municipal services (street lighting, rubbish disposal, drainage)	7	17.1
Environmental programs (greening, dust suppression)	6	14.6
Recreational facilities (sporting grounds, playgrounds)	6	14.6
Telecommunications (phones)	4	9.8
Health services (medical centre, detox centres, AEHWs, first aid kit)	4	9.8
Meeting areas (administration facilities, general purpose buildings)	3	7.3
Fencing (houses, tips, sewerage ponds)	2	4.9
Training (employment and business development)	1	2.4
Health hardware (ablutions, hot water systems, washing machines)	1	2.4
No response	10	24.4
Total	**41**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When prompted, **housing** is also the highest recorded environmental health concern (78%), but **dust** (61%) and **water quality/supply** (41%) are also relatively high.

Table 4.36: Community Needs (prompted)

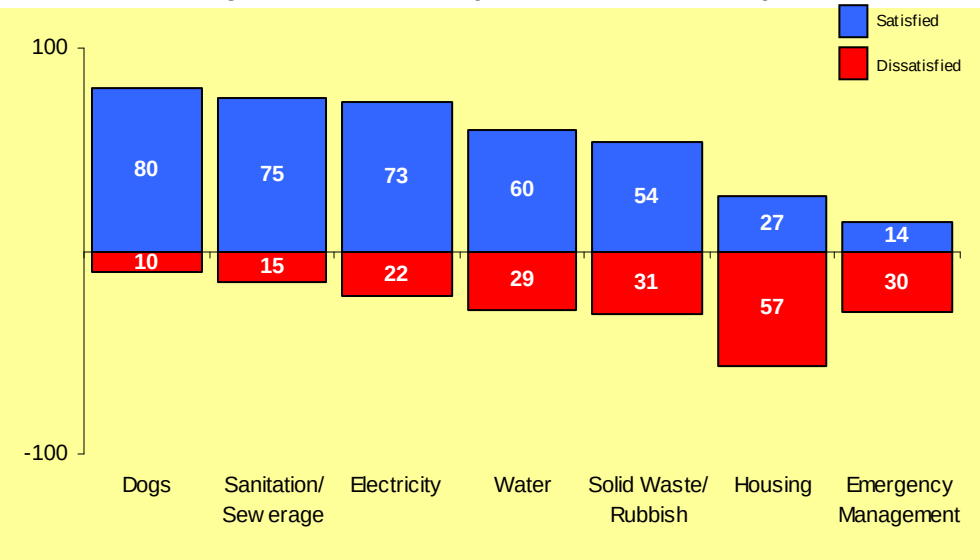
Identified Need	Communities	%
Housing/overcrowding	32	78.0
Dust	25	61.0
Water quality/supply	17	41.4
Dogs	11	26.8
Electricity supply/interruptions	9	22.0
Sewerage connections/lagoons	9	22.0
Emergency management	9	22.0
Rubbish collection	5	12.2
Other – cats	1	2.4
Other – septic tanks	1	2.4
Total	**41**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their satisfaction with each of the key environmental health areas, **housing**, **solid waste (rubbish)** and **emergency management** record the lowest levels of satisfaction, and higher proportions of dissatisfied relative to those satisfied.

Figure 4.5: Community Satisfaction Summary



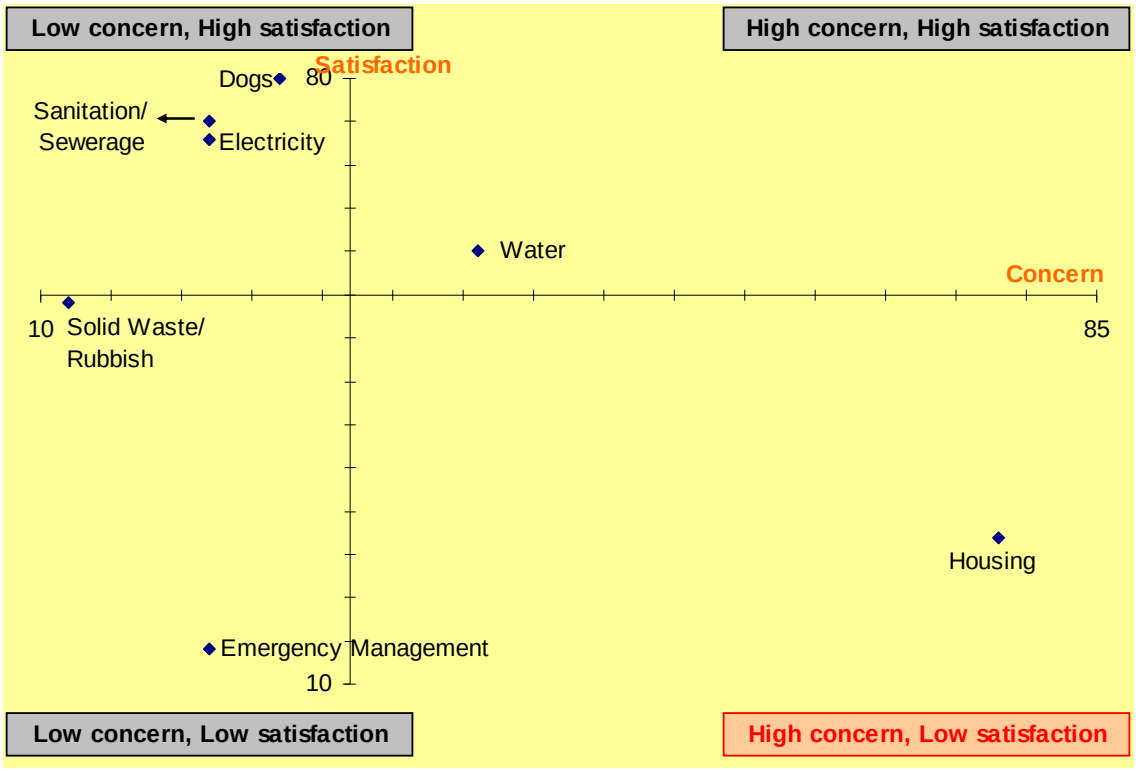
Base: All communities

The matrix below combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — Priority to maintain
- Bottom right — High concern, low satisfaction — Priority to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** is the key environmental health area that records high concern but low satisfaction (the bottom right quadrant in Figure 4.6) and would thus be considered one of the key priorities at a 'relative level' in the Derby-West Kimberley region group.

Figure 4.6: Community Concern and Satisfaction Summary



The discussion following provides further detail by the individual communities in Derby-West Kimberley.

4.3.2. Water

Seven Derby-West Kimberley communities (bolded in Table 4.38) are in the top 20% of communities in Western Australia with a usual population of <100 in which **water** would be considered an action priority.

Overall in Derby-West Kimberley:

- **Bores** are used by four out of five communities (81% of communities, 81% of usual population) and the main drinking water supply is stored in **covered tanks** (100%).
- One-third (31%) record no **water treatment/disinfection**. In those where the water is tested (26 communities), the stated methods are Chlorine/CL (used by 11 communities), UV (4 communities) and Fluoride (1 community).
- The majority (28) of communities record **regular testing** of their water supply and in seven of these communities (Wangkatjungka, Bayulu, Ngalingkadji, Pandanus Park, Jimbalakudunj, Looma and Jarlmadangah), *Microbiological issues* were identified.
- There are three communities with **no reticulated water supply** to each dwelling – (with one of these communities having a usual population of >100).
- There are ten communities (29%) that record **dissatisfaction** with water supply – Joy Springs, Ngalingkadji, Yalumbu, Pandanus Park, Cone Bay, Jimbalakudunj, Kadjina, Koorabye, Looma, Jarlmadangah. The key reasons for this relate to *not enough supply* (6 communities), *pressure* (5), *regular system failure* (3), *taste* (3) and *lack of power* (1).

Table 4.37: Water

Pop>=100	Pop	Score
Looma	450	2.3

Base: All communities identified

Table 4.38: Water

Pop<100	Pop	Score
Koorabye	**89**	**4.5**
Cone Bay	**30**	**3.6**
Joy Springs	**73**	**3.3**
Kadjina	**70**	**3.2**
Biridu	**30**	**2.4**
Bungardi	**30**	**2.4**
Yulumbu	**15**	**1.7**
Balginjirr	21	1.3
Bidijul	15	1.2

Base: Top 20% of communities identified

4.3.3. Electricity

Five Derby-West Kimberley communities (bolded in the following table) are in the top 20% of communities in Western Australia with usual populations <100 in which electricity would be considered an action priority.

Overall in Derby-West Kimberley;

- One-fifth of communities (22%) affecting a similar proportion of the usual population (23%) record **unsatisfactory electricity supply**.
  - This affects eight communities – Windjingayre, Bedunburra, Bayulu, Djugerari, Yalumbu, Kadjina, Munmarul and Galamanda.
  - The key reasons for this are *regular system failure* (5 communities), *lack of fuel* (3), *generator too small* (3), *lack of fuel storage* (2) and *lack of maintenance* (1).
  - Bayulu, Kadjina and Munmarul each record **daily interruptions** of electricity supply and Galamanda records **weekly interruptions**.
- There are only three Western Australian communities that record **no source of electricity**, and one of these is in Derby-West Kimberley – Gilly Sharpe.
- There are three communities among whom their main electricity source is **solar/solar hybrid** – Cone Bay, Balginjir and Yalumbu.
- Three in five (59%) incur charges for their electricity within their community via a **chuck-in system**, 34% have a **fixed levy/direct debit through rental payment** and in 7% individuals are **not charged**. No communities record individual meters/power cards or power bills.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.39: Electricity

Pop<100	Pop	Score
Koorabye	**89**	**3.6**
Jarlmadangah	**78**	**3.1**
Djugerari	**74**	**3.0**
Kadjina	**70**	**2.8**
Ngurtuwarta	**40**	**1.6**
Ngumpan	33	1.3
Biridu	30	1.2
Ngalingkadji	30	1.2
Galamanda	20	0.8
Jimbalakudunj	18	0.7

Base: Top 20% of communities identified

4.3.4. Housing

One Derby-West Kimberley community with usual population >=100 and six communities with usual population <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **housing** would be considered an action priority. Three in five communities (57%) in Derby-West Kimberley record housing in their community as unsatisfactory.

Table 4.40: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Bayulu	**500**	**8.3**	**8.3**
Looma	450	7.3	7.3
Wangkatjungka	220	7.1	7.1
Mowanjum	286	6.8	6.8

Base: All communities identified

Table 4.41: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Bidijul	**15**	**3.8**	**15.0**
Windjingayre	**30**	**15.0**	**15.0**
Budulah	**35**	**7.0**	**11.7**
Biridu	**30**	**4.3**	**10.0**
Bungardi	**30**	**7.5**	**10.0**
Galamanda	**20**	**5.0**	**10.0**
Koorabye	89	8.1	8.1
Mindi Rardi	95	6.8	6.8

Base: Top 20% of communities identified

4.3.5. Solid Waste Disposal

One Derby-West Kimberley community with usual populations >=100 and four communities with usual populations <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

Overall in Derby-West Kimberley;

- In the majority of communities (73%) community workers are **responsible** for household rubbish collection.
- Household rubbish is **collected** weekly in 92% of communities. However in Ngurtuwata and Ngalingkadji it is collected fortnightly, and monthly in Kadjina.
    - Half (47%) of communities do, however, record **times of non-collection**. The stated reasons for this relate to *no suitable vehicles* (11 communities) and *no workers* (3).
- Two communities (Jarlmadangah and Gilly Sharpe) record that the tip dumping area is not in a suitable site, but also record that there is an alternative appropriate site.
- In Ngurtuwarta, Yalumba and Kupungarri **excessive litter levels** are recorded, and **high levels** are recorded in Yakanarra, Mindi Rardi and Kadjina. However, the majority of communities (84%) record either moderate, low or no litter.
- **Unwanted cars/car bodies** littering the community are recorded in two-thirds (67%) of communities, and the average number among these communities is 8 car bodies. There are six communities where the recorded number is higher – Yakanarra (37), Bayulu (25), Pandanus Park (24), Bedunburra (20), Looma (10) and Gillaroong (10).
- The majority of communities record a **rubbish tip capacity** of more than 12 months (72%); however there are four communities where the capacity is less than 6 months (Djugerari, Balginjirr, Gilly Sharpe and Galamanda) and three communities where capacity is 6-12 months (Bedunburra, Ngumpan and Jimbalakudunj).

Table 4.42: Solid Waste Disposal

Pop>=100	Pop	Score
Bayulu	**500**	**30.0**
Junjuwa	250	15.0
Wangkatjungka	220	13.2
Yakanarra	140	11.2
Muludja	121	9.7

Base: All communities identified

Table 4.43: Solid Waste Disposal

Pop<100	Pop	Score
Djugerari	**74**	**8.9**
Kadjina	**70**	**5.6**
Joy Springs	**73**	**4.4**
Ngurtuwarta	**40**	**3.2**
Jarlmadangah	78	3.1

Base: Top 20% of communities identified

4.3.6. Sanitation/Sewerage

Two Derby-West Kimberley communities with usual populations >=100 and two communities with usual populations <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **Sanitation/Sewerage** would be considered an action priority.

Overall in Derby-West Kimberley;

- In three in five (62%) communities, the sewerage is disposed of via septic tanks/leach drains, 28% via a community sewerage system and 10% are connected to a town system.
- There is one community that records no maintenance of the internal sewerage reticulation system – Bedunburra.
- **Bayulu**, **Looma** and **Junjuwa** each record a moderate level of sewerage lagoon overflow.
- **Wangkatjungka** also has moderate levels of sewerage lagoon overflow, and records the current condition of community ablution facilities as very unsatisfactory.
- In **Muludja**, the maintenance of the sewerage lagoon is recorded as unsatisfactory.
- There are three communities that record the sewerage system as not meeting their needs - **Mindi Rardi**, **Kurnangki** and **Cone Bay**. In each of these communities, the key stated reason for dissatisfaction relates to *inadequate disposal facilities.*
    - In **Mindi Rardi**, the maintenance of the sewerage lagoon is recorded as unsatisfactory and there is a high recorded level of sewerage overflow.
    - In **Kurnangki**, the sewerage lagoon is also not fenced/gated adequately, the maintenance of the sewerage lagoon is recorded as very unsatisfactory and there is a moderate level of sewerage lagoon overflow.

Table 4.44: Sanitation/Sewerage

Pop>=100	Pop	Score
Bayulu	**500**	**20.0**
Looma	**450**	**18.0**
Junjuwa	250	10.0
Wangkatjungka	220	8.8
Yakanarra	140	2.8
Muludja	121	2.4

Base: All communities identified

Table 4.45: Sanitation/Sewerage

Pop<100	Pop	Score
Mindi Rardi	**95**	**5.7**
Kurnangki	**80**	**3.2**
Djugerari	74	1.5

Base: Top 20% of communities identified

4.3.7. Dust

Two Derby-West Kimberley communities with usual populations >=100 and nine communities with usual populations <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Overall in Derby-West Kimberley;

- Close to three in five (59%) communities record **excessive or high dust levels** and 31% record moderate dust levels. There are only four communities in this region which record low dust levels (Karmulinunga, Cone Bay, Junjuwa and Looma).
- Despite the high recorded dust levels, only six communities already have revegetation/suppression programs in place in the form of;
    - o Tree planting — Balginjirr, Burrinunga
    - o Revegetation/landscaping — Jarlmadangah
    - o Speed humps/bollards — Jarlmadangah
    - o Growing lawns/gardens/grass — Burrinunga
- Two in five (44%) record dirt **community access roads**, and in three communities – Yalumbu, Cone Bay and Biridu – their condition is considered poor.
- The majority of communities (77%) record unsealed internal community roads.

Table 4.46: Dust

Pop>=100	Pop	Score
Bayulu	**500**	**10.0**
Mowanjum	**286**	**8.6**
Wangkatjungka	220	6.6

Base: All communities identified

Table 4.47: Dust

Pop<100	Pop	Score
Mindi Rardi	**95**	**4.8**
Pandanus Park	**94**	**4.7**
Koorabye	**89**	**4.5**
Djugerari	**74**	**4.4**
Kadjina	**70**	**4.2**
Joy Springs	**73**	**3.7**
Kupungarri	**50**	**2.5**
Imintji	**60**	**2.4**
Jarlmadangah	**78**	**2.3**
Budulah	35	1.8

Base: Top 20% of communities identified

4.3.8. Dogs

Eight Derby-West Kimberley communities with usual populations <100 (bolded in the following table) are in the top 20% of communities in Western Australia in which **dogs** would be considered an action priority.

Overall in Derby-West Kimberley;

- The majority of communities (73%) have a **dog program**.
- The **average number of dogs** recorded in communities is 40. However, there are several communities with a higher estimated number than this, namely Looma (100 dogs), Junjuwa (96), Bayulu (90), Wangkatjungka (90) and Yakanarra (85). Each of these communities records having a dog program in place.
- *Invomec/Moxidectin/Cydectin*, and *euthanasia* are the most common **programs** cited (each used in 90% of communities with an existing program). Only four communities have a *sterilisation* program (Mowanjum, Ngumpan, Pandanus Park and Jarlmadangah) however 90% have *Covinan (Proligestone)*.
- In four out of five (79%) communities with a dog program, it is **implemented** by the *EHFSO/FSO*.
- The majority (80%) are **satisfied** with the management of regular programs.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.48: No Dog Program in Communities

Pop<100	Pop	Score
Imintji	**60**	**0.6**
Kupungarri	**50**	**0.5**
Biridu	**30**	**0.3**
Cone Bay	**30**	**0.3**
Windjingayre	**30**	**0.3**
Balginjirr	**21**	**0.2**
Galamanda	**20**	**0.2**
Bidijul	**15**	**0.2**
Bedunburra	12	0.1
Mowla Bluff	6	0.1
Gilly Sharpe	5	0.1

Base: All communities identified

4.3.9. Emergency Management

In Derby-West Kimberley, the most frequently recorded emergencies that communities are prone to are **bushfires** (89%) and **floods** (71%) and one-quarter (23%) are prone to **cyclones**. One community (Balginjirr) also records they are prone to drought.

Despite the high propensity for bushfires in the region, half of communities (50%) do not have fire management plans and only five communities (14%) have working fire equipment. In addition, three-quarters (74%) do not have plans in the event of floods. Overall, three-quarters (71%) do not have emergency evacuation plans and 87% are not trained in emergency procedures. No community in this region belongs to an LEMC.

Not surprisingly, only five communities record satisfaction with emergency management preparedness and each of these communities have some plans in place:

- Budulah (fire management, cyclones);
- Djugerari (fire management, floods);
- Balginjirr (fire management);
- Jarlmadangah (fire management, cyclones, floods, evacuation); and
- Burrinunga (cyclones, evacuation).

Table 4.49: Emergency Management

Pop>=100	Pop	Score
Bayulu	**500**	**5**
Looma	450	4.5
Mowanjum	286	2.86
Junjuwa	250	2.5
Wangkatjungka	220	2.2

Base: All communities identified

Table 4.50: Emergency Management

Pop<100	Pop	Score
Mindi Rardi	**95**	**1.0**
Pandanus Park	**94**	**0.0**
Koorabye	**89**	**0.9**
Kurnangki	**80**	**0.8**
Jarlmadangah	**78**	**0.8**
Djugerari	**74**	**0.7**
Joy Springs	**73**	**0.7**
Kadjina	**70**	**0.7**

Base: All communities identified

4.3.10. Telecommunications

As shown in the tables below, there are eight communities in Derby-West Kimberley that do not have access to either a working pay or satellite phone.

Table 4.51: Communities (population>=20) that have Neither Payphones nor Satellite Phone

Community	Pop
Kurnangki	80
Burrinunga	40
Budulah	35
Bungardi	30
Cone Bay	30
Windjingayre	30
Total	**245**

Base: Community without access to pay or satellite phone

Table 4.52: Communities with Public Payphones Reported as Not Working

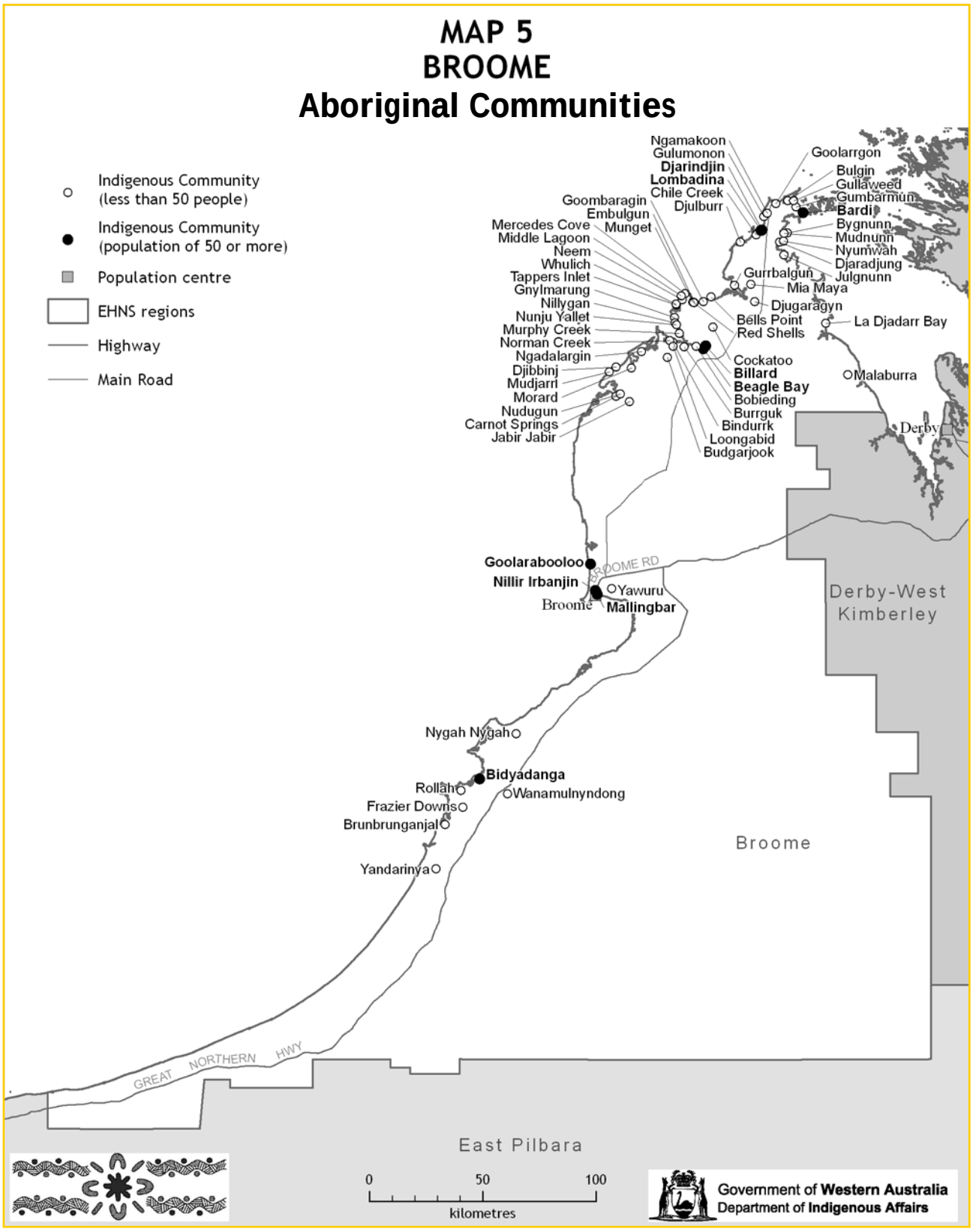
Community	Pop
Galamanda	20
Bedunburra	12
Total	**32**

Base: Community with public payphone not working

In terms of access to other telecommunications facilities;

- Two communities in the region have telecentres and video conferencing facilities – Yakanarra and Jarlmadangah.
- Two in five (38%) are connected to the internet.

4.4. Broome Region



Sixty two Broome communities (listed below) were surveyed in the EHNS 2008 research of which the total usual population is 2,548. Of these, the majority (47 communities) have usual populations of less than 20 people and 15 have populations of 20 or more people.

Aboriginal languages were reportedly spoken in many of the communities in the Shire, with the most common being:

- Bardi;
- Karajarri;
- Kriol; and
- Nyul Nyul.

Broome Communities Participating in EHNS 2008

Bardi (400)	Frazier Downs (5)	Mudnunn (8)
Beagle Bay (270)	Gnylmarung (15)	Munget (10)
Bells Point (2)	Goolarabooloo (63)	Murphy Creek (1)
Bidyadanga (800)	Goolarrgon (1)	Neem (10)
Billard (72)	Goombaragin (7)	Ngadalargin (2)
Bindurrk (8)	Gullaweed (15)	Ngamakoon (30)
Bobieding (16)	Gulumonon (20)	Nillir Irbanjin (61)
Brunbrunganjal (19)	Gumbarmun (15)	Nillygan (14)
Budgarjook (20)	Gurrbalgun (17)	Norman Creek (9)
Bulgin (7)	Jabir Jabir (6)	Nudugun (8)
Burrguk (5)	Julgnunn (8)	Nunju Yallet (5)
Bygnunn (1)	La Djadarr Bay (27)	Nygah Nygah (4)
Carnot Springs (2)	Lombadina (55)	Nyumwah (10)
Chile Creek (4)	Loongabid (15)	Red Shells (3)
Cockatoo (5)	Malaburra (7)	Rollah (8)
Djaradjung (6)	Mallingbar (56)	Tappers Inlet (12)
Djarindjin (260)	Mercedes Cove (6)	Wanamulnyndong (20)
Djibbinj (9)	Mia Maya (2)	Whulich (4)
Djugaragyn (8)	Middle Lagoon (9)	Yandarinya (14)
Djulburr (2)	Morard (9)	Yawuru (7)
Embulgun (29)	Mudjarrl (5)	

Numbers in brackets above denotes number of community members

Service communities or towns and the number of communities they service

Bardi (3)

Beagle Bay (30)

Bidyadanga (6)

Broome (63)

Derby (1)

Djarindjin/Lombadina (50)

Port Smith (1)

Numbers in brackets above denotes number of communities serviced by that town

4.4.1. Perceived Community Need and Satisfaction

Table 4.53 below displays the communities' needs to improve conditions. Seven in ten (43 out of 62 communities) recorded **housing (new, repairs, for visitors and workers)**. This is the most frequently stated need, particularly in terms of being the first stated/most salient need (in 33 communities it is the first mentioned).

- Consistent with this, when prompted with a list showing environmental concerns for the community and asked to select their main, housing is the most selected area (Table 4.54).
- The priority scores support this with 5 Broome communities with usual populations <100 being in the top 20% of communities in Western Australia in terms of housing being considered a priority to address.

Water, power, sewerage (improvements or provision) are also cited as a perceived area of need in 40 communities (and in 14 surveys it is the first mentioned, Table 4.53).

Table 4.53: Community Needs (spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	43	69.4
Water, Power, Sewerage (improvements or provision)	40	64.5
Health hardware (ablutions, hot water systems, washing machines)	27	43.5
Fencing (houses, tips, sewerage ponds)	9	14.5
Municipal services (street lighting, rubbish disposal, drainage)	7	11.3
Plant/Vehicle workshop (tools, machinery, tractors, equipment)	6	9.7
Environmental programs (greening, dust suppression)	5	8.1
Access (internal and access roads, vehicles, boats, airstrips)	4	6.5
Training (employment and business development)	3	4.8
Telecommunications (phones)	3	4.8
Health services (medical centre, detox centres, AEHWs, first aid kit)	3	4.8
Recreational facilities (sporting grounds, playgrounds)	2	3.2
Total	**62**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

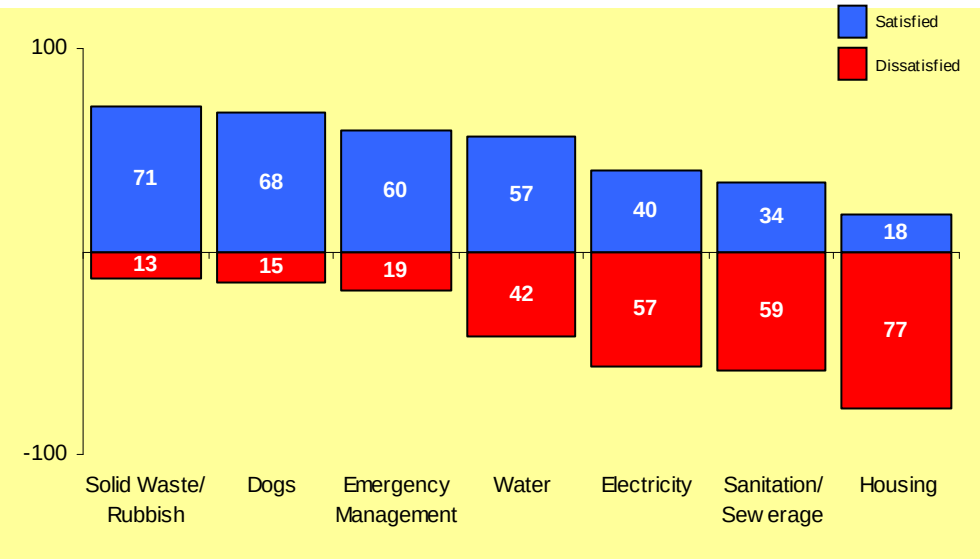
Table 4.54: Community Needs (prompted)

Identified Need	Communities	%
Housing	40	64.5
Electricity	31	50.0
Water	27	43.5
Dust	17	27.4
Sewerage	13	21.0
Emergency Management	10	16.1
Other - Pests/Vermin	10	16.1
Rubbish	9	14.5
Dogs	6	9.7
Total	**62**	

% may exceed 100% due to multiple responses being allowed for this question

When asked their **satisfaction** with each of the key environmental health areas, **housing**, **sanitation/sewerage** and **electricity** each record higher proportions of dissatisfied versus satisfied.

Figure 4.7: Community Satisfaction Summary

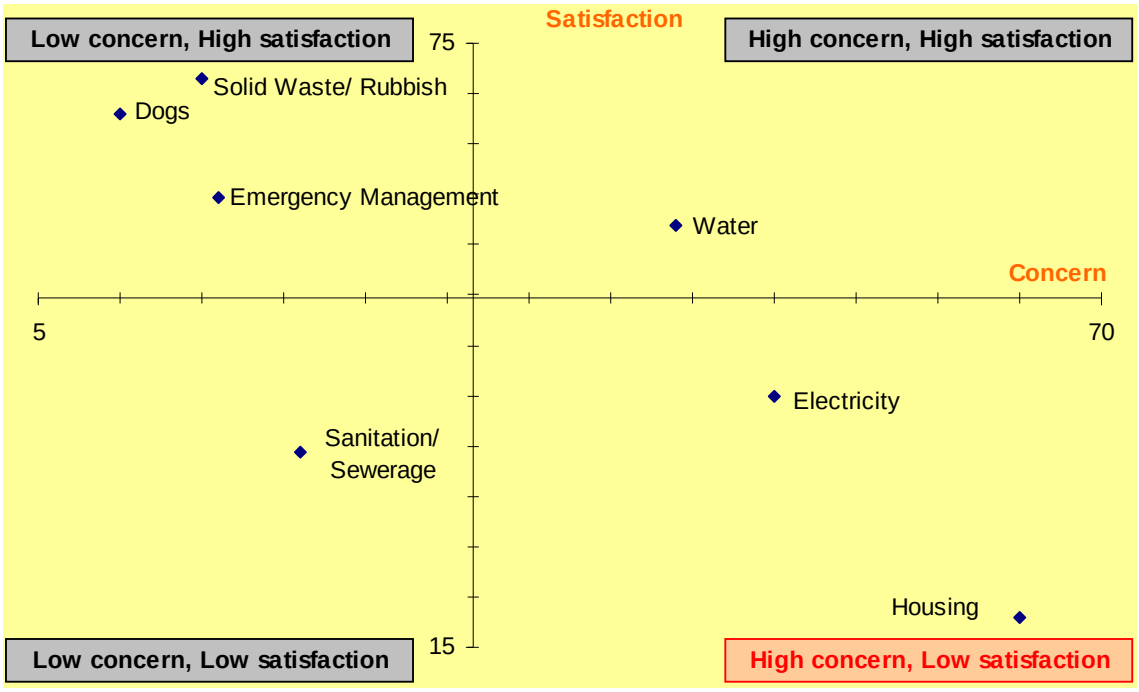


The matrix below combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — **Priority** to maintain
- Bottom right — High concern, low satisfaction — **Priority** to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** and **electricity** are the environmental health areas that record high concern but low satisfaction (the bottom right quadrant in Figure 4.8) and should thus be considered as two of the key priorities at a 'relative level' in the Broome region group. While Sanitation/Sewerage also records low satisfaction it records comparatively lower levels of concern (bottom left quadrant).

Figure 4.8: Community Concern and Satisfaction Summary



The discussion following provides further detail by individual communities in Broome.

4.4.2. Water

Six Broome communities (bolded in the following table) are in the top 20% of communities in Western Australia with usual populations of <100 in which **water** would be considered an action priority.

Overall in Broome;

- **Bores** are used by 96% of Broome communities with <20 people and 98% of communities with >=20 people.
    - In Jabir Jabir and Djaradjung, the main water supply is stored in **uncovered tanks**.
    - In two communities – Whulich and Nunju Yallet – the main water supply is **carted**.
- 94% of communities with usual populations of <20 record **no disinfection of drinking water** (compared to the total for this region of 81%). Similar proportions (94%) of small communities record **no monthly testing** (compared to the total for this region of 82%).
    - In four communities (Djarindjin, Bardi, Goombaragin and Budgarjook), **water quality issues** were identified in terms of *chemicals/heavy metals* (for the first three communities) and *microbiological* (for the final two communities).
- In 8 communities in Broome, there is **no reticulated water supply** to each dwelling (Gullaweed, Bindurrk, Goombaragin, Norman Creek, Mundjarri, Whulich, Nunju Yallet, Djibbinj).

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.55: Water

Pop<100	Pop	Score
Billard	**72**	**10.1**
Embulgun	**29**	**4.1**
Ngamakoon	**30**	**3.6**
Gulumonon	**20**	**2.4**
Gnylmarung	**15**	**1.9**
Wanamulnyndong	**20**	**1.6**
Gurrbalgun	17	1.5
Brunbrunganjal	19	1.5
Yandarinya	15	1.3
Neem	10	1.2

Base: Top 20% of communities identified

4.4.3. Electricity

One Broome community (bolded in the following table) is in the top 20% of communities in Western Australia with usual populations of <100 in which electricity would be considered an action priority.

However in total, half (56%) of communities in Broome consider the electricity supply unsatisfactory, compared to 36% of all Western Australian communities. The reported reasons for this are **lack of fuel** (23 communities), **generator too small** (14 communities), **lack of maintenance** (12 communities), **regular system failures** (9 communities) and **lack of storage** (3 communities).

Overall in Broome;

- There are only three Western Australian communities that record **no source of electricity**, and one of these is in Broome – **Bygnunn**.
- The charges for electricity usage are most likely incurred via a **chuck in system** (45 communities), with 7 communities having **individual meters/power cards**, 3 power bills and 8 communities where **individuals are not charged**.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.56: Electricity

Pop<100	Pop	Score
Billard	**72**	**2.9**
Ngamakoon	30	1.2
Embulgun	29	1.2
La Djadarr Bay	27	1.1
Budgarjook	20	0.8
Gulumonon	20	0.8
Brunbrunganjal	19	0.8
Gurrbalgun	17	0.7
Gumbarmun	15	0.6
Tappers Inlet	12	0.5

Base: Top 20% of communities identified

4.4.4. Housing

Five Broome communities with usual populations <100 (bolded in Table 4.58) are in the top 20% of communities in Western Australia in which **housing** would be considered an action priority. Three-quarters (77%) of communities in Broome record housing in the community as unsatisfactory.

Table 4.57: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Bardi	400	5.3	7.4
Bidyadanga	800	7.3	7.3
Djarindjin	260	5.7	5.8

Base: All communities identified

Table 4.58: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Ngamakoon	**30**	**3.8**	**30.0**
Goolarabooloo	**63**	**7.9**	**21.0**
Gnylmarung	**15**	**2.5**	**15.0**
Nyumwah	**10**	**3.3**	**10.0**
Munget	**10**	**2.0**	**10.0**
Brunbrunganjal	19	6.3	9.5
Rollah	8	2.7	8.0
Mudnunn	8	2.0	8.0
Loongabid	15	3.8	7.5

Base: Top 20% of communities identified

4.4.5. Solid Waste Disposal

Two Broome communities with usual populations >=100 and two communities with usual populations <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

Thirteen percent of communities in Broome record **unsatisfactory rubbish tip management**, which is lower than the figure recorded for total Western Australia (23%). However, One-third (33%) of communities with populations >20 in Broome record **high litter levels**, which is higher when compared to the total for Western Australia of communities this size of 21%.

Overall in Broome;

- There are six communities that record **using either the Broome tip or another community's tip;** namely Djugaragyn, Goombaragin, Yandarinya, Bells Point, Nillir Irbanjin and Mallingbar.
- And nine communities record a **rubbish tip capacity of less than six months** – Bindurrk, Murphy Creek, Embulgun, Bidyadanga, Red Shells, Tappers Inlet, Whulich, Djibbinj and Morard.
- Seven communities record a **site that is not suitable** – Ngamakoon, Mugnunn, Julgnunn, Loongabid, Tappers Inlet, Bidyadanga and Redshells.
    - However, Bidyadanga and Redshells are the only two of these communities to record that there is no suitable alternative site.
- Thirty four communities have **unwanted cars/car bodie**s in the community. Beagle Bay (30 cars/car bodies), Bidyadanga (30), Djarindjin (20), Billard (10) and Mia Maya (8) each record higher than average numbers of cars/car bodies in their community.

Table 4.59: Solid Waste Disposal

Pop>=100	Pop	Score
Bidyadanga	**800**	**80.0**
Bardi	**400**	**32.0**
Beagle Bay	270	21.6
Djarindjin	260	20.8

Base: Top 20% of communities identified

Table 4.60: Solid Waste Disposal

Pop<100	Pop	Score
Billard	**72**	**8.6**
Embulgun	**29**	**3.8**
Bobieding	16	1.3
Budgarjook	20	1.2
Ngamakoon	30	1.2
Wanamulnyndong	20	1.2

Base: Top 20% of communities identified

4.4.6. Sanitation/Sewerage

One Broome community with usual populations >=100 (bolded in Table 4.61) is in the top 20% of communities in Western Australia in which *sewerage treatment/disposal systems* would be considered an action priority.

Overall in Broome;

- There are six communities that record **only having access to pit toilets;** namely Mia Maya, Goombaragin, Norman Creek, Mudjarri, Whulich and Nunju Yallet. There is only one other community outside of Broome that records only having access to pit toilets, and this is in the Halls Creek region group.
- In one-quarter (27%, n=16), the internal **sewage reticulation system is not maintained** either by the community or the RAESP.
- Only a single community has access to a **drying pond for disposal of sludge**.
- Half (56%) of communities are not satisfied with the **current condition of community ablution facilities**.
- Three in five (59%) are not satisfied that the **current sewage system meets the needs of their community**. The most frequently stated reasons for dissatisfaction relate to *inadequate size* for the community (24 communities), *lack of maintenance* (7 communities) and *inadequate disposal facilities* (5 communities).

Table 4.61: Sanitation/Sewerage

Pop>=100	Pop	Score
Bidyadanga	**800**	**16.0**
Djarindjin	260	10.4
Bardi	400	8.0
Beagle Bay	270	5.4

Base: All communities identified

Table 4.62: Sanitation/Sewerage

Pop<100	Pop	Score
Middle Lagoon	9	0.2
Cockatoo	5	0.1

Base: All communities identified

4.4.7. Dust

Two Broome communities with usual populations >=100 and one community with a usual population <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Overall in Broome:

- Six communities record **excessive dust problems** – namely, Mercedes, Billard, Goombaragin, Neem, Cockatoo and Jabar Jabar.
    - Cockatoo is the only one of these communities to record a *revegetation or dust suppression program* – in the form of growing lawns/gardens/grass. The remaining five do not have such programs.
- Eight communities record **high dust problems** – Bindurrk, Wanamulnyndong, Djarindjin, Gurrabalgun, Djugaragyn, Embulgun, Tappers Inlet and Bobieding.
    - Tappers Inlet and Djugaragyn both record *revegetation or dust suppression programs*, with Djugaragyn recording both growing lawns/gardens/grass as well as gravelled areas/shell grit but the remaining six communities do not have such programs.

Table 4.63: Dust

Pop>=100	Pop	Score
Bidyadanga	**800**	**24.0**
Djarindjin	**260**	**13.0**
Beagle Bay	270	5.4

Base: All communities identified

Table 4.64: Dust

Pop<100	Pop	Score
Billard	**72**	**4.3**
Goolarabooloo	63	1.9
Embulgun	29	1.5
Lombadina	55	1.1
Wanamulnyndong	20	1.0
Ngamakoon	30	0.9
Gurrbalgun	17	0.9

Base: Top 20% of communities identified

4.4.8. Dogs

Three Broome communities with usual populations <100 (bolded in the following table) are in the top 20% of communities in Western Australia in which **dogs** would be considered an action priority.

Overall in Broome;

- Fourteen of the 54 communities responding **do not have a dog program**, but five of these communities' record 0 dogs in their community and five communities did not indicate whether there were dogs in the community.
    - Therefore, those communities with known dogs that do not have a dog program include Nillir Irbanjin (15 dogs), Mallingbar (10 dogs), Neem (6 dogs) and Yawuru (5 dogs).
- There are three communities with **high numbers of dogs** estimated in their community – Bidyadanga with an estimate of 600, Bardi with an estimate of 100 and Beagle Bay with an estimate of 70. In each of these three communities, there is a dog program for *Invomec/Moxidectin/Cydectin* and *Euthanasia* but there is no program for *sterilisation* or *Convinan (Proligestrone)*.
- In all communities where there is a dog program, it is implemented by the **EHO/AEHW/Ranger**. There are two communities that also record implementation by a **community member** (Djaradjung and Mercedes Cove) and five by **Regional EH Crew** (Lombadina, Djarindjin, Bardi, Beagle Bay and Bidyadanga).
- There are six communities that record the management of dog programs as **unsatisfactory** – Bindurrk, Djarindjin, Norman Creek, Embulgun, Bidyadanga and Tappers Inlet.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.65: No Dog Program in Communities

Pop<100	Pop	Score
Billard	**72**	**0.7**
Nillir Irbanjin	**61**	**0.6**
Mallingbar	**56**	**0.6**
Gullaweed	15	0.2
Yandarinya	14	0.1
Munget	10	0.1
Neem	10	0.1
Middle Lagoon	9	0.1
Morard	9	0.1
Goombaragin	7	0.1
Yawuru	7	0.1

Base: All communities identified

4.4.9. Emergency Management

Two Broome communities with usual populations >=100 and two with a usual population of <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Table 4.66: Emergency Management

Pop>=100	Pop	Score
Bidyadanga	**800**	**16**
Bardi	**400**	**8**
Djarindjin	260	2.6

Base: All communities identified

Table 4.67: Emergency Management

Pop<100	Pop	Score
Goolarabooloo	**63**	**1.3**
Billard	**72**	**0.7**
Nillir Irbanjin	61	0.6
Mallingbar	56	0.6
Gulumonon	20	0.4
Gurrbalgun	17	0.3
Ngamakoon	30	0.3
Gullaweed	15	0.3
Loongabid	15	0.3
Embulgun	29	0.3
La Djadarr Bay	27	0.3

Base: Top 20% of communities identified

All (100%) communities in the Broome region group are prone to **cyclones** and 97% are prone to **bush fires**, seven in ten (71%) are prone to **floods** and 18% record **tsunamis** as an alternative occurrence their community is prone to.

Despite this high recorded frequency, nineteen communities in the Broome region group have **neither emergency management plans in place for any of these hazards nor** an emergency evacuation plan. Seven of these are larger communities with usual populations of 20 or higher and are listed in Table 4.68 below. It should also be noted that there is also a significant lack of training and access to equipment in communities in the region group. There is acknowledgement that this is not optimal, with the majority of these communities recording dissatisfaction with their community's preparedness for emergency management.

Table 4.68: Emergency Management

Community	Pop	Training in emergency procedures	Has Fire fighting equipment	Belong to an LEMC	Satisfied with community preparedness
Beagle Bay	270	No	No	No	No
Djarindjin	260	No	No	No	No
Billard	72	No	No	No	Neutral
Nillir Irbanjin	61	No	No	No	No
Mallingbar	56	No	No	No	Neutral
Embulgun	29	No	No	No	No
Wanamulnyndong	20	No	No	No	No response
Bobieding	16	No	Yes	No	No
Tappers Inlet	12	Yes	No	No	No
Neem	10	No	No	No	No
Norman Creek	9	No	No	No	Neutral
Djibbinj	9	No	No	No	Neutral
Morard	0	No	No	No	Neutral
Jabir Jabir	6	No	No	No	No
Rollah	8	No	No	No	Yes
Frazier Downs	5	No	No	No	Neutral
Nygah Nygah	4	No	No	No	No
Carnot Springs	2	No	No	No	Neutral
Murphy Creek	1	No	No	No	No response

Base: Communities without emergency management procedures

Only seven communities in Broome have **training in emergency procedures** – Mercedes, Goombaragin, and Bidyadanga, Cockatoo and Tappers Inlet each have training in *FESA/fire management/fire fighting/fire drills/bushfire*. Cockatoo and Tappers Inlet also have training in *first aid* and Argyle/Tiwest has provided training in Burrguk and Djaradjung is self trained.

Only six communities in Broome have **fire fighting equipment** (10% of communities in the Broome region group). These communities are Djulburr, Bardi, Bidyadanga, Cockatoo, Bobieding and Goolarabooloo.

There are only two communities in Broome (3%) that belong to a LEMC.

4.4.10. Telecommunications

As shown in Table 4.69 below, there are four communities in Broome who **do not have access to either a pay or satellite phone**.

Table 4.69: Communities with Neither Payphones nor Satellite Phone

Community	Pop
Brunbrunganjal	19
Yandarinya	14
Rollah	8
Mia Maya	2
Total	**43**

Base: Community without access to pay or satellite phone

Table 4.70: Communities with Public Payphones Reported as Not Working

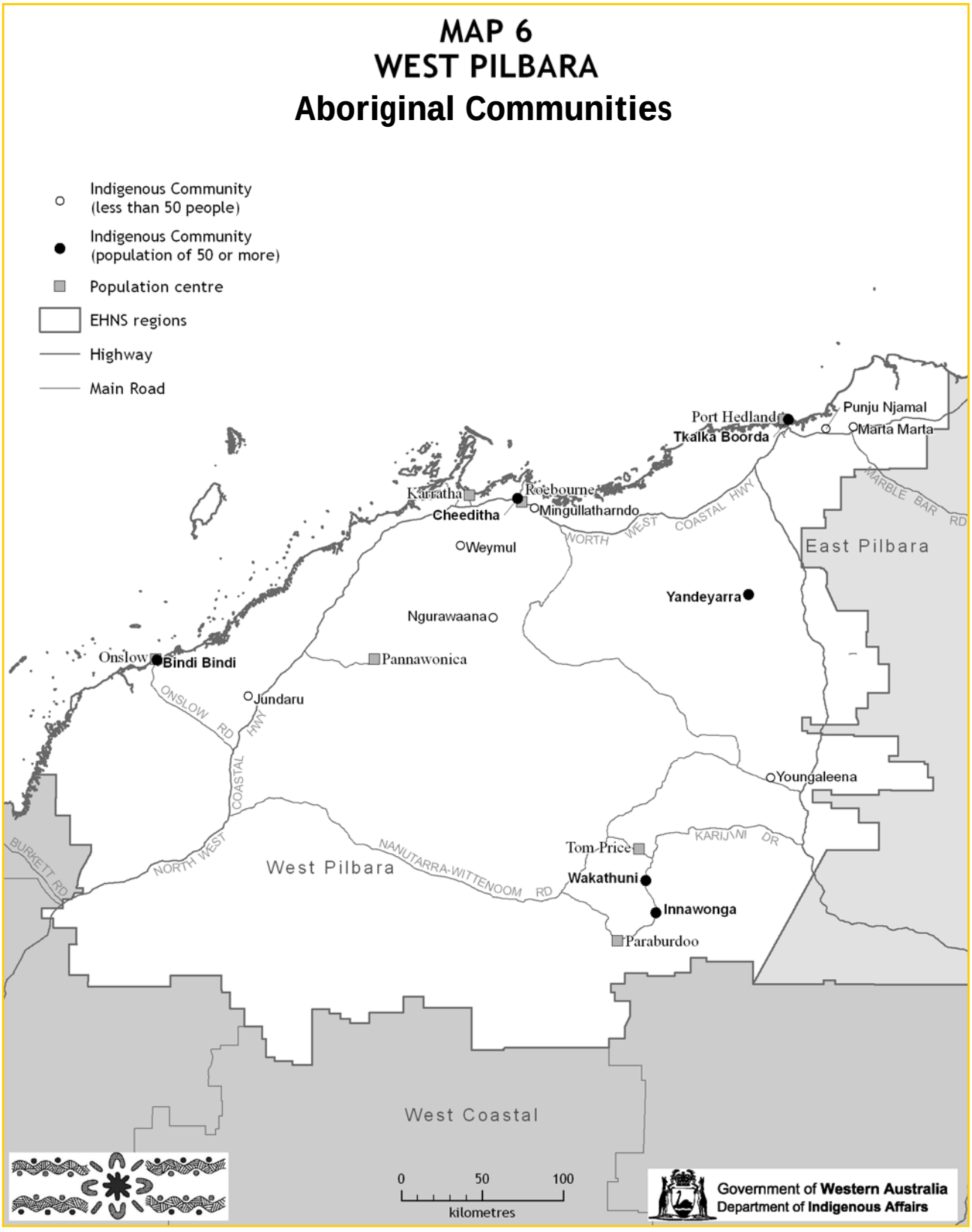
Community	Pop
La Djadarr Bay	27
Total	**27**

Base: Community with public payphone not working

In terms of access to other telecommunications facilities:

- Two communities in Broome have telecentres – Djarindjin and Bidyadanga.
- Three communities have video conference facilities – Djarandjin, Bidyadanga and Red Shells.
- Fourteen communities (23% of all Broome communities) are connected to the internet.

4.5. West Pilbara Region



Thirteen West Pilbara communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 629. Of these, the majority of communities (9) have usual populations of 20 or more people and 4 have populations of less than 20 people. Aboriginal languages were reportedly spoken in the majority (85%) of communities in the region with the most common language being:

- Banyjima
- Ngarluma
- Ngamal
- Yindjibarndi

West Pilbara Communities Participating in EHNS

Bindi Bindi (88)	Punju Njamal (8)
Cheeditha (54)	Tkalka Boorda (66)
Innawonga (50)	Wakathuni (72)
Jundaru (12)	Weymul (6)
Marta Marta (10)	Yandeyarra (180)
Mingullatharndo (29)	Youngaleena (24)
Ngurawaana (30)	

Numbers in brackets above denotes number of community members

Service communities or towns and the number of communities they service

Karratha (3)

Onslow (2)

Paraburdoo (1)

Port Hedland (3)

Roebourne (4)

South Hedland (2)

Tom Price (2)

Numbers in brackets above denotes number of communities serviced by that town

4.5.1. Perceived Community Need and Satisfaction

Table 4.71 below displays the communities' needs to improve conditions. Half of communities (54%) recorded **housing (new, repairs, housing for visitors and workers)** and this is considerably higher that any other spontaneously mentioned need. **Municipal services** (31%) is the second 'tier' of needs recorded.

Table 4.71: Community Needs (spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	7	53.8
Municipal services (street lighting, rubbish disposal, drainage)	4	30.8
Telecommunications (phones)	3	23.1
Environmental programs (greening, dust suppression)	3	23.1
Water, Power, Sewerage (improvements or provision)	3	23.1
Fencing (houses, tips, sewerage ponds)	2	15.4
Training (employment and business development)	2	15.4
Health services (medical centre, detox centres, AEHWs, first aid kit)	2	15.4
Plant/Vehicle workshop (tools, machinery, tractors, equipment)	2	15.4
Recreational facilities (sporting grounds, playgrounds)	2	15.4
Access (internal and access roads, vehicles, boats, airstrips)	2	15.4
No response	1	7.7
Other	1	7.7
Meeting areas (administration facilities, general purpose buildings)	1	7.7
Total	**13**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When prompted, **housing, dust** and **rubbish collection** are equally the highest recorded environmental health concern in West Pilbara.

Table 4.72: Community Needs (prompted)

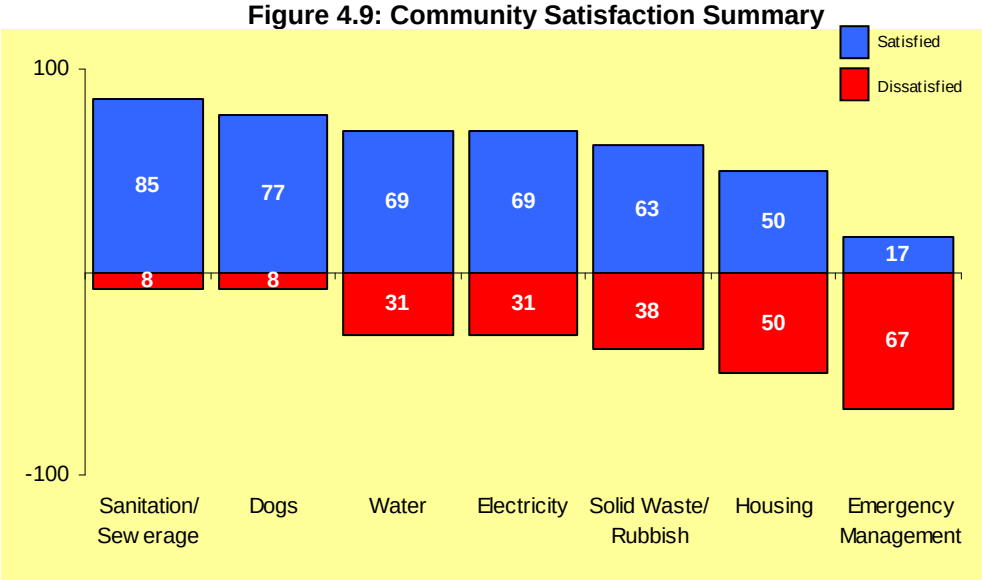
Identified Need	Communities	%
Housing/overcrowding/maintenance	7	54%
Dust	7	54%
Rubbish collection	7	54%
Electricity supply/interruptions/no power	5	39%
Dogs	5	39%
Other – pests/vermins/insects	5	39%
Water quality/supply	4	31%
Sewerage connections/plumbing	4	31%
Emergency management	4	31%
Total	**13**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their **satisfaction** with each of the key environmental health areas, **emergency management** and **housing** each record higher proportions of dissatisfaction versus satisfaction.

Figure 4.9: Community Satisfaction Summary



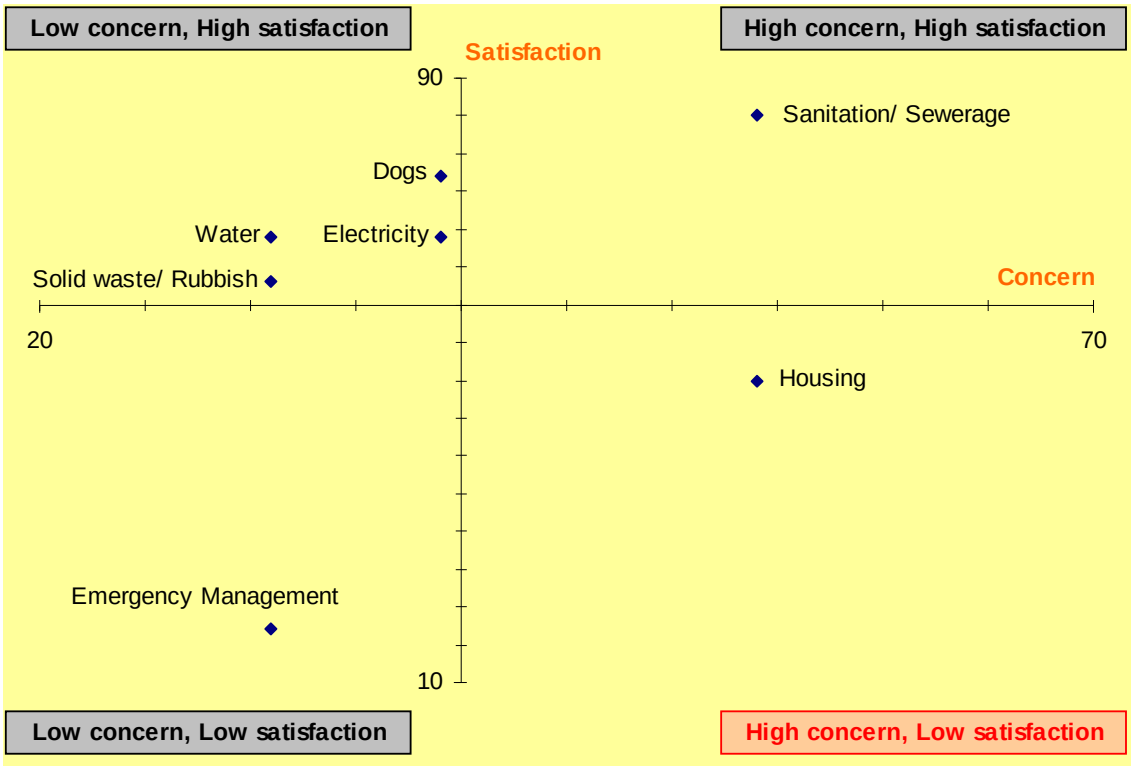
Base: All communities

The matrix overleaf combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quarter quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — Priority to maintain
- Bottom right — High concern, low satisfaction — Priority to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** is the key environmental health area that records high concern but low satisfaction (the bottom right quadrant in Figure 4.10 overleaf) and would thus be considered one of the key priorities at a 'relative level' in the West Pilbara region group.

Figure 4.10: Community Concern and Satisfaction Summary



4.5.2. Water

One West Pilbara community (bolded in the following table) is in the top 20% of communities in Western Australia with usual population of <100 in which **water** would be considered an action priority.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled below.

Table 4.73: Water

Pop<100	Pop	Score
Mingullatharndo	**29**	**5.8**
Jundaru	12	1.4
Wakathuni	72	1.1
Weymul	6	0.2

Base: All communities identified

Overall in West Pilbara:

- **Bores** are used by half of (54%) West Pilbara communities and 39% have a nearby **town** as their main drinking water supply.
  - In one community – Mingullatharndo – the main water is **carted**.
- One-quarter (23%) record no **water treatment/disinfection** for drinking water. In those where the water is treated (10 communities), the stated methods of water treatment/disinfection are Chlorine/CL (used in 7 communities) and UV (1 community)
- The majority of communities (92%) record **regular testing** of their water supply and only one records no monthly testing (Mingullatharndo – where the water is carted).
  - Microbiological issues were recorded in all eight communities which have been tested (Weymul, Ngurawaana, Jundaru, Innawonga, Bindi Bindi, Youngaleena, Wakathuni, Yandeyarra).
- All communities in West Pilbara (100%) recorded **reticulated water supply** to their dwelling which is primarily maintained by RAESP (8 communities).
- Seven in ten communities (69%) are **satisfied** with water supply to their dwelling. However, one particular community (Jundaru) records dissatisfaction for a number of key reasons: *poor maintenance/regular system failure, not enough supply* and *poor taste.*

4.5.3. Electricity

Two West Pilbara communities with usual population of <100 (bolded in Table 4.75) are in the top 20% of communities in which **electricity** would be considered an action priority.

Table 4.74: Electricity

Pop>=100	Pop	Score
Yandeyarra	180	7.2

Base: All communities identified

Table 4.75: Electricity

Pop<100	Pop	Score
Wakathuni	**72**	**2.9**
Innawonga	**50**	**2.0**
Mingullatharndo	29	1.2
Jundaru	12	0.5
Marta Marta	10	0.4
Weymul	6	0.2

Base: All communities identified

Overall in West Pilbara:

- Community generators are the primary **source of electricity** (in 9 communities) and all record having enough fuel stored for generators, except for one community.
- Two-thirds of communities (62%) report **regular interruptions** with the electricity supply.
    - Innawonga records **weekly interruptions** of electricity supply, while Weymul, Marta Marta, Wakathuni records **monthly interruptions**.
    - Equipment breakdown and lack of fuel are key reasons for interruptions with the electricity supply in these communities.
- Almost half (46%) have a **fixed levy/direct debit through rental payment** for their electricity within their community, 23% have **individual meters**, and 16% incur charges via a **chuck-in system**.
- The majority of communities (69%) are satisfied with the electricity supply in West Pilbara. However, there are four communities (Cheeditha, Jundaru, Innawonga, Wakathuni) (31%) in West Pilbara which consider the electricity supply unsatisfactory.

4.5.4. Housing

No West Pilbara communities are in the top 20% of communities in which **housing** would be considered an action priority.

Half of West Pilbara (50%) communities record housing in their community as satisfactory.

Table 4.76: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Yandeyarra	180	3.75	6.9

Base: All communities identified

Table 4.77: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Mingullatharndo	29	3.6	9.7
Innawonga	50	5.0	8.3
Weymul	6	0.7	6.0
Wakathuni	72	3.6	4.5
Tkalka Boorda	66	3.0	4.1
Youngaleena	24	3.0	4.0
Bindi Bindi	88	2.8	3.8
Cheeditha	54	3.6	3.6
Jundaru	12	2.4	3.0
Ngurawaana	30	3.0	3.0

Base: All communities identified

4.5.5. Solid Waste Disposal

No West Pilbara communities are in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

Table 4.78: Solid Waste Disposal

Pop>=100	Pop	Score
Yandeyarra	180	10.8

Base: All communities identified

Table 4.79: Solid Waste Disposal

Pop<100	Pop	Score
Mingullatharndo	29	2.9
Weymul	6	1.0
Punju Njamal	8	0.6
Jundaru	12	0.5

Base: All communities identified

Overall in West Pilbara:

- In the majority of communities (69%) community workers are **responsible** for household rubbish collection.
- Household rubbish is **collected** weekly in 77% of communities. However, in smaller communities such as Weymul and Punju Njamal it is collected monthly.
- Three-quarters (73%) have a mobile garage bin as a form of **receptacle** for rubbish, 37% use a 44 gallon drum and 28% record the use of bulk skips.
- There are five communities that record **using a town rubbish tip**, Cheeditha, Innawonga, Bindi Bindi, Wakathuni, and Tkalka Boorda.
- Those with rubbish tips consider it a **suitable site**, apart from one – Mingullatharndo which also records no suitable alternative site.
- In Wakathuni and Tkalka Boorda excessive litter levels are recorded, and high levels are recorded in Cheeditha and Bindi Bindi. However, two-thirds of communities (67%) record either moderate, low or no litter.
- Eight out of ten (82%) communities have **unwanted car bodies** in the community. The average is 11 cars in each of these communities, but Jundaru (120), Mingullatharndo (50), Ngurawaana (50), Wakathuni (50) each record higher than average numbers of cars/car bodies in their community.
- In total, 63% of communities are **satisfied** with the overall management of solid waste disposal in their community.

4.5.6. Sanitation/Sewerage

No West Pilbara communities are in the top 20% of communities in Western Australia in which **Sanitation/ Sewerage** would be considered an action priority.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.80: Sanitation/Sewerage

Pop<100	Pop	Score
Wakathuni	72	1.4
Jundaru	12	0.5

Base: All communities identified

Overall in West Pilbara:

- In half (54%) of communities, the sewerage is disposed of via septic tanks, 31% are connected to nearby town systems, and 16% via a community sewerage system.
- There are three communities that record having access to a **drying pond for sludge disposal**.
- Jundaru and Wakathuni record moderate to low levels of sewage overflow in their community. These communities also record the overall maintenance of the sewage lagoon as unsatisfactory.
- However in total, 92% of communities record the sewerage system in the community currently meets their needs.

4.5.7. Dust

No West Pilbara communities are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.81: Dust

Pop<100	Pop	Score
Tkalka Boorda	66	2.0
Bindi Bindi	88	0.9
Cheeditha	54	0.5
Innawonga	50	0.5
Jundaru	12	0.5
Marta Marta	10	0.3
Mingullatharndo	29	0.6
Ngurawaana	30	0.9
Punju Njamal	8	0.5
Wakathuni	72	1.4

Base: All communities identified

Overall in West Pilbara:

- Two communities record excessive **dust problems** – Weymul and Punju Njamal. Despite the excessive recorded dust levels a revegetation/suppression program does not exist in these communities.
- However, in three communities where high levels of dust problems are recorded (Mingullatharndo, Jundaru, Tkalka Boorda) two of these have already implemented a program - Mingullatharndo, Jundaru.

4.5.8. Dogs

Overall, each of the communities in the West Pilbara region has a dog program which is implemented by one of the following:

- AEHW; or
- EHO/Pilbara Shire.

Overall in West Pilbara:

- The most common programs used are Ivomec/Moxidectin/Cydectin (92%), Covinan (Proligestone) (85%), and Euthanasia Program (77%).
- The majority (77%) are **satisfied** with the management of regular dog programs in their community.

4.5.9. Emergency Management

One West Pilbara community with usual populations <100 (bolded in the following table) is in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Overall in West Pilbara:

- Almost all communities (93%) are prone to **cyclones** and 69% are prone to **bushfires**, and two in five (39%) are prone to **floods**.
- Despite the high recorded frequency, eight communities recorded **no emergency management** plans and two-thirds (62%) of communities have **no emergency evacuation plans.**
- Overall, three communities record fire fighting equipment in their community but none record training in any emergency procedure.
- Not surprisingly, 67% of communities are dissatisfied with their community's preparedness to respond to an emergency.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled below.

Table 4.82: Emergency Management

Pop<100	Pop	Score
Tkalka Boorda	**66**	**0.7**
Cheeditha	54	0.5
Innawonga	50	0.5
Youngaleena	24	0.5
Mingullatharndo	29	0.3
Marta Marta	10	0.1
Punju Njamal	8	0.1
Weymul	6	0.1

Base: Top 20% of communities identified

4.5.10. Telecommunications

As shown in table 4.83 below, there is one community in West Pilbara with a usual population >20 which does not have access to a pay or satellite phone.

Table 4.83: Communities (population>=20) that have Neither Payphones nor Satellite Phone

Community	Pop
Mingullatharndo	29

Base: Community without access to pay or satellite phone

In terms of access to other communication facilities:

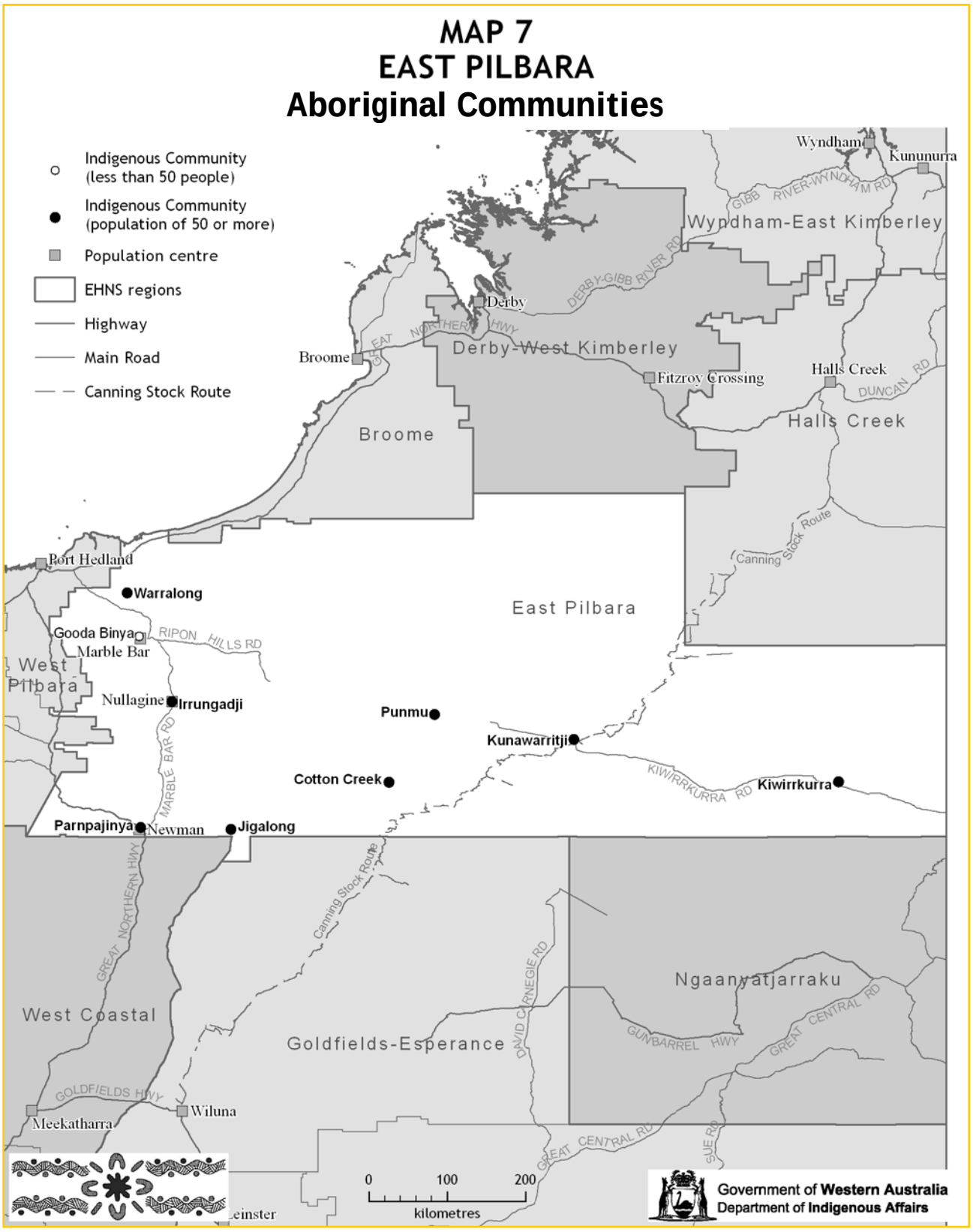
- Two communities (Weymul and Jundaru) are connected to the internet
- Eight communities have payphones, and seven of these have working payphones

Table 4.84: Communities with Public Payphones Reported as Not Working

Community	Pop
Tkalka Boorda	66

Base: Community with public payphone not working

4.6. East Pilbara Region



Nine East Pilbara communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 1,076. All of East Pilbara's communities have an Aboriginal language as the main language spoken in the community, with the exception of one (Gooda Binya). This represents 95% of the East Pilbara's usual population (1,027 people). The most common Aboriginal languages spoken were:

- Martu;
- Manyjilyjarra; and
- Warnman.

Communities Participating in EHNS

Cotton Creek (111)

Gooda Binya (49)

Irrungadji (150)

Jigalong (200)

Kiwirrkurra (165)

Kunawarritji (56)

Parnpajinya (60)

Punmu (130)

Warralong (155)

Numbers in bracket above denotes number of community members

Service communities or towns and the number of communities they service

Alice Springs (1)

Jigalong (2)

Kintore (1)

Marble Bar (4)

Newman (4)

Nullagine (1)

Port Hedland (2)

Punmu (1)

Numbers in bracket above denotes number of communities serviced by that town

4.6.1. Perceived Community Need and Satisfaction

Table 4.85 below displays the communities needs to improve conditions. Over half (56%) of the communities equally recorded **housing (new, repairs, housing for visitors and workers)** and **health services (medical centre, detox centres, AEHWs)**. However, in terms of first stated/most salient need, housing is the most frequently stated need (in 4 out of 9 communities it is the first mentioned as opposed to 2 communities for health services).

- Consistent with this, when prompted with a list showing concerns for the community and asked to select their main concern, housing is the most selected area (Table 4.86).

Table 4.85: Community Needs (spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	5	55.6
Health services (medical centre, detox centres, AEHWs, first aid kit)	5	55.6
Environmental programs (greening, dust suppression)	4	44.4
Municipal services (street lighting, rubbish disposal, drainage)	4	44.4
Water, Power, Sewerage (improvements or provision)	4	44.4
Training (employment and business development)	3	33.3
Plant/Vehicle workshop (tools, machinery, tractors, equipment)	2	22.2
Telecommunications (phones)	1	11.1
Health hardware (ablutions, hot water systems, washing machines)	1	11.1
Access (internal and access roads, vehicles, boats, airstrips)	1	11.1
No response	1	11.1
Total	**9**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

Table 4.86: Community Needs (prompted)

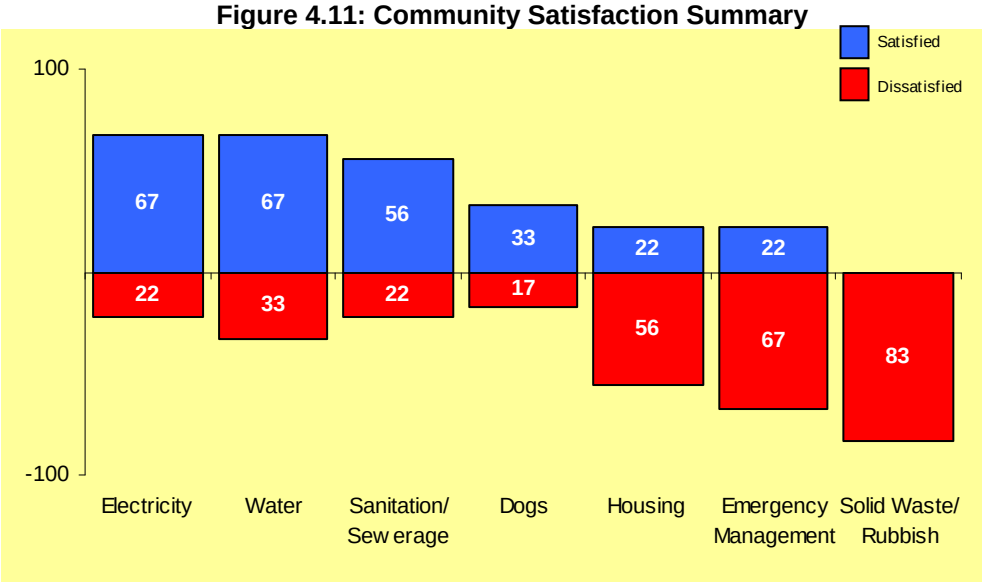
Identified Need	Communities	%
Housing/overcrowding/maintenance	9	100.0
Dust	7	77.7
Electricity supply/interruptions/no power	6	66.6
Rubbish collection	5	55.5
Dogs	5	55.5
Water quality/supply	4	44.4
Sewerage connections/plumbing	4	44.4
Emergency management	3	33.3
Other – pests/vermins	2	22.2
Total	**9**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their satisfaction with each of the key environmental health areas, **solid waste** records the lowest levels of satisfaction. **Housing** and **Emergency management** also record low levels of satisfaction and higher proportions of dissatisfied relative to those satisfied.

Figure 4.11: Community Satisfaction Summary



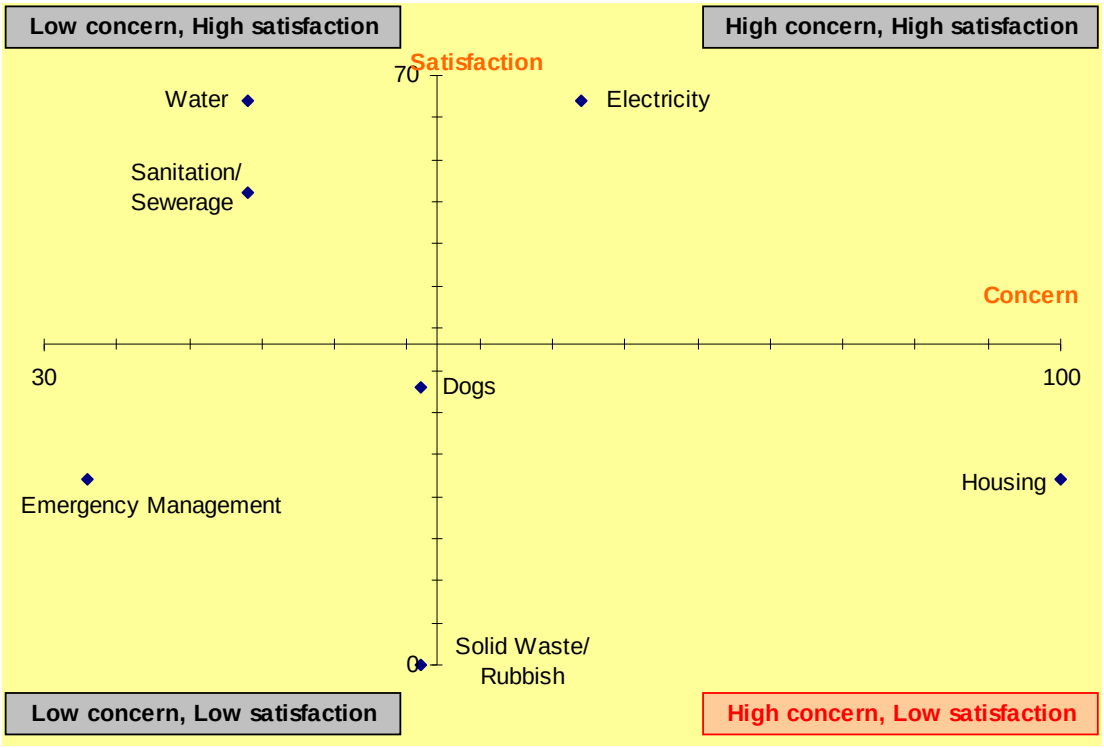
Base: All communities

The matrix below combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quarter quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — Priority to maintain
- Bottom right — High concern, low satisfaction — Priority to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** is the environmental health area that records high concern but low satisfaction (the bottom right quadrant in Figure 4.12) and would thus be considered as three of the key priorities at a 'relative level' in the East Pilbara region group.

Figure 4.12: Community Concern and Satisfaction Summary



The following discussion provides further detail by the individual communities in East Pilbara.

4.6.2. Water

One East Pilbara community (bolded in Table 4.87) is in the top 20% of communities in Western Australia with usual population of >=100 in which **water** would be considered an action priority.

Overall in East Pilbara:

- **Bores** are used by two out of three communities (66% of the usual population), and the main drinking water supply is stored in **covered tanks** (100%)
- All communities in the East Pilbara have regular disinfection of their water supplies. The main method used to disinfect the drinking water is Chlorine/CL (used by 5 communities).
- All communities (100%) claim their drinking water is **regularly tested** on a monthly basis. In two of these communities (Cotton Creek, Jigalong) chemical/heavy metal issues were identified.
- There is one community with a usual population of >20 that recorded **no reticulated water supply** to individual dwellings.
- The water system in all communities in East Pilbara is **maintained** by two organisations, RAESP (in 7 communities) and Water Corporation (in 2 communities).
- One in three communities (33%) record **dissatisfaction** with water supply which are: (Cotton Creek, Jigalong, Punmu).
    - In Cotton creek, the key reason for dissatisfaction relates to *poor taste/smell/colour/cloudy*
    - In Jigalong, a number of issues were mentioned: *poor maintenance, regular system failure, lack of power, not enough supply,* and *poor pressure*
    - While in Punmu, the problem is said to relate to *poor pressure*

Table 4.87: Water

Pop>=100	Pop	Score
Jigalong	**200**	**11.0**
Punmu	130	0.7
Cotton Creek	111	0.6

Base: All communities identified

4.6.3. Electricity

No East Pilbara communities are in the top 20% of communities in Western Australia in which **electricity** would be considered an action priority.

There are two communities that consider the electricity supply to be **unsatisfactory**:

- Cotton Creek due to a *lack of storage* in the community; and Kiwirrkurra for *regular system failure*

Overall in East Pilbara:

- Community generators are the primary **source of electricity** (in 6 communities) and most have enough fuel stored for generators. Cotton Creek is only community that records not having enough generator fuel.
- Over half of communities (56%), which affects a significant proportion of the usual population (71%), report **regular interruptions** with the electricity supply. Of these five communities, four mention the equipment as main reason.
    - In two communities (Cotton Creek, Kiwirrkurra), regular interruptions caused by equipment breakdown or damage occurs on a **weekly basis**.

Communities with a usual population of <100 did not have any priority needs and therefore have not been tabled.

Table 4.89: Electricity

Pop>=100	Pop	Score
Jigalong	200	8.0
Kiwirrkurra	165	6.6
Warralong	155	6.2
Punmu	130	5.2
Cotton Creek	111	4.4

Base: Top 20% of communities identified

4.6.4. Housing

One East Pilbara community (bolded in Table 4.90) with usual population >=100 is in the top 20% of communities in Western Australia in which housing would be considered an action priority. Over half of communities (56%) in East Pilbara record **housing** in their community as unsatisfactory.

Table 4.90: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Warralong	**155**	**8.2**	**10.3**
Kiwirrkurra	165	5.9	6.3
Cotton Creek	111	2.8	6.2
Irrungadji	150	5.2	5.2
Punmu	130	4.5	4.8
Jigalong	200	3.6	3.6

Base: All communities identified

Table 4.91: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Parnpajinya	60	4.6	4.6
Gooda Binya	49	3.3	3.5
Kunawarritji	56	3.3	3.3

Base: All communities identified

4.6.5. Solid Waste Disposal

Two East Pilbara communities with usual populations <100 (bolded in Table 4.93) are in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

Four in five (83%) communities in East Pilbara record **unsatisfactory rubbish tip management**, which is higher than that recorded for total Western Australia (23%).

- Unwanted car bodies are a contributing factor to this result. This average is 79 cars in each of these communities, but Warralong (200), Irrungadji (200) and Cotton Creek (200) each record a higher than average number of cars/car bodies in their community.
- Another priority issue is the excessive levels of litter recorded in Parnpajinya and Punmu, and high levels in three other communities (Warralong, Gooda Binya, and Kiwirrkurra).

Overall in East Pilbara:

- Community workers are mainly **responsible** for household rubbish collection (6 communities).
- Household rubbish is **collected weekly** in eight out of nine communities. Punmu is the only community where rubbish is collected fortnightly.
- Most communities have either a mobile garage bin (4 communities) or a 44 gallon drum (4 communities) as a form **receptacle** for rubbish.
    - However, there are six communities that record **times of non-collection** in the past year. The stated reasons for this relate to *no suitable vehicle* (4 communities) and *not organised well (2).*
- Three communities record using a **town rubbish tip** (Gooda Binya, Irrungadji, and Parnpajinya) and only one in six communities have a rubbish tip that is properly fenced.
- Two communities (Punmu and Kiwirrkurra) record that the tip dumping area is **not a suitable site**, but also record that there is an alternative appropriate site.
- And two communities mention a **rubbish tip capacity of less than 6 months** (Punmu, Warralong).

Table 4.92: Solid Waste Disposal

Pop>=100	Pop	Score
Kiwirrkurra	165	23.1
Punmu	130	22.1
Jigalong	200	16.0
Cotton Creek	111	13.3
Warralong	155	9.3

Base: All communities identified

Table 4.93: Solid Waste Disposal

Pop<100	Pop	Score
Kunawarritji	**56**	**5.0**
Parnpajinya	**60**	**3.6**

Base: All communities identified

4.6.6. Sanitation/Sewerage

There are no East Pilbara communities in the top 20% of communities in Western Australia in which **Sanitation/Sewerage** would be considered an action priority.

Overall in East Pilbara:

- Five communities have their sewage disposed of via septic tanks. One of these communities (Gooda Binya) also has access to pit toilets. Three communities drain their sewerage via a community sewerage system and one is connected to the town system.
- The sewerage system is maintained by the community or the RAESP in all communities in the East Pilbara region.
- Three communities mention the sewerage lagoons in their communities are fenced adequately. Of these however, Cotton Creek recorded the maintenance of the lagoons as unsatisfactory, and Punmu also recorded the maintenance of the lagoons as unsatisfactory as well as a high level of sewage overflow.
- Six communities are not satisfied with the **current condition of community ablution facilities**. Of these, two of the communities are not satisfied that the **current sewerage system meets the needs of their community**.

Communities with a usual population of <100 did not have any priority needs and therefore have not been tabled.

Table 4.94: Sanitation/Sewerage

Pop>=100	Pop	Score
Punmu	130	7.8
Jigalong	200	4.0
Cotton Creek	111	2.2

Base: All communities identified

4.6.7. Dust

One East Pilbara community (bolded in Table 4.95) with usual population >=100 is in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Table 4.95: Dust

Pop>=100	Pop	Score
Kiwirrkurra	**165**	**9.9**
Warralong	155	6.2
Cotton Creek	111	5.6
Punmu	130	5.2
Jigalong	200	4.0
Irrungadji	150	3.0

Base: All communities identified

Table 4.96: Dust

Pop<100	Pop	Score
Kunawarritji	56	1.7
Gooda Binya	49	1.5
Parnpajinya	60	1.2

Base: All communities identified

4.6.8. Dogs

One East Pilbara community with usual populations >=100 (bolded in the following tables) and one with a usual population of <100 are in the top 20% of communities in Western Australia in which **dogs** would be considered an action priority.

Table 4.97: No Dog Program in Communities

Pop>=100	Pop	Score
Cotton Creek	**111**	**1.1**

Base: All communities identified

Table 4.98: No Dog Program in Communities

Pop<100	Pop	Score
Kunawarritji	**56**	**0.6**

Base: All communities identified

Overall in East Pilbara:

- Seven out of the nine communities **have a dog program** and all record using the Ivomec/Moxtidectin/Cydectin program.
- The communities in Table 4.97 and Table 4.98 above do not **have a dog program**, but they both estimate a number of dogs in their community (Cotton Creek -150 and Kunawarritji - 40).
- The **average number of dogs** recorded in communities is 92. There are four communities with a higher estimated number than this, all of which have a dog program in place, except for Cotton Creek as mentioned above.
- In all communities where there is a dog program, it is implemented by **EHO/Ranger**.
- Only one community recorded the management of the dog program as **unsatisfactory**.

4.6.9. Emergency Management

One East Pilbara community with usual populations >=100 (bolded in Table 4.99) is in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Table 4.99: Emergency Management

Pop>=100	Pop	Score
Irrungadji	**150**	**3.0**
Cotton Creek	111	2.2
Jigalong	200	2.0
Warralong	155	1.6
Punmu	130	1.3

Base: All communities identified

Table 4.100: Emergency Management

Pop<100	Pop	Score
Parnpajinya	60	1.2
Kunawarritji	56	0.6

Base: All communities identified

Three-quarters (78%) of communities are prone to **floods**, 66% are prone to **bushfires**, and half (56%) record being prone to **cyclones**.

Despite the high propensity of floods and bushfires in the region, two-thirds of communities do not have an emergency management plan in place to handle these occurrences (71% and 67% respectively).

Seven out of nine communities in the East Pilbara region have **no emergency evacuation plans** in place for natural disasters, and only two communities record the training of emergency management procedures taking place in their community - Kunawarritji, Kiwirrkurra.

While a number of communities are dissatisfied with the level of emergency management preparedness, there are two communities that are satisfied with the emergency management plans and procedures (Gooda Binya, Irrungadji).

4.6.10. Telecommunications

Eight communities in East Pilbara have public pay phones (Cotton Creek is the one community without them), but as shown in the following table, there are two communities in which they are not working.

Table 4.101: Communities with Public Payphones Reported as Not Working

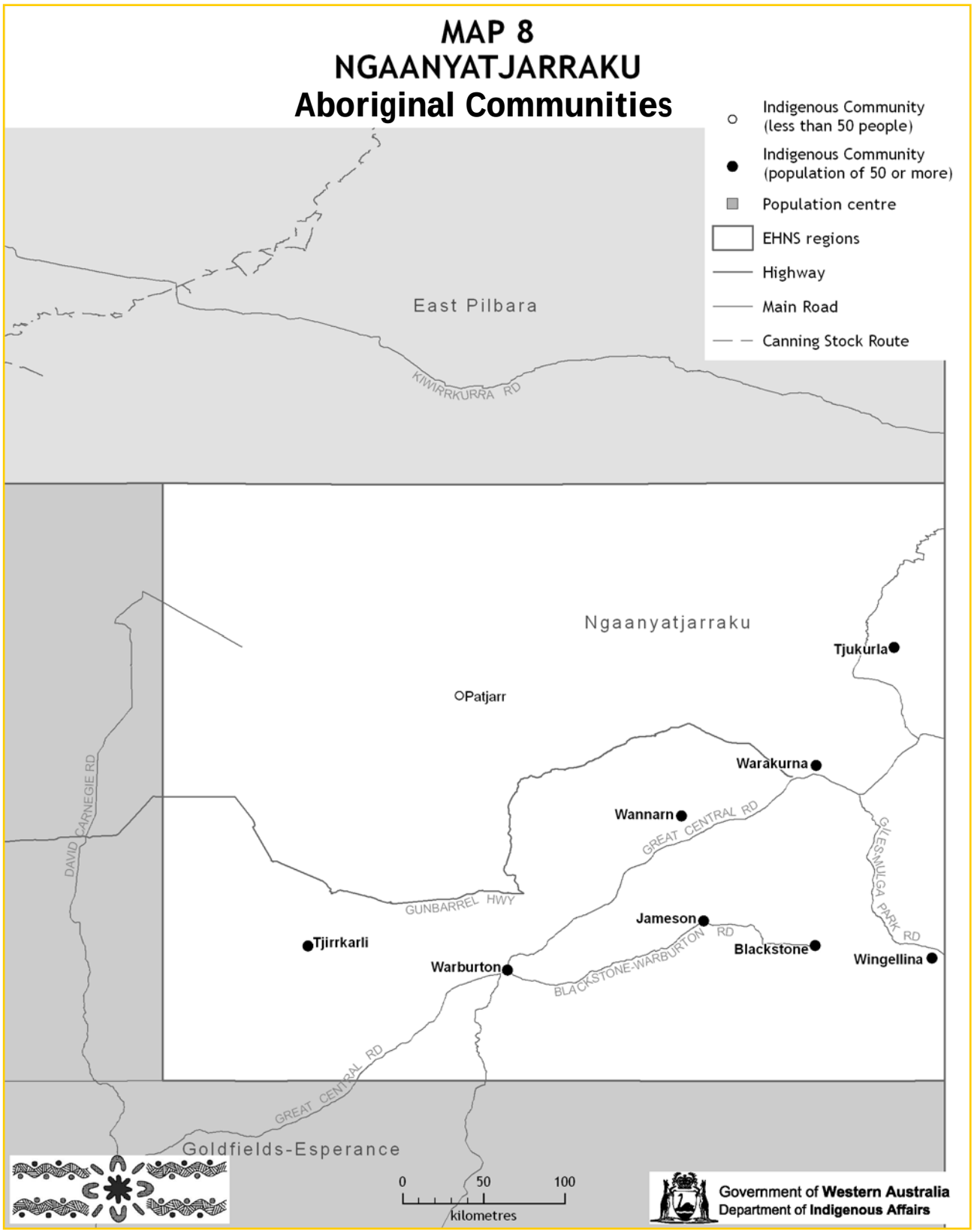
Community	Pop
Warralong	155
Irrungadji	150
Total	**305**

Base: Communities with public payphone not working

In terms of access to other telecommunication facilities:

- Three communities are connected to the internet – Irrungadji, Jigalong, Punmu
- Two communities have video teleconferencing facilities – Cotton Creek, Jigalong
- Four communities have a satellite phone – Cotton Creek, Jigalong, Punmu, Kunawarritji

4.7. Ngaanyatjarraku Region



Nine Ngaanyatjarraku communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 1,537. Of these, the majority (6) have usual populations of 100 or more people and 3 have usual populations of less than 100 people.

In all of the Ngaanyatjarraku communities (100%) the Ngaanyatjarra Aboriginal language is the primary language spoken in this region.

Communities Participating in EHNS

Blackstone (120)

Jameson (115)

Patjarr (30)

Tjirrkarli (62)

Tjukurla (67)

Wannarn (109)

Warakurna (168)

Warburton (719)

Wingellina (147)

Numbers in brackets above denotes number of community members

Service communities or towns and the number of communities they service

Warakurna (2)

Warburton (4)

Wingellina (3)

Numbers in brackets above denotes number of communities serviced by that town

4.7.1. Perceived Community Need and Satisfaction

Table 4.102 below displays the communities needs to improve conditions. Two-thirds of communities (67%) recorded **housing (new, repairs, housing for visitors and workers)**. This is the most frequently stated needs – particularly in terms of being the first state/most salient need (in 5 communities it is the first mentioned).

- Consistent with this, when prompted with a list showing environmental concerns for the community and asked to select their main community need, housing is the second most selected area (Table 4.103).

Dust is also cited as a perceived main area of need in eight of the nine communities.

Table 4.102: Community Needs (spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	6	66.7
Access (internal and access roads, vehicles, boats, airstrips)	4	44.4
Health services (medical centre, detox centres, AEHWs, first aid kits)	3	33.3
Meeting areas (administration facilities, general purpose buildings)	2	22.2
Recreational facilities (sporting grounds, playgrounds)	2	22.2
Water, Power, Sewerage (improvements or provision)	2	22.2
Training (employment and business development)	1	11.1
Municipal services (street lighting, rubbish disposal, drainage)	1	11.1
Total	**9**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When prompted, **dust** is also the highest recorded environmental health concerns (89%). Housing (78%), dogs (67%) and emergency management (67%) is also listed as a major concern.

Table 4.103: Community Needs (prompted)

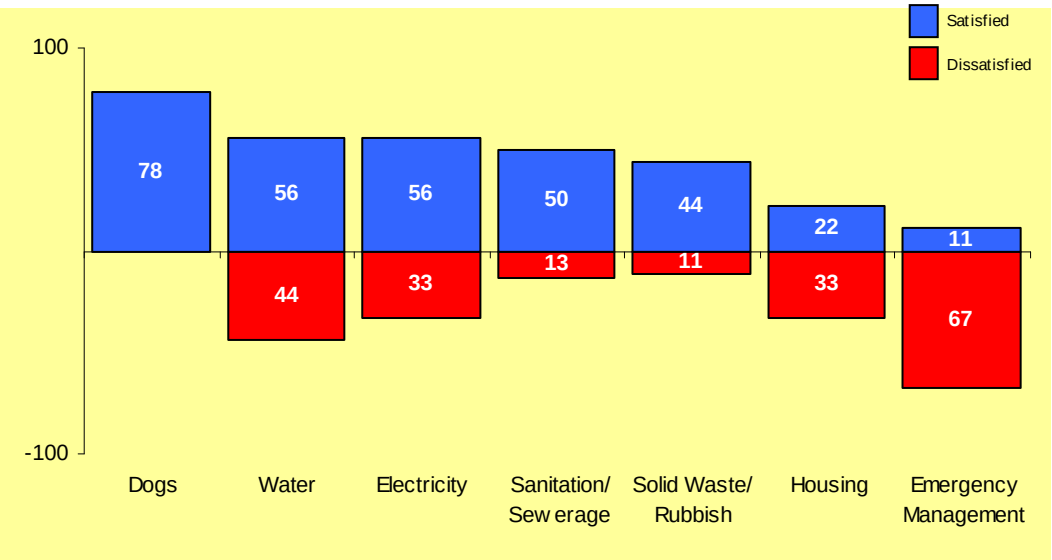
Identified Need	Communities	%
Dust	8	88.9
Housing/overcrowding/maintenance	7	77.8
Dogs	6	66.7
Emergency management	6	66.7
Water quality/supply	5	55.6
Rubbish collection	5	55.6
Electricity supply/interruptions/no power	4	44.4
Sewerage connections/plumbing	1	11.1
Total	**9**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their **satisfaction** with each of the key environmental health areas, **emergency management**, **water supply**, **electricity supply** and **housing** each record the highest proportions of dissatisfaction.

Figure 4.13: Community Satisfaction Summary



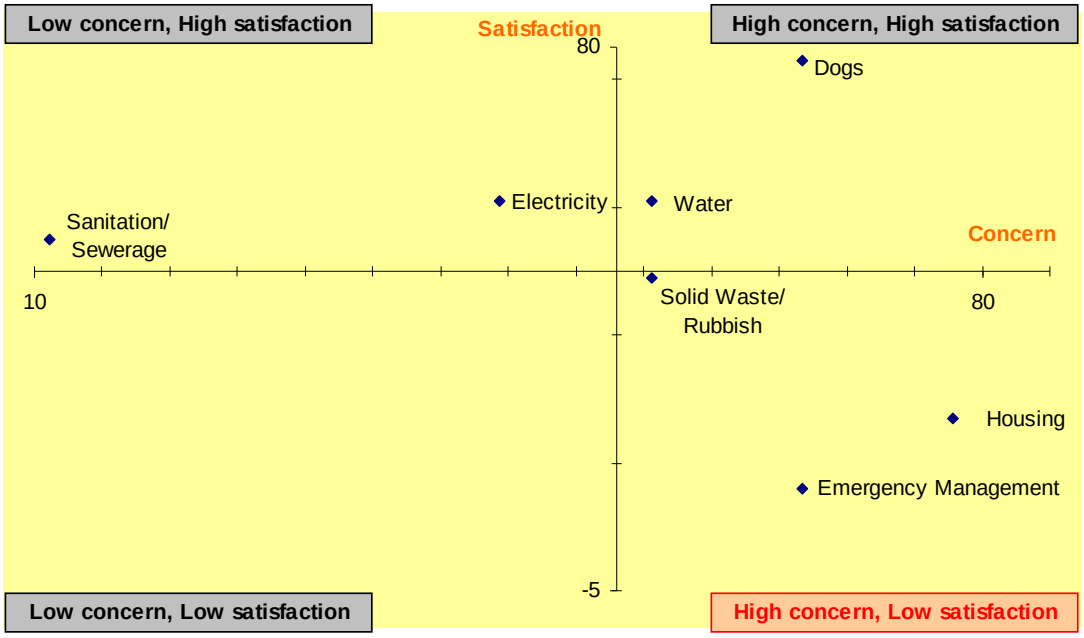
Base: All communities

The matrix below combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — **Priority** to maintain
- Bottom right — High concern, low satisfaction — **Priority** to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** and **emergency management** are the environmental health areas that record highest concern but low satisfaction (the bottom right quadrant in Figure 4.14) and should thus be considered two of the key priorities at a 'relative level' in the Ngaanyatjarraku region group.

Figure 4.14: Community Concern and Satisfaction Summary



4.7.2. Water

One Ngaanyatjarraku community (bolded in the following table) is in the top 20% of communities in Western Australia with usual population of >=100 in which **water** would be considered an action priority. Overall 44% of communities are dissatisfied with the water supply, thus attributing to the below identified communities being listed as action priorities.

Overall in Ngaanyatjarraku;

- **Bores** are used by 100% of all Ngaanyatjarraku communities. In all communities the main water supply is stored in **covered tanks**.
- In 100% of all Ngaanyatjarraku communities, they use water treatment/disinfection for drinking water. All communities record **monthly testing**
- In all communities in Ngaanyatjarraku, there is **reticulated water supply** to each dwelling
- In all communities, the water system is **maintained** by the *RAESP regional service provider*

Communities with a usual population of <100 did not have any priority needs and therefore have not been tabled.

Table 4.104: Water

Pop>=100	Pop	Score
Warburton	**719**	**10.8**
Wingellina	**147**	**6.6**
Wannarn	109	1.6

Base: All communities identified

4.7.3. Electricity

One Ngaanyatjarraku community with usual population of >=100 (bolded in Table 4.105) is in the top 20% of communities in Western Australia in which electricity would be considered a priority to address. Furthermore one other Ngaanyatjarraku community is in the top 20% of communities in Western Australia with usual populations of <100 (Bolded in Table 4.106) in which **electricity** would be considered an action priority.

In total, 33% of communities in Ngaanyatjarraku consider the electricity supply unsatisfactory, compared to 36% of all Western Australian communities. The stated reasons for this are that the **generator too small** (3 communities) and there is **regular system failures** (1 community).

Overall in Ngaanyatjarraku;

- All communities use community generators, except for the Patjarr community who uses a domestic generator.
- The charges for electricity usage are most likely incurred via a **fixed levy/direct debit through rental payment** (6 communities). Individuals in one community (Blackstone) are not charged by the community.

Table 4.105: Electricity

Pop>=100	Pop	Score
Warburton	**719**	**28.8**
Warakurna	168	6.7
Wingellina	147	5.9
Jameson	115	4.6
Wannarn	109	4.4

Base: All communities identified

Table 4.106: Electricity

Pop<100	Pop	Score
Tjirrkarli	**62**	**2.5**
Patjarr	30	1.2

Base: All communities identified

4.7.4. Housing

No Ngaanyatjarraku community is in the top 20% of communities in Western Australia in which **housing** would be considered an action priority.

One in three communities (33%) in Ngaanyatjarraku record housing in the community as unsatisfactory.

Table 4.107: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Warburton	719	5.7	6.8
Warakurna	168	4.7	5.1
Jameson	115	3.8	3.8
Blackstone	120	3.3	3.3
Wingellina	147	2.7	2.9
Wannarn	109	2.6	2.7

Base: All communities identified

Table 4.108: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Tjukurla	67	3.4	4.8
Tjirrkarli	62	3.4	3.4
Patjarr	30	1.2	3.0

Base: All communities identified

4.7.5. Solid Waste Disposal

One Ngaanyatjarraku community with usual population >=100 (bolded in Table 4.109) is in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority. Furthermore two communities with usual populations of <100 (bolded in Table 4.110) are in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

One community (11%) reported they receive **unsatisfactory rubbish tip management**, which is lower than that recorded for total Western Australia (23%).

Overall in Ngaanyatjarraku;

- All communities record **having a rubbish tip**, namely *dug out pits* (except for Warburton which has a surface tip).
- All communities record a **rubbish tip capacity of more than twelve months**.
- All communities record that the **site that is suitable for tip dumping**.
- Six out of nine communities have **unwanted cars/car bodie**s in the community.

Table 4.109: Solid Waste Disposal

Pop>=100	Pop	Score
Warburton	**719**	**107.9**
Warakurna	168	10.1
Wingellina	147	8.8
Blackstone	120	7.2
Jameson	115	6.9
Wannarn	109	6.5

Base: All communities identified

Table 4.110: Solid Waste Disposal

Pop<100	Pop	Score
Tjukurla	**67**	**4.0**
Tjirrkarli	**62**	**3.7**
Patjarr	30	2.4

Base: All communities identified

4.7.6. Sanitation/Sewerage

One Ngaanyatjarraku community with a usual population >=100 (bolded in the following table) is in the top 20% of communities in Western Australia in which **Sanitation/Sewerage** would be considered an action priority.

Overall in Ngaanyatjarraku;

- Most communities have access to septic tank/leach drains or community sewerage systems.
- All communities have their **sewage reticulation system maintained** by the RAESP Regional Service Provider.
- Three communities have access to a **drying pond for disposal of sludge.**
- Four in five communities (86%) are not satisfied with the **current condition of community ablution facilities**.
- One community (Wingellina) is not satisfied that the **current sewage system meets the needs of their community**. The reason for dissatisfaction relates to *lack of maintenance*.

Communities with a usual population of <100 did not have any priority needs and therefore have not been tabled.

Table 4.111: Sanitation/Sewerage

Pop>=100	Pop	Score
Warburton	**719**	**28.8**
Blackstone	120	2.4

Base: All communities identified

4.7.7. Dust

One Ngaanyatjarraku community with usual population >=100 and two communities with a usual population <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Overall in Ngaanyatjarraku:

- Three communities record **excessive dust problems** namely, Warakurna, Patjarr and Wannarn.
- Four communities record **high dust problems** – Warburton, Wingellina, Tjirrkarli and Tjukurla.
    - These communities (excluding Wingellina) have a *revegetation or dust suppression program* in place and in Warburton; they are planting trees growing lawns/garden/grass.

Table 4.112: Dust

Pop>=100	Pop	Score
Warburton	**719**	**21.6**
Wingellina	147	7.4
Warakurna	168	6.7
Wannarn	109	6.5
Blackstone	120	2.4
Jameson	115	2.3

Base: All communities identified

Table 4.113: Dust

Pop<100	Pop	Score
Tjukurla	**67**	**2.7**
Tjirrkarli	**62**	**2.5**
Patjarr	30	1.8

Base: All communities identified

4.7.8. Dogs

No communities in the Ngaanyatjarraku region have recorded a priority score for the dog programs calculation. However, all communities do have a dog program and have each of the following implemented in their community:

- Ivomec/Moxidectin/Cydectin;
- Sterilisation;
- Covinan (Proligestone); and
- Euthanasia Program.

In eight of the nine communities, the program is implemented by AEHW and most are satisfied (78%) with the management of the program.

4.7.9. Emergency Management

No Ngaanyatjarraku communities are in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Communities with a usual population of <100 did not have any priority needs and therefore have not been tabled.

Table 4.114: Emergency Management

Pop>=100	Pop	Score
Wannarn	109	1.1

Base: All communities identified

4.7.10. Telecommunications

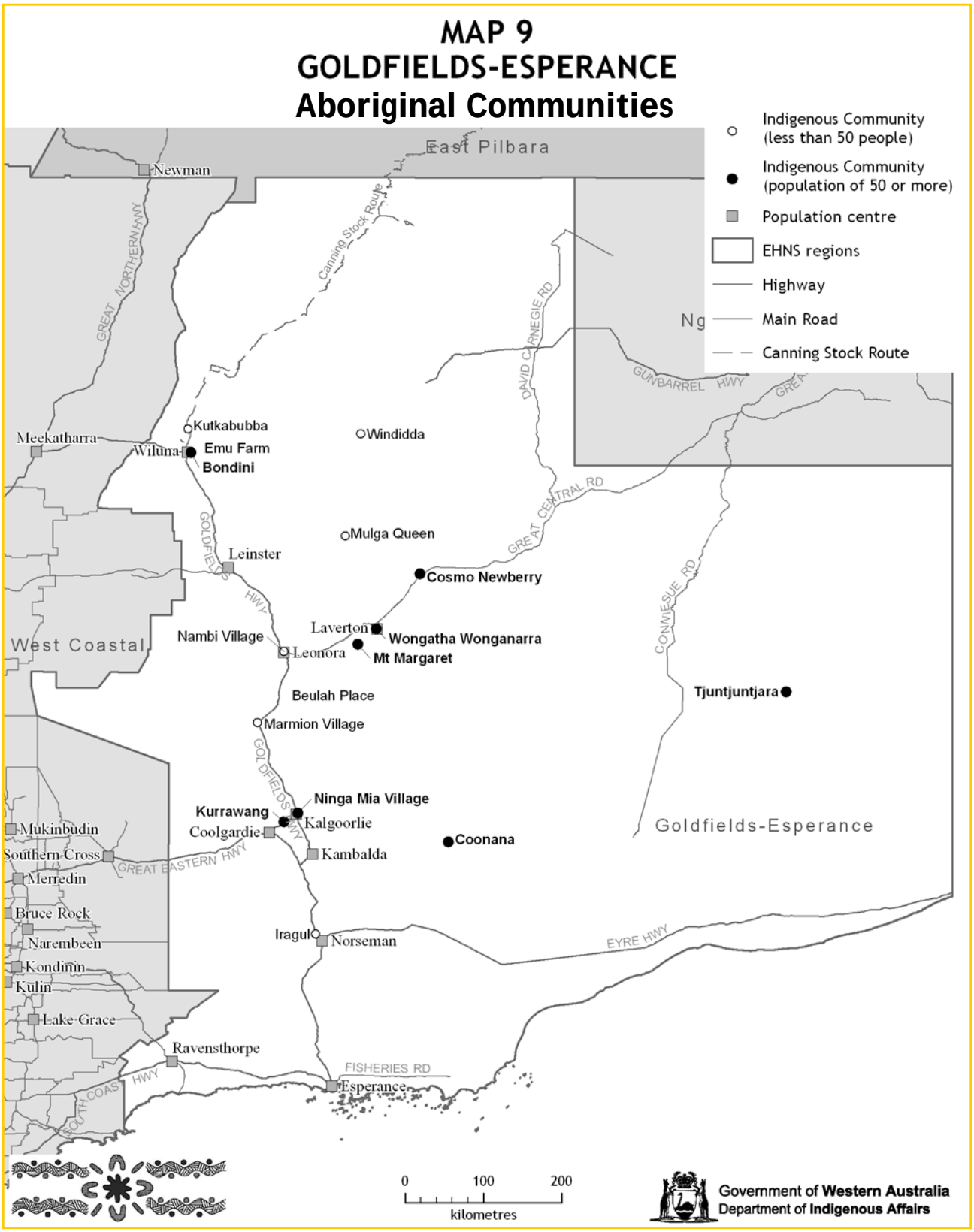
All communities (except for one) have access to a community payphone that works. This community (Tjukurla) however reports having access to a community satellite phone.

Table 4.115: Communities with Public Payphones Reported as Not Working

Community	Pop
Tjukurla	67
Total	**67**

Base: Community with public payphone not working

4.8. Goldfields-Esperance Region



Fourteen Goldfields-Esperance communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 1,015. Of these, the majority (13) have usual populations of 20 or more people and 1 has a population of less than 20 people.

Three of Goldfields-Esperance's medium sized communities (Tjuntjuntjara, Ninga Mia Village, and Coonana) have an Aboriginal language as their main language. This equates to 252 people (25% of Goldfields-Esperance's usual population). Wongatha and Martu were the most commonly reported Aboriginal languages in the Goldfields-Esperance region.

Communities Participating in EHNS

Bondini (100)

Coonana (80)

Cosmo Newberry (87)

Iragul (15)

Kurrawang (92)

Kutkabubba (47)

Marmion Village (49)

Mt Margaret (76)

Mulga Queen (45)

Nambi Village (27)

Ninga Mia Village (70)

Tjuntjuntjara (102)

Windidda (35)

Wongatha Wonganarra (190)

Service communities or towns and the number of communities they service

Coolgardie (1)

Kalgoorlie (5)

Laverton (4)

Leonora (3)

Menzies (1)

Norseman (1)

Wiluna (3)

4.8.1. Perceived Community Need and Satisfaction

Table 4.116 below displays the communities needs to improve conditions. One-third of communities (36%) recorded **housing (new, repairs, housing for visitors and workers)**. This is the most frequently stated need, particularly in terms of being the first stated/most salient need (in 7 communities it is the first mentioned).

- Consistent with this, when prompted with a list showing environmental concerns for the community and asked to select their main, housing is the most selected area (Table 4.117).

Dust and **Sewerage connections/plumbing** are also cited as perceived areas of need (Table 4.117).

Table 4.116: Community Needs (Spontaneous)

Identified Need	Communities	%
Housing (new. repairs, housing for visitors and workers)	5	35.7
Municipal services (street lighting, rubbish disposal, drainage)	3	21.4
Other	2	14.3
Health services (medical centre, detox centres, AEHWs, first aid kits)	2	14.3
Environmental programs (greening, dust suppression)	2	14.3
Access (internal and access roads, vehicles, boats, airstrips)	2	14.3
Water, Power, Sewerage (improvements or provision)	2	14.3
Meeting areas (administration facilities, general purpose buildings)	1	7.1
Telecommunications (phones)	1	7.1
Recreational facilities (sporting grounds, playgrounds)	1	7.1
Total	**16**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

Table 4.117: Community Needs (prompted)

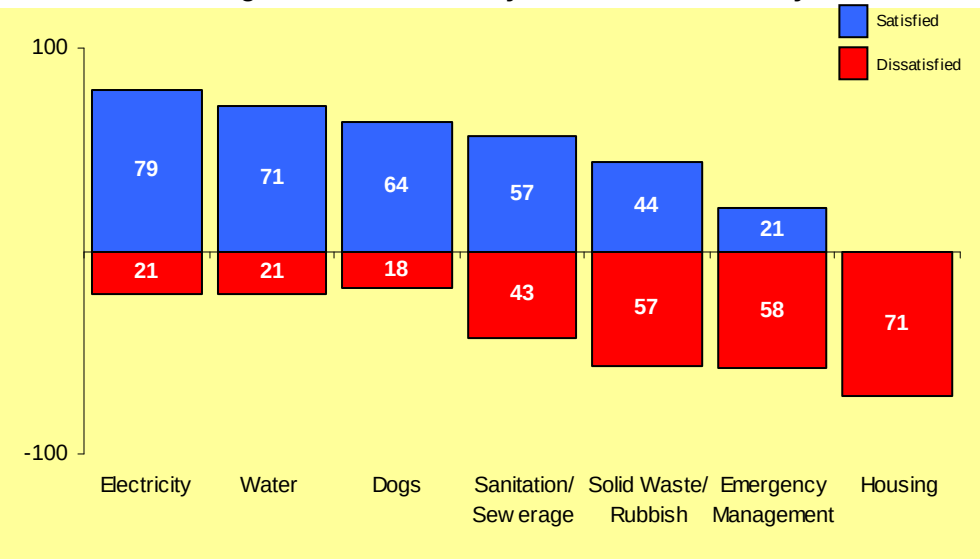
Identified Need	Communities	%
Housing/overcrowding/maintenance	13	81
Dust	11	69
Sewerage connections/plumbing	10	63
Emergency management	8	50
Water quality/supply	6	38
Other – pests/vermins/insects	6	38
Electricity supply/interruptions/no power	5	31
Rubbish collection	4	25
Dogs	3	19
Total	**16**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their satisfaction with each of the key environmental health areas, **housing** record the highest levels of dissatisfaction and **emergency management** record higher proportions of dissatisfied relative to those satisfied.

Figure 4.15: Community Satisfaction Summary



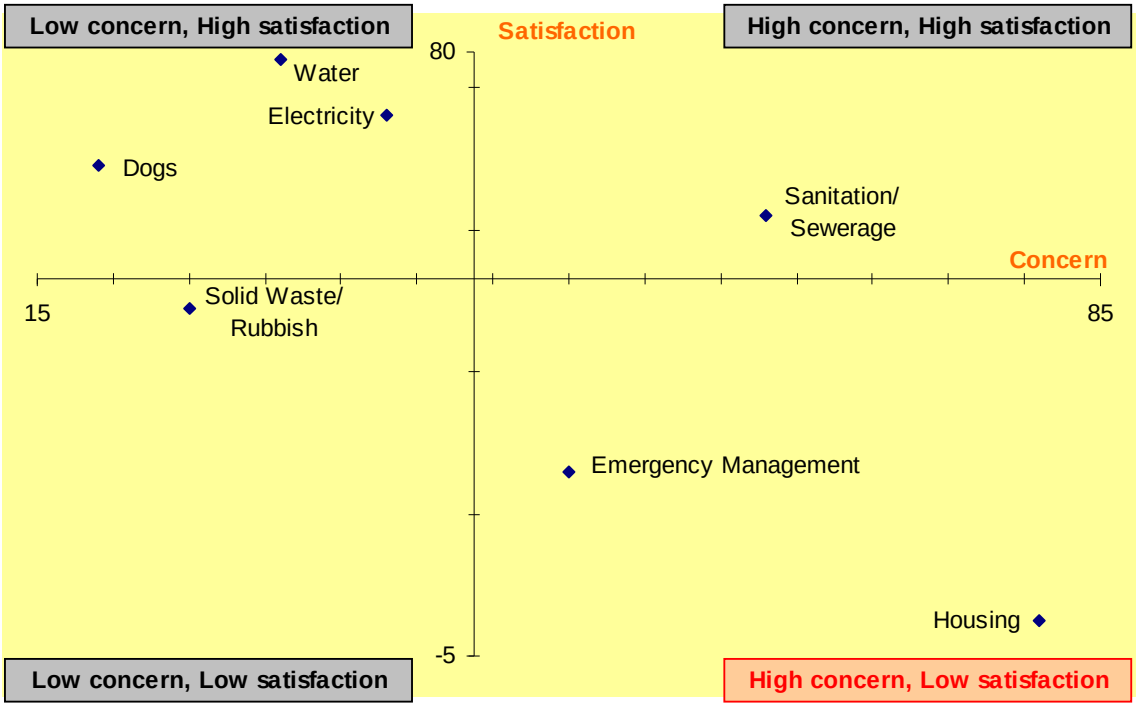
Base: All communities

The matrix below combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — **Priority** to maintain
- Bottom right — High concern, low satisfaction — **Priority** to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** and **emergency management** are the environmental health areas that record high concern but low satisfaction (the bottom right quadrant in Figure 4.16) and should thus be considered two of the key priorities at a 'relative level' in the Goldfields-Esperance region group.

Figure 4.16: Community Concern and Satisfaction Summary



4.8.2. Water

Two Goldfields-Esperance communities with a usual population of <100 (bolded in Table 4.119) are in the top 20% of communities in Western Australia in which **water** would be considered an action priority.

Table 4.118: Water

Pop>=100	Pop	Score
Tjuntjuntjara	102	3.1

Base: All communities identified

Table 4.119: Water

Pop<100	Pop	Score
Coonana	**80**	**1.6**
Windidda	**35**	**1.6**
Mulga Queen	45	0.5

Base: All communities identified

Overall in Goldfields-Esperance;

- Half of communities (50%) use **bores** as their main water supply, 47% use the **town** water supply, and in one community (Coonana), the main water is sourced from a dam.
- One-third (36%) record no **water treatment/disinfection** for drinking water. However, in those where the water is tested (9 communities), the stated methods are UV and Chlorine/CL.
- The majority of communities (9) record **regular testing** of their water supply. One of these communities in particular (Windidda) record chemical/heavy metals, microbiological and aesthetic issues with their water supply.
- There are 3 communities that record **dissatisfaction** with the water supply – Tjuntjuntjara (due to poor maintenance), Mulga Queen (for regular system failure) and Windidda (as there is not enough supply and due to poor taste).

4.8.3. Electricity

Two Goldfields-Esperance communities (bolded in Table 4.121) are in the top 20% of communities in Western Australia with usual population of <100 in which **electricity** would be considered an action priority.

Table 4.120: Electricity

Pop>=100	Pop	Score
Tjuntjuntjara	102	4.1

Base: All communities identified

Table 4.121: Electricity

Pop<100	Pop	Score
Coonana	**80**	**3.2**
Mt Margaret	**76**	**3.0**
Windidda	35	1.4

Base: All communities identified

Overall in Goldfields-Esperance;

- Half (50%) of the communities in the Goldfield-Esperance region have their main source of electricity from community generators, while the other half is from the town supply (50%).
- One-third (36%) report **regular interruptions** with the electricity supply and three of these communities record equipment breakdown as the reason for the interruption.
    - Tjuntjuntjara records **weekly interruptions** of electricity supply and Iragul and Mt Margaret records **monthly interruptions**.
- Three in five (57%) incur charges for their electricity within their community via **individual meters**, and 50% have a **fixed levy/direct debit through rental payment**.
- One-fifth of communities (21%) affecting the same proportion of the usual population (21%) record **unsatisfactory electricity supply**.

4.8.4. Housing

Two Goldfield-Esperance communities with usual population >=100 and two communities with usual populations <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **housing** would be considered an action priority. In addition, there are eleven communities (71%) that record **dissatisfaction** with housing in the Goldfields-Esperance region group, while the remaining communities record a neutral opinion.

Table 4.122: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Wongatha Wonganarra	**190**	**8.3**	**9.5**
Bondini	**100**	**4.5**	**7.7**
Tjuntjuntjara	102	3.5	4.4

Base: All communities identified

Table 4.123: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Kutkabubba	**47**	**6.7**	**7.8**
Windidda	**35**	**3.9**	**7.0**
Mulga Queen	45	5.0	5.6
Coonana	80	2.4	5.0
Nambi Village	27	3.0	4.5
Ninga Mia Village	70	1.9	4.4
Mt Margaret	76	2.5	3.6
Marmion Village	49	2.6	3.5
Cosmo Newberry	87	3.1	3.3

Base: All communities identified

4.8.5. Solid Waste Disposal

Five Goldfields-Esperance communities (bolded in Table 4.125) with usual populations <100 are in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

Table 4.124: Solid Waste Disposal

Pop>=100	Pop	Score
Tjuntjuntjara	102	8.2
Bondini	100	6.0

Base: All communities identified

Table 4.125: Solid Waste Disposal

Pop<100	Pop	Score
Cosmo Newberry	**87**	**7.8**
Kutkabubba	**47**	**7.1**
Coonana	**80**	**4.8**
Mt Margaret	**76**	**4.6**
Mulga Queen	**45**	**3.6**
Iragul	15	0.3

Base: All communities identified

Overall in Goldfields-Esperance;

- In two-thirds (64%) of communities, community workers are **responsible** for household rubbish collection, and in 36% it is the local governments responsibility.
- In all communities, household rubbish is **collected** weekly (100%).
    - However, one-third (36%) of communities record **times of non-collection**.
- There are five communities that record **using a town rubbish tip** (Bondini, Ninga Mia Village, Marmion Village, Nambi Village, and Wongatha Wonganarra).
- Ten communities have **unwanted cars/car bodies** in the community. The average is 35 cars in each of these communities, but Bondini (100) and Cosmo Newberry (100) each recording higher than average number of cars in their community.
- Overall, over half (55%) of the communities record **unsatisfactory rubbish tip management** in their community.

4.8.6. Sanitation/Sewerage

No communities within the region have any priority needs with respect to Sanitation/Sewerage and therefore no tables have been listed here.

Overall in Goldfields-Esperance;

- Seven communities have their sewage disposed of via septic tanks. One of these communities (Tjuntjuntjara) also has access to pit toilets. Six communities drain their sewage via a community sewerage system and one is connected to the town system.

- In one community (Ninga Mia Village), the internal **sewerage reticulation system is not maintained** either by the community or the RAESP.
- The majority of communities (73%) only have access to a **drying pond for disposal of sludge**.
- Five communities are not satisfied with the **current condition of community ablution facilities** (Tjuntjuntjara, Cosmo Newberry, Marmion Village, Coonana, and Ninga Mia Village).
- And six communities are not satisfied that the **current sewerage system meets the needs of their community**. Of these, the most frequently stated reason for dissatisfaction relate to *lack of maintenance*.

4.8.7. Dust

Four Goldfields-Esperance community with usual population <100 (bolded in Table 4.127) are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Table 4.126: Dust

Pop>=100	Pop	Score
Tjuntjuntjara	102	6.1
Bondini	100	2.0
Wongatha Wonganarra	190	1.9

Base: All communities identified

Table 4.127: Dust

Pop<100	Pop	Score
Cosmo Newberry	**87**	**4.4**
Coonana	**80**	**4.0**
Kurrawang	**92**	**3.7**
Mt Margaret	**76**	**3.0**
Kutkabubba	47	2.4
Mulga Queen	45	2.3
Ninga Mia Village	70	2.1

Base: All communities identified

Overall in Goldfields-Esperance;

- Two communities record **excessive dust problems** namely, Tjuntjuntjara and Mt Margaret. Both of these communities do not have a revegetation or dust suppression program.
- Eight communities record **high dust problems** – Windidda, Kutkabubba, Bondini, Cosmo Newberry, Ninga Mia Village, Kurrawang, Mulga Queen, Coonana.
- Bondini is the only of these communities to record a *revegetation or dust suppression program.* The remaining seven do not have such programs.

4.8.8. Dogs

Two Goldfields-Esperance communities (bolded in the following table) with usual population of <100 are in the top 20% of communities in Western Australia in which **dogs** would be considered a priority to address.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.128: No Dog Program in Communities

Pop<100	Pop	Score
Windidda	**35**	**0.4**
Nambi Village	**27**	**0.3**
Iragul	15	0.2

Base: All communities identified

Overall in Goldfields-Esperance;

- Eleven communities **have a dog program** and most of these record using one or more programs. The stated programs in which these communities are using are Ivomec/Moxtidectin/Cydectin (in 9 communities), Covinan (in 7 communities), and the Euthanasia program (in 9 communities).
  - Ninga Mia Village and Marmion Village record using only the Euthanasia program in their community.
- The **average number of dogs** recorded in communities is 30. There are four communities with a higher estimated number than this, however all have recorded having a dog program in place.
- The majority of communities' record the management of dog programs as **satisfactory**, while only two communities are not satisfied namely, Bondini and Tjuntjuntjara.

4.8.9. Emergency Management

One Goldfields-Esperance community with a usual population of <100 (bolded in Table 4.130) is in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Table 4.129: Emergency Management

Pop>=100	Pop	Score
Tjuntjuntjara	102	1.0

Base: All communities identified

Table 4.130: Emergency Management

Pop<100	Pop	Score
Coonana	**80**	**0.8**
Mulga Queen	45	0.5
Windidda	35	0.4
Iragul	15	0.2

Base: All communities identified

In Goldfields-Esperance, the most frequently recorded emergencies that communities are prone to are **bushfires** (75%) and one-quarter (25%) are prone to **floods**.

Even though there is a high propensity for bushfires in the region, three-quarters (75%) do not have a fire management plan and only four communities (29%) have working fire equipment.

All communities in this region do not have emergency evacuation plans (100%) and only one community records (Kurrawang) training in emergency procedures.

Three in five (58%) of communities record **dissatisfaction** with emergency management preparedness, 21% record satisfaction, and the remaining communities record a neutral opinion (21%).

4.8.10. Telecommunications

As shown in table below, there is one community in the Goldfield-Esperance region that **does not have access to either a pay or satellite phone**.

Table 4.131: Communities (population>=20) that have Neither Payphones nor Satellite Phone

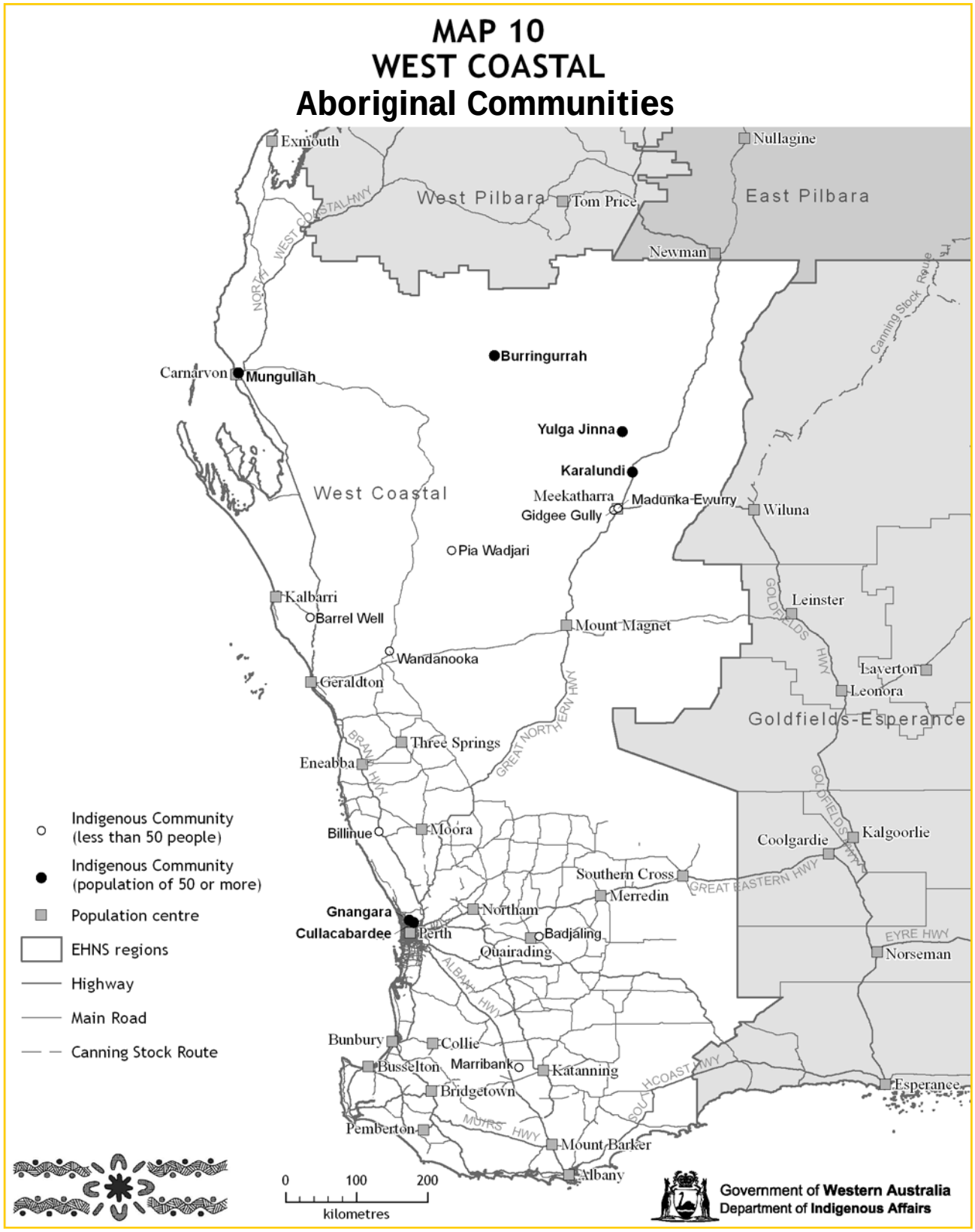
Community	Pop
Kurrawang	92

Base: Community without access to pay or satellite phone

Overall in Goldfields-Esperance;

- Half (54%) of communities are connected to the internet
- The majority have pay phones (92%) and all report to be working

4.9. West Coast Region



Fourteen West Coast communities (listed below) were surveyed in the EHNS 2008 research, of which the total usual population is 782. Of these, one in five have usual populations of less than 20 people (3 communities, 21%) the rest (11 communities, 79%) have usual populations of 20 or more people.

Communities Participating in EHNS

Badjaling (19)	Karalundi (106)
Barrel Well (27)	Madunka Ewurry (19)
Billinue (43)	Marribank (1)
Burringurrah (150)	Mungullah (150)
Cullacabardee (50)	Pia Wadjari (40)
Gidgee Gully (20)	Wandanooka (40)
Gnangara (65)	Yulga Jinna (52)

Numbers in bracket above denotes number of community members

Service communities or towns and the number of communities they service

Ballajura (1)	Landsdale (1)	Mt Barloweerie (1)
Beechboro (1)	Lockridge (1)	Mullewa (2)
Canarvon (1)	Meekatharra (5)	Perth Airport (2)
Dandargan (1)	Midland (1)	Quairading (1)
Kalbarri (1)	Mirrabooka (1)	Wanneroo (1)
Kojanup (1)	Moora (1)	Yalgoo (1)

Numbers in bracket above denotes number of communities serviced by that town

4.9.1. Perceived Community Need and Satisfaction

Table 4.132 below displays the communities' needs to improve conditions. One in three communities (29%) recorded environmental programs (greening, dust suppression), water, power, sewerage (improvements or provision) and housing (new. repairs, housing for visitors and workers).

Table 4.132: Community Needs (spontaneous)

Identified Need	Communities	%
Environmental programs (greening, dust suppression)	4	28.6
Water, Power, Sewerage (improvements or provision)	4	28.6
Housing (new. repairs, housing for visitors and workers)	4	28.6
Municipal services (street lighting, rubbish disposal, drainage)	3	21.4
Access (internal and access roads, vehicles, boats, airstrips)	3	21.4
No response	2	14.3
Meeting areas (administration facilities, general purpose buildings)	1	7.1
Other	5	35.7
Total	**14**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When prompted, **housing** and **dust** are also the highest recorded environmental health concerns (64%). This is consistent with the previous table findings.

Table 4.133: Community Needs (prompted)

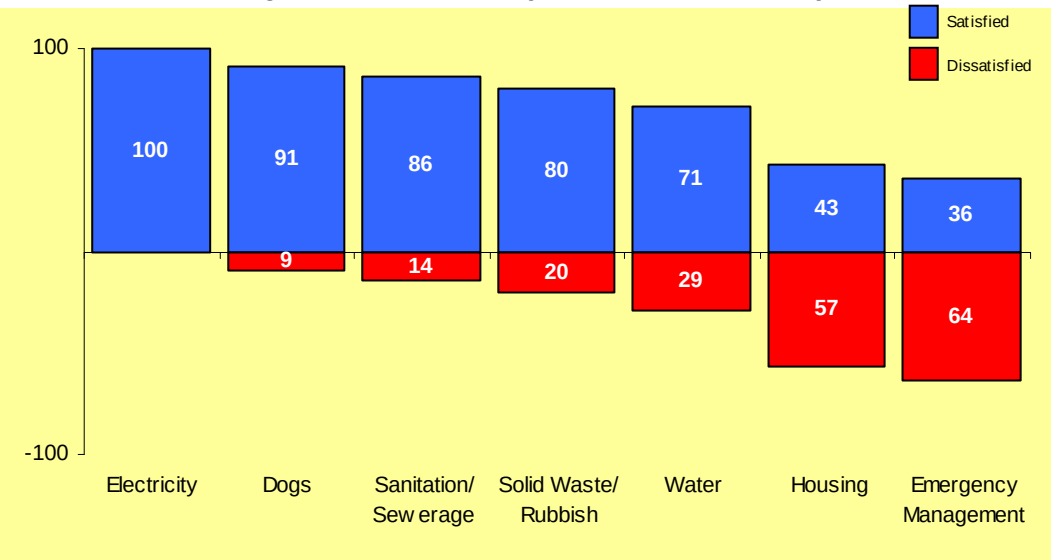
Identified Need	Communities	%
Housing/overcrowding/maintenance	9	64.3
Dust	9	64.3
Water quality/supply	5	35.7
Rubbish collection	5	35.7
Dogs	4	28.6
Electricity supply/interruptions/no power	3	21.4
Sewerage connections/plumbing	3	21.4
Emergency management	2	14.3
Total	**14**	

Base: All communities

% may exceed 100% due to multiple responses being allowed for this question

When asked their **satisfaction** with each of the key environmental health areas, **emergency management** and **housing** each record higher proportions of dissatisfied versus satisfied (Figure 4.17).

Figure 4.17: Community Satisfaction Summary



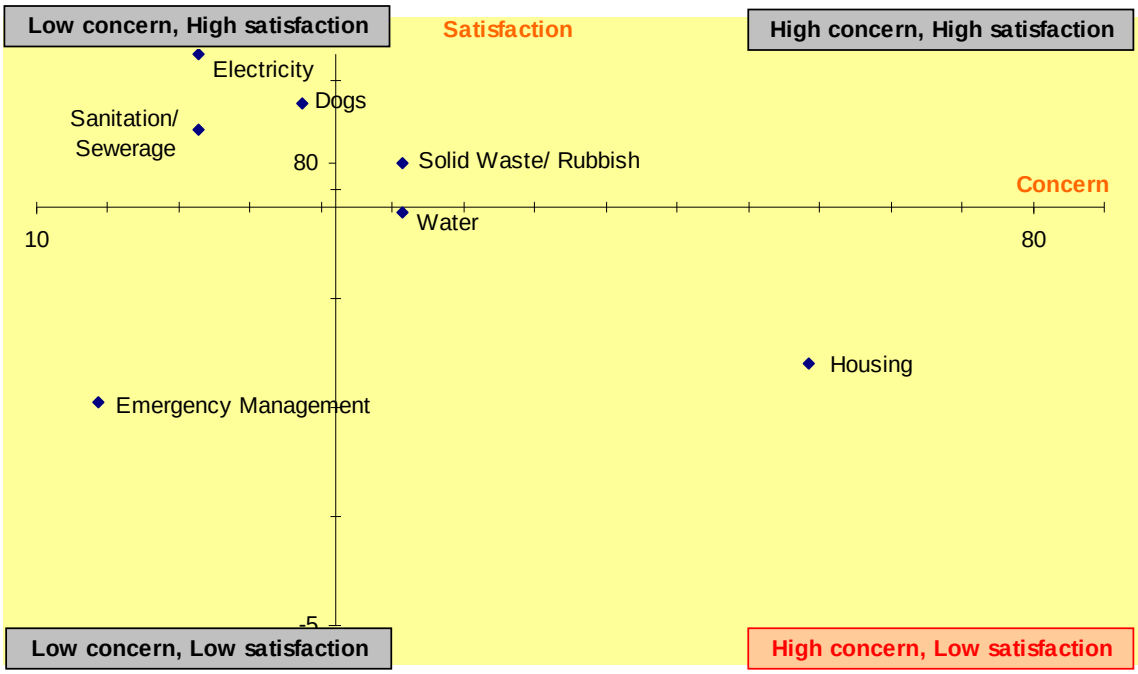
Base: All communities

The matrix overleaf combines the measures of **concern** and **satisfaction** across the key environmental health areas. The four quadrants can be summarised as follows:

- Top left — Low concern, high satisfaction — Maintain
- Top right — High concern, high satisfaction — **Priority** to maintain
- Bottom right — High concern, low satisfaction — **Priority** to address
- Bottom left — Low concern, low satisfaction — Address longer term

When combining **concern** and **satisfaction** in order to highlight potential areas for focus, **housing** is the environmental health areas that record highest concern but low satisfaction (the bottom right quadrant in Figure 4.18) and should thus be considered one of the key priorities at a 'relative level' in the West Coast region group. While emergency management also records low satisfaction it records comparatively lower levels of concern (bottom left quadrant).

Figure 4.18: Community Concern and Satisfaction Summary



The discussion following provides further detail by individual communities in West Coast.

4.9.2. Water

One West Coast community (bolded in the table overleaf) is in the top 20% of communities in Western Australia with usual populations of <100 in which **water** would be considered a priority to address.

Overall in West Coast;

- **Bores** are used by 21% of West Coast communities with <20 people and 36% of communities with >=20 people.
  - In one community the main water supply is **soaks**.
- 15% of communities with usual populations of <20 record **no disinfection of drinking water** (compared to the total for this region of 46%).
  - **Water quality issues** are identified in terms of *chemicals/heavy metals* in five communities (Burringurrah, Cullacabardee, Badjaling, Gnangara, Barrel Well), *microbiological* for most communities except Burringurrah as well as *aesthetic (looks, smell, taste)* for Cullacabardee, Badjaling, Gnangara and Barrel Well.

- In most of communities, the water system is **maintained** by *RAESP/Water Corp* (64%). Gidgee Gully is reported **not to be maintained by anyone**.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.134: Water

Pop<100	Pop	Score
Gidgee Gully	**20**	**1.9**
Billinue	43	1.3
Badjaling	19	0.2
Marribank	1	0.1

Base: All communities identified

4.9.3. Electricity

Two West Coast communities (bolded in the following table) are in the top 20% of communities in Western Australia with usual population of <100 in which electricity would be considered an action priority.

No communities (0%) in the West Coast region consider the electricity supply unsatisfactory, compared to 36% of all Western Australian communities.

Overall in West Coast;

- There are four communities which use community generators (Yulga Jinna, Karalundi, Pia Wadjari and Burringurrah).
- The charges for electricity usage are mostly incurred via an **individual meters/power cards** (11 communities).

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled.

Table 4.135: Electricity

Pop<100	Pop	Score
Yulga Jinna	**52**	**2.1**
Pia Wadjari	**40**	**1.6**

Base: All communities identified

4.9.4. Housing

No West Coast communities are in the top 20% of communities in Western Australia in which **housing** would be considered an action priority.

Three in five communities (57%) in West Coast record housing in the community as unsatisfactory.

Table 4.136: Housing

Pop>=100	Pop	Crude PDM	Adj. PDM
Burringurrah	150	4.1	5.0
Karalundi	106	3.8	4.8

Base: All communities identified

Table 4.137: Housing

Pop<100	Pop	Crude PDM	Adj. PDM
Gnangara	65	5.9	9.3
Barrel Well	27	4.5	9.0
Billinue	43	7.2	8.6
Wandanooka	40	6.7	8.0
Gidgee Gully	20	2.9	6.7
Madunka Ewurry	19	3.8	6.3
Pia Wadjari	40	2.4	4.4
Badjaling	19	3.8	3.8

Base: All communities identified

4.9.5. Solid Waste Disposal

One West Coast community with usual population <100 (bolded in the table overleaf) is in the top 20% of communities in Western Australia in which **solid waste disposal** would be considered an action priority.

Twenty percent (20%) of communities with a rubbish tip record **unsatisfactory rubbish tip management**, which is lower than the Western Australian average (23%).

Overall in West Coast;

- There are eight communities that record **using a town rubbish tip**, namely Cullacabardee, Badjaling, Wandanooka, Barrel Well, Gidgee Gully, Billinue, Mungullah and Madunka Ewurry.
- Of the four communities that have a **rubbish tip, the capacity is either between 6-12 months (**Pia Wadjari) **or more than 12 months** (Burringurrah, Yulga Jinna, Karalundi).
- Eleven communities have **unwanted cars/car bodie**s in the community. Burringurrah and Pia Wadjari (100 cars/car bodies each) each record higher than average numbers of unwanted cars/car bodies in their community.

Communities with a usual population of >=100 did not have any priority needs and therefore have not been tabled below.

Table 4.138: Solid Waste Disposal

Pop<100	Pop	Score
Pia Wadjari	**40**	**7.6**
Gidgee Gully	20	1.2

Base: All communities identified

4.9.6. Sanitation/Sewerage

No West Coast communities are in the top 20% of communities in Western Australia in which **Sanitation/Sewerage** would be considered an action priority.

Overall in West Coast;

- In one community (Gidgee Gully), the **sewerage reticulation system is not maintained** either by the community or the RAESP (i.e. no one maintains it).
- Three communities have access to a **drying pond for disposal of sludge.**
- One-quarter (25%) of communities are not satisfied with the **current condition of community ablution facilities**.
- Fourteen percent (14%) are not satisfied that the **current sewerage system meets the needs of their community**.

Table 4.139: Sanitation/Sewerage

Pop>=100	Pop	Score
Burringurrah	150	3.0

Base: All communities identified

Table 4.140: Sanitation/Sewerage

Pop<100	Pop	Score
Madunka Ewurry	19	0.8

Base: All communities identified

4.9.7. Dust

No West Coast communities are in the top 20% of communities in Western Australia in which **dust** would be considered an action priority.

Overall in West Coast:

- Two communities record **excessive dust problems** namely, Gidgee Gully and Barrel Well.
- Eight communities record **high dust problems** – Burringurrah, Pia Wadjari, Wandanooka, Billinue, Badjaling, Mungullah, Marribank and Madunka Ewurry.
    - Gidgee Gully is the only community to record a *revegetation or dust suppression program.*

Table 4.141: Dust

Pop>=100	Pop	Score
Mungullah	150	4.5
Burringurrah	150	4.5

Base: All communities identified

Table 4.142: Dust

Pop<100	Pop	Score
Billinue	43	2.2
Pia Wadjari	40	2.0
Wandanooka	40	2.0
Barrel Well	27	1.6
Gidgee Gully	20	1.0
Badjaling	19	1.0
Madunka Ewurry	19	1.0
Gnangara	65	0.7

Base: All communities identified

4.9.8. Dogs

One West Coast community with usual population of >=100 and one with a usual population of <100 (bolded in the following tables) are in the top 20% of communities in Western Australia in which **dogs** would be considered an action priority.

Overall in the West Coast;

- Three of the 14 communities **do not have a dog program**, but all of these communities recorded dogs in their community, namely Barrel Well (8 dogs), Mungullah (50 dogs) and Cullacabardee (6 dogs).

Table 4.143: No Dog Program in Communities

Pop>=100	Pop	Score
Mungullah	**150**	**1.5**

Base: All communities identified

Table 4.144: No Dog Program in Communities

Pop<100	Pop	Score
Barrel Well	**27**	**0.3**

Base: All communities identified

4.9.9. Emergency Management

No West Coast communities are in the top 20% of communities in Western Australia in which **emergency management** would be considered an action priority.

Table 4.145: Emergency Management

Pop>=100	Pop	Score
Burringurrah	150	1.5

Base: All communities identified

Table 4.146: Emergency Management

Pop<100	Pop	Score
Gnangara	65	0.7
Cullacabardee	50	0.5
Wandanooka	40	0.4

Base: All communities identified

4.9.10. Telecommunications

As shown in table below, there are two communities in the West Coast who appear to **not have access to telephone facilities** for community members.

Table 4.147: Communities with Community Phone Access

Community	Pop	Telecentre in community	Community video-teleconference facility	Community payphone that works	Community Satellite phone
Badjaling	19	No	No	No response	No response
Marribank	1	No	No	No response	No
Total	**20**				

Base: Communities which have no access to telephone facilities

5. Community Needs and Services

5.1. Health Issues

The key health issues of communities are highlighted as follows:

- Environmental health and health concerns — refer Section 5.1.1
- Human health issues — refer Section 5.1.2

Summary of the key results

The main environmental health concern amongst Western Australian Aboriginal communities is housing and overcrowding, with two in three (69%) communities reporting this. Dust (49%), water quality/supply (42%) and electric supply/interruptions (39%) are also frequently recorded.

Diabetes is the most frequently noted health concern overall (62%), for both small (36%) and large (80%) communities. Substance abuse is the highest risk factor, recorded in one-third (36%) of all communities.

Whilst a majority of communities have health programs available (68%), there are one-third (32%) who have no access to any of the health programs available.

One-quarter have a purpose built (23%) or temporary arrangement (3%) health clinic within their community. Two-thirds (69%) of communities and nearly all (92%) of the usual population are located within 30 kilometres of a health clinic (may be outside the immediate community). Similar proportions (63% of communities and 85% of the usual population) are located within 30 kilometres of a pharmacy or a health clinic/hospital that can dispense medicines under Section 100 of the National Health Act 1953.

5.1.1. Environmental Health Issues

Similar to previous years, communities in 2008 are surveyed for their environmental health and health concerns. As noted in the table overleaf, **the main environmental health concern amongst Western Australia Aboriginal Communities is housing/overcrowding with two in three (69%, 161 communities) communities reporting this.** **Dust** (49%), **water quality/supply** (42%) and **electric supply/interruptions** (39%) are also frequently recorded.

Larger communities (>=20 people) are more likely than smaller communities to experience concerns with several of the environmental health issues, namely:

- Housing/overcrowding (77%);
- Dust (58%);
- Dogs (39%);
- Emergency management (32%);
- Sewerage connection/lagoons (29%); and
- Rubbish collection (31%).

Whereas smaller communities (<20 people) are more likely than larger communities to experience concerns with:

- Electricity supply/interruptions (48%); and
- Water quality/supply (44%).

Due to the change in questionnaire wording and response options, no comparisons between 2004 and 2008 can be made.

Table 5.1: Number of Communities Reporting Environmental Health Issues for Their Community per Issue

	Com pop <20			Com pop >=20			Total		
Issue	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Housing/overcrowding	55	95	57.9	106	137	77.4	161	232	69.4
Dust	35	95	36.8	79	137	57.7	114	232	49.1
Water quality/supply	42	95	44.2	55	137	40.1	97	232	41.8
Electricity supply/interruptions	46	95	48.4	45	137	32.8	91	232	39.2
Emergency management	22	95	23.2	44	137	32.1	66	232	28.4
Dogs	8	95	8.4	54	137	39.4	62	232	26.7
Sewerage connections/lagoons	19	95	20	40	137	29.2	59	232	25.4
Rubbish collection	15	95	15.8	43	137	31.4	58	232	25
Pests/insects/vermin	14	95	14.7	22	137	16.1	36	232	15.5

Base: All communities

Table 5.2 overleaf provides a summary of environmental health concerns by region group. Overall, communities within the Ngaanyatjarraku region record higher than average concerns with seven of the nine environmental health issues. However, each region records higher than average in at least one of the key areas, namely;

- **Wyndham-East Kimberley** – water quality, emergency management, dogs, pests/insects/vermin.
- **Halls Creek** – electricity supply/interruptions, dogs.
- **Derby-West Kimberley** – housing/overcrowding, dust.
- **Broome** – electricity supply/interruptions.
- **West Pilbara** – dogs, sewerage connections/lagoons, rubbish collection, pests/insects/vermin.
- **East Pilbara** – housing/overcrowding, dust, water, electricity supply/interruptions, emergency management, dogs, rubbish collection.
- **Ngaayatjarraku** – housing/overcrowding, dust, water, electricity supply/interruptions, emergency, dogs, rubbish collection.
- **Goldfields-Esperance** – housing/overcrowding, dust, emergency management, sewerage connections/lagoons, rubbish collection, pests/insects/vermin.
- **West Coast** – dust, rubbish collection.

Due to changes in the questionnaires, comparisons between 2004 and 2008 are not possible.

Table 5.4: Number of Communities Reporting a Main Health Concern by Region Group

	Housing/overcrowding			Dust			Water quality/supply			Electricity supply/interruptions			Emergency management		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	25	35	71.4	18	35	51.4	17	35	48.6	12	35	34.3	16	35	45.7
Halls Creek	22	35	62.9	14	35	40.0	13	35	37.1	19	35	54.3	9	35	25.7
Derby-West Kimberley	32	41	78.0	25	41	61.0	17	41	41.5	9	41	22.0	9	41	22.0
Broome	40	62	64.5	17	62	27.4	27	62	43.5	31	62	50.0	10	62	16.1
West Pilbara	7	13	53.8	7	13	53.8	3	13	23.1	5	13	38.5	4	13	30.8
East Pilbara	7	9	77.8	7	9	77.8	4	9	44.4	4	9	44.4	3	9	33.3
Ngaanyatjarraku	7	9	77.8	8	9	88.9	5	9	55.6	4	9	44.4	6	9	66.7
Goldfields-Esperance	12	14	85.7	9	14	64.3	6	14	42.9	4	14	28.6	7	14	50.0
West Coast	9	14	64.3	9	14	64.3	5	14	35.7	3	14	21.4	2	14	14.3
Total	**161**	**232**	**69.4**	**114**	**232**	**49.1**	**97**	**232**	**41.8**	**91**	**232**	**39.2**	**66**	**232**	**28.4**

Base: All communities

Table 5.2: Environmental Health Concerns by Region Group (cont'd.)

	Dogs			Sewerage connections/lagoons			Rubbish collection			Pests/insects/vermin		
Region group	**n**	**n**	**n**	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	11	35	31.4	9	35	25.7	8	35	22.9	12	35	34.3
Halls Creek	11	35	31.4	9	35	25.7	9	35	25.7	1	35	2.9
Derby-West Kimberley	11	41	26.8	9	41	22.0	5	41	12.2	0	41	0
Broome	6	62	9.7	13	62	21.0	9	62	14.5	10	62	16.1
West Pilbara	5	13	38.5	4	13	30.8	7	13	53.8	5	13	38.5
East Pilbara	5	9	55.6	2	9	22.2	5	9	55.6	1	9	11.1
Ngaanyatjarraku	6	9	66.7	1	9	11.1	5	9	55.6	0	9	0
Goldfields-Esperance	3	14	21.4	9	14	64.3	5	14	35.7	6	14	42.9
West Coast	4	14	28.6	3	14	21.4	5	14	35.7	1	14	7.1
Total	**62**	**232**	**26.7**	**59**	**232**	**25.4**	**58**	**232**	**25.0**	**36**	**232**	**15.5**

Base: All communities

5.1.2. Human Health Issues

As well as environmental health concerns, communities are asked to detail their human health concerns. **As noted in Table 5.3, diabetes is the most frequently noted health concern among both small (usual populations of <20) and larger (usual populations of >=20) communities**.

Substance abuse is the highest risk factor, recorded in one-third (36%, 83 communities) of all Western Australian Aboriginal communities, half (54%) of larger communities and one in ten (10%) smaller communities. Poor nutrition is also a high risk factor recorded in 29% of communities and mosquito borne diseases are recorded in one in five (19%).

In general, larger communities are more likely to record concern with each of the major health areas than smaller communities. There is only one exception where concern of mosquito borne diseases is recorded more among smaller (24%) than larger (15%) communities.

Due to the change in questionnaire wording and response options, no comparisons between 2004 and 2008 can be made.

Table 5.3: Number of Communities Reporting their Major Health Concerns

Health concerns	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Diseases									
Diabetes	34	95	35.8	110	137	80.3	144	232	62.1
Kidney (renal) problems	13	95	13.7	77	137	56.2	90	232	38.8
Gastro/intestinal problems	8	95	8.4	52	137	38	60	232	25.9
Heart disease	1	95	1.1	8	137	5.8	9	232	3.9
Hypertension/high blood pressure	1	95	1.1	3	137	2.2	4	232	1.7
Health conditions									
Hearing/eyesight problems	25	95	26.3	84	137	61.3	109	232	47.0
Asthma/respiratory problems	28	95	29.5	71	137	51.8	99	232	42.7
Flu/colds	20	95	21.1	72	137	52.6	92	232	39.7
Skin problems	9	95	9.5	65	137	47.4	74	232	31.9
Mental health									
Mental Health services	1	95	1.1	2	137	1.5	3	232	1.3
Risk factors									
Substance abuse	9	95	9.5	74	137	54.0	83	232	35.8
Poor nutrition	8	95	8.4	60	137	43.8	68	232	29.3
Mosquito born diseases	23	95	24.2	21	137	15.3	44	232	19.0
Pests - Mosquitoes/ants/March flies/bush flies	1	95	1.1	6	137	4.4	7	232	3.0

Base: All communities

Other less common health concerns (not listed in the table) include:

	%		%
STI/STD	0.9	Violence	0.4
Podiatry	0.4	Poor hygiene	0.4
Tonsillitis	0.4	Dust	0.4
Addictions/drug/alcohol	0.4	Aged Care	0.4

Tables 5.4 provide a breakdown of main human health concerns by region group. Key findings of these tables include:

- **Diabetes concerns** – are highest in East Pilbara, Ngaanyatjarraku, Goldfields-Esperance, West Pilbara, Derby-West Kimberley and West Coast.
- **Substance abuse concerns –** are highest in Wyndham-East Kimberley, East Pilbara, Ngaanyatjarraku and Goldfields-Esperance.

Table 5.4: Number of Communities Reporting a Main Health Concern by Region Group

Region group	Diabetes			Hearing/eyesight problems			Asthma/respiratory problems			Flu/colds			Kidney (renal) problems			Substance abuse			Skin problems		
	n	Tot	%	n	n	Tot	%	n	Tot	%	n	Tot	%	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	16	35	45.7	14	35	40.0	14	35	40.0	5	35	14.3	13	35	37.1	16	35	45.7	9	35	25.7
Halls Creek	16	35	45.7	15	35	42.9	12	35	34.3	17	35	48.6	11	35	31.4	9	35	25.7	8	35	22.9
Derby-West Kimberley	31	41	75.6	23	41	56.1	17	41	41.5	19	41	46.3	22	41	53.7	16	41	39.0	14	41	34.1
Broome	28	62	45.2	20	62	32.3	24	62	38.7	15	62	24.2	14	62	22.6	10	62	16.1	8	62	12.9
West Pilbara	9	13	69.2	3	13	23.1	3	13	23.1	3	13	23.1	5	13	38.5	5	13	38.5	1	13	7.7
East Pilbara	9	9	100.0	5	9	55.6	6	9	66.7	9	9	100.0	5	9	55.6	7	9	77.8	7	9	77.8
Ngaanyatjarraku	9	9	100.0	7	9	77.8	5	9	55.6	8	9	88.9	5	9	55.6	5	9	55.6	8	9	88.9
Goldfields-Esperance	14	14	100.0	11	14	78.6	10	14	71.4	8	14	57.1	7	14	50.0	9	14	64.3	10	14	71.4
West Coast	12	14	85.7	11	14	78.6	8	14	57.1	8	14	57.1	8	14	57.1	6	14	42.9	9	14	64.3
Total	**144**	**232**	**62.1**	**109**	**232**	**47.0**	**99**	**232**	**42.7**	**92**	**232**	**39.7**	**90**	**232**	**38.8**	**83**	**232**	**35.8**	**74**	**232**	**31.9**

Base: All communities

Table 5.4: Number of Communities Reporting a Main Health Concern by Region Group (cont'd.)

Region group	Poor nutrition			Gastro/intestinal problems			Mosquito born diseases			Heart disease			Pests - Mosquitoes/ants/March flies/bush flies			Hypertension/high blood pressure			Mental Health services		
	n	Tot	%	n	Tot	n	Tot	n	Tot	n	Tot	%	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	6	35	17.1	4	35	11.4	3	35	8.6	2	35	5.7	0	35	0	1	35	2.9	0	35	0
Halls Creek	12	35	34.3	9	35	25.7	8	35	22.9	0	35	0	1	35	2.9	0	35	0	0	35	0
Derby-West Kimberley	12	41	29.3	13	41	31.7	2	41	4.9	0	41	0	0	41	0	0	41	0	0	41	0
Broome	7	62	11.3	10	62	16.1	19	62	30.6	2	62	3.2	3	62	4.8	0	62	0	1	62	1.6
West Pilbara	5	13	38.5	1	13	7.7	2	13	15.4	0	13	0	3	13	23.1	0	13	0	0	13	0
East Pilbara	6	9	66.7	5	9	55.6	3	9	33.3	1	9	11.1	0	9	0	1	9	11.1	1	9	11.1
Ngaanyatjarraku	6	9	66.7	3	9	33.3	1	9	11.1	0	9	0	0	9	0	0	9	0	1	9	11.1
Goldfields-Esperance	8	14	57.1	7	14	50.0	1	14	7.1	4	14	28.6	0	14	0	2	14	14.3	0	14	0
West Coast	6	14	42.9	8	14	57.1	5	14	35.7	0	14	0	0	14	0	0	14	0	0	14	0
Total	**68**	**232**	**29.3**	**60**	**232**	**25.9**	**44**	**232**	**19.0**	**9**	**232**	**3.9**	**7**	**232**	**3.0**	**4**	**232**	**1.7**	**3**	**232**	**1.3**

Base: All communities

Health Programs

Two-thirds (68%) of Western Australia Aboriginal communities have access to the health programs listed in Table 5.5. Of these communities, on average, nine of the twelve health programs are available in each community.

Availability of substance abuse programs (drugs/substance abuse programs and alcohol prevention programs) are higher in 2008 compared to that recorded in 2004, as are mental health programs. These are the only programs to record higher prevalence[15].

Table 5.5: Number of Communities with Health Programs by Region Group

Region group	Immunisation service	Women's health program	Maternal program	Baby health program	Dental health program	Eye program	Drug/substance abuse program	Alcohol prevention program	Nutrition program	Diabetes program	Sexual health program	Mental health program
Wyndham-East Kimberley	12	10	7	12	8	9	5	4	7	7	7	7
Halls Creek	9	8	6	8	2	7	3	5	6	7	7	3
Derby-West Kimberley	27	26	26	26	8	26	22	22	25	27	26	23
Broome	52	51	47	52	50	53	49	48	47	53	50	47
West Pilbara	9	10	8	10	7	8	7	7	10	8	9	9
East Pilbara	9	6	6	7	0	7	2	2	4	7	5	5
Ngaanyatjarraku	9	9	6	9	1	4	0	0	2	8	8	2
Goldfields-Esperance	10	3	2	8	2	6	2	1	4	6	4	2
West Coast	10	9	8	9	8	7	6	6	8	10	9	8
Total	**147**	**132**	**116**	**141**	**86**	**127**	**96**	**95**	**113**	**133**	**125**	**106**
2004 Total	**168**	**160**	**NA**	**163**	**116**	**148**	**85**	**81**	**117**	**144**	**129**	**102**

Base: All communities

[15] These may be due to an actual change in availability of health programs but could also be a result of data collection estimations being inaccurate between years.

Whilst a majority of communities have health programs available, there are one-third (32%, 71 communities) who have *no* access to *any* of the health programs listed in Table 5.6. Halls Creek (71%) and Wyndham-East Kimberley (60%) rate highest in terms of regions with no access to health programs. Smaller communities (<20 people) are more likely than larger communities (>=20 people) to report having no access to health programs. However, in 2008 there are fewer smaller communities with no access to health programs relative to that recorded in 2004 (51% 2004, 44% 2008).

Table 5.6: Number of Communities with No Access to Health Programs by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	12	12	100.0	6	18	33.3	18	30	60.0
Halls Creek	16	16	100.0	9	19	47.4	25	35	71.4
Derby-West Kimberley	5	7	71.4	6	31	19.4	11	38	28.9
Broome	6	47	12.8	1	15	6.7	7	62	11.3
West Pilbara	1	4	25.0	1	9	11.1	2	13	15.4
East Pilbara	0	0	0.0	0	9	0.0	0	9	0.0
Ngaanyatjarraku	0	0	0.0	0	9	0.0	0	9	0.0
Goldfields-Esperance	0	1	0.0	4	13	30.8	4	14	28.6
West Coast	0	3	0.0	4	11	36.4	4	14	28.6
Total	**40**	**90**	**44.4**	**31**	**134**	**23.1**	**71**	**224**	**31.7**
2004 Total	**49**	**96**	**51**	**41**	**168**	**24**	**90**	**264**	**34**

Base: All communities

Community Health Clinics

Of the Western Australia Aboriginal communities, one-quarter have either a purpose built (23%) or a temporary arrangement (3%) health clinic but the majority (75%) do not have a health clinic within their community. No smaller community (<20 people) reports having a health clinic.

Table 5.7: Number of Communities with No Health Clinic by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	14	14	100.0	14	21	66.7	28	35	80.0
Halls Creek	16	16	100.0	13	19	68.4	29	35	82.9
Derby-West Kimberley	10	10	100.0	19	31	61.3	29	41	70.7
Broome	47	47	100.0	10	15	66.7	57	62	91.9
West Pilbara	4	4	100.0	4	9	44.4	8	13	61.5
East Pilbara	-	-	-	3	9	33.3	3	9	33.3
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	1	1	100.0	8	13	61.5	9	14	64.3
West Coast	3	3	100.0	7	11	63.6	10	14	71.4
Total	**95**	**95**	**100.0**	**78**	**137**	**56.9**	**173**	**232**	**74.6**
2004 Total	**97**	**102**	**95**	**100**	**171**	**58**	**197**	**273**	**72**

Base: All communities

While three-quarters (75%, as stated above) do not have a health clinic within their community, two-thirds (69% of all communities) are located within 30 kilometres of a health clinic. These clinics service 92% (13,855 people) of the usual Aboriginal population in Western Australia. There are 19 communities (8% of all communities) which are more than 100 kilometres from a health clinic, affecting 3% of the total usual population - these are primarily in Halls Creek (6 communities) and Derby-West Kimberley (7 communities).

Table 5.8: Number of Communities within Various Distances to Health Clinic by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	8	22.9	8	22.9	7	20.0	5	14.3	4	11.4	3	8.6	35
Halls Creek	14	40.0	5	14.3	2	5.7	6	17.1	2	5.7	6	17.1	35
Derby-West Kimberley	22	53.7	3	7.3	2	4.9	-	-	7	17.1	7	17.1	41
Broome	10	16.1	17	27.4	13	21.0	15	24.2	6	9.7	1	1.6	62
West Pilbara	6	46.2	1	7.7	2	15.4	1	7.7	3	23.1	-	-	13
East Pilbara	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Ngaanyatjarraku	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	9	64.3	2	14.3	1	7.1	1	7.1	-	-	1	7.1	14
West Coast	7	50.0	2	14.3	2	14.3	1	7.1	1	7.1	1	7.1	14
Total	**94**	**40.5**	**38**	**16.4**	**29**	**12.5**	**29**	**12.5**	**23**	**9.9**	**19**	**8.2**	**232**

Base: All communities

Table 5.9: Usual Population of Communities within Various Distances to Health Clinic by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	1,444	71.6	161	8.0	83	4.1	138	6.8	122	6.0	70	3.5	2,018
Halls Creek	1,895	86.5	73	3.3	48	2.2	65	3.0	14	0.6	97	4.4	2,192
Derby-West Kimberley	2,744	82.8	103	3.1	162	4.9	-	-	181	5.5	125	3.8	3,315
Broome	2,005	78.7	155	6.1	180	7.1	135	5.3	66	2.6	7	0.3	2,548
West Pilbara	447	71.1	66	10.5	58	9.2	10	1.6	48	7.6	-	-	629
East Pilbara	1,076	100.0	-	-	-	-	-	-	-	-	-	-	1,076
Ngaanyatjarraku	1,537	100.0	-	-	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	750	73.9	107	10.5	47	4.6	76	7.5	-	-	35	3.4	1,015
West Coast	547	69.9	84	10.7	83	10.6	1	0.1	27	3.5	40	5.1	782
Total	**12,445**	**82.4**	**749**	**5.0**	**661**	**4.4**	**425**	**2.8**	**458**	**3.0**	**374**	**2.5**	**15,112**

Base: Count of all community members

Community Pharmacy

Sixty-three percent of communities (146 communities) report having a pharmacy/health clinic that can dispense medicines within 30 kilometres of their community. These pharmacies service 85% (12,779 people) of the usual Aboriginal population in Western Australia. There are 31 communities (13% of all communities) which are 100 kilometres or further away from a pharmacy which affects 9% of the usual population.

Table 5.10: Number of Communities within Various Distances to Pharmacy by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East													
Kimberley	7	20.0	8	22.9	6	17.1	5	14.3	5	14.3	4	11.4	35
Halls Creek	14	40.0	5	14.3	2	5.7	6	17.1	1	2.9	7	20.0	35
Derby-West Kimberley	19	46.3	4	9.8	2	4.9	-	-	7	17.1	9	22.0	41
Broome	10	16.1	17	27.4	13	21.0	15	24.2	6	9.7	1	1.6	62
West Pilbara	3	23.1	-	-	3	23.1	4	30.8	2	15.4	1	7.7	13
East Pilbara	4	44.4	-	-	-	-	-	-	-	-	5	55.6	9
Ngaanyatjarraku	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	7	50.0	3	21.4	1	7.1	1	7.1	-	-	2	14.3	14
West Coast	6	42.9	2	14.3	1	7.1	1	7.1	2	14.3	2	14.3	14
Total	**79**	**34.1**	**39**	**16.8**	**28**	**12.1**	**32**	**13.8**	**23**	**9.9**	**31**	**13.4**	**232**

Base: All communities

Table 5.11: Usual Population of Communities within Various Distances to Pharmacy by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East													
Kimberley	1,384	68.6	161	8.0	77	3.8	138	6.8	128	6.3	130	6.4	2,018
Halls Creek	1,895	86.5	73	3.3	48	2.2	65	3.0	4	0.2	107	4.9	2,192
Derby-West Kimberley	2,305	69.5	389	11.7	162	4.9	-	-	181	5.5	278	8.4	3,315
Broome	2,005	78.7	155	6.1	180	7.1	135	5.3	66	2.6	7	0.3	2,548
West Pilbara	334	53.1	-	-	130	20.7	99	15.7	42	6.7	24	3.8	629
East Pilbara	466	43.3	-	-	-	-	-	-	-	-	610	56.7	1,076
Ngaanyatjarraku	1,537	100.0	-	-	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	635	62.6	177	17.4	47	4.6	76	7.5	-	-	80	7.9	1,015
West Coast	495	63.3	84	10.7	40	5.1	1	0.1	70	9.0	92	11.8	782
Total	**11,056**	**73.2**	**1,039**	**6.9**	**684**	**4.5**	**514**	**3.4**	**491**	**3.2**	**1,328**	**8.8**	**15,112**

Base: Count of all community members

5.2. Community Needs and Planning

The key community needs and planning are highlighted as follows:

- Proportion of communities with a Community Layout Plan — refer Section 5.2.1
- Improvement requirements for communities — refer Section 5.2.2

Summary of the key results

Among smaller communities (<20 people), 8% have a **Community Layout Plan** and 6% are developing a plan. The proportion is higher among larger communities (>=20 people) where two-thirds (65%) report having a CLP and one in seven (15%) are developing one.

Overall, the most commonly identified needs for Western Australia Aboriginal communities relate to **housing** (new, repairs, housing for visitors and workers – 53%) and **water, power, sewerage** (improvements or provision – 42%) issues

5.2.1. Community Planning

The following tables show the number and proportion of communities with a Community Layout Plan (CLP). Furthermore the tables also outline if the CLP is either being used and, for communities where it doesn't currently have a CLP, whether one is being developed.

As seen in Table 5.12, among smaller communities (<20 people), 8% have a CLP and 6% are developing a plan.

Comparison between 2004 and 2008 is not possible due to the question not being asked in 2004.

Table 5.12: Number and Proportion of Small Communities (<20 pop) with a Community Layout Plan (CLP) by Region Group

	Has CLP		% Has CLP and uses it	% Has CLP but use unknown	% Developing CLP	Total
Region group	n	%	%	%	%	n
Wyndham-East Kimberley	1	7.1	7.1	0.0	0.0	14
Halls Creek	0	0.0	0.0	0.0	6.7	15
Derby-West Kimberley	0	0.0	0.0	0.0	0.0	9
Broome	3	7.0	7.0	0.0	9.3	43
West Pilbara	1	25.0	0.0	25.0	0.0	4
East Pilbara	-	-	-	-	-	-
Ngaanyatjarraku	-	-	-	-	-	-
Goldfields-Esperance	1	100.0	100.0	0.0	0.0	1
West Coast	1	33.3	33.3	0.0	0.0	3
Total	**7**	**7.9**	**6.7**	**1.1**	**5.6**	**89**

Base: Communities with <20 members which have a CLP

The proportion is higher among larger communities (>=20 people) where two-thirds (65%) report having a CLP and one in seven (15%) are developing one (Table 5.13).

Larger communities in Wyndham-East Kimberley are less likely to either have a CLP (52%) or be developing one (10%). Larger communities in Broome (47%) and West Coast (55%) are also less likely to have a CLP, but are more likely to be developing one (27% and 27% respectively).

Table 5.13: Number and Proportion of Large Communities (>=20 pop) with a Community Layout Plan (CLP) by Region Group

	Has CLP		% Has CLP and uses it	% Has CLP but use unknown	% Developing CLP	Total
Region group	**n**	**%**	**%**	**%**	**%**	**n**
Wyndham-East Kimberley	11	52.4	42.9	9.5	9.5	21
Halls Creek	13	68.4	68.4	0.0	10.5	19
Derby-West Kimberley	21	72.4	62.1	6.9	0.0	29
Broome	7	46.7	46.7	0.0	26.7	15
West Pilbara	6	66.7	55.6	0.0	33.3	9
East Pilbara	8	88.9	77.8	11.1	11.1	9
Ngaanyatjarraku	7	77.8	77.8	0.0	22.2	9
Goldfields-Esperance	9	69.2	30.8	7.7	23.1	13
West Coast	6	54.5	36.4	9.1	27.3	11
Total	**88**	**65.2**	**54.8**	**5.2**	**14.8**	**135**

Base: Communities with >=20 members which have a CLP

5.2.2. Community Needs

The EHNS provided an option for listed improvements for each community via a closed question. Open ended verbatim response were provided and subsequently coded into an appropriate codeframe. Priorities other than that which are environmental related needs are also included in the analysis. Table 5.14 outlines their responses across each region.

Overall, the most commonly identified needs for Western Australia Aboriginal communities relate to housing (new, repairs, housing for visitors and workers – 53%) and water, power, sewerage (improvements or provision – 42%) issues. The same issues were also identified in 2004, however at higher levels (67% and 49% respectively).

Further detail by region is discussed in Section 4 of this report.

Table 5.14: Community Identified Needs

	Number of Communities		Wyndham-East Kimberley		Halls Creek		Derby-West Kimberley		Broome		West Pilbara		East Pilbara		Ngaanyat-jarraku		Goldfields-Esperance		West Coast	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Housing (new, repairs, housing for visitors and workers)	**123**	**53.0**	14	40	13	37.1	26	63.4	43	69.4	7	53.8	5	55.6	6	66.7	5	35.7	4	28.6
Water, Power, Sewerage (improvements or provision)	**97**	**41.8**	17	48.6	12	34.3	13	31.7	40	64.5	3	23.1	4	44.4	2	22.2	2	14.3	4	28.6
Access (internal and access roads, vehicles, boats, airstrips, fuel)	**43**	**18.5**	5	14.3	6	17.1	16	39	4	6.5	2	15.4	1	11.1	4	44.4	2	14.3	3	21.4
Municipal services (street lighting, rubbish disposal, drainage)	**42**	**18.1**	6	17.1	7	20	7	17.1	7	11.3	4	30.8	4	44.4	1	11.1	3	21.4	3	21.4
Health hardware (ablutions, hot water systems, washing machines)	**37**	**15.9**	4	11.4	4	11.4	1	2.4	27	43.5	-	-	1	11.1	-	-	-	-	-	-
Environmental programs (greening, dust suppression)	**28**	**12.1**	1	2.9	3	8.6	6	14.6	5	8.1	3	23.1	4	44.4	-	-	2	14.3	4	28.6
Health services (medical centre, detox centres, AEHWs, first aid kit)	**23**	**9.9**	-	-	4	11.4	4	9.8	3	4.8	2	15.4	5	55.6	3	33.3	2	14.3	-	-
Fencing (houses, tips, sewerage ponds)	**21**	**9.1**	5	14.3	3	8.6	2	4.9	9	14.5	2	15.4	-	-	-	-	-	-	-	-
Recreational facilities (sporting grounds, playgrounds)	**16**	**6.9**	-	-	3	8.6	6	14.6	2	3.2	2	15.4	-	-	2	22.2	1	7.1	-	-
Plant/Vehicle workshop (tools, machinery, tractors, equipment)	**16**	**6.9**	-	-	6	17.1	-	-	6	9.7	2	15.4	2	22.2	-	-	-	-	-	-
Telecommunications (phones)	**16**	**6.9**	3	8.6	1	2.9	4	9.8	3	4.8	3	23.1	1	11.1	.	.	1	7.1	-	-
Training (employment and business development)	**12**	**5.2**	2	5.7	-	-	1	2.4	3	4.8	2	15.4	3	33.3	1	11.1	-	-	-	-
Meeting areas (administration facilities, general purpose buildings)	**11**	**4.7**	-	-	3	8.6	3	7.3	-	-	1	7.7	-	-	2	22.2	1	7.1	1	7.1

Base: All communities

5.3. Provision of Community Services

The indicators of community service provision are as follows:

- Provision of community services such as employment programs and disability housings — refer Section 5.3.1
- Community facilities and telecommunications — refer Section 5.3.3
- Health services such as community foodstores and nutrition policy — refer Section 5.4.7.

Summary of the key results

Four in five communities (82%) report there being a **CDEP** within the community.

Overall the need for **modification of existing accommodation** is greater than the need for purpose-built disability accommodation. Across all Western Australia Aboriginal communities, a total of 79 communities (34% of all communities) require modifications to existing accommodation and 15 communities (6% of all communities) require purpose-built accommodation for disabled people.

In terms of the number of community people which require modified or purpose-built disability housing, a total of 353 have been identified to benefit from this. Proportionally, this is 2.3% of the Western Australian Aboriginal population.

Overall 35% of communities (81 communities in total) have access to either a **telecentre**, **community computer connected to the internet or a video conference facility**. Two-thirds (68%) have a public payphone in their community. Of these communities, most report (92%) that the phone is in working order. One-third of communities (33%) are located within 20kms of a telecentre. However, the majority of communities (51%) are located more than 50kms away from a telecentre.

Seven in ten communities (72% and 92% of the usual population) are within 30 kilometres of a **primary school**. Similarly most communities (69% and 90% of the usual population) are within 30 kilometres of a **high school**. Forty-two percent of communities (or 9,051 people – 60% of the usual population) are within 30 kilometres of **Police services**. However, forty-nine percent (or 5,439 people – 36%) are more than 50 kilometres away from Police service.

A majority of communities (72%) and people (13,624 or 85% of the usual population) live within 30 kilometres of an **airstrip**.

Ten percent of Aboriginal communities (3% of usual population - 498 people) report having **no access to fresh food, fruit and vegetables**. Almost two-thirds of all communities (62%) and most of the usual population (84%) are within 30kms of fresh food supplies. Of the communities with stores, three in five (60%) report not having a nutrition policy.

Human Services

5.3.1. Community Development Employment Program (CDEP)

The CDEP programme is an Australian Government funded initiative for unemployed Aboriginal and Torres Strait Islander people. The programme provides participation opportunities through activities which develop skills and improve employability of participants in order to assist them to move into employment outside the CDEP programme. CDEP activities can also lead to the development of business enterprises. The overall aim of CDEP is to support Aboriginal and Torres Strait Islander Australians to achieve economic independence[16].

CDEP workers can be employed on CDEP on either a full-time or part-time basis and on either a base level salary or where CDEP is used to top-up or match another salary contribution. The data overleaf refers to the number of communities utilising the CDEP (regardless of employment hours or payment type). Furthermore the CDEP data is also based on verbal reports and no cross-validation with CDEP administration data has been conducted.

As seen in Table 5.15, four in five communities (82%, 185 communities) report there being a CDEP within the community. This is lower than 2004 results, where nearly all communities (97%) reported having a CDEP. Similar to that recorded in 2004, larger communities (>=20 people – 88%) are more likely than smaller communities (<20 people - 73%) to have a CDEP.

By region:

- All communities within Derby-West Kimberley and Ngaanyatjarraku report having a CDEP.
- The result is considerably lower in West Pilbara where two in five (42%) report a CDEP.

For smaller communities (<20 people), an average of 5 people has been reported as participating in a CDEP. For larger communities an average of 27 people has been reported.

[16] Source:http://www.workplace.gov.au/NR/rdonlyres/8610D6D8-84E0-441F-B899-0540A29BACB2/0/CDEPGuidelines_final_web070829.pdf

Table 5.15: Number and Proportion of Communities with CDEP by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	8	13	61.5	20	20	100.0	28	33	84.8
Halls Creek	11	15	73.3	19	19	100.0	30	34	88.2
Derby-West Kimberley	10	10	100.0	31	31	100.0	41	41	100.0
Broome	34	45	75.6	9	15	60.0	43	60	71.7
West Pilbara	1	4	25.0	4	8	50.0	5	12	41.7
East Pilbara	-	-	-	7	9	77.8	7	9	77.8
Ngaanyatjarraku	-	-	-	9	9	100.0	9	9	100.0
Goldfields-Esperance	1	1	100.0	11	13	84.6	12	14	85.7
West Coast	1	3	33.3	9	11	81.8	10	14	71.4
Total	**66**	**91**	**72.5**	**119**	**135**	**88.1**	**185**	**226**	**81.9**
2004 Total	**93**	**98**	**95**	**167**	**171**	**98**	**260**	**269**	**97**

Base: All communities

5.3.2. Disability and Mobility

Housing for Disabled Community People

Table 5.16 and 5.17 show the number of communities and the number of people requiring purpose-built dwellings or modifications to their existing homes due to disability.

Overall the need for modification of existing accommodation is greater than the need for purpose-built disability accommodation. Across Western Australia, a total of 79 communities (34% of all communities) require modifications to existing accommodation and 15 communities (6% of all communities) require purpose-built accommodation for disabled people. Derby-West Kimberley, Broome and the Wyndham-East Kimberley region report the highest levels, accounting for 60% of all modifications or Purpose-Built accommodation.

Proportionally, there is only a small difference between 2004 (36% of all communities) and 2008 (37% of all communities) requiring modification or purpose-built accommodation for disabled people.

Table 5.16: Number of Communities Needing Modifications or Purpose-Built Accommodation for Disabled People by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	Modifica-tion	Purpose built	Total	Modifica-tion	Purpose built	Total	Modifica-tion	Purpose built	Total
Wyndham-East Kimberley	2	2	4	9	2	10	11	4	14
Halls Creek	2	0	2	4	2	5	6	2	7
Derby-West Kimberley	2	0	2	19	1	20	21	1	22
Broome	5	3	6	9	2	9	14	5	15
West Pilbara	-	-	-	3	0	3	3	0	3
East Pilbara	-	-	-	5	2	6	5	2	6
Ngaanyatjarraku	-	-	-	9	1	9	9	1	9
Goldfields-Esperance	1	0	1	7	0	7	8	0	8
West Coast	-	-	-	2	0	2	2	0	2
Total	**12**	**5**	**15**	**67**	**10**	**71**	**79**	**15**	**86**
2004 Total	**9**	**3**	**12**	**61**	**25**	**86**	**70**	**28**	**98**

Base: Communities requiring modification or purpose-built accommodation for disabled members

In terms of the number of community people which require modified or purpose-built disability housing, a total of 353 have been identified to benefit from this.

The need for either modifications or purpose built accommodation is higher in **Ngaanyatjarraku** (4.5% of usual population, 69 people), **Goldfields-Esperance** (3.9% of usual population, 40 people) and **East Pilbara** (3.8% of usual population, 41 people).

Proportionally, since 2004 there is only a small difference in the number of disabled community people requiring modification or purpose-built accommodation (1.6% of population in 2004 vs. 2.3% of population in 2008).

Table 5.17: Number of Community People with Disabilities Needing Modifications or Purpose-Built Accommodation by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	Modifica-tion	Purpose built	Total	Modifica-tion	Purpose built	Total	Modifica-tion	Purpose built	Total
Wyndham-East Kimberley	2	2	4	28	4	32	30	6	36
Halls Creek	2	0	2	31	2	33	33	2	35
Derby-West Kimberley	3	0	3	61	11	72	64	11	75
Broome	10	6	16	26	10	36	36	16	52
West Pilbara	-	-	-	3	0	3	3	0	3
East Pilbara	-	-	-	34	7	41	34	7	41
Ngaanyatjarraku	-	-	-	49	20	69	49	20	69
Goldfields-Esperance	1	0	1	39	0	39	40	0	40
West Coast	-	-	-	2	0	2	2	0	2
Total	**18**	**8**	**26**	**273**	**54**	**327**	**291**	**62**	**353**
2004 Total	**15**	**4**	**19**	**172**	**73**	**245**	**187**	**77**	**264**

Base: Count of community members requiring modification or purpose-built accommodation for disabled members

Mobility Issues

Minimal community infrastructure is common to Aboriginal communities and this creates further mobility difficulties for disabled people. Furthermore provision of adequate mobility infrastructure for people with disabilities is important as it allows them to function within, and engage with, community and its services.

Half (49%) of communities (85 communities) who have disabled people report mobility issues present (Table 5.18) – an increase of sixteen percentage points since 2004 (33% in 2004). This is higher in Halls Creek (71%), Derby-West Kimberley (68%), East Pilbara (78%) and Ngaanyatjarraku (67%).

The most commonly reported structural mobility barriers in 2008 include:

- No ramps/ramps need sealing/not enough ramps (46%);
- Pavements need to be sealed/dirt footpaths (37%);
- No sealed roads/roads need upgrading (25%);
- Rails needed in bathroom/house (8%); and
- Steps too high/kerbing too high (6%).

Table 5.18: Number of Communities with Mobility Issues by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	0	9	0.0	5	15	33.3	5	24	20.8
Halls Creek	8	11	72.7	12	17	70.6	20	28	71.4
Derby-West Kimberley	2	4	50.0	17	24	70.8	19	28	67.9
Broome	11	32	34.4	7	12	58.3	18	44	40.9
West Pilbara	0	2	0.0	5	7	71.4	5	9	55.6
East Pilbara	-	-	-	7	9	77.8	7	9	77.8
Ngaanyatjarraku	-	-	-	6	9	66.7	6	9	66.7
Goldfields-Esperance	1	1	100.0	4	12	33.3	5	13	38.5
West Coast	0	2	0.0	0	9	0.0	0	11	0.0
Total	**22**	**61**	**36.1**	**63**	**114**	**55.3**	**85**	**175**	**48.6**
2004 Total	**9**	**86**	**11**	**71**	**156**	**46**	**80**	**242**	**33**

Base: Communities with disabled members

There are 8,480 people (64% of the usual population) who live in communities where mobility issues are of concern to their disabled community members. This number is higher in Halls Creek (93% of usual population), Ngaanyatjarraku (83%) and East Pilbara (81%).

Since 2004, there has been an increase of nine percentage points in the proportion of community members with mobility issues (55% in 2004 vs. 64% in 2008).

Table 5.19: Usual Population of Communities with Mobility Issues by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	0	103	0	210	1,497	14	210	1,600	13
Halls Creek	62	76	82	1,856	1,992	93	1,918	2,068	93
Derby-West Kimberley	30	54	56	2,003	2,684	75	2,033	2,738	74
Broome	84	267	31	1,490	2,061	72	1,574	2,328	68
West Pilbara	0	22	0	300	384	78	300	406	74
East Pilbara	-	-	-	872	1,076	81	872	1,076	81
Ngaanyatjarraku	-	-	-	1,272	1,537	83	1,272	1,537	83
Goldfields-Esperance	15	15	100	286	953	30	301	968	31
West Coast	0	38	0	0	566	0	0	604	0
Total	**191**	**575**	**33**	**8,289**	**12,750**	**65**	**8,480**	**13,325**	**64**
2004 Total	**81**	**745**	**11**	**7,956**	**13,910**	**57**	**8,037**	**14,655**	**55**

Base: Count of community members with disabled members

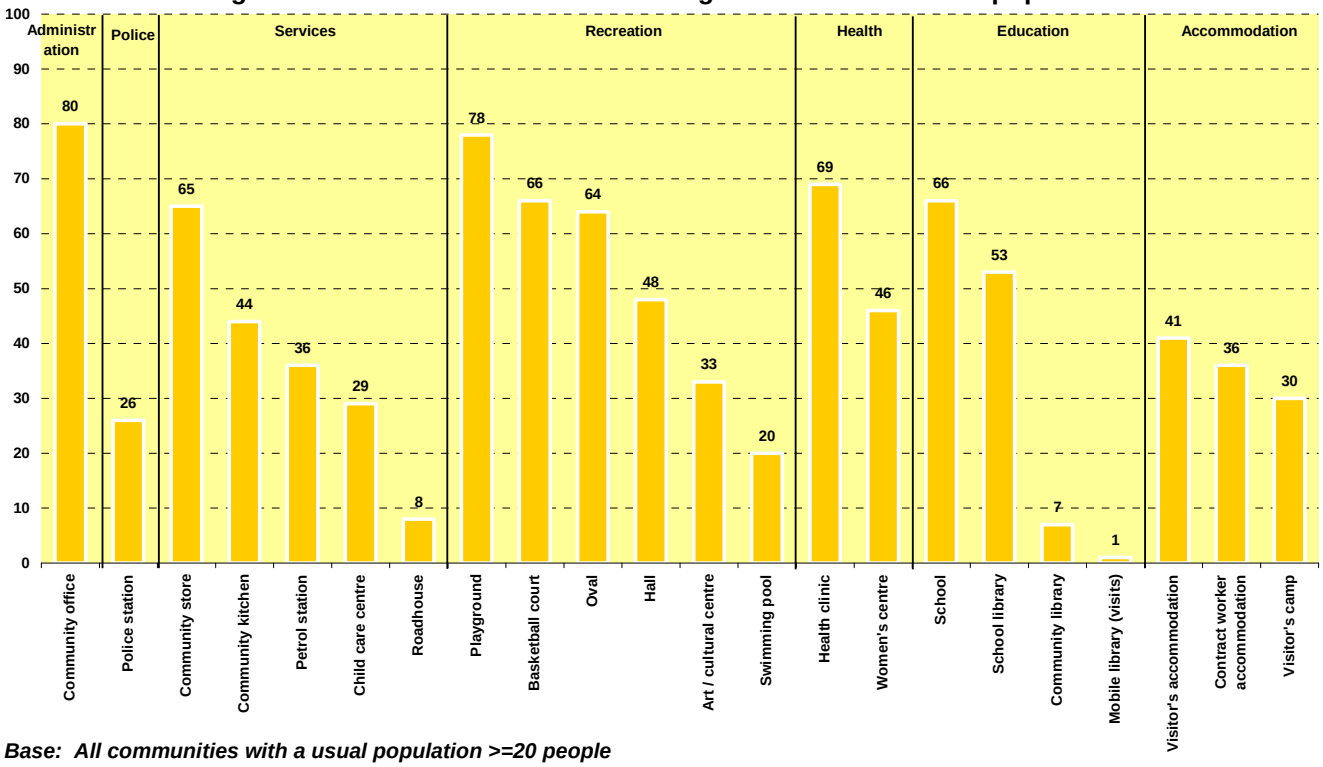
Facilities

5.3.3. Community Facilities

The following figure shows the number of communities with communal facilities and the proportion of region population with access to those facilities on site. Communities with a usual population less than 20 are excluded from the table as these communities rarely have such facilities on site.

The figure records the total proportion of Western Australian Aboriginal communities with access to the facilities.

Figure 5.1: Access to Facilities – among all communities with populations >=20



Base: All communities with a usual population >=20 people

Compared to that recorded in 2004 (shown in Table 5.20), there are more mentions in 2008 of access to playgrounds (73% 2004, 78% 2008), halls (42% to 48%), community kitchens (34% to 44%), Police stations (14% to 26%) and swimming pools (11% to 20%). There are also more mentions of visitors' accommodation (19% to 41%) however this is potentially offset by fewer mentions of access to contract worker accommodation (49% to 36%) and visitors' camps (42% to 30%). Recorded access to child care centres is also lower in 2008 (29%) relative to that recorded in 2004 (48%).

Community Facilities Which Have Lower Population Access - by Region Group

Wyndham-East Kimberley – lower access to:

- *Municipal*: community office
- *Services*: child care centre, roadhouse
- *Recreation*: basketball court, oval, art/cultural centre, swimming pool
- *Health*: health clinic, women's centre
- *Education*: school, school library, mobile library (visits)

Halls Creek – lower access to:

- *Municipal*: community office
- *Services*: child care centre, roadhouse
- *Education*: school library, community library, mobile library (visits)

Derby-West Kimberley – lower access to:

- *Municipal*: community office, Police station, roadhouse
- *Services*: petrol station, child care centre
- *Education*: school, school library, community library, mobile library (visits)
- *Accommodation*: visitors accommodation, contract worker accommodation, visitors camp

Broome – lower access to:

- *Services*: roadhouse
- *Recreation*: basketball court, oval, hall, art/cultural centre
- *Education*: mobile library (visits)
- *Accommodation*: contract worker accommodation, visitors camp

West Pilbara – lower access to:

- *Municipal*: community office, Police station
- *Services*: community store, community kitchen, petrol station, child care centre, roadhouse
- *Recreation*: oval, hall, arts/cultural centre
- *Health*: health clinic, women's centre
- *Education*: school, school library, community library, mobile library (visits)
- *Accommodation*: visitors accommodation, contract worker accommodation, visitors camp

East Pilbara – lower access to:

- *Services*: community kitchen, petrol station, child care centre, roadhouse
- *Health*: women's centre
- *Education*: school library, community library
- *Accommodation*: contract worker accommodation,

Ngaanyatjarraku – lower access to:

- *Services*: community kitchen, child care centre
- *Education*: community library, mobile library (visits)
- *Accommodation*: visitors camp

Goldfields-Esperance – lower access to:

- *Municipal*: community office, Police station
- *Services*: community store, petrol station, child care centre, roadhouse
- *Recreation*: playground, basketball court, arts/cultural centre, swimming pool
- *Health*: health clinic, women's centre
- *Education*: school, school library, community library, mobile library (visits)
- *Accommodation*: contract worker accommodation

West Coast – lower access to:

- *Municipal*: Police station
- *Services*: child care centre, roadhouse
- *Education*: school library, community library, mobile library (visits)
- *Accommodation*: contract worker accommodation, visitors camp

Table 5.20: Number of Facilities and Percentage of Regional Population with Access to a Facility (population>=20) by Region Group

Dwelling Type	Community office		Playground		Health clinic		School		Basketball Court		Community store		Oval		School library	
	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop
Wyndham-East Kimberley	9	65.5	10	81.1	7	52.3	7	52.3	6	49.6	5	57.8	2	37.6	3	18.2
Halls Creek	12	76.5	13	70.6	6	67.1	8	72.4	6	61.6	6	67.1	9	71.8	7	55.2
Derby-West Kimberley	16	77.2	20	87.7	12	66.1	10	56.0	15	75.0	10	60.9	9	64.7	9	53.6
Broome	8	88.4	3	66.9	5	81.8	5	81.8	5	46.0	5	81.8	3	51.5	5	81.8
West Pilbara	6	75.5	7	86.7	5	60.0	3	39.5	5	70.5	1	30.4	1	30.4	2	35.4
East Pilbara	7	81.0	6	75.9	6	75.9	6	75.9	5	70.7	5	61.5	6	84.7	4	48.5
Ngaanyatjarraku	9	100.0	6	84.5	9	100.0	9	100.0	8	98.0	9	100.0	9	100.0	6	72.4
Goldfields-Esperance	10	67.5	7	55.2	5	38.4	6	48.2	7	55.2	4	36.1	6	53.7	5	43.7
West Coast	10	94.6	8	85.2	4	61.6	4	46.8	6	75.5	2	34.5	5	69.2	4	46.8
Total	**87**	**80.2**	**80**	**77.5**	**59**	**68.8**	**58**	**66.4**	**63**	**65.9**	**47**	**64.5**	**50**	**63.5**	**45**	**53.3**
2004 Total	**98**	**83.9**	**84**	**72.6**	**69**	**70.2**	**63**	**65.1**	**71**	**71.4**	**58**	**63.4**	**52**	**61.6**	**53**	**60.6**

Base: All communities

Table 5.20: Number of Facilities and Percentage of Regional Population with Access to a Facility (population>=20) by Region Group (cont'd.)

Dwelling Type	Hall		Women's centre		Community kitchen		Visitors accommodation		Contract worker accommodation		Petrol station		Art/cultural centre		Visitors camp	
	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop
Wyndham-East Kimberley	5	50.4	1	3.6	4	46.5	2	37.6	3	32.7	3	33.6	1	3.6	5	37.1
Halls Creek	8	45.5	5	53.9	7	43.7	5	38.6	7	60.3	4	56.6	6	61.6	8	71.5
Derby-West Kimberley	7	41.1	5	48.9	16	70.9	4	11.0	3	7.3	-	-	8	36.9	3	5.0
Broome	3	33.2	4	63.4	4	36.1	3	57.5	3	32.8	5	81.8	1	2.5	1	2.9
West Pilbara	2	27.0	2	45.2	3	18.0	2	13.3	1	8.4	-	-	-	-	-	-
East Pilbara	4	46.6	4	43.7	2	24.2	3	35.9	3	35.9	1	10.3	4	41.5	6	67.1
Ngaanyatjarraku	7	91.0	5	77.0	2	20.5	7	83.3	8	90.4	4	74.8	7	88.9	3	20.7
Goldfields-Esperance	6	50.7	3	26.9	4	31.8	5	54.0	3	28.1	1	8.7	1	8.0	8	75.0
West Coast	5	53.6	2	40.4	5	53.6	6	56.0	3	29.2	1	20.2	2	23.8	2	9.0
Total	**47**	**48.3**	**31**	**46.4**	**47**	**43.6**	**37**	**40.7**	**34**	**36.0**	**19**	**35.6**	**30**	**32.6**	**36**	**29.8**
2004 Total	**44**	**42.4**	**42**	**50.2**	**54**	**34.2**	**32**	**18.8**	**36**	**48.8**	**26**	**39.0**	**24**	**30.3**	**42**	**42.3**

Table 5.20 Number of Facilities and Percentage of Regional Population with Access to a Facility (population>=20) by Region Group (cont'd.)

Dwelling Type	Child care centre		Police station		Swimming pool		Roadhouse		Community library		Mobile library (visits)		Other	
	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop	n	% pop
Wyndham-East Kimberley	3	33.6	2	37.6	-	-	1	3.6	1	3.9	-	-	-	-
Halls Creek	1	17.2	2	39.3	1	17.2	-	-	1	1.2	-	-	-	-
Derby-West Kimberley	6	33.9	-	-	-	-	2	3.4	1	1.6	-	-	1	2.4
Broome	4	63.4	3	51.1	1	36.6	-	-	1	36.6	-	-	-	-
West Pilbara	1	30.4	-	-	1	30.4	-	-	-	-	-	-	3	21.2
East Pilbara	-	-	1	18.6	1	18.6	-	-	-	-	1	13.9	-	-
Ngaanyatjarraku	2	13.9	2	57.7	3	65.5	2	57.7	-	-	-	-	1	4.0
Goldfields-Esperance	2	17.2	-	-	-	-	-	-	-	-	-	-	2	14.9
West Coast	1	20.2	-	-	2	34.5	-	-	-	-	-	-	2	14.5
Total	**20**	**29.2**	**10**	**26.1**	**9**	**19.6**	**5**	**7.5**	**4**	**6.6**	**1**	**1.1**	**9**	**3.7**
2004 Total	**34**	**47.5**	**7**	**13.9**	**7**	**11.0**	**10**	**12.4**	**3**	**4.2**	**2**	**3.4**	**10**	**11.6**

Base: All communities

5.3.4. Telecommunications

Table 5.21 provides a summary of various telecommunication types available to Aboriginal communities.

Overall 35% of communities (81 communities in total) have access to either a telecentre, community computer connected to the internet or a video conference facility. Of these communities most (78%) have access to one facility only – with the internet being the most common. Only a limited number of communities have access to two (12%) or all three facilities (10%) listed below.

Comparison between 2004 and 2008 show a twenty percentage point increase in the number of community computers being connected to an internet (14% to 34%).

In terms of the type of internet connection, most communities (regardless of community size) have either cable/broadband (22%) or satellite (63%). A small proportion of communities rely on dial up internet access (15%).

Table 5.21: Number of Communities with a Facility by Region Group

	Telecentre			Internet			Video Conference		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	0	35	0.0	9	35	25.7	1	35	2.9
Halls Creek	3	35	8.6	14	35	40.0	7	34	20.6
Derby-West Kimberley	2	41	4.9	15	39	38.5	2	38	5.3
Broome	2	62	3.2	14	59	23.7	3	62	4.8
West Pilbara	0	13	0.0	2	13	15.4	1	13	7.7
East Pilbara	0	9	0.0	3	9	33.3	2	9	22.2
Ngaanyatjarraku	2	9	22.2	8	9	88.9	2	9	22.2
Goldfields-Esperance	1	14	7.1	8	14	57.1	1	14	7.1
West Coast	1	14	7.1	4	14	28.6	0	14	0.0
Total	**11**	**232**	**4.7**	**77**	**227**	**33.9**	**19**	**228**	**8.3**
2004 Total	**NA**			**39**	**271**	**14**	**16**	**260**	**6**

Base: All communities

Table 5.22 further summarises telecommunication mediums available to Aboriginal communities. **Overall two-thirds (68%, 158 communities) have a public payphone in their community. Of these communities, most report (92%) that the phone is in working order.** Satellite phones are in low use, with one in five (19%) communities reporting having one.

Comparison between 2004 and 2008 shows a twenty-one percentage point increase in the number of payphones (47% vs. 68% respectively). More positively, the increases in number of payphones have not diminished the working order of phones, suggesting maintenance (repair or replacement) has been kept up since 2004.

5.22: Number of Communities with a Telephone Facility by Region Group

Region group	Payphones			% Payphones working			Satellite Phones		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	24	35	68.6	20	23	87.0	4	35	11.4
Halls Creek	28	35	80.0	24	26	92.3	3	34	8.8
Derby-West Kimberley	29	40	72.5	26	28	92.9	7	39	17.9
Broome	28	62	45.2	27	28	96.4	12	62	19.4
West Pilbara	8	13	61.5	7	8	87.5	1	12	8.3
East Pilbara	8	9	88.9	5	7	71.4	4	9	44.4
Ngaanyatjarraku	9	9	100.0	7	8	87.5	8	9	88.9
Goldfields-Esperance	13	14	92.9	13	13	100.0	3	14	21.4
West Coast	11	14	78.6	11	11	100.0	1	11	9.1
Total	**158**	**231**	**68.4**	**140**	**152**	**92.1**	**43**	**225**	**19.1**
2004 Total	**129**	**272**	**47**	**114**	**125**	**91**	**63**	**260**	**24**

Base: All communities

Distances to Nearest Telecentre

Whilst Table 5.21 shows only 11 communities with a telecentre, this figure is based on communities which specifically report having a telecentre located within them. In many instances, a telecentre will not be located directly within the community however will be within close proximity. Table 5.23 and 5.24 shows the reported proximity from a community centre to the nearest telecentre.

Across all regions, one-third of communities (33%, 78 communities) are located within 20kms of a telecentre. However, the majority of communities (51%) are located more than 50kms away from a telecentre.

Of the communities located more than 50kms away from a telecentre, 68% either have access to a public payphone (that works) within their community or to a community satellite phone. One-third (32%) of communities do not have access to either of these communication devices.

Table 5.23: Number of Communities within Various Distances to Telecentre by Region Group

Region Group	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n tot
Wyndham-East Kimberley	3	8.6	7	20.0	5	14.3	5	14.3	3	8.6	12	34.3	35
Halls Creek	7	20.0	3	8.6	-	-	6	17.1	5	14.3	14	40.0	35
Derby-West Kimberley	10	24.4	6	14.6	2	4.9	-	-	9	22.0	14	34.1	41
Broome	5	8.1	13	21.0	6	9.7	4	6.5	23	37.1	11	17.7	62
West Pilbara	3	23.1	1	7.7	3	23.1	1	7.7	3	23.1	2	15.4	13
East Pilbara	3	33.3	-	-	-	-	-	-	-	-	6	66.7	9
Ngaanyatjarraku	2	22.2	-	-	-	-	-	-	-	-	7	77.8	9
Goldfields-Esperance	5	35.7	3	21.4	1	7.1	1	7.1	1	7.1	3	21.4	14
West Coast	5	35.7	2	14.3	1	7.1	1	7.1	3	21.4	2	14.3	14
Total	**43**	**18.5**	**35**	**15.1**	**18**	**7.8**	**18**	**7.8**	**47**	**20.3**	**71**	**30.6**	**232**

Base: All communities

Table 5.24: Usual Population of Communities within Various Distances to Telecentre by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	545	27.0	156	7.7	63	3.1	138	6.8	72	3.6	1,044	51.7	2,018
Halls Creek	1,166	53.2	47	2.1	-	-	65	3.0	624	28.5	290	13.2	2,192
Derby-West Kimberley	819	24.7	903	27.2	194	5.9	-	-	468	14.1	931	28.1	3,315
Broome	1,232	48.4	130	5.1	511	20.1	37	1.5	569	22.3	69	2.7	2,548
West Pilbara	171	27.2	66	10.5	130	20.7	10	1.6	48	7.6	204	32.4	629
East Pilbara	259	24.1	-	-	-	-	-	-	-	-	817	75.9	1,076
Ngaanyatjarraku	866	56.3	-	-	-	-	-	-	-	-	671	43.7	1,537
Goldfields-Esperance	468	46.1	177	17.4	47	4.6	76	7.5	87	8.6	160	15.8	1,015
West Coast	404	51.7	69	8.8	40	5.1	1	0.1	176	22.5	92	11.8	782
Total	**5,930**	**39.2**	**1,548**	**10.2**	**985**	**6.5**	**327**	**2.2**	**2,044**	**13.5**	**4,278**	**28.3**	**15,112**

Base: Count of all community members

5.3.5. Other Community Facilities

Educational services

Distance from primary school and high school is also measured in 2008. **As noted in Table 5.25 below, two in five communities (43%, 100 communities) are within 6 kilometres of a primary school, also seven in ten communities (72%, 167 communities) are within 30 kilometres of a primary school.**

Regions which are closest to a primary school are East Pilbara (100% of communities are within 6 kilometres), Ngaanyatjarraku (100%) and Goldfields-Esperance (71%). Regions which are furthest from a primary school are Derby-West Kimberley (20% of communities are more than 100 kilometres away) and Halls Creek (11%).

Table 5.25: Number of Communities within Various Distances to Primary School by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	9	25.7	8	22.9	7	20.0	6	17.1	3	8.6	2	5.7	35
Halls Creek	16	45.7	5	14.3	3	8.6	6	17.1	1	2.9	4	11.4	35
Derby-West Kimberley	20	48.8	4	9.8	1	2.4	-	-	8	19.5	8	19.5	41
Broome	11	17.7	17	27.4	13	21.0	14	22.6	6	9.7	1	1.6	62
West Pilbara	7	53.8	-	-	3	23.1	2	15.4	1	7.7	-	-	13
East Pilbara	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Ngaanyatjarraku	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	10	71.4	2	14.3	1	7.1	-	-	-	-	1	7.1	14
West Coast	9	64.3	1	7.1	2	14.3	1	7.1	1	7.1	-	-	14
Total	**100**	**43.1**	**37**	**15.9**	**30**	**12.9**	**29**	**12.5**	**20**	**8.6**	**16**	**6.9**	**232**

Base: All communities

The majority of community members (92%, 13,997 people) have a primary school located within 30 kilometres of their community. Communities within the Wyndham-East Kimberley region have the largest proportion of community members (15% of usual population for the region - or 305 people) that are more than 30 kilometres away from a primary school.

Table 5.26: Usual Population of Communities within Various Distances to Primary School by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	1,469	72.8	161	8.0	83	4.1	154	7.6	106	5.3	45	2.2	2,018
Halls Creek	1,950	89.0	76	3.5	58	2.6	84	3.8	4	0.2	20	0.9	2,192
Derby-West Kimberley	2,440	73.6	389	11.7	73	2.2	-	-	275	8.3	138	4.2	3,315
Broome	2,015	79.1	155	6.1	180	7.1	125	4.9	66	2.6	7	0.3	2,548
West Pilbara	471	74.9	-	-	130	20.7	16	2.5	12	1.9	-	-	629
East Pilbara	1,076	100.0	-	-	-	-	-	-	-	-	-	-	1,076
Ngaanyatjarraku	1,537	100.0	-	-	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	848	83.5	85	8.4	47	4.6	-	-	-	-	35	3.4	1,015
West Coast	652	83.4	19	2.4	83	10.6	1	0.1	27	3.5	-	-	782
Total	**12,458**	**82.4**	**885**	**5.9**	**654**	**4.3**	**380**	**2.5**	**490**	**3.2**	**245**	**1.6**	**15,112**

Base: Count of all community members

With respect to high schools, most communities (69%, 159 communities) are within 30 kilometres of a high school. All communities within the Ngaanyatjarraku region are within 6 kilometres of a high school. As with primary schools, the region furthest away from high schools is Derby-West Kimberley, with one in five communities (20%) being located more than 100 kilometres away.

Table 5.27: Number of Communities within Various Distances to High School by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	7	20.0	8	22.9	7	20.0	6	17.1	2	5.7	5	14.3	35
Halls Creek	15	42.9	6	17.1	3	8.6	5	14.3	1	2.9	5	14.3	35
Derby-West Kimberley	16	39.0	7	17.1	2	4.9	-	-	8	19.5	8	19.5	41
Broome	10	16.1	17	27.4	12	19.4	15	24.2	6	9.7	2	3.2	62
West Pilbara	5	38.5	1	7.7	3	23.1	2	15.4	1	7.7	1	7.7	13
East Pilbara	8	88.9	-	-	-	-	-	-	-	-	1	11.1	9
Ngaanyatjarraku	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	8	57.1	3	21.4	1	7.1	1	7.1	-	-	1	7.1	14
West Coast	7	50.0	3	21.4	1	7.1	1	7.1	2	14.3	-	-	14
Total	**85**	**36.6**	**45**	**19.4**	**29**	**12.5**	**30**	**12.9**	**20**	**8.6**	**23**	**9.9**	**232**

Base: All communities

Most of the community usual population (90%, 13,520 people) have access to a high school within 30 kilometres of their community. Communities within the Wyndham-East Kimberley region have the largest usual population (28% or 565 people) which are more than 30 kilometres from a high school.

Table 5.28: Usual Population of Communities within Various Distances to High School by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	1,209	59.9	161	8.0	83	4.1	154	7.6	56	2.8	355	17.6	2,018
Halls Creek	1,945	88.7	81	3.7	58	2.6	73	3.3	4	0.2	31	1.4	2,192
Derby-West Kimberley	1,772	53.5	936	28.2	194	5.9	-	-	275	8.3	138	4.2	3,315
Broome	2,005	78.7	155	6.1	172	6.8	135	5.3	66	2.6	15	0.6	2,548
West Pilbara	381	60.6	66	10.5	130	20.7	16	2.5	12	1.9	24	3.8	629
East Pilbara	1,020	94.8	-	-	-	-	-	-	-	-	56	5.2	1,076
Ngaanyatjarraku	1,537	100.0	-	-	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	680	67.0	177	17.4	47	4.6	76	7.5	-	-	35	3.4	1,015
West Coast	537	68.7	134	17.1	40	5.1	1	0.1	70	9.0	-	-	782
Total	**11,086**	**73.4**	**1,710**	**11.3**	**724**	**4.8**	**455**	**3.0**	**483**	**3.2**	**654**	**4.3**	**15,112**

Base: Count of all community members

Policing services

Across all Western Australia Aboriginal regions, 42% (98 communities) of communities are within 30 kilometres of Police services. However, half (49%, 114 communities) are more than 50 kilometres away from Police service.

Table 5.29: Number of Communities within Various Distances to Police Services by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	5	14.3	8	22.9	8	22.9	5	14.3	4	11.4	5	14.3	35
Halls Creek	7	20.0	3	8.6	-	-	7	20.0	2	5.7	16	45.7	35
Derby-West Kimberley	8	19.5	6	14.6	2	4.9	-	-	9	22.0	16	39.0	41
Broome	5	8.1	14	22.6	5	8.1	4	6.5	23	37.1	11	17.7	62
West Pilbara	4	30.8	-	-	3	23.1	1	7.7	3	23.1	2	15.4	13
East Pilbara	4	44.4	-	-	-	-	1	11.1	-	-	4	44.4	9
Ngaanyatjarraku	2	22.2	-	-	-	-	-	-	-	-	7	77.8	9
Goldfields-Esperance	3	21.4	3	21.4	1	7.1	1	7.1	1	7.1	5	35.7	14
West Coast	4	28.6	2	14.3	1	7.1	1	7.1	3	21.4	3	21.4	14
Total	**42**	**18.1**	**36**	**15.5**	**20**	**8.6**	**20**	**8.6**	**45**	**19.4**	**69**	**29.7**	**232**

Base: All communities

Sixty percent (9,051 people) of the Aboriginal usual population has access to police services (in terms of proximity) being located within 30 kilometres of their community. However 36% of the population (5,439 people) are more than 50 kilometres away from Police services.

Table 5.30: Usual Population of Communities within Various Distances to Police Services by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	1,245	61.7	161	8.0	155	7.7	138	6.8	139	6.9	180	8.9	2,018
Halls Creek	1,255	57.3	47	2.1	-	-	205	9.4	14	0.6	671	30.6	2,192
Derby-West Kimberley	601	18.1	903	27.2	194	5.9	-	-	468	14.1	1,149	34.7	3,315
Broome	1,232	48.4	136	5.3	505	19.8	37	1.5	569	22.3	69	2.7	2,548
West Pilbara	237	37.7	-	-	130	20.7	10	1.6	48	7.6	204	32.4	629
East Pilbara	459	42.7	-	-	-	-	155	14.4	-	-	462	42.9	1,076
Ngaanyatjarraku	887	57.7	-	-	-	-	-	-	-	-	650	42.3	1,537
Goldfields-Esperance	317	31.2	177	17.4	47	4.6	76	7.5	87	8.6	311	30.6	1,015
West Coast	239	30.6	84	10.7	40	5.1	1	0.1	176	22.5	242	30.9	782
Total	**6,472**	**42.8**	**1,508**	**10.0**	**1,071**	**7.1**	**622**	**4.1**	**1,501**	**9.9**	**3,938**	**26.1**	**15,112**

Base: Count of all community members

5.3.6. Airstrip within the Region

Airstrip access to communities is vital for supplies (e.g. food, medicine), for fly in services (e.g. health check-ups) and general servicing of a community.

Across Western Australia, a majority of communities (72%, 166 communities) and members (85%, 13,624 people) live within 30 kilometres of an airstrip. Communities within the Derby-West Kimberley region are most isolated from airstrips, with one in three (29%) located more than 50 kilometres away.

Table 5.31: Number of Communities within Various Distances to Airstrip by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	9	25.7	9	25.7	7	20.0	5	14.3	3	8.6	2	5.7	35
Halls Creek	17	48.6	3	8.6	1	2.9	5	14.3	3	8.6	6	17.1	35
Derby-West Kimberley	17	41.5	9	22.0	3	7.3	-	-	8	19.5	4	9.8	41
Broome	10	16.1	18	29.0	12	19.4	15	24.2	6	9.7	1	1.6	62
West Pilbara	7	53.8	-	-	3	23.1	3	23.1	-	-	-	-	13
East Pilbara	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Ngaanyatjarraku	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	9	64.3	3	21.4	1	7.1	1	7.1	-	-	-	-	14
West Coast	5	35.7	4	28.6	1	7.1	1	7.1	2	14.3	1	7.1	14
Total	**92**	**39.7**	**46**	**19.8**	**28**	**12.1**	**30**	**12.9**	**22**	**9.5**	**14**	**6.0**	**232**

Base: All communities

Table 5.32: Usual Population of Communities within Various Distances to Airstrip by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	1,417	70.2	211	10.5	83	4.1	138	6.8	72	3.6	97	4.8	2,018
Halls Creek	1,930	88.0	47	2.1	20	0.9	40	1.8	20	0.9	135	6.2	2,192
Derby-West Kimberley	1,088	32.8	1,464	44.2	224	6.8	-	-	465	14.0	74	2.2	3,315
Broome	2,005	78.7	161	6.3	174	6.8	135	5.3	66	2.6	7	0.3	2,548
West Pilbara	459	73.0	-	-	130	20.7	40	6.4	-	-	-	-	629
East Pilbara	1,076	100.0	-	-	-	-	-	-	-	-	-	-	1,076
Ngaanyatjarraku	1,537	100.0	-	-	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	715	70.4	177	17.4	47	4.6	76	7.5	-	-	-	-	1,015
West Coast	445	56.9	174	22.3	40	5.1	1	0.1	70	9.0	52	6.6	782
Total	**10672**	**70.6**	**2,234**	**14.8**	**718**	**4.8**	**430**	**2.8**	**693**	**4.6**	**365**	**2.4**	**15,112**

Base: Count of all community members

Health Services

5.3.7. Nutrition

Similar to 2004, communities were asked whether they have access to fresh food, fruit and vegetables. Table 5.33 overleaf highlights the results by region and also compares to 2004 results overall.

Across Western Australia, 10% of Aboriginal communities (3% of usual population - 498 people) report having no access to fresh food, fruit and vegetables. Halls Creek has the highest proportion, with two in five (39%) reporting communities without access to fresh food, fruit and vegetables.

Positively, comparisons between 2004 show a seven percentage point decrease in 2008 in communities having no access to fresh food, fruit and vegetables (17% vs. 10% respectively). This indication suggests there are now more communities with better access to fresh food, fruit and vegetables.

Table 5.33: Number of Communities without Access to Fresh Food, Fruit and Vegetables by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Tot	%	n	Tot	%	n	Tot	%
Wyndham-East Kimberley	-	-	-	1	8	12.5	1	8	12.5
Halls Creek	3	5	60.0	4	13	30.8	7	18	38.9
Derby-West Kimberley	1	2	50.0	2	10	20.0	3	12	25.0
Broome	1	40	2.5	0	15	0.0	1	55	1.8
West Pilbara	0	3	0.0	0	9	0.0	0	12	0.0
East Pilbara	-	-	-	1	9	11.1	1	9	11.1
Ngaanyatjarraku	-	-	-	0	9	0.0	0	9	0.0
Goldfields-Esperance	0	1	0.0	2	11	18.2	2	12	16.7
West Coast	0	2	0.0	0	10	0.0	0	12	0.0
Total	**5**	**53**	**9.4**	**10**	**94**	**10.6**	**15**	**147**	**10.2**
2004 Total	**24**	**100**	**24**	**22**	**169**	**13**	**46**	**269**	**17**

Base: All communities

With respect to the distance travelled by community people for fresh food supplies, the average distance travelled is 49 kilometres – with smaller communities (<20 people) travelling further than larger communities. Derby-West Kimberley (74 kilometres) and East Pilbara (63 kilometres) have the longest average travel distance for fresh food supplies.

Table 5.34: Average Distance (km) Travelled to the Nearest Fresh Food Supplies by Region Group

Region group	Com pop <20			Com pop >=20			Total		
	n	Ave. Dist.	Max Dist.	N	Ave. Dist.	Max Dist.	N	Ave. Dist.	Max Dist.
Wyndham-East Kimberley	14	37	156	21	79	520	35	62	520
Halls Creek	16	81	190	19	31	130	35	54	190
Derby-West Kimberley	10	163	450	31	45	230	41	74	450
Broome	47	33	200	15	15	87	62	29	200
West Pilbara	4	49	77	9	44	150	13	45	150
East Pilbara	-	-	-	9	63	400	9	63	400
Ngaanyatjarraku	-	-	-	9	0	0	9	0	0
Goldfields-Esperance	1	18	18	13	53	240	14	51	240
West Coast	3	15	35	11	49	190	14	42	190
Total	**95**	**56**	**450**	**137**	**44**	**520**	**232**	**49**	**520**

Base: All communities

Distance to Fresh Food Supplies

The below tables complement Tables 5.34 and further breaks down each region by distance to fresh food supplies.

A majority of communities (62%, 144 communities) and the usual population (84% of all Western Australia Aboriginal people – 12,748 people) are within 30kms of fresh food supplies – with the Ngaanyatjarraku and East Pilbara region recording the shortest distances. However in 15% of communities, the travel distance to fresh food supplies is more than 100 kilometres.

Table 5.35: Number of Communities within Various Distances to Fresh Food Supplies by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	7	20.0	8	22.9	6	17.1	5	14.3	4	11.4	5	14.3	35
Halls Creek	14	40.0	4	11.4	1	2.9	4	11.4	2	5.7	10	28.6	35
Derby-West Kimberley	17	41.5	3	7.3	2	4.9	-	-	8	19.5	11	26.8	41
Broome	11	17.7	17	27.4	13	21.0	14	22.6	6	9.7	1	1.6	62
West Pilbara	3	23.1	-	-	3	23.1	4	30.8	2	15.4	1	7.7	13
East Pilbara	7	77.8	-	-	-	-	-	-	-	-	2	22.2	9
Ngaanyatjarraku	9	100.0	-	-	-	-	-	-	-	-	-	-	9
Goldfields-Esperance	6	42.9	3	21.4	1	7.1	1	7.1	-	-	3	21.4	14
West Coast	6	42.9	1	7.1	2	14.3	1	7.1	2	14.3	2	14.3	14
Total	**80**	**34.5**	**36**	**15.5**	**28**	**12.1**	**29**	**12.5**	**24**	**10.3**	**35**	**15.1**	**232**

Base: All communities

Table 5.36: Usual Population of Communities within Various Distances to Fresh Food Supplies by Region Group

	<6 km		6-20 km		21-30 km		31-50 km		51-100 km		100+ km		Total
Region Group	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n tot**
Wyndham-East Kimberley	1,372	68.0	161	8.0	77	3.8	138	6.8	112	5.6	158	7.8	2,018
Halls Creek	1,895	86.5	52	2.4	20	0.9	46	2.1	14	0.6	165	7.5	2,192
Derby-West Kimberley	2,372	71.6	103	3.1	194	5.9	-	-	275	8.3	371	11.2	3,315
Broome	2,009	78.8	155	6.1	180	7.1	131	5.1	66	2.6	7	0.3	2,548
West Pilbara	334	53.1	-	-	130	20.7	99	15.7	42	6.7	24	3.8	629
East Pilbara	791	73.5	-	-	-	-	-	-	-	-	285	26.5	1,076
Ngaanyatjarraku	1,537	100.0	-	-	-	-	-	-	-	-	-	-	1,537
Goldfields-Esperance	586	57.7	177	17.4	47	4.6	76	7.5	-	-	129	12.7	1,015
West Coast	454	58.1	19	2.4	83	10.6	1	0.1	133	17.0	92	11.8	782
Total	**11,350**	**75.1**	**667**	**4.4**	**731**	**4.8**	**491**	**3.2**	**642**	**4.2**	**1,231**	**8.1**	**15,112**

Base: Count of all community members

Nutrition-based Policy

Communities are also asked whether their on site community store has a nutrition based policy. **Of the communities with stores, three in five (60%, 24 communities) report not having a nutrition policy.** The regions of East Pilbara (100%) and Ngaanyatjarraku (89%) have the highest number of communities without a store nutrition policy.

Of the communities with a store nutrition based policy, 9 out of the 15 communities (60%) feel the policy is working. This result is the same as in 2004 where 14 of the 23 communities (61%) felt the policy was working.

Table 5.37: Number of Communities with a Community Store without a Nutrition-based Policy by Region Group

	Com pop <20			Com pop >=20			Total		
Region group	**n**	**Tot**	**%**	**n**	**Tot**	**%**	**n**	**Tot**	**%**
Wyndham-East Kimberley	-	-	-	3	5	60.0	3	5	60.0
Halls Creek	-	-	-	0	5	0.0	0	5	0.0
Derby-West Kimberley	-	-	-	2	4	50.0	2	4	50.0
Broome	-	-	-	3	5	60.0	3	5	60.0
West Pilbara	-	-	-	0	1	0.0	0	1	0.0
East Pilbara	-	-	-	5	5	100.0	5	5	100.0
Ngaanyatjarraku	-	-	-	8	9	88.9	8	9	88.9
Goldfields-Esperance	-	-	-	2	4	50.0	2	4	50.0
West Coast	-	-	-	1	2	50.0	1	2	50.0
Total	**-**	**-**	**-**	**24**	**40**	**60.0**	**24**	**40**	**60.0**
2004 Total	**5**	**6**	**83**	**22**	**48**	**46**	**27**	**54**	**50**

Base: Communities who have a community store

5.3.8. Foodstores

As seen in the below table, a total of 47 communities (20% of all communities) report having food premises (e.g. community store, bakery, roadhouse) – with a total of 60 foodstores between them. The Goldfields-Esperance region group has the highest number of foodstores to communities, with an average of 1.8 foodstores in each community.

Table 5.38: Number of Communities and Foodstores by Region Group

Region group	Number of Communities	Number of Foodstores
Wyndham-East Kimberley	5	7
Halls Creek	6	7
Derby-West Kimberley	10	11
Broome	5	8
West Pilbara	1	1
East Pilbara	5	5
Ngaanyatjarraku	9	11
Goldfields-Esperance	4	7
West Coast	2	3
Total	**47**	**60**

Base: Communities who have a food premise

6. Trends between the 1997, 2004 and 2008 Environmental Health Needs Surveys

6.1. Trend Data Overview

Since the inception of the EHNS in 1997, a total of three collection periods has been conducted to understand the environmental health needs of Aboriginal communities in Western Australia. Each collection period included significant resources to not only collect the information, but to also analyse and interpret the findings to help assist in Government policy decision making. Tracking the progress of Aboriginal communities' environmental health needs has many benefits, however specifically it provides insight into community changes and the potential impact these changes may have in the future. This allows Government and Aboriginal support services/organisations to determine priorities and assist where possible.

The purpose of this section of the report is to enable comparable time series analysis of the core indicators of environmental health in Aboriginal communities. It comprises a compilation of 1997, 2004 and 2008 EHNS survey data that has been selected on the basis that it can identify the coverage of managed environmental health services and the quality of those services. There are recognised limitations within the data, as it usually relies on a subjective measure based on community satisfaction in its assessment of the quality of services.

Each EHNS survey covered a different set of communities and as such the data file for this research contains data on some 341 Western Australia communities, however the number of communities varies significantly across the three surveys:

- **213 communities in 1997**
- **274 communities in 2004**
- **232 communities in 2008**

Discussion of trend data quality

The trends data consists of data from three different EHNS. The quality and accuracy of the data varies across the three surveys due to different levels of quality control used in the data collection and data entry stages. The inaccuracies of information appear primarily attributable to two factors:

- **Awareness of service provision** - communities were not aware of who provides their service (i.e. local, State or Federal Government) and what level of service they receive.
- **Data collection process –** In some instances survey officers did not fully understand the different classes of services that the communities used. Therefore results relating to a specific item may be inaccurately recorded.

Most of the data from the different datasets however, could be cross-referenced against current and historical administration/service data and hence improved/corrected[17]. Furthermore, many of the data items collected are typically static over time as they are about service delivery and infrastructure in the communities. Because the data could be cross-referenced with other administration/service data, and coupled with the fact that essential service data is fairly static over time, it was possible to apply corrections to the trend data where there was a clear inconsistency between one data collection period and another.

[17] In some instances data cross-referencing was not possible. Therefore total reliance on the accuracy of the data collection process is necessary

As seen in the below table, there were minimal edits that would re-categorise communities. The major data edit which was conducted was to do with solid waste disposal data (i.e. managed rubbish disposal). Reason for data changes related to a questionnaire response option change in 2008.

Table 6.1 Data changes required for time series analysis

	Number of edited changes that affected categorisation[a]		
	1997	2004[b]	2008[c]
Managed Water Service	0	0	0
Managed Power Service	0	0	0
Managed Rubbish Disposal	0	36	20
Managed Sewerage System	0	2	1
Dust Prevention Program	0	0	0
Emergency Bush Fire Services	NA	0	0
Emergency Cyclone Services	NA	0	0
Emergency Management Procedures	NA	0	0
Permanent Dwelling	NA	NA	NA
Managed Dog Service	0	0	0
Total changes required	**0**	**38**	**21**

(a) Only changes that would affect what category the community be classed (i.e. serviced/non-serviced) are listed in this table.
(b) Number of service effecting changes made to the 2004 EHNS dataset in the trends file as a result of data improvement.
(c) Number of service effecting changes made to the 2008 data in the 2008 EHNS dataset as a result of cross-referencing with other administration data.

6.1.1. Overall Results

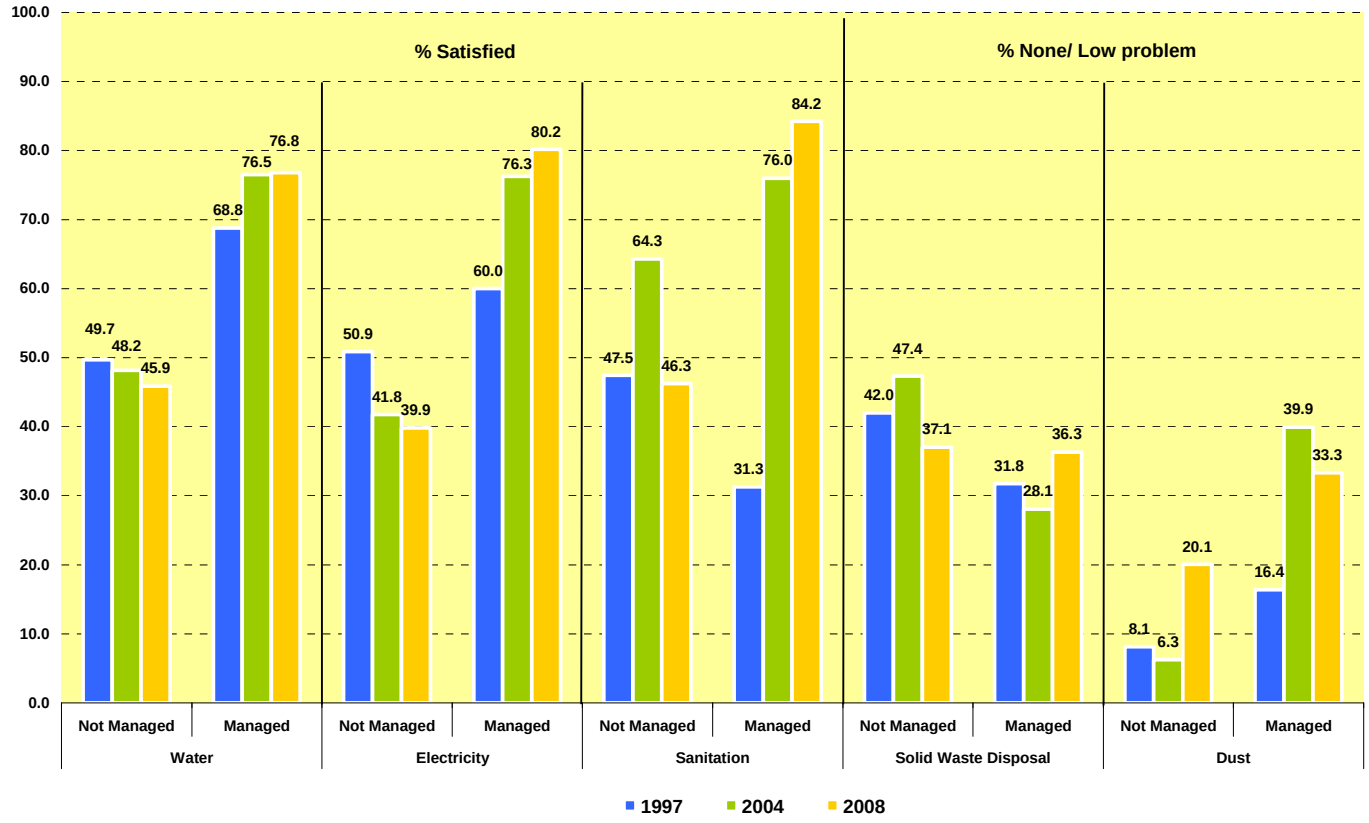
Figure 6.1 below summarises (at an overall Western Australia level) the changes in health outcomes since the inception of the EHNS in 1997. Further detail of each specific health area and region is found within Section 6.

Trends in the data show community members with managed services[18] have higher satisfaction when it comes to essential services such as water, electricity and sanitation (sewerage). Furthermore satisfactions with these managed services have continually increased since 1997.

When it comes to solid waste disposal, since 1997 there has been increases in the proportion of the usual population living in communities with managed services having none/low levels of litter. This trend is also evident when it comes to dust suppression, with the rate of community members living in communities with none/low levels of dust problems doubling since 1997.

Overall, the results presented below show positive improvements for Western Australia Aboriginal communities who have managed services. Results for non managed communities are not as positive, with most results (except for dust suppression) dropping continually since 1997.

Figure 6.1: Changes in Health Outcome Trends since 1997 - Proportion of Usual Population



[18] Communities with managed water, power and sewerage services either have these services connected under mainstream utility arrangements or provided for by the Remote Area Essential Service Program (RAESP). Communities have managed solid waste disposal services if they use either a town tip or another community tip, or the community tip is a dug trench/pit that is located in a suitable site and is fenced. Communities with dust programs have managed dust services.

6.2. Water

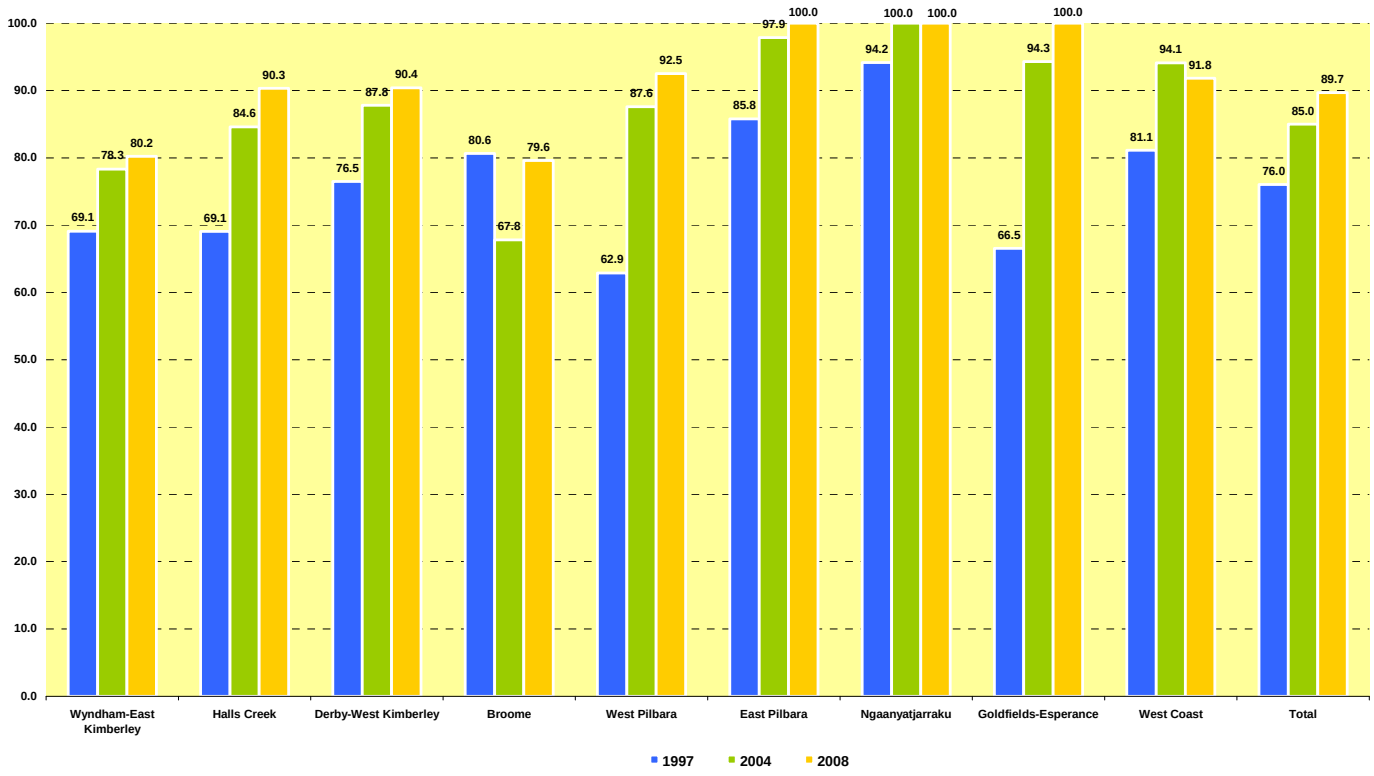
6.2.1. Access to Managed Water Services

Figure 6.2 identifies if community people receive managed water services (i.e. whether their community belongs to a RAESP and/or receives town supplied water). Access to RAESP and/or town supplied water services, ensures that the community receives water that is regularly tested and treated and that the maintenance of the community's internal reticulation is provided for.

The data presented below was constructed using the MAIN source of drinking water data from each questionnaire and the 1998, 2004 and 2008 RAESP community lists (see Appendix 3 for 2008 RAESP communities). Communities were considered to have managed water services if they were either on town supply water and/or the RAESP program. Non-town supplied, non-RAESP communities or communities with missing data were considered to not have managed services.

Since 2004, there has been a fourteen percentage point increase in the proportion of community members having access to a managed water service. This pattern is apparent in all region groups with the exclusion of Broome. Three regions (East Pilbara, Ngaanyatjarraku and Goldfields-Esperance) report all communities having access to a managed water service.

Figure 6.2: Proportion of Usual Population with Managed Water Services by Region Group (%)



6.2.2. Satisfaction with Water Supply

Figure 6.3 provides a summary of whether communities found their water supply to be satisfactory. The figures are reported by communities who have access to managed water services and those who do not. Analysing this way allows comparison between each service model type.

Changes to the questionnaire

Response option changes relating to satisfaction of water supply were applied to the 2008 questionnaire. Table 6.2 below highlights the response option changes. For comparison of trend data to be void of any biases, replication of questionnaire and data collection process needs to be identical each time. Due to the changes in the question response option in 2008, caution should be taken when interpreting Figure 6.3 results.

Table 6.2: Changes to question response options

1997 and 2004	2008
Q. Is the water supply satisfactory? [Tick one box]	***Q. Is the water supply satisfactory? [Tick one box]***
☐ ***Yes***	☐ **Very Unsatisfactory**
☐ ***No***	☐ **Unsatisfactory**
☐ ***Unsure***	☐ **Neutral**
	☐ **Satisfactory**
	☐ **Very Satisfactory**
☐ ***Yes (Very Satisfactory, Satisfactory, Neutral)***	***Alignment of 2008 data to the 1997 and 2004 data***
☐ ***No (Very Unsatisfactory, Unsatisfactory)***	

Trend analysis findings

In all regions, satisfaction is higher among communities with a managed water supply versus not managed. As a total (all region groups combined), satisfaction has declined since 1997 among those regions with a water supply that is not managed.

Figure 6.3: Proportion of Usual Population with Satisfactory Water Supply by Region Group

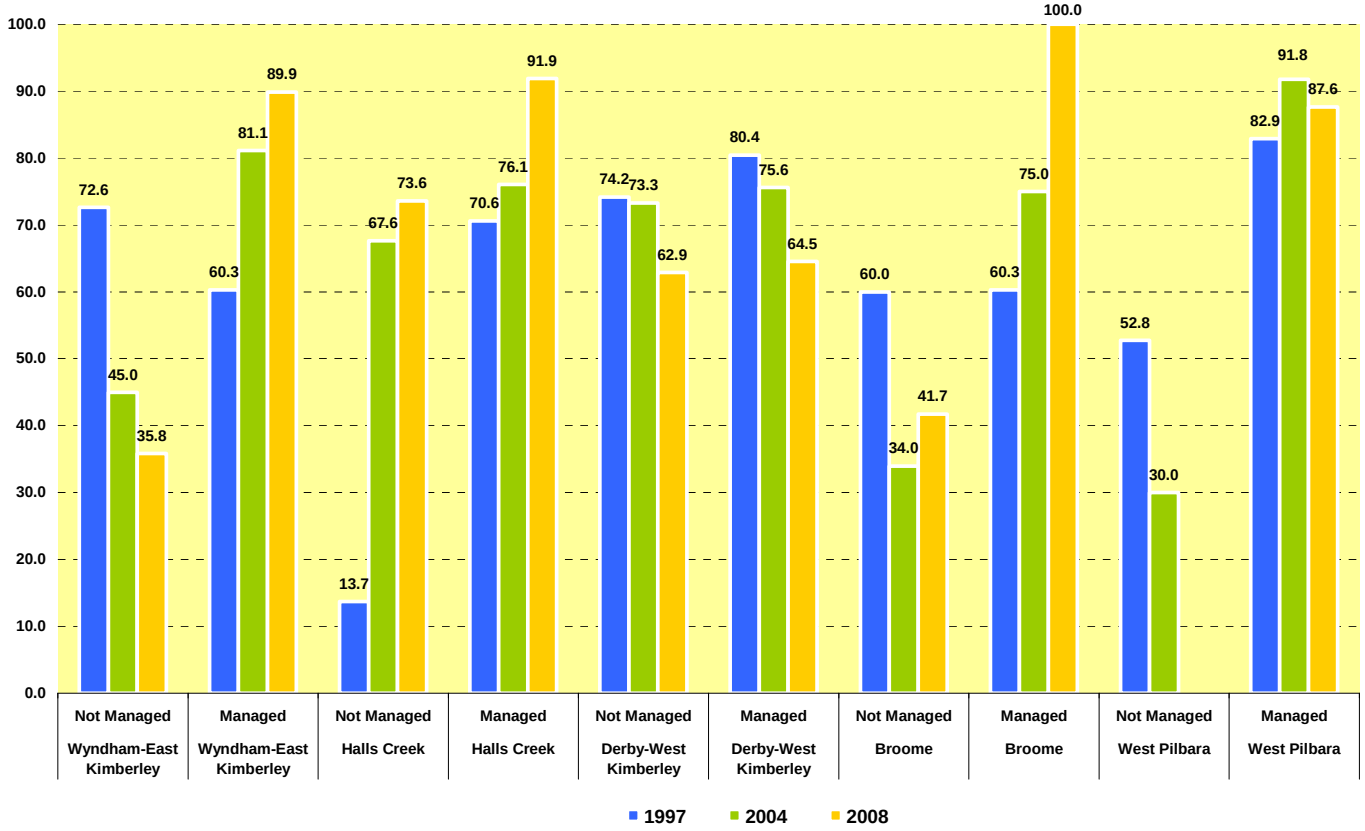
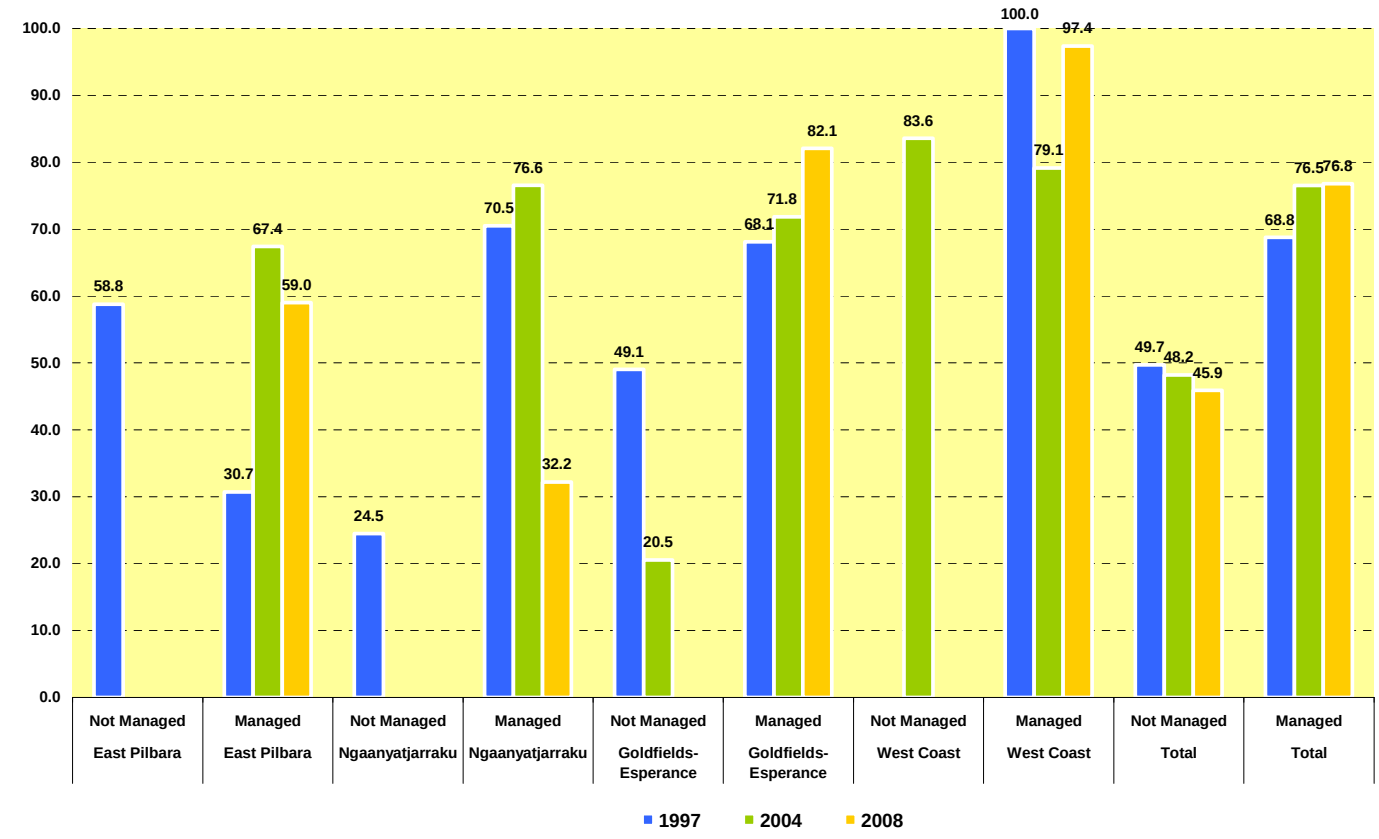


Figure 6.3: Proportion of Usual Population with Satisfactory Water Supply by Region Group (cont.)



6.3. Electricity

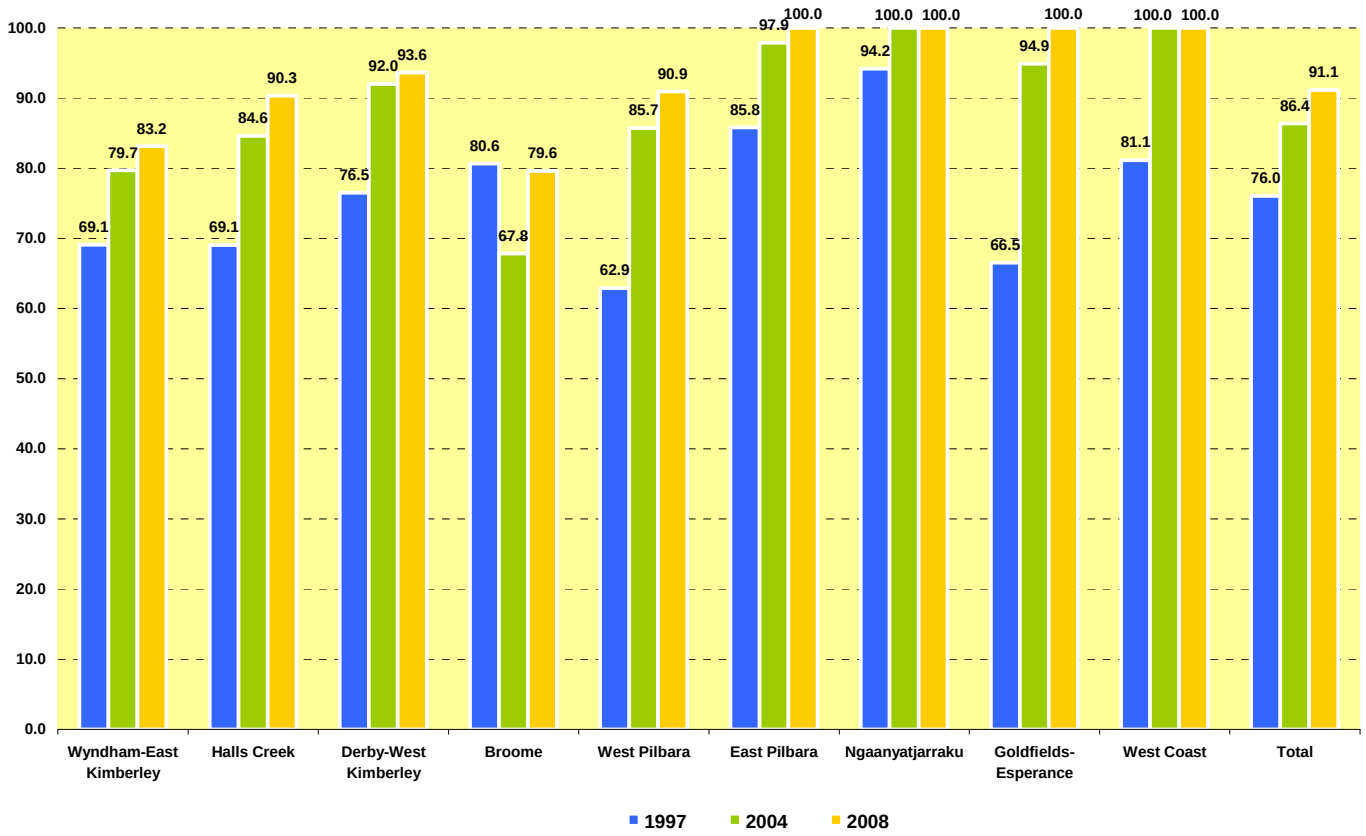
6.3.1. Access to Managed Electricity Services

Figure 6.4 identifies if the community receives managed electricity services (i.e. whether it belongs to the Remote Area Essential Services Program and/or receives town supplied electricity). These services ensure that the community receives power and that the maintenance of the community's internal reticulation is provided for.

This field was constructed by using the MAIN source of electricity data from each questionnaire and the 1998, 2004 and 2008 RAESP community lists (see Appendix 3 for 2008 RAESP communities). Communities were considered to have managed electricity services if they were either on town supply power and/or the RAESP program. Non-town supplied, non-RAESP communities or communities with missing data were considered to not have managed services.

Since 2004, there has been a fifteen percentage point increase in the proportion of community members having access to a managed electricity service. This pattern is consistent across all region groups. Four regions (East Pilbara, Ngaanyatjarraku, Goldfields-Esperance and West Coast) report all community members having access to a managed electricity service.

Figure 6.4: Proportion of Usual Population with Managed Electricity Services by Region Group



6.3.2. Satisfaction with Electricity Supply

Figure 6.5 provides a summary of whether communities found their electricity supply to be satisfactory. The figures are reported by communities who have access to a managed electricity service and communities who do not. Analysing this way allows comparison between each service model type.

Changes to the questionnaire

Response options changes relating to satisfaction of electricity supply were applied to the 2008 questionnaire. Table 6.3 below highlights the response option changes. For comparison of trend data to be void of any biases, replication of questionnaire and data collection process needs to be identical each time. Due to the changes in the question response option in 2008, caution should be taken when interpreting Figure 6.5 results.

Table 6.3: Changes to question response options

1997 and 2004	2008
Q. Is the electricity supply satisfactory? [Tick one box]	***Q. Is the electricity supply satisfactory? [Tick one box]***
☐ ***Yes***	☐ **Very Unsatisfactory**
☐ ***No***	☐ **Unsatisfactory**
☐ ***Unsure***	☐ **Neutral**
	☐ **Satisfactory**
	☐ **Very Satisfactory**
☐ ***Yes (Very Satisfactory, Satisfactory, Neutral)***	***Alignment of 2008 data to the 1997 and 2004 data***
☐ ***No (Very Unsatisfactory, Unsatisfactory)***	

Trend analysis findings

Across all communities with a managed electricity supply in Western Australia, community members' satisfaction has increased between 2004 and 2008 (four percentage point increase). However among communities without a managed electricity supply, satisfaction has consistently decreased each reporting year (51% in 1997, 42% in 2004 and 40% in 2008).

Broome (98%) and West Coast (100%) region groups with managed electricity supply record the highest satisfaction in 2008 when compared to other Western Australian regions.

Figure 6.5: Proportion of Usual Population with Satisfactory Electricity Services by Region Group

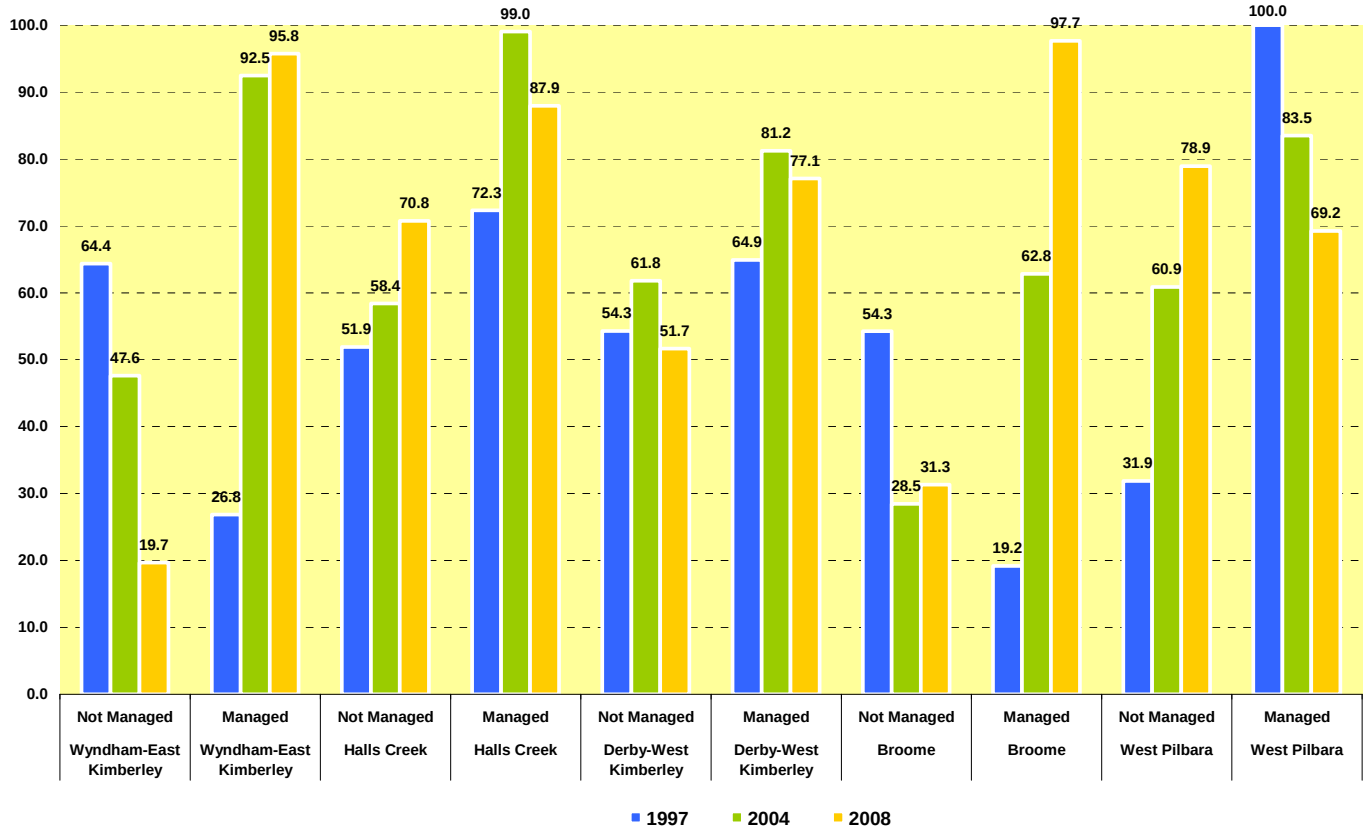
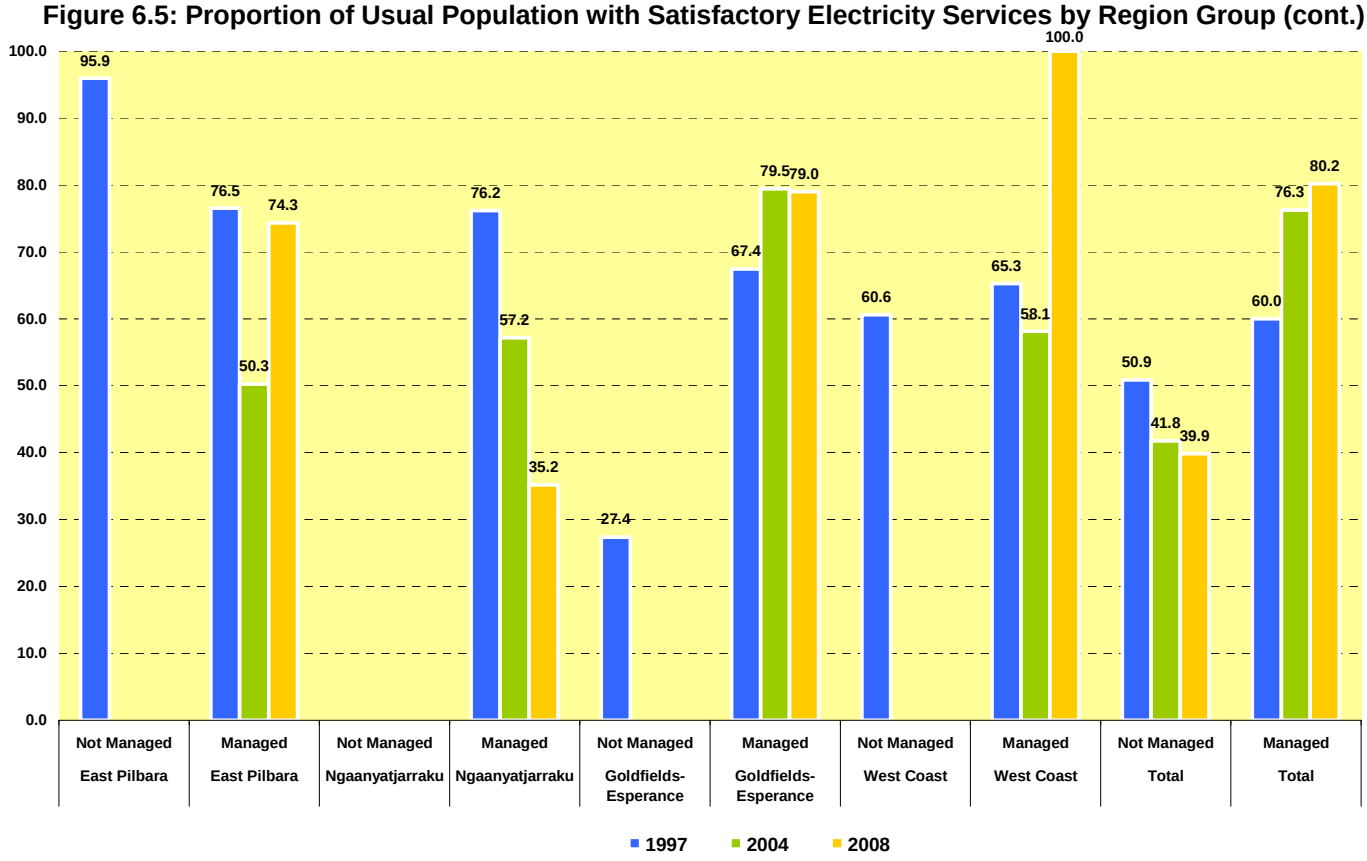


Figure 6.5: Proportion of Usual Population with Satisfactory Electricity Services by Region Group (cont.)



6.4. Housing

6.4.1. Permanent Housing

Figure 6.6 provides a summary of the ratio of usual population to permanent dwellings within the community. Due to lack of detailed housing data it was not possible to identify those communities whose housing is managed under any kind of arrangements or not. Therefore as a substitute to this, the figures are broken down by communities who have access to a managed electricity service and communities who don't. Analysing this way allows comparison between communities of distinct service model types.

Changes to the questionnaire and data collection method.

The 1997 and 2004 surveys collected information by surveying each community dwelling however the 2008 survey collected information by either visually counting the dwellings in small communities or asking the community representative for housing numbers in large communities. Furthermore response option changes were also applied to the 2008 questionnaire. Table 6.4 below highlights the response option changes. For comparison of trend data to be void of any biases, replication of questionnaire and data collection process needs to be identical each time. Due to the changes in the question response option in 2008, caution should be taken when interpreting Figure 6.6 results.

Table 6.4: Changes to question response options

1997	2004	2008
Q. What type of dwelling is it? [Tick one box] ***Permanent Dwelling*** ☐ *Separate house* ☐ *Semi-detached, duplex* ☐ *Flat, apartment* ***Temporary Dwelling*** ☐ *Caravan* ☐ *Improvised shelter* ☐ *Donga* ☐ *Other (specify)*_____	*Q. What type of dwelling is it? [Tick one box]* ***Permanent Dwelling*** ☐ *Separate house* ☐ *Semi-detached, duplex* ☐ *Flat, apartment* ☐ *Aged care dwelling* ☐ *Single persons quarters* ☐ *Flat, apartment* ☐ *Permanent transportable* ***Temporary Dwelling*** ☐ *Caravan* ☐ *Improvised shelter* ☐ *Donga* ☐ *Other (specify)*_____	*Q. Number of permanent dwellings (includes permanent transportable)* *Occupied* ☐ *Unoccupied* ☐ *Derelict/Abandoned* ☐ *Under Construction* ☐ *Q. Number of temporary dwellings (caravans, improvised shelters or dongas)* *Occupied* ☐ *Unoccupied* ☐ *Derelict/Abandoned* ☐ *Under Construction* ☐

Trend analysis findings

Figure 6.6 overleaf shows the ratio of usual population to permanent dwellings (with managed electricity services or not) within the community.

Since 1997, the number of community members sharing a permanent dwelling has decreased (regardless of managed electricity service or not). In 2008 an average of 5.6 people are sharing a dwelling in non managed regions whereas in managed regions the average drops down to 5.3 people per dwelling.

With respect to non-managed communities, a number of regions reported decreases in the average number of community members sharing a permanent dwelling. Broome reported the largest decrease in the number of community members sharing a permanent dwelling (from an average of 26.3 people in 2004 to an average of 6.9 people in 2008).

Figure 6.6: Ratio of Usual Population to Permanent Dwellings (number of community members)

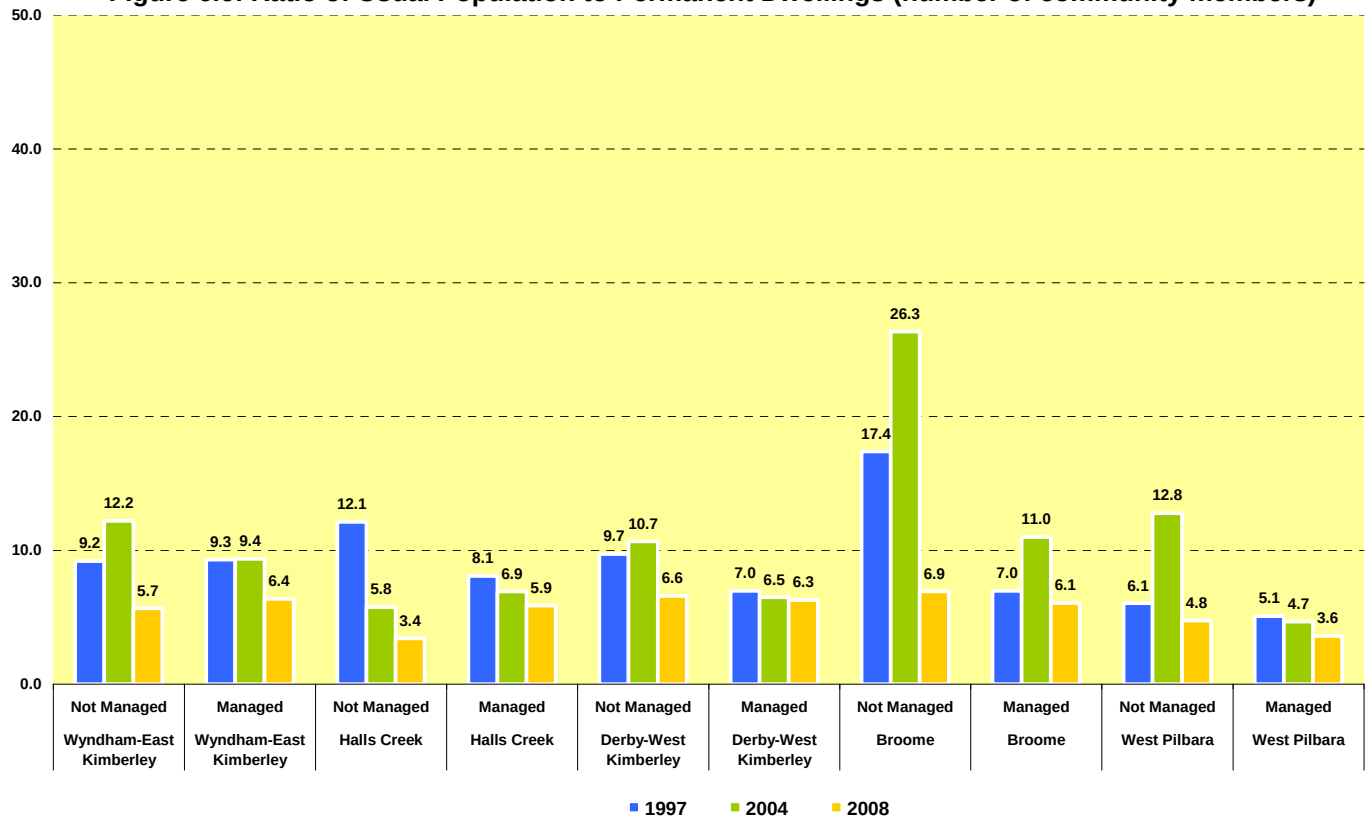
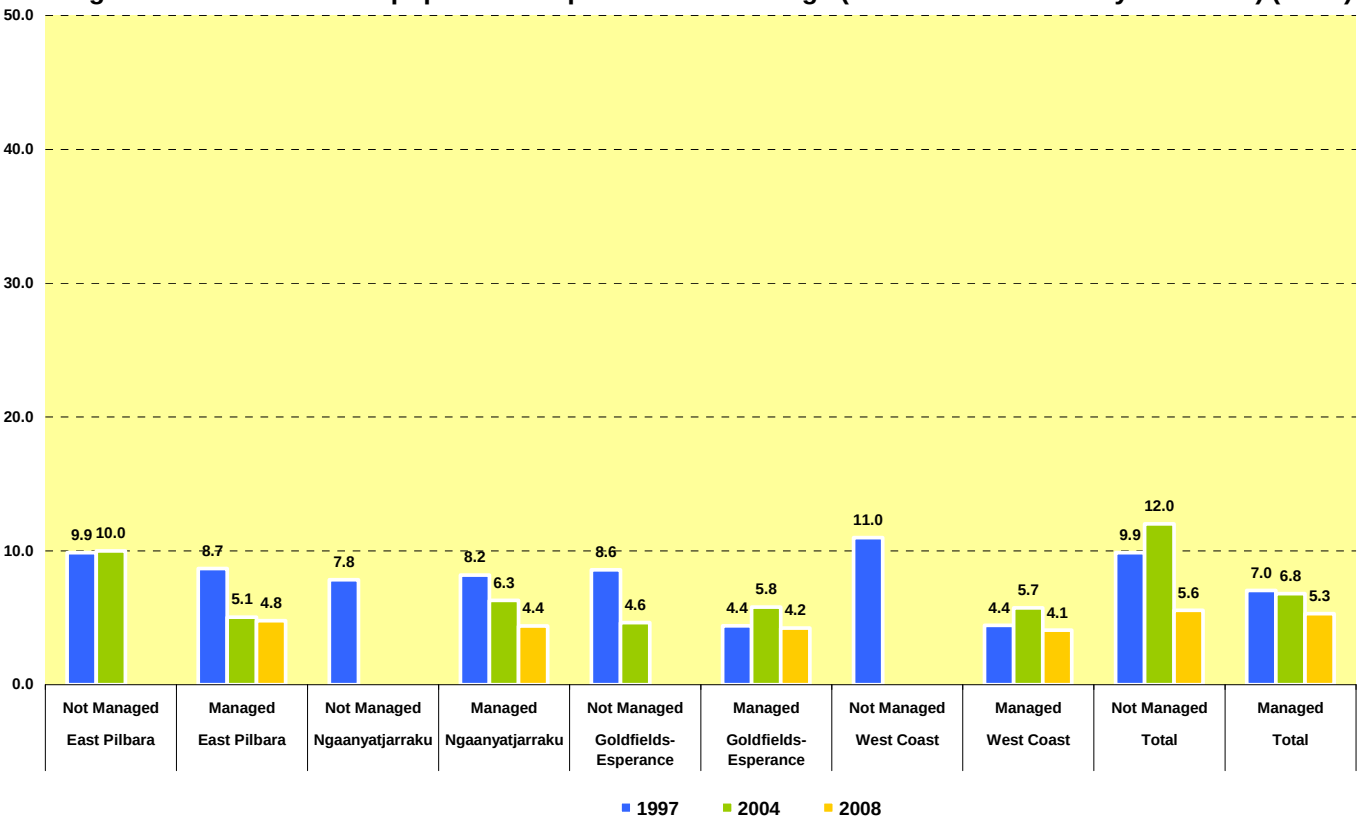


Figure 6.6: Ratio of usual population to permanent dwellings (number of community members) (cont.)



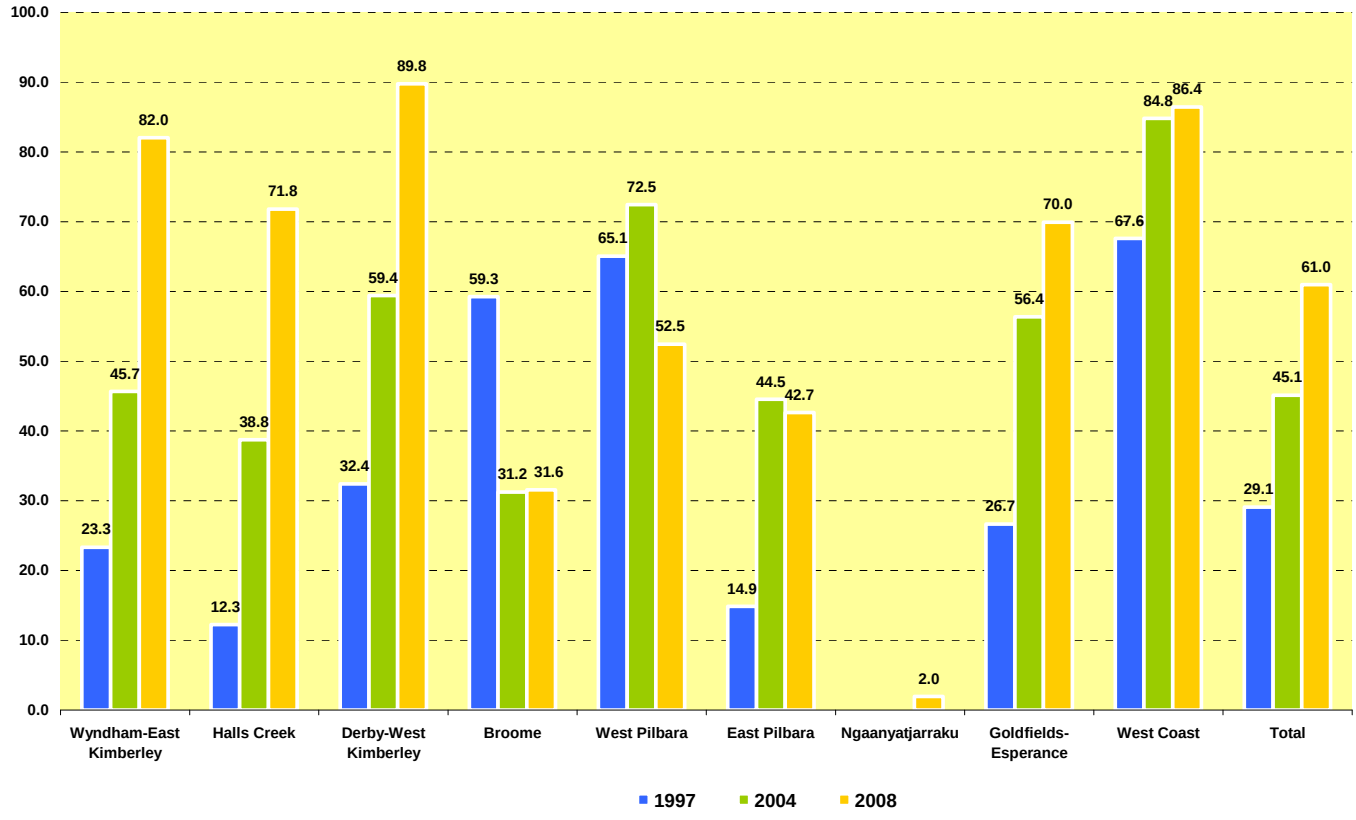
6.5. Solid Waste Disposal

6.5.1. Access to Managed Rubbish Disposal

Figure 6.7 identifies if the community uses a managed rubbish disposal service (i.e. that community rubbish is disposed of in an appropriate facility). This field was constructed by using the type of rubbish tip data from each questionnaire. An appropriate facility/managed rubbish disposal service is deemed to be either a town tip, another community's tip or their own tip which is either a dug pit or trench and is fenced and located in a suitable site. Communities with missing or unsure responses are included as not having managed rubbish services.

Since 2004, there has been a seventeen percentage point increase in the proportion of community people having access to a managed rubbish disposal service. This is reflected in all region groups with the exclusion of West Pilbara and, East Pilbara which has decreased since 2004.

Figure 6.7: Proportion of Usual Population with Managed Rubbish Disposal by Region Group



6.5.2. Communities with Minimal Litter Levels

Figure 6.8 provides a summary of the litter levels. The figures are reported by communities who have no or low levels of litter. Furthermore the litter levels are reported by communities with managed rubbish disposal services and communities who do not. Analysing this way allows comparison between each service model type.

Rescaling of question

Response options remain the same across all three collection periods. However for simplicity of data presentation, the response options have been re-coded as listed in Table 6.5 below.

Table 6.5: Re- coding to question response options

Original response options (1997, 2004 , 2008)	Recoded response options (1997, 2004 , 2008)
Q. Please rate the level of litter around the community?	***Q. Please rate the level of litter around the community?***
[Tick one box]	***[Tick one box]***
☐ ***None***	☐ ***Low (None, Low)***
☐ ***Low***	☐ ***High (Moderate, High, Excessive)***
☐ ***Moderate***	
☐ ***High***	
☐ ***Excessive***	

Trend analysis findings

Across all communities with managed rubbish disposal services in Western Australia, the proportion of community members living in communities with none or low levels of litter has increased (increase of eight percentage points since 2004). However among communities without managed rubbish disposal services, this trend is not evident.

Figure 6.8: Proportion of Usual Population with None or Low Litter Levels of by Region Group

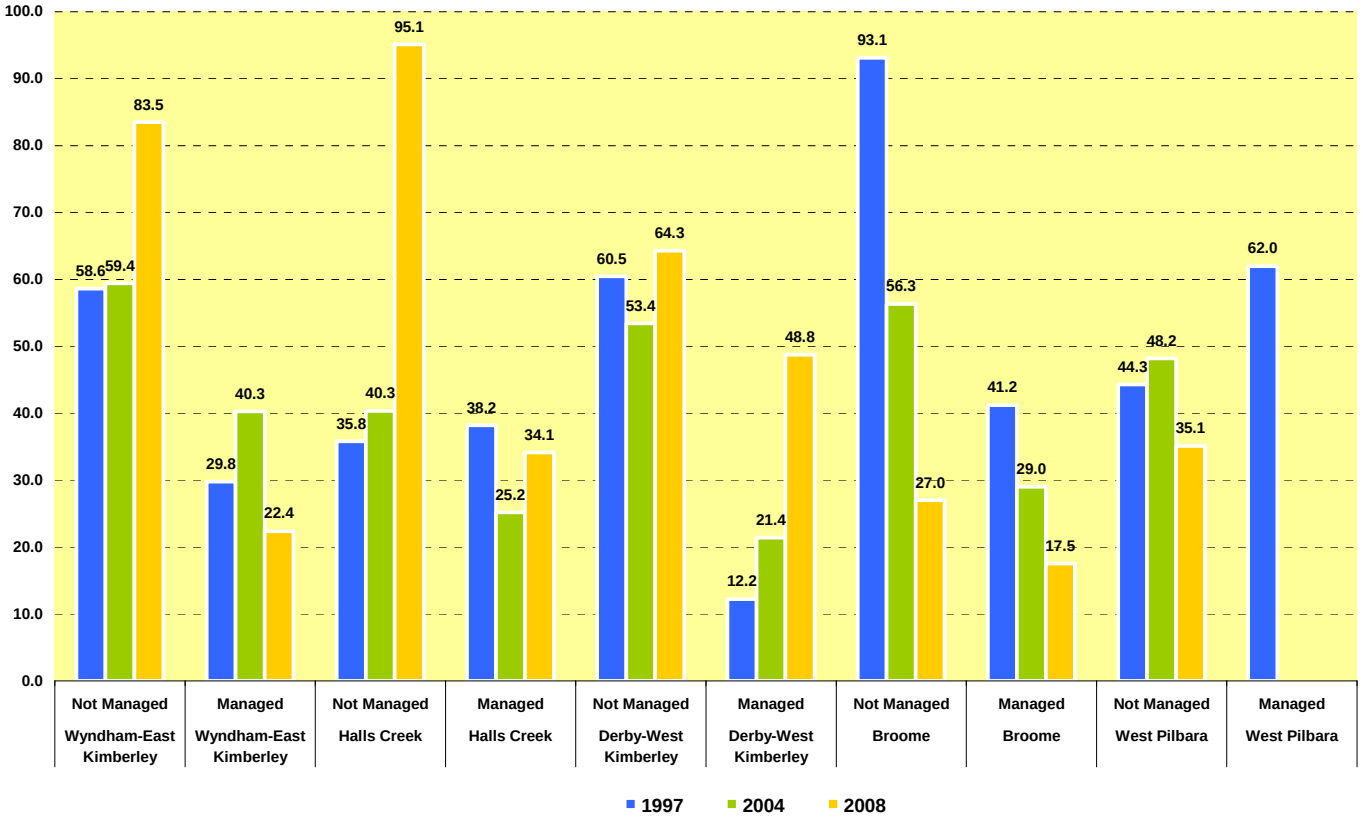
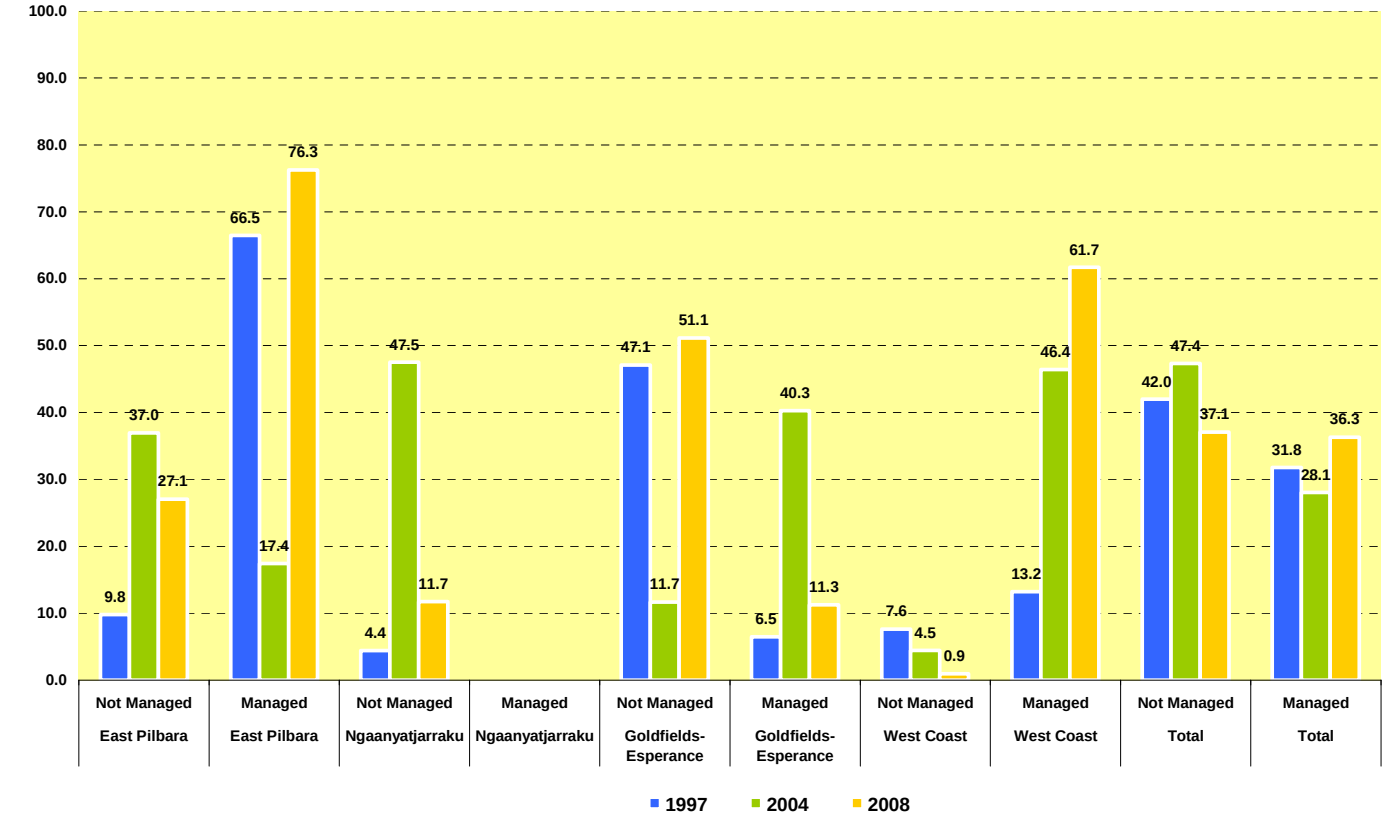


Figure 6.8: Proportion of Usual Population with None or Low Litter Levels of by Region Group (cont.)



6.6. Sanitation/Sewerage

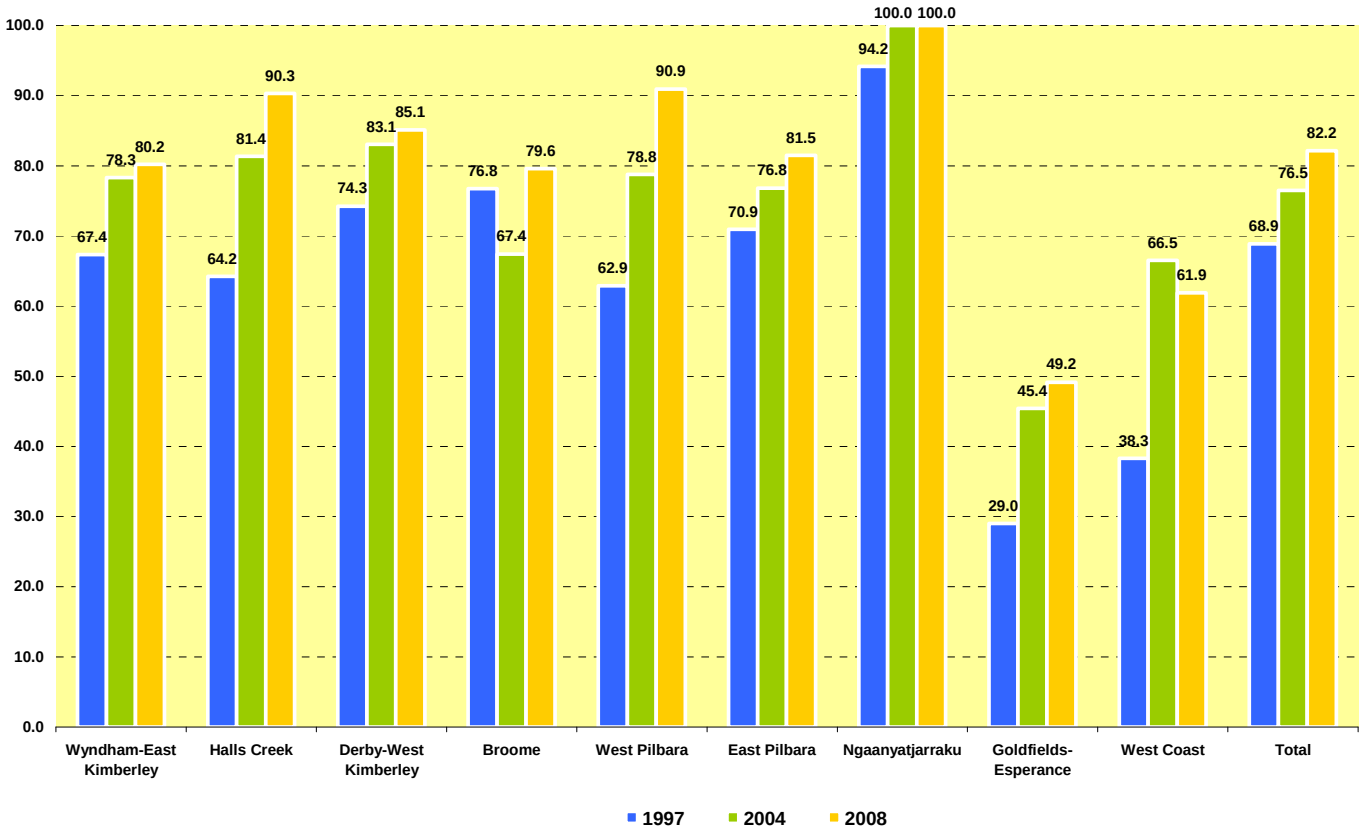
6.6.1. Access to Managed Sewerage Services

Figure 6.9 identifies if the community receives managed sewerage services (i.e. whether it belongs to the Remote Area Essential Services Program and/or is connected to a town sewerage system). These services ensure that community effluent is disposed of in a suitable manner and that the maintenance of the community's internal reticulation is managed.

This field was constructed by using the sewerage treatment system data from each questionnaire and the 1998, 2004 and 2008 RAESP community lists (see Appendix 3 for 2008 RAESP communities). Communities were considered to have managed sewerage services if they were either connected to a town system and/or the RAESP program. Non-town connected, non-RAESP communities or communities with missing data were considered to not have managed services.

Since 2004, there has been a six percentage point increase in the proportion of community members having access to a managed sewerage service. This trend is recorded in all region groups with the exclusion of Ngaanyatjarraku (which had already recorded 100% in 2004) and West Coast (which saw a decrease since 2004).

Figure 6.9: Proportion of Usual Population with Managed Sewerage System by Region Group



6.6.2. Satisfaction with Sewerage Supply

Figure 6.10 provides a summary of whether communities found their sewerage supply to be satisfactory. The figures are recorded by communities who have access to a managed sewerage services and those who do not. Analysing this way allows comparison between each service model type.

Changes to the questionnaire

Response options changes relating to satisfaction of sewerage supply was applied to the 2008 questionnaire. Table 6.6 below highlights the response option changes. For comparison of trend data to be void of any biases, replication of questionnaire and data collection process needs to be identical each time. Due to the changes in the question response option in 2008, caution should be taken when interpreting Figure 6.10 results.

Table 6.6: Changes to question response options

1997 and 2004	2008
Q. Does the sewage system meet the current needs of the community? [Tick one box]	***Q. Does the sewage system meet the current needs of the community?***
☐ ***Yes***	☐ **Very Unsatisfactory**
☐ ***No***	☐ **Unsatisfactory**
☐ ***Unsure***	☐ **Neutral**
	☐ **Satisfactory**
	☐ **Very Satisfactory**
☐ ***Yes (Very Satisfactory, Satisfactory, Neutral)***	***Alignment of 2008 data to the 1997 and 2004 data***
☐ ***No (Very Unsatisfactory, Unsatisfactory)***	

Trend analysis findings

Across all managed sewerage services communities in Western Australia, the proportion of population with satisfactory sewerage services has increased between 2004 and 2008 (eight percentage point increase). However among communities not serviced by a managed sewerage service, satisfaction has decreased to that of the 1997 level.

West Pilbara (100%) and West Coast (100%) region groups with managed sewerage service record the highest satisfaction in 2008 when compared to other Western Australian regions.

Figure 6.10: Proportion of Usual Population with Satisfactory Sewerage Supply by Region Group (%)

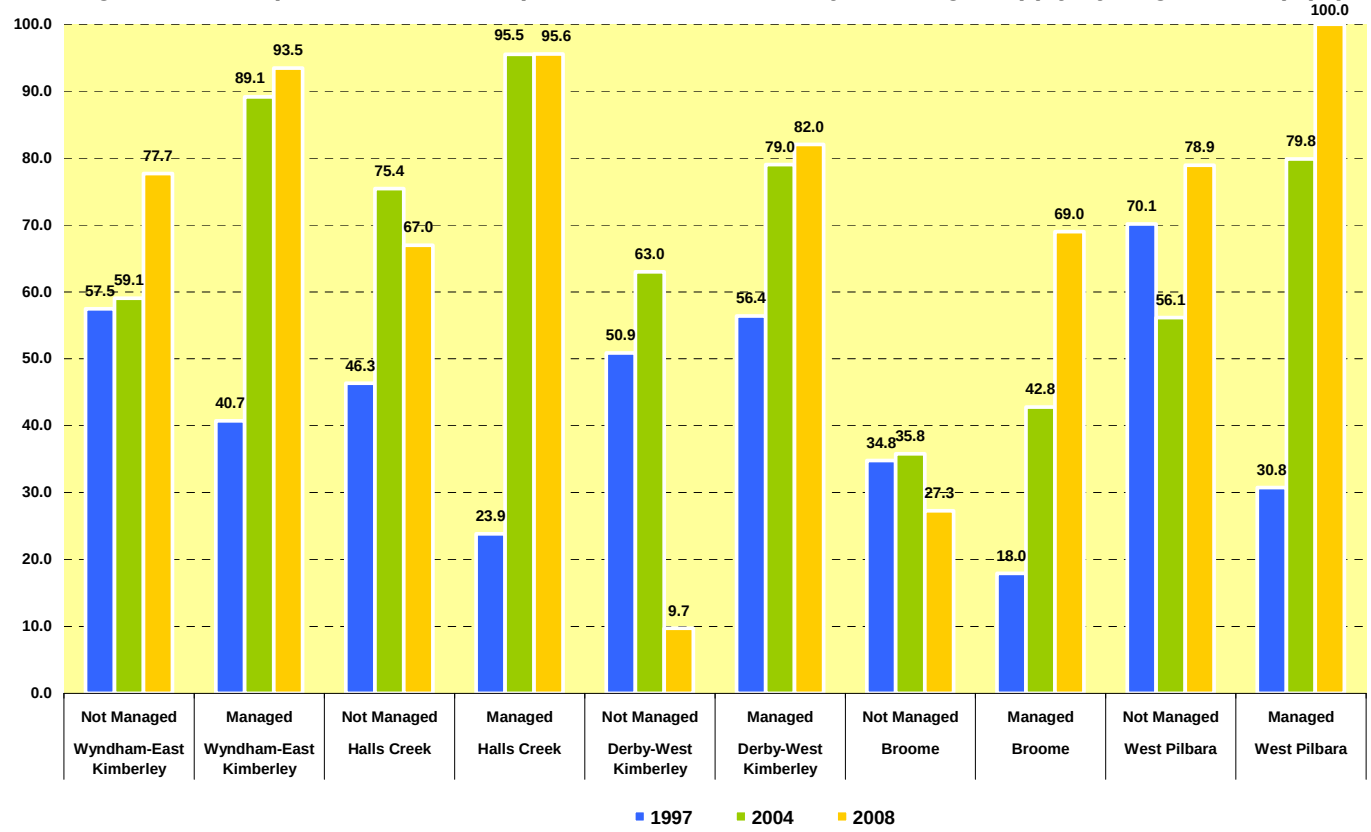
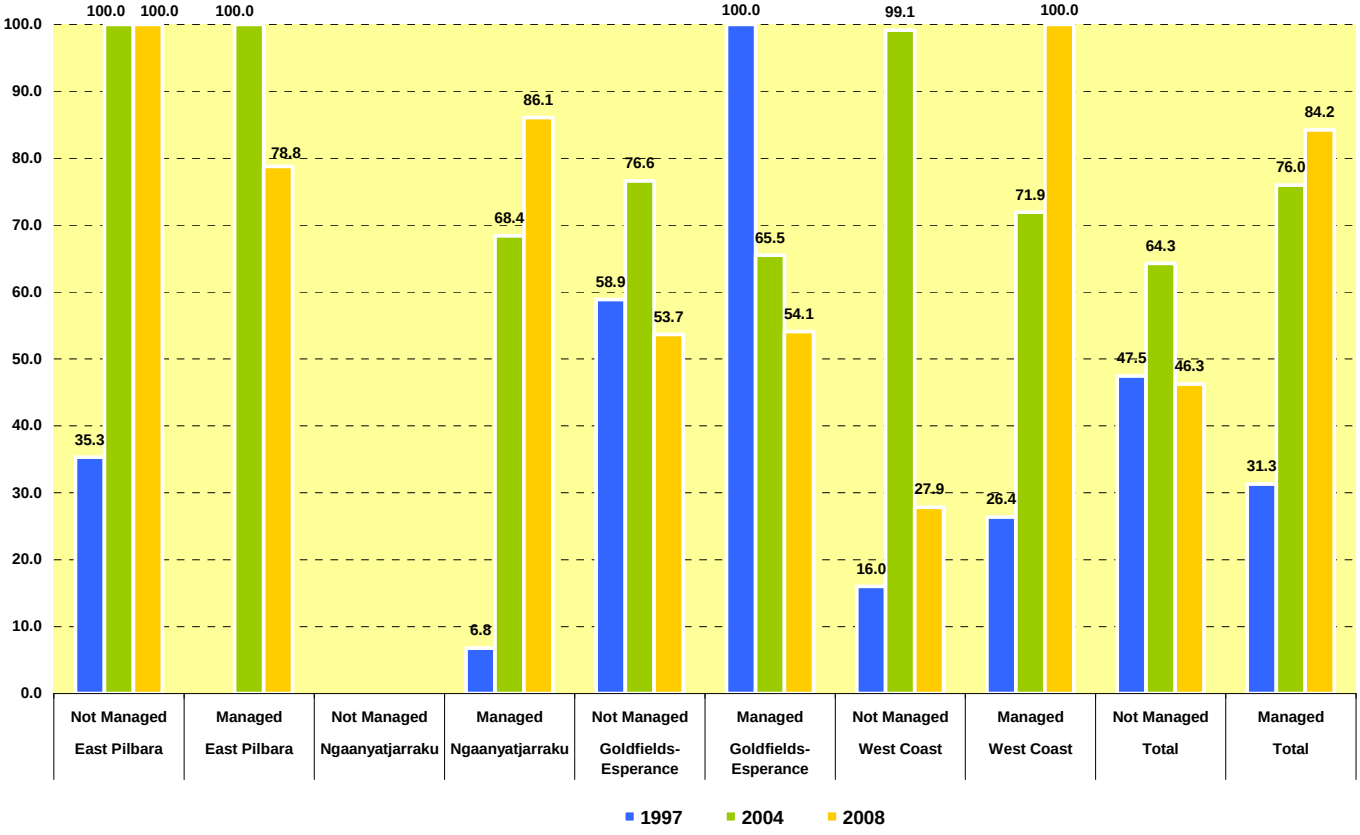


Figure 6.10: Proportion of Usual Population with Satisfactory Sewerage Supply by Region Group (cont.) (%)



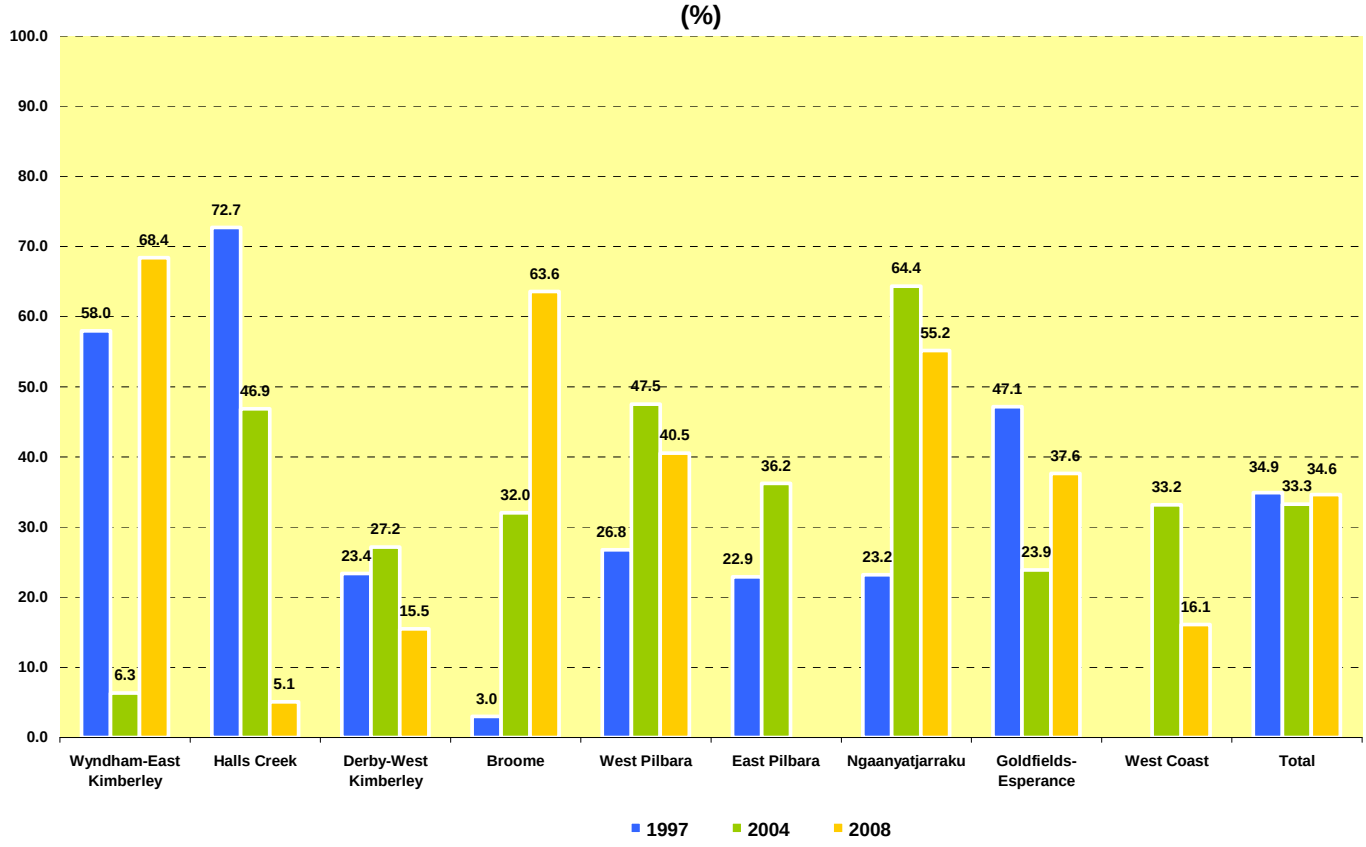
6.7. Dust

6.7.1. Access to Dust Suppression/Revegetation Program

Figure 6.11 identifies if the community has a dust suppression/revegetation program. Communities that responded yes were listed as being managed, while communities that responded no or unsure were classified as being not managed.

Since 2004, there has been a small increase in the proportion of community members who live in a community that has a dust suppression/revegetation program. At an individual region level there has been a mix of increases and decreases. Communities in the Wyndham-East Kimberley and Broome regions recorded the largest increases since 2004.

Figure 6.11: Proportion of Usual Population with a Dust Suppression/Revegetation Program by Region Group (%)



6.7.2. Communities with Low Dust Levels

Figure 6.12 provides a summary of the dust levels by usual population proportions. The figures are broken down by communities who have no or low levels of dust. Furthermore the dust levels are broken down by communities that have dust suppression/revegetation programme (i.e. managed) and communities who don't (i.e. not managed). Analysing this way allows comparison between each service model type.

Comparison across regions, and from 1997 to 2008, should be done with caution however, as the dust levels differed considerably, even between neighbouring communities, which therefore suggests that the survey measured perceived dust levels rather than actual dust levels.

Rescaling of question

Response options remain the same across all three collection periods. However for simplicity of data presentation, the response options have been re-coded post data collection as listed in Table 6.7 below.

Table 6.7: Re-coding to question response options

Original response options (1997, 2004 , 2008)	Recoded response options (1997, 2004 , 2008)
Q. Please rate the level of dust problems experience by the community? [Tick one box]	***Q. Please rate the level of dust problems experience by the community? [Tick one box]***
☐ ***None***	☐ ***Low (None, Low)***
☐ ***Low***	☐ ***High (Moderate, High, Excessive)***
☐ ***Moderate***	
☐ ***High***	
☐ ***Excessive***	

Trend analysis findings

Across regions with a managed dust suppression/revegetation program, most reported an increase in the proportion of community members who live in a community with none or low dust levels. However at a total Western Australia level, there has been a decrease from 40% in 2004 to 33% in 2008.

Figure 6.12: Proportion of Usual Population with None or Low Dust Levels by Region Group (%)

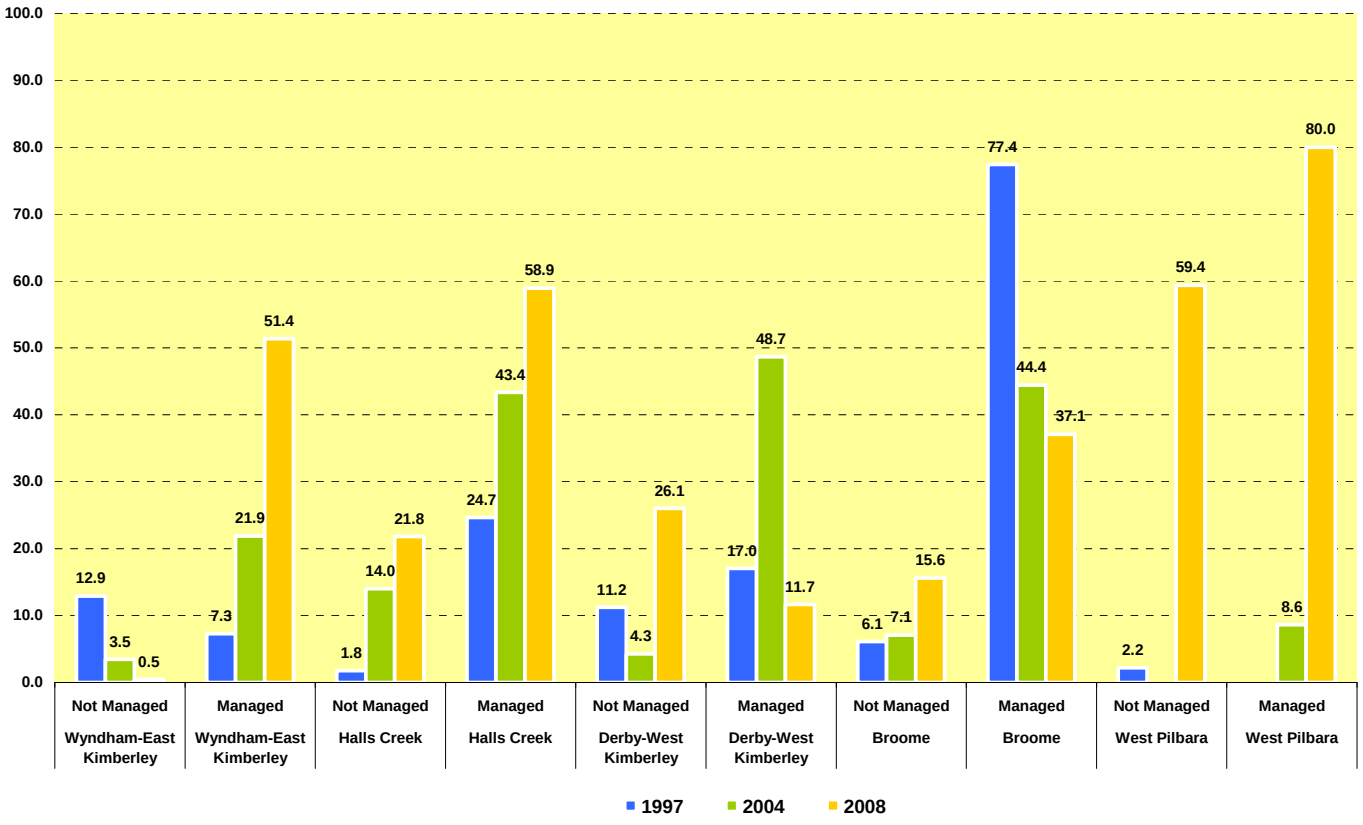
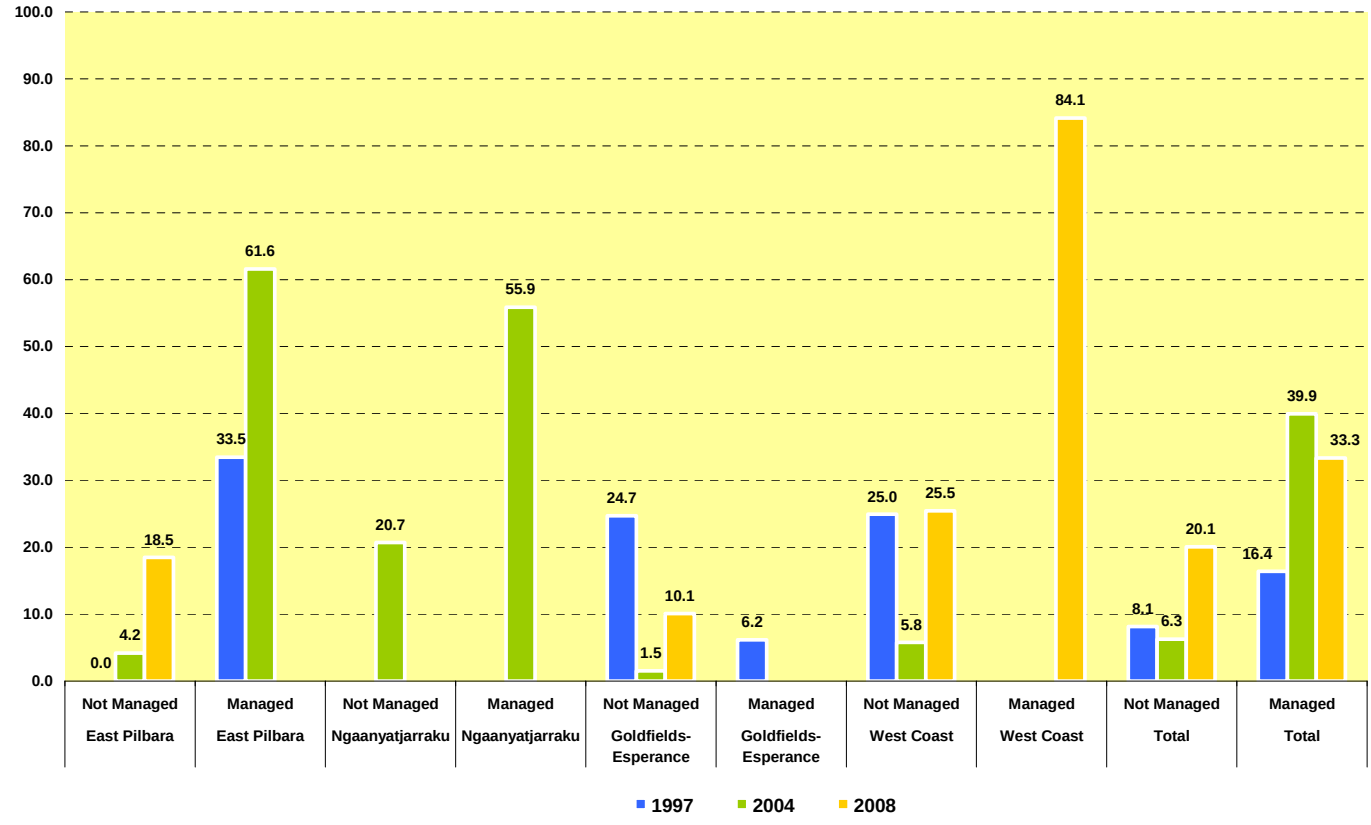


Figure 6.12: Proportion of Usual Population with None or Low Dust Levels by Region Group (cont.) (%)



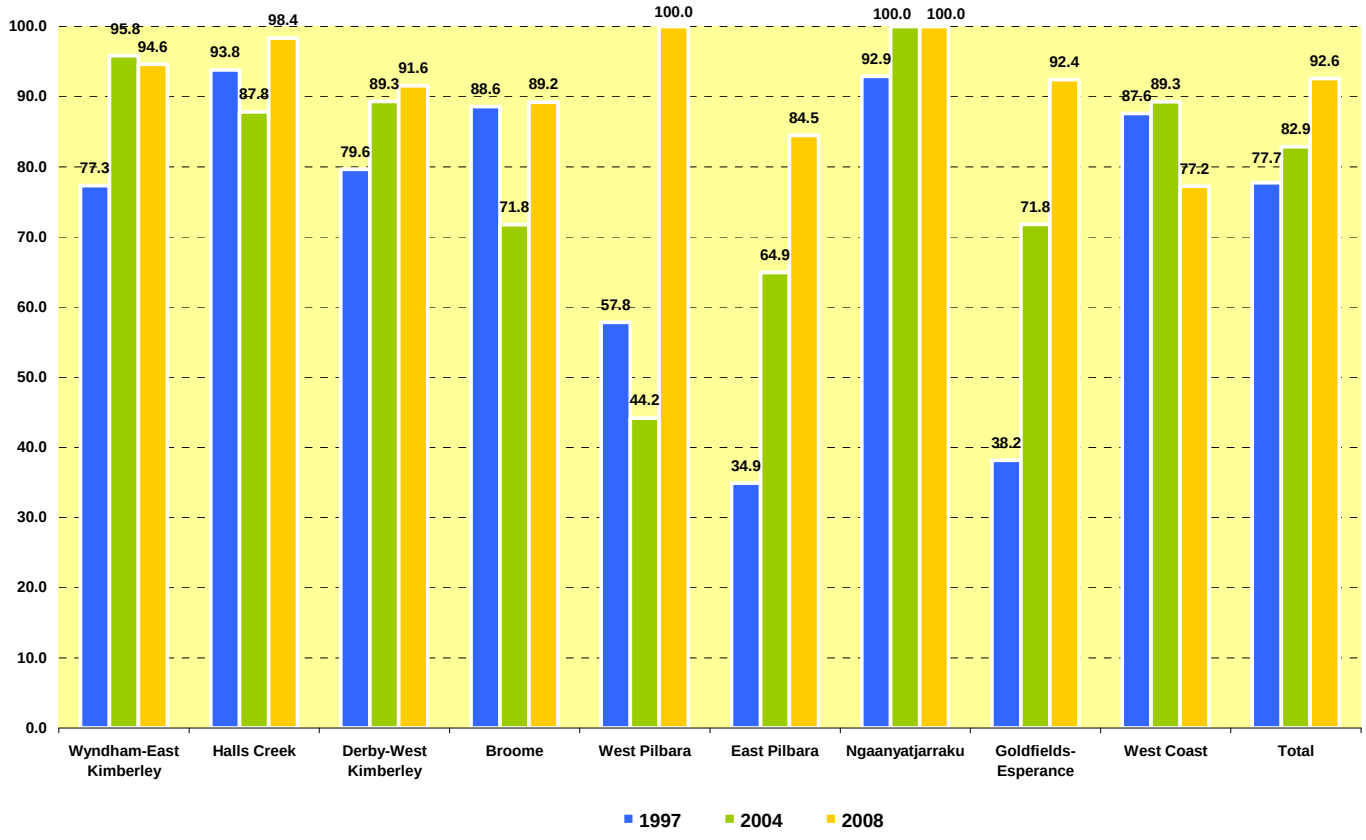
6.8. Dog Program

6.8.1. Access to Dog Program

Figure 6.13 identifies if a community reported having a dog program. Communities that responded yes were listed as being managed, while communities that responded no or unsure were classified as being not managed (i.e. no dog control program).

Across all regions, there has been a ten percentage increase (since 2004) in the proportion of population that live in communities with a managed dog control program. Large increases were noted for communities within Halls Creek, Broome, West Pilbara, East Pilbara and the Goldfields-Esperance regions. All community members within the West Pilbara and Ngaanyatjarraku region report having a managed dog control program within their community.

Figure 6.13: Proportion of Usual Population with Managed Dog Control Program by Region Group (%)



6.8.2. Satisfaction with Dog Program

Whilst questions relating to whether or not a community had a dog program have been asked in previous EHNS studies, satisfaction with the dog program was only asked in 2008. Therefore, no comparison between 1997, 2004 and 2008 results are possible.

6.9. Emergency Management

6.9.1. Adequacy of Bushfires Services

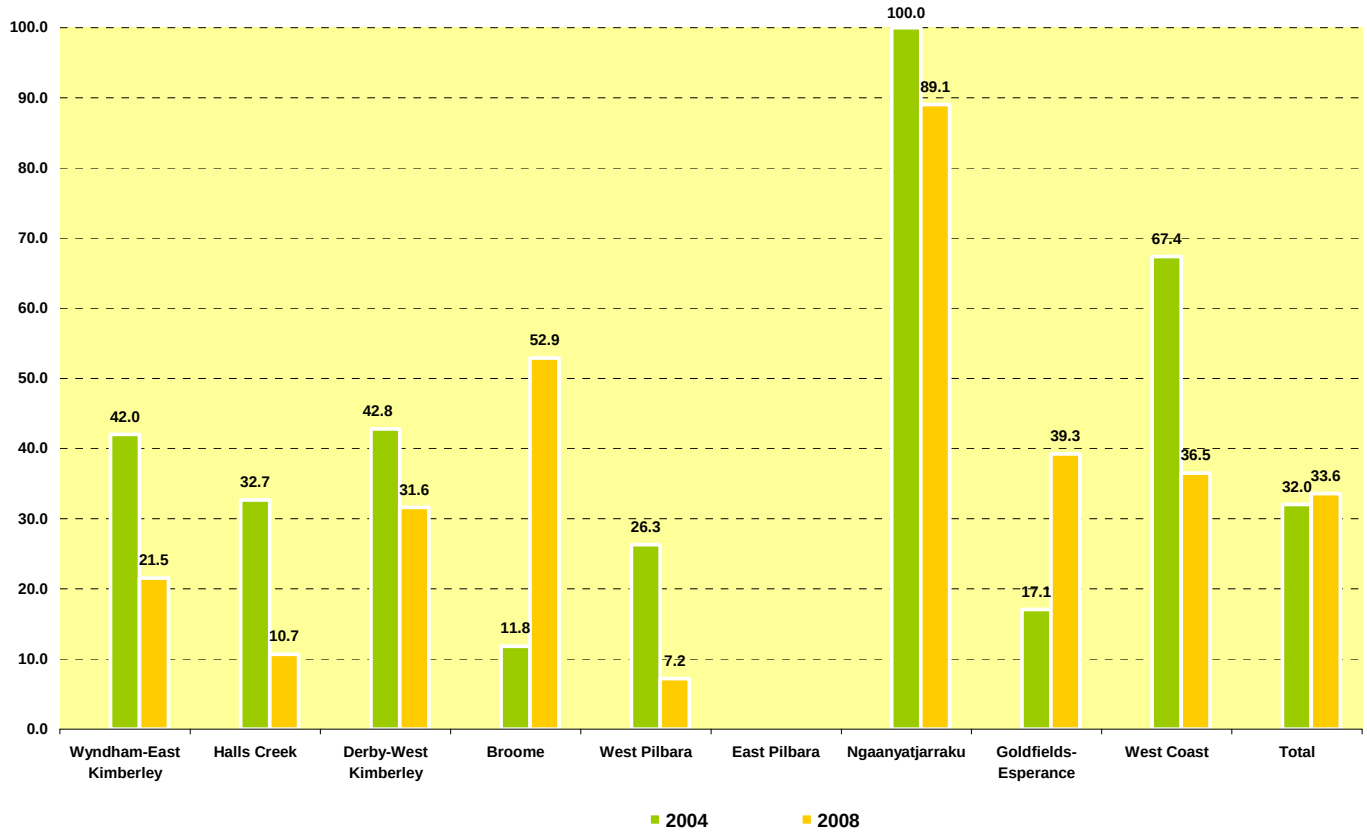
Figure 6.14 identifies if the community reported that it was prone to bushfires or not. For these communities it further identifies if they had fire fighting equipment or not.

This field was constructed using the bushfire data from each questionnaire in 2004 and 2008. The survey required that an indication of whether an area was prone to bushfires (i.e. “Yes” or “No” response). This proneness is a subjective indication and this may cause a variation in response data and impact on the findings. Caution, therefore, should be taken when interpreting Figure 6.14 results.

Trend analysis findings

At a Western Australia level, there has been a minimal increase in the proportion of population that live in communities that are prone to bushfires and that they had fire fighting equipment. However at an individual regional level, there have been large decreases across most regions, except for Broome and the Goldfields-Esperance regions.

Figure 6.14: Proportion of Usual Population Prone to Bushfires and have Fire Fighting Equipment by Region Group (%)



6.9.2. Adequacy of Cyclone Procedures

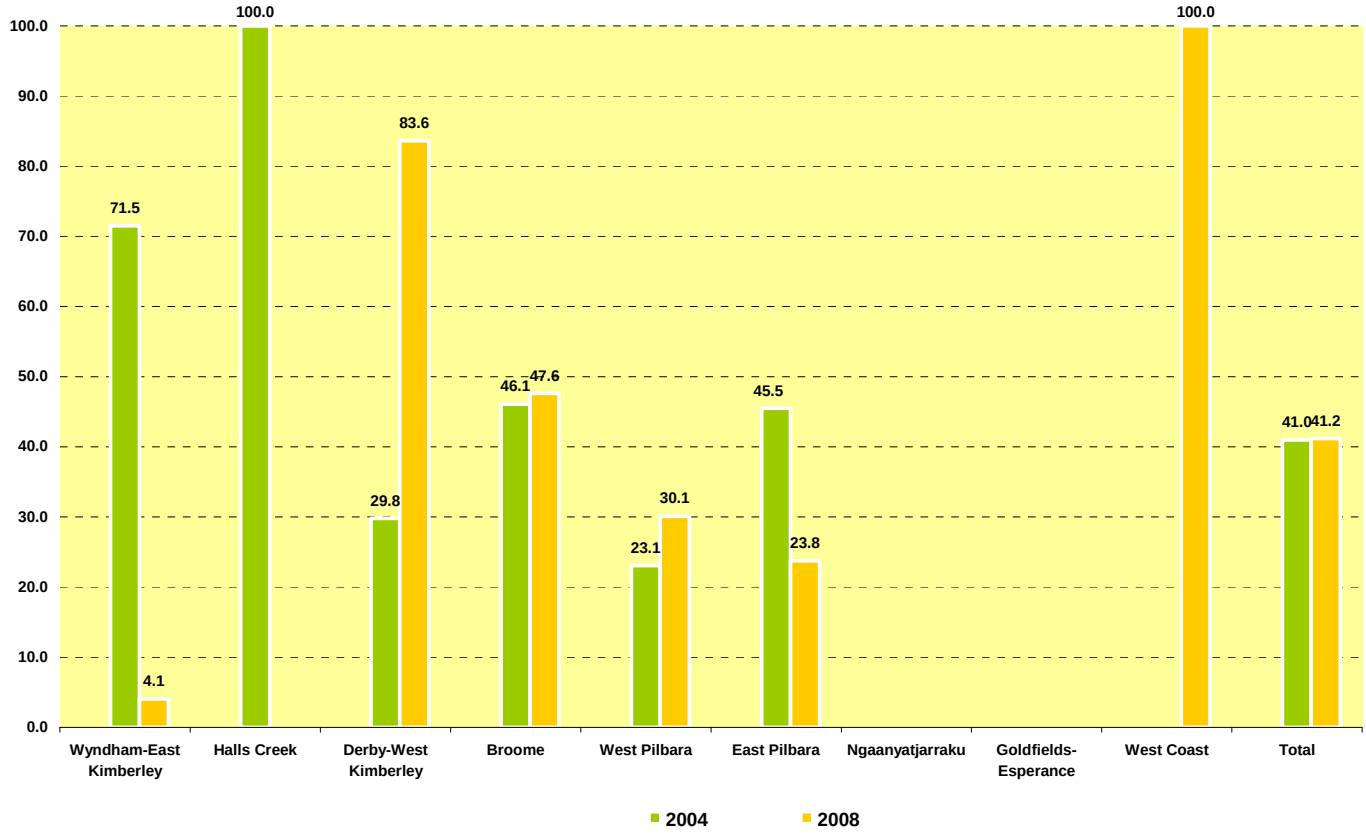
Figure 6.15 identifies if the community reported that it was prone to cyclones or not. For these communities it further identifies if they had an emergency evacuation procedure or not.

This field was constructed using the cyclone data from each questionnaire in 2004 and 2008. The survey required that an indication of whether an area was prone to cyclones (i.e. "Yes" or "No" response). Whether or not a community is prone, is a subjective indication and this may cause a variation in response data and impact on the findings. Caution, therefore, should be taken when interpreting Figure 6.15 results.

Trend analysis findings

At a total level, there has been no change in the proportion of population who live in a community prone to cyclones and have an emergency evacuation procedure.

Figure 6.15: Proportion of Usual Population Prone to Cyclones and have an Emergency Evacuation Procedure by Region Group (%)



6.9.3. Provision of Training in Emergency Management Procedures

Figure 6.16 identifies if community members were trained in emergency management procedures or not. Communities that responded yes were listed as being managed, while communities that responded no or unsure were classified as being not managed.

Changes to the questionnaire

Slight question wording and response options changes were applied to the 2008 questionnaire. Table 6.8 below highlights the changes. For comparison of trend data to be void of any biases, replication of questionnaire and data collection process needs to be identical each time. Due to the changes in the question wording and response option in 2008, caution should be taken when interpreting Figure 6.16 results.

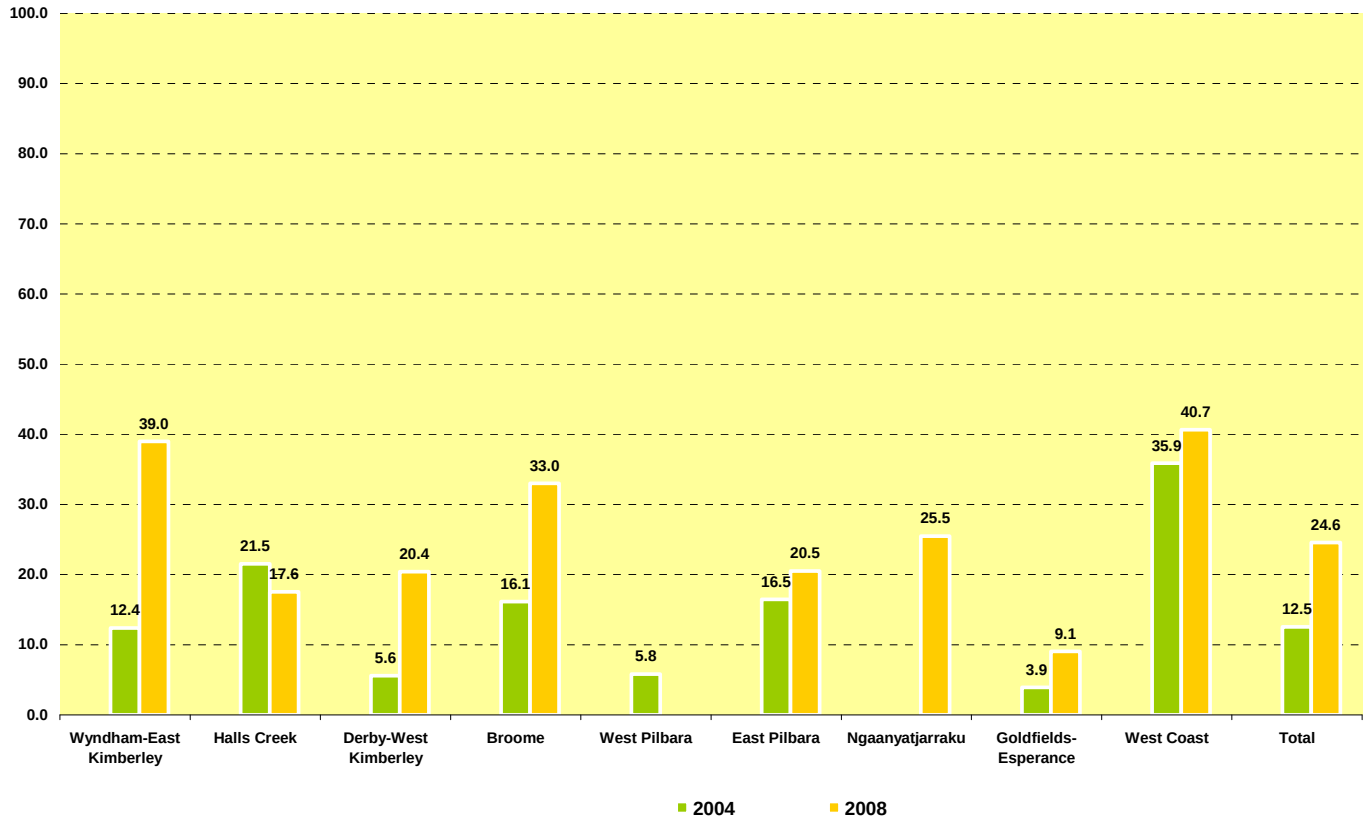
Table 6.8: Changes to question and response options

2004	2008
Q. Are the community members trained in emergency management? [Tick one box]	***Q. Is the community trained in emergency procedures (e.g. fire fighting)? [Tick one box]***
☐ ***Yes***	☐ ***Yes***
☐ ***No***	☐ ***No***
☐ ***Unsure***	
	If yes, please specify _____
☐ ***Yes (Yes)***	
☐ ***No (No)***	***Alignment of 2008 data to the 2004 data***
☐ ***Unsure (categorised as No response)***	

Trend analysis findings

At a total level, there has been a large increase of twelve percentage points in the proportion of population that live in communities with members trained in emergency management procedures. Wyndham-East Kimberley, Derby-West Kimberley, Broome and Ngaanyatjarraku recorded the highest increase in 2008.

Figure 6.16: Proportion of Usual Population Trained in Emergency Management Procedures by Region Group (%)



Appendix 1

Calculation of Core Indicator Priorities

The priority tables used throughout this report were constructed by applying scores to different responses on key survey questions for each of the eight core indicators. Each community's score was then calculated by adding the scores of each question and then weighting (multiplying) the score by the population of the community divided by 100.

For example, to calculate the Solid Waste Disposal score for a community, their response to Question 74 (In the past year have there been periods when the rubbish did not get collected?):

1. contributes a score of 2 if they answered *'yes'*, or a score of 0 if they answered *'no'.*
2. this is then multiplied by its weighting factor of 3, to give a final score for that question of 6
3. each of the other questions that comprise the Solid Waste Disposal indicator is then evaluated and the scores are added together; and
4. finally, the score is multiplied by 1/100th of the population (larger populations will score higher).

Note that a score of 10 for power is not equivalent to a score of 10 for water. Comparisons can be made between communities for a particular score, but not between core indicators within communities.

Population Weight

The population weight is based on the usual population of the community.

The community's total score for a given indicator is then multiplied by 1/100th of the community's usual population to provide a population weight continuum. Communities with a zero population can't be included to priority list. For example:

Usual population	Population Weight
50	0.5
75	0.75
100	1
200	2
0	-

Water

Questions	Weight	Response	Score
Q57. What is the main source of water for the community?	4	Soak	0
		Bore	0
		Town	0
		None/Carted	3
		River/Creek	0
		Other	0
Q59. Does the community use any water treatments to treat the drinking water? (Excluding those communities with Town Supply)	3	Yes/Unsure	0
		No	6
Q60. Is the water supply tested regularly (at least once a month)? (Excluding those communities with Town Supply)	1	Yes/Unsure	0
		No	2
Q58. How is the MAIN community drinking water supply stored? (Excluding those communities with Town Supply)	1	Covered tank	0
		Uncovered Tank/Dam	2
Q62a. Is the water supply satisfactory?	2	Any combination of Poor Maintenance, Regular System Failure, Lack of Power	0.5
		Lack of Storage	0.25
		Not enough supply	2
		Any combination of Poor Pressure, Poor taste/smell/colour/cloudy	0.25
		Drought	0
		Other	0

Electricity

Questions	Weight	Response	Score
Q63. What is the MAIN source of electricity?	3	Town Supply	0
		Community Generators	0
		Domestic Generators	0
		Solar	0
		Solar Hybrid	0
		None	3
Q65. Does the electricity get interrupted regularly? (Excluding those communities connected to a town supply)	2	Yes	2
		No/Unsure	0

Housing

Housing need is defined in terms of capital programs available to meet that need (i.e. construction and repair and maintenance programs) and is primarily based on the Population Density Measure (PDM).

There are two primary indicators for each community surveyed - a 'Crude PDM' using all dwellings in the community, and an 'Adjusted PDM' which takes into account only those 'adequate dwellings'.

The number of dwellings has been used rather than the number of bedrooms, as numbers of dwellings were available for all communities, but the number of bedrooms was only available for dwellings to which access was granted.

Crude PDM = (Number of dwellings in community/Usual Population) x 100

Adjusted PDM = (Number of adequate dwellings in community/Usual Population) x 100

An 'Adequate Dwelling' is defined as being a permanent dwelling (including permanent transportable) that is occupied.

Solid Waste Disposal

Questions	Weight	Response	Score
Q74. In the past year have there been periods when the rubbish did not get collected?	3	Yes	2
		No	0
Q76. What type of rubbish tip does the community have? (None, Dug trench, Dug pit, Natural depression, Surface tip, Other)	3	None	7
		Surface Tip	3
		Natural Depression	2
		All else	0
Q78. Is the tip dumping area in a suitable site?	2	Yes	0
		No	2
Q82. The Rubbish tip has enough capacity to meet community needs for:	2	Less than 12 months	2
		More than 12 months	0
Q79. Please rate how well the tip is managed.	1	Very Unsatisfactory	3
		Unsatisfactory	2
		All else	0

Sanitation/Sewerage

Questions	Weight	Response	Score
Q88. Please rate the level of lagoon overflow.	1	Excessive	8
		High	6
		Moderate	4
		Low	2
		None	0

Dust

Questions	Weight	Response	Score
Q51. Are internal community roads:	1	Sealed	0
		Unsealed	2
		Partly sealed	1
Q52. Rate the level of dust problems usually experienced by the community.	1	None	0
		Low	0
		Moderate	1
		High	2
		Excessive	3
Q53. Are there any revegetation or dust suppression programs?	1	Yes/Unsure	0
		No	1

Dog Control

Question	Weight	Response	Score
Q33. Does the community have a dog program?	1	Yes/Unsure	0
		No	1

Emergency Management

Q93, Q96 - communities that are prone to bushfires but do not have fire-fighting equipment are given a score of 1

Q93, Q94 - communities that are prone to cyclones but have no evacuation plan are given a score of 1.

The score is then weighted by population.

Appendix 2

Participating Communities and Alternative Names

Community Name (pop)	EHNS Region	Local Government Authority	Alternative Name
Alligator Hole (33)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Badjaling (19)	West Coastal	Quairading	Badjaling Wanderers
Balginjirr (21)	Derby-West Kimberley	Derby-West Kimberley	Lower Liveringa
Balgo (**460**)	Halls Creek	Halls Creek	Wirrimanu
Bardi (**400**)	Broome	Broome	Ardyaloon
Barrel Well (27)	West Coastal	Northampton	Ajana
Baulu Wah (8)	Halls Creek	Halls Creek	Violet Valley
Bawoorrooga (10)	Halls Creek	Halls Creek	
Bayulu (**500**)	Derby-West Kimberley	Derby-West Kimberley	Go Go Station
Beagle Bay (**270**)	Broome	Broome	Beagle Bay Mission
Bedunburra (12)	Derby-West Kimberley	Derby-West Kimberley	Nillibublica
Bell Springs (22)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Bells Point (2)	Broome	Broome	Weedong
Bidijul (15)	Derby-West Kimberley	Derby-West Kimberley	
Bidyadanga (**800**)	Broome	Broome	La Grange
Billard (**72**)	Broome	Broome	
Billinue (43)	West Coastal	Dandaragan	Cataby Seeds
Bindi Bindi (**88**)	West Pilbara	Ashburton	Onslow Town Reserve
Bindurrk (8)	Broome	Broome	
Biridu (30)	Derby-West Kimberley	Derby-West Kimberley	Leopold Downs Station
Birndirri (4)	Halls Creek	Halls Creek	Old Lamboo
Blackstone (**12**0)	Ngaanyatjarraku	Ngaanyatjarraku	Papulankutja
Bobieding (16)	Broome	Broome	Bernards Well
Bondini (**100**)	Goldfields-Esperance	Wiluna	Bondini Reserve
Bow River (21)	Wyndham-East Kimberley	Wyndham-East Kimberley	Juwurlinji
Brunbrunganjal (19)	Broome	Broome	Kitty Wells
Budgarjook (20)	Broome	Broome	Red Soil
Budulah (35)	Derby-West Kimberley	Derby-West Kimberley	
Bulgin (7)	Broome	Broome	Bulgun
Bungardi (30)	Derby-West Kimberley	Derby-West Kimberley	
Burrguk (5)	Broome	Broome	Banana Wells
Burringurrah (**150**)	West Coastal	Upper Gascoyne	Mt James
Burrinunga (40)	Derby-West Kimberley	Derby-West Kimberley	
Bygnunn (1)	Broome	Broome	Byngunn
Carnot Springs (2)	Broome	Broome	
Cheeditha (**54**)	West Pilbara	Roebourne	Roebourne Town Reserve
Chile Creek (4)	Broome	Broome	Jilirr
Cockatoo (5)	Broome	Broome	
Cockatoo Springs (30)	Wyndham-East Kimberley	Wyndham-East Kimberley	Ngunulum
Cone Bay (30)	Derby-West Kimberley	Derby-West Kimberley	Larinyuwar

Community Name (pop)	EHNS Region	Local Government Authority	Alternative Name
Coonana (**80**)	Goldfields-Esperance	Kalgoorlie-Boulder	Upurl Upurlila Ngurratja
Cosmo Newberry (**87**)	Goldfields-Esperance	Laverton	Cosmo
Cotton Creek (**111**)	East Pilbara	East Pilbara	Parnngurr
Crocodile Hole (16)	Wyndham-East Kimberley	Wyndham-East Kimberley	Rugan
Cullacabardee (**50**)	West Coastal	Swan	
Darlngunaya (30)	Derby-West Kimberley	Derby-West Kimberley	Old Fitzroy
Darlu Darlu (5)	Halls Creek	Halls Creek	Nine Mile (Darlu Darlu)
Dillon Springs (6)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Dingo Springs (8)	Wyndham-East Kimberley	Wyndham-East Kimberley	Yardangarli
Djaradjung (6)	Broome	Broome	
Djarindjin (**260**)	Broome	Broome	Djaraindjin
Djibbinj (9)	Broome	Broome	
Djimung Nguda (11)	Derby-West Kimberley	Derby-West Kimberley	Ejai Block
Djugaragyn (8)	Broome	Broome	Jugarargyn
Djugerari (**74**)	Derby-West Kimberley	Derby-West Kimberley	Cherrabun
Djulburr (2)	Broome	Broome	
Dodnun (**50**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Mt Elizabeth
Embulgun (29)	Broome	Broome	Imbalgun Aboriginal Community
Emu Creek (18)	Wyndham-East Kimberley	Wyndham-East Kimberley	Gulgagulganeng
Fly Well (11)	Halls Creek	Halls Creek	Flywell
Four Mile (24)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Frazier Downs (5)	Broome	Broome	
Galamanda (20)	Derby-West Kimberley	Derby-West Kimberley	Galmarringarri
Galeru Gorge (28)	Halls Creek	Halls Creek	Mt Pierre
Ganinyi (26)	Halls Creek	Halls Creek	Louisa Downs
Geboowama (9)	Wyndham-East Kimberley	Wyndham-East Kimberley	Rocky Spring
Gidgee Gully (20)	West Coastal	Meekatharra	Buttah Windee
Gillaroong (40)	Derby-West Kimberley	Derby-West Kimberley	Gilarong
Gilly Sharpe (5)	Derby-West Kimberley	Derby-West Kimberley	
Glen Hill (**72**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Mandangala
Gnangara (**65**)	West Coastal	Wanneroo	Swan Valley Nyungah
Gnylmarung (15)	Broome	Broome	
Gooda Binya (49)	East Pilbara	East Pilbara	Goodabinya
Goolarabooloo (**63**)	Broome	Broome	Goolarabooloo Millibinyarri
Goolarrgon (1)	Broome	Broome	Midaloon
Goolgaradah (4)	Halls Creek	Halls Creek	
Goombaragin (7)	Broome	Broome	
Goose Hill (6)	Wyndham-East Kimberley	Wyndham-East Kimberley	Gilaluwa
Guda Guda (**54**)	Wyndham-East Kimberley	Wyndham-East Kimberley	9 Mile Camp

Community Name (pop)	EHNS Region	Local Government Authority	Alternative Name
Gulberang (4)	Wyndham-East Kimberley	Wyndham-East Kimberley	8 Mile
Gullaweed (15)	Broome	Broome	
Gulumonon (20)	Broome	Broome	Goolamionon
Gumbarmun (15)	Broome	Broome	Gumbarnum
Gurrbalgun (17)	Broome	Broome	Pender Bay
Hollow Springs (19)	Wyndham-East Kimberley	Wyndham-East Kimberley	Woolerregerberleng
Honeymoon Beach (17)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Imintji (**60**)	Derby-West Kimberley	Derby-West Kimberley	Immintji
Innawonga (**50**)	West Pilbara	Ashburton	Bellary Springs
Iragul (15)	Goldfields-Esperance	Dundas	Tjirntu Para Para
Irrungadji (**150**)	East Pilbara	East Pilbara	Nullagine Town Reserve
Jabir Jabir (6)	Broome	Broome	Rock Hole
Jameson (**115**)	Ngaanyatjarraku	Ngaanyatjarraku	Mantamaru
Janterriji (6)	Halls Creek	Halls Creek	Dolly Hole
Jarlmadangah (**78**)	Derby-West Kimberley	Derby-West Kimberley	Jarlmadangah Burru
Jigalong (**200**)	East Pilbara	East Pilbara	
Jilariya (5)	Halls Creek	Halls Creek	
Jimbalakudunj (18)	Derby-West Kimberley	Derby-West Kimberley	Paradise Station
Jimbilum (12)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Joy Springs (**73**)	Derby-West Kimberley	Derby-West Kimberley	Eight Mile
Julgnunn (8)	Broome	Broome	
Jundaru (12)	West Pilbara	Ashburton	Peedamulla Station
Junjuwa (**250**)	Derby-West Kimberley	Derby-West Kimberley	Bunuba
Kadjina (**70**)	Derby-West Kimberley	Derby-West Kimberley	Milijidee
Kalumburu (**500**)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Kandiwal (25)	Wyndham-East Kimberley	Wyndham-East Kimberley	Mitchell Falls
Karalundi (**106**)	West Coastal	Meekatharra	
Karmulinunga (**60**)	Derby-West Kimberley	Derby-West Kimberley	Derby Town Reserve
Karnparri (7)	Derby-West Kimberley	Derby-West Kimberley	Melon Hole
Kartang Rija (5)	Halls Creek	Halls Creek	Turner River
Kearney Range (10)	Halls Creek	Halls Creek	Walajunti
Kiwirrkurra (**165**)	East Pilbara	East Pilbara	
Koongie Park (31)	Halls Creek	Halls Creek	Lamboo Gunian
Koorabye (**89**)	Derby-West Kimberley	Derby-West Kimberley	Ngalapita
Kunawarritji (**56**)	East Pilbara	East Pilbara	Well 33
Kundat Djaru (**161**)	Halls Creek	Halls Creek	Ringer Soak
Kupartiya (27)	Halls Creek	Halls Creek	Bohemia Downs
Kupungarri (**50**)	Derby-West Kimberley	Derby-West Kimberley	Mount Barnett
Kurnangki (**80**)	Derby-West Kimberley	Derby-West Kimberley	
Kurrawang (**92**)	Goldfields-Esperance	Coolgardie	Kagc

Community Name (pop)	EHNS Region	Local Government Authority	Alternative Name
Kutkabubba (47)	Goldfields-Esperance	Wiluna	Number 2
La Djadarr Bay (27)	Broome	Broome	La Djardarr Bay
Lamboo Station (25)	Halls Creek	Halls Creek	Ngunjiwirri
Linga (12)	Halls Creek	Halls Creek	
Lombadina (**55**)	Broome	Broome	Lombadina Mission
Looma (**450**)	Derby-West Kimberley	Derby-West Kimberley	
Loongabid (15)	Broome	Broome	Lungabid
Lumuku (11)	Halls Creek	Halls Creek	Osmond Valley Station
Madunka Ewurry (19)	West Coastal	Meekatharra	Muda Ewurry
Malaburra (7)	Broome	Broome	Maher Family
Mallingbar (**56**)	Broome	Broome	Kennedy Hill
Mardiwah Loop (**252**)	Halls Creek	Halls Creek	Thalgnarr Ngarriny
Marmion Village (49)	Goldfields-Esperance	Menzies	Menzies
Marribank (1)	West Coastal	Kojonup	Carrolup
Marta Marta (10)	West Pilbara	Port Hedland	Deca Station
Marunbabidi (25)	Wyndham-East Kimberley	Wyndham-East Kimberley	Parap Parap
Mcgowan Island (5)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Mercedes Cove (6)	Broome	Broome	
Mia Maya (2)	Broome	Broome	Mayi Mia
Middle Lagoon (9)	Broome	Broome	
Milba (5)	Halls Creek	Halls Creek	
Mimbi (21)	Halls Creek	Halls Creek	
Mindi Rardi (**95**)	Derby-West Kimberley	Derby-West Kimberley	Windmill Reserve
Mindibungu (**220**)	Halls Creek	Halls Creek	Billiluna
Mingullatharndo (29)	West Pilbara	Roebourne	5 Mile
Mirima (**250**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Wirrjining Darwung Council
Molly Springs (46)	Wyndham-East Kimberley	Wyndham-East Kimberley	Wijilarwarrim
Moongardie (20)	Halls Creek	Halls Creek	
Morard (9)	Broome	Broome	Moord
Mowanjum (**286**)	Derby-West Kimberley	Derby-West Kimberley	
Mowla Bluff (6)	Derby-West Kimberley	Derby-West Kimberley	Bulinjarr
Mt Margaret (**76**)	Goldfields-Esperance	Laverton	Mount Margaret
Mud Springs (19)	Wyndham-East Kimberley	Wyndham-East Kimberley	Ribinyung Daawang
Mudjarrl (5)	Broome	Broome	
Mudnunn (8)	Broome	Broome	
Mulan (**140**)	Halls Creek	Halls Creek	Lake Gregory
Mulga Queen (45)	Goldfields-Esperance	Laverton	Nurra Kurramunoo
Muludja (**121**)	Derby-West Kimberley	Derby-West Kimberley	Colin Yard
Munget (10)	Broome	Broome	
Mungullah (**150**)	West Coastal	Carnarvon	Carnarvon Town Reserve

Community Name (pop)	EHNS Region	Local Government Authority	Alternative Name
Munmarul (14)	Derby-West Kimberley	Derby-West Kimberley	Milla Windi
Munthanmar (12)	Wyndham-East Kimberley	Wyndham-East Kimberley	Munthamar
Murphy Creek (1)	Broome	Broome	
Nambi Village (27)	Goldfields-Esperance	Leonora	Nambi Road Village
Neem (10)	Broome	Broome	Midlagoon
Ngadalargin (2)	Broome	Broome	
Ngalingkadji (30)	Derby-West Kimberley	Derby-West Kimberley	Chestnut Bore
Ngallagunda (**60**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Gibb River
Ngamakoon (30)	Broome	Broome	
Ngumpan (33)	Derby-West Kimberley	Derby-West Kimberley	Pinnacle Creek
Ngurawaana (30)	West Pilbara	Ashburton	Millstream
Ngurtuwarta (40)	Derby-West Kimberley	Derby-West Kimberley	Jubilee Downs
Nicholson Block (30)	Halls Creek	Halls Creek	Nicholson Camp
Nillir Irbanjin (**61**)	Broome	Broome	1 Mile
Nillygan (14)	Broome	Broome	Shonelle Point
Ninga Mia Village (**70**)	Goldfields-Esperance	Kalgoorlie-Boulder	Ninga Mia
Norman Creek (9)	Broome	Broome	
Nudugun (8)	Broome	Broome	
Nulla Nulla (20)	Wyndham-East Kimberley	Wyndham-East Kimberley	
Nullywah (**250**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Nulleywah
Nunju Yallet (5)	Broome	Broome	
Nygah Nygah (4)	Broome	Broome	
Nyumwah (10)	Broome	Broome	Nymwah
Oombulgurri (**200**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Forrest River Mission
Pago (3)	Wyndham-East Kimberley	Wyndham-East Kimberley	Waina Family
Pandanus Park (**94**)	Derby-West Kimberley	Derby-West Kimberley	The Park
Parnpajinya (**60**)	East Pilbara	East Pilbara	Pumajina
Patjarr (30)	Ngaanyatjarraku	Ngaanyatjarraku	Karilywarra
Pia Wadjari (40)	West Coastal	Murchison	Mt Barloweerie
Pullout Springs (31)	Halls Creek	Halls Creek	Girriyoowa
Punju Njamal (8)	West Pilbara	Port Hedland	Ngarla-Coastal Njamal
Punmu (**130**)	East Pilbara	East Pilbara	Lake Dora
Rb River Junction (4)	Halls Creek	Halls Creek	Robe River Junction
Red Hill (**60**)	Halls Creek	Halls Creek	Lundja
Red Shells (3)	Broome	Broome	
Rocky Springs (5)	Halls Creek	Halls Creek	Tharmindie Corp
Rollah (8)	Broome	Broome	
Tappers Inlet (12)	Broome	Broome	
Tirralintji (13)	Derby-West Kimberley	Derby-West Kimberley	Train River
Tjirrkarli (**62**)	Ngaanyatjarraku	Ngaanyatjarraku	

Community Name (pop)	EHNS Region	Local Government Authority	Alternative Name
Tjukurla (**67**)	Ngaanyatjarraku	Ngaanyatjarraku	
Tjuntjuntjara (**102**)	Goldfields-Esperance	Menzies	Tjuntjuntjarra
Tkalka Boorda (**66**)	West Pilbara	Port Hedland	Tjalka Boorda
Wakathuni (**72**)	West Pilbara	Ashburton	Rocklea
Wanamulnyndong (20)	Broome	Broome	Mijilmil - Mia
Wandanooka (40)	West Coastal	Mullewa	Kardulu Farm
Wangkatjungka (**220**)	Derby-West Kimberley	Derby-West Kimberley	Christmas Creek
Wannarn (**109**)	Ngaanyatjarraku	Ngaanyatjarraku	Wanarn
Warakurna (**168**)	Ngaanyatjarraku	Ngaanyatjarraku	Giles
Warburton (**719**)	Ngaanyatjarraku	Ngaanyatjarraku	
Warmun (**359**)	Halls Creek	Halls Creek	Turkey Creek
Warralong (**155**)	East Pilbara	East Pilbara	Karntimarta
Warrayu (45)	Wyndham-East Kimberley	Wyndham-East Kimberley	Warriu
Weymul (6)	West Pilbara	Roebourne	Cheratta
Whulich (4)	Broome	Broome	
Windidda (35)	Goldfields-Esperance	Wiluna	
Windjingayre (30)	Derby-West Kimberley	Derby-West Kimberley	Windjingare
Wingellina (**147**)	Ngaanyatjarraku	Ngaanyatjarraku	Irrunytju
Wongatha Wonganarra (**190**)	Goldfields-Esperance	Laverton	Wongatha Wonganara
Woolah (**67**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Doon Doon
Wuggun (**50**)	Wyndham-East Kimberley	Wyndham-East Kimberley	Wuggubun
Wungu (4)	Halls Creek	Halls Creek	Old Flora Valley Station
Wurrenranginy (**50**)	Halls Creek	Halls Creek	Wurrenraginy
Yakanarra (**140**)	Derby-West Kimberley	Derby-West Kimberley	
Yandarinya (14)	Broome	Broome	
Yandeyarra (**180**)	West Pilbara	Port Hedland	Mugarinya
Yardgee (**84**)	Halls Creek	Halls Creek	
Yawuru (7)	Broome	Broome	
Yirralallem (20)	Wyndham-East Kimberley	Wyndham-East Kimberley	Packsaddle Springs
Yiyili (**58**)	Halls Creek	Halls Creek	
Youngaleena (24)	West Pilbara	Ashburton	Mulga Downs
Yulga Jinna (**52**)	West Coastal	Meekatharra	Fraser Well
Yulumbu (15)	Derby-West Kimberley	Derby-West Kimberley	Tableland Station

Appendix 3

Communities with Essential Services Managed by RAESP

Community Name	EHNS Region	Water	Electricity	Sewerage	RAESP Region	ARIA+
Bardi	Broome	X	X	X	Kimberley	Very Remote
Beagle Bay	Broome	X	X	X	Kimberley	Very Remote
Bidyadanga	Broome	X	X	X	Kimberley	Very Remote
Bobeiding	Broome	X	X	X	Kimberley	Very Remote
Budgarjook	Broome	X	X	X	Kimberley	Very Remote
Djarindjin	Broome	X	X	X	Kimberley	Very Remote
Goolarabooloo	Broome	X	X	X	Kimberley	Remote
LaDjardarr Bay	Broome	X	X	X	Kimberley	Very Remote
Lombadina	Broome	X	X	X	Kimberley	Very Remote
Bayulu	Derby-West Kimberley	X	IR[1]	X	Kimberley	Very Remote
Djugerari	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Imintji	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Jarlmadangah	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Jimbalakadunj	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Joy Springs	Derby-West Kimberley	X	IR[1]	X	Kimberley	Very Remote
Junjuwa	Derby-West Kimberley	X	IR[1]	IR[1]	Kimberley	Very Remote
Kadjina	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Karmilinunga	Derby-West Kimberley	IR[2]	IR[1]	X	Kimberley	Very Remote
Koorabye	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Kupungarri	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Looma	Derby-West Kimberley	X	IR[1]	X	Kimberley	Very Remote
Mowanjum	Derby-West Kimberley	IR[2]	IR[1]	X	Kimberley	Very Remote
Muludja	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Ngalingkadji	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Ngumpan	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Ngurtawarta	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Noonkanbah	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Pandanus Park	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Wangkatjungka	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Yakanarra	Derby-West Kimberley	X	X	X	Kimberley	Very Remote
Jigalong	East Pilbara	X	X	X	Pilbara	Very Remote
Kiwirrkurra	East Pilbara	X	X	X	Pilbara	Very Remote
Kunawaritji	East Pilbara	X	X	X	Pilbara	Very Remote
Parnngurr	East Pilbara	X	X	X	Pilbara	Very Remote
Punmu	East Pilbara	X	X	X	Pilbara	Very Remote
Warralong	East Pilbara	X	X	X	Pilbara	Very Remote
Coonana	Goldfields-Esperance	X	X	X	Western Desert	Very Remote
Cosmo Newberry	Goldfields-Esperance	X	X	X	Western Desert	Very Remote

Community Name	EHNS Region	Water	Electricity	Sewerage	RAESP Region	ARIA+
Kutkabubba	Goldfields-Esperance	X	X	X	Pilbara	Very Remote
Mt Margaret	Goldfields-Esperance	X	X	X	Western Desert	Very Remote
Mulga Queen	Goldfields-Esperance	X	X	X	Western Desert	Very Remote
Tjuntjuntjarra	Goldfields-Esperance	X	X	X	Western Desert	Very Remote
Windidda	Goldfields-Esperance	X	X	X	Pilbara	Very Remote
Balgo	Halls Creek	X	X	X	Kimberley	Very Remote
Galeru Gorge	Halls Creek	X	X	X	Kimberley	Very Remote
Kundat Djaru	Halls Creek	X	X	X	Kimberley	Very Remote
Kupartiya	Halls Creek	X	X	X	Kimberley	Very Remote
Lamboo						
Gunian	Halls Creek	X	IR[1]	X	Kimberley	Very Remote
Lundja	Halls Creek	IR[2]	IR[1]	X	Kimberley	Very Remote
Mindibungu	Halls Creek	X	X	X	Kimberley	Very Remote
Moongardie	Halls Creek	X	X	X	Kimberley	Very Remote
Mulan	Halls Creek	X	X	X	Kimberley	Very Remote
Warmun	Halls Creek	X	X	X	Kimberley	Very Remote
Wurrenraginy	Halls Creek	X	X	X	Kimberley	Very Remote
Yiyili	Halls Creek	X	X	X	Kimberley	Very Remote
Blackstone	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Jameson	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Patjarr	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Tjirrkarli	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Tjukurla	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Wannan	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Warakurna	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Warburton	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Wingellina	Ngaanyatjarraku	X	X	X	Western Desert	Very Remote
Barrell Well	West Coastal	X	IR[1]	X	Pilbara	Remote
Burringurrah	West Coastal	X	X	X	Pilbara	Very Remote
Karalundi	West Coastal	X	X	X	Pilbara	Very Remote
Pia Wadjari	West Coastal	X	X	X	Pilbara	Very Remote
Wandanooka	West Coastal	X	X	X	Pilbara	Remote
Yulga Jinna	West Coastal	X	X	X	Pilbara	Very Remote
Bindi Bindi	West Pilbara	IR[2]	IR[1]	X	Pilbara	Very Remote
Cheeditha	West Pilbara	IR[2]	IR[1]	IR[1]	Pilbara	Remote
Innawonga	West Pilbara	X	X	X	Pilbara	Very Remote
Jinparinya	West Pilbara	IR[3]	X	X	Pilbara	Very Remote
Ngurawaana	West Pilbara	X	X	X	Pilbara	Very Remote
Punju Ngamal	West Pilbara	X	*IR	X	Pilbara	Very Remote
Tjalka Wara	West Pilbara	IR[3]	IR[1]	X	Pilbara	Very Remote

Community Name	EHNS Region	Water	Electricity	Sewerage	RAESP Region	ARIA+
Wakathuni	West Pilbara	X	X	X	Pilbara	Very Remote
Yandeyarra	West Pilbara	X	X	X	Pilbara	Very Remote
Youngaleena	West Pilbara	X	X	X	Pilbara	Very Remote
Bow River	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Dodnun	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Guda Guda	Wyndham-East Kimberley	IR[2]	IR[1]	X	Kimberley	Very Remote
Kalumburu	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Kandiwal	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Mandangala	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Marunbabidi	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Ngallagunda	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Oombulgurri	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Woolah	Wyndham-East Kimberley	X	X	X	Kimberley	Very Remote
Yarrunga	#N/A	X	X	X	Kimberley	Very Remote

IR[1]	Internal reticulation only
IR[2]	Internal reticulation only - no sampling and testing required
IR[3]	Internal reticulation only - sampling and testing required
ARIA+	Based on 2001 ARIA+ collection district scores