



Evaluation of Environmental Health Survey Data - Indigenous Housing

Myfanwy Runcie & Ross Bailie

*Menzies School of Health Research
Northern Territory - Australia*

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The ideas and opinions presented in this research report are the authors' own, and do not necessarily reflect the ideas and opinions of the CRCATH, its board, executive committee or other stakeholders.

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Executive Summary

The Commonwealth and Northern Territory Governments, and the Aboriginal and Torres Strait Islander Commission provide funds for housing to improve the living conditions of Aboriginal people. The Indigenous Housing Authority of the Northern Territory is responsible for allocating 'maintenance grants' to eligible housing organisations to help meet the cost of specific repairs and maintenance that are necessary to make houses safe and healthy to live in. This is a major area of 'environmental health'. The Department of Local Government together with Territory Health Services assist organisations in conducting a regular environmental health survey of their houses. In 1998-1999 approximately 4500 environmental health surveys were undertaken.

The Menzies School of Health Research was approached by the Department of Local Government to conduct an analysis and evaluation of the data collected in this first round of surveys, and to make recommendations regarding the survey process, the survey instrument, and methods to improve data quality. Analysis of the data enabled us to draw conclusions concerning a range of issues. These issues included measurement of the level of functionality of environmental health infrastructure; identification of areas of greatest need; generation of repair and maintenance records; and other related issues.

We used a variety of methods to evaluate the survey data, database organisation, and the survey process and instrument. These included interrogation of database software; interviews with key informants; observation of the survey process in the field; uni-variate analysis; and the creation of a method to estimate house functionality. The uni-variate analysis was useful to determine the diversity and number of dwellings; score for individual survey items; and house condition ratings. This analysis was carried out for the entire Northern Territory and for each of the seven Aboriginal and Torres Strait Islander Commission regions. In total, 3906 houses were surveyed and had data entered in all fields in a computer database.

Community Development Officers, Technical Officers from the Department of Local Government, Environmental Health Officers from Territory Health Services, Community Housing Officers and Council employees conducted the household surveys. Before a house was surveyed, an explanation was given to the residents that no immediate repairs would be made as a result of the survey. During a survey, ratings of the presence and condition of up to 96 items were determined. Facilities were scored on a seven item coding scale ranging from 'item not present', 'no maintenance', to 'urgent maintenance required'. After completion, survey sheets were delivered to the Department of Local Government in Darwin. The data was then entered manually into a computer database.

The results of the uni-variate analysis indicated that the items of bathroom bench/shelves, laundry shelves, and fences around boundaries required maintenance or installation in a high percentage (40%) of surveyed houses. Other items requiring maintenance or installation included oven (38%), and stove top (35%).

There were a number of items missing in over 30% of the houses surveyed, and these were recorded as '0-not present', rather than '5-item not present but urgently needed', which suggest surveyors thought they were not urgently required. Items recorded in a high number of houses as '0-not present', included laundry drainage and shelf, septic tank system, and bathroom bench.

The method used to provide information about the functionality of individual houses was based on questions on whether there were easily available facilities to allow people to perform 'six standard living practices' of washing people, washing clothes, performing ablutions, removing waste water, removing waste rubbish, and preparing and storing food.

The results of the analysis of housing functionality against the six standard living practices ranged between 37 and 69% for surveyed houses. For instance, in 62% of houses the facility to 'prepare and store food' was not functional. All six standard living practices were possible in only 13% of all houses surveyed. For three of the standard living practices, the results are an overestimate of good functionality because the items of laundry drainage and kitchen hot tap could not be included in the analysis for technical reasons. Hot water systems were non-functional in 29% of houses surveyed. Electricity was not working in all parts of the house in 59% of all those that were surveyed.

The facilities most commonly identified as missing or requiring repair were kitchen facilities (especially stove-tops and ovens), attention to waste water drainage, electricity and hot water systems.

Comparisons between regions and communities should be made with caution, as in some regions/communities, notably Alice Springs, a relatively small proportion of funded houses were surveyed. In addition the level of standardisation of the survey process between regions is uncertain.

Recommendations

A number of recommendations are made to ensure a high level of data quality in future surveys:

Conduct of survey

- survey a high proportion of houses in all communities and out-stations to gain a good representative sample;
- develop protocols to ensure consistency in the conduct of the survey;
- standardise the method of assessing the condition of items;
- run training workshops for surveyors prior to the surveys to improve standardisation and quality of survey data;
- provide ongoing training and support to surveyors throughout the survey;
- employ ongoing quality control measures;
- encourage commitment to the survey by:
 - emphasising the relationships to health on the survey sheets and in the training
 - producing feedback reports for Field Officers and each community surveyed as soon as possible after the survey.

Survey instrument

- remove items from the survey instrument that fail to add significant information to the data set;
- re-categorise 'pests' to include three levels of ant, cockroach, rodent or other infestation, and have an accompanying guide as to how to score these items; create a space for the name of the pest if it is not an ant, cockroach or rat;
- add the items of smoke alarm, toilet roll holder, kitchen drainage and kitchen sink to the survey instrument;
- rename the item 'basin' to 'hand basin';
- reduce the condition codes from seven choices to five;
- include a box for 'no access to house' and boxes for when an entire facility is absent;
- provide a clear description of code meanings.

Database organisation

- provide ongoing training for data entry personnel;
- provide ongoing quality control of data entry;
- configure the database to include functions to prevent mistakes from being made such as the overwriting of data;
- carry out regular random data quality checks.

The introduction of this annual survey has been a positive initiative by the Department of Local Government. The results are indicative of the considerable resources that are required to address the backlog of house construction and repair.

With the currently available data it is not possible to quantify health risks in relation to specific components of infrastructure. However, linkage of the housing survey data to health status data of residents in these households would create an important opportunity to provide this sort of information. Variations in the conduct of the survey, the quality of the data, and the representativeness of surveyed houses of all funded houses in the region or community mean comparisons should be made with reservation.

Acknowledgments

On behalf of the Department of Local Government for the Northern Territory, we would like to thank all the Aboriginal communities who participated in this survey. Others who contributed their time included Community Development Officers and Technical Officers of the Department of Local Government, Environmental Health Officers from Territory Health Services, Community Housing Officers and Council employees, Environmental Health Workers and Housing Officers.

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1. Introduction

1.1 Introduction and aims

The Commonwealth and Northern Territory (NT) Governments, and the Aboriginal and Torres Strait Islander Commission (ATSIC) provide funds for housing to improve the living conditions of Aboriginal people. The Indigenous Housing Authority for the Northern Territory (IHANT) is responsible for allocating funds for Indigenous housing, and developing new policies for construction. IHANT is accountable to the funding agencies for achieving effective housing outcomes. The IHANT program is managed by the Department of Local Government.

IHANT aims to improve the availability of housing and reduce overcrowding by:

1. increasing the number of houses available;
2. improving housing management so houses last longer and provide a safe and healthy living environment.

As it may not be possible to overcome the large backlog in available housing for many years, maintenance of existing houses is an important strategy for a healthy and safe living environment. Currently some houses are only lasting 5-7 years. If properly maintained they could last for 20 years or more and at the same time provide a healthy and safe living environment for the occupants.

IHANT holds the view that people in communities may not be in a position to pay enough rent to do all the things necessary to properly manage and maintain their housing stock. IHANT provides 'maintenance grants' to eligible housing organisations to help meet the cost of specific repairs and maintenance that are necessary to make houses safe and healthy to live in. The focus is on what is referred to as 'environmental health'.

In this context, environmental health is generally accepted to include:

- safe water and food supply;
- safe collection, treatment and disposal of sewage and waste water;
- safe collection, transport and disposal of rubbish;
- pest and domestic animal control;
- safe housing and living conditions, including a safe power supply.

The Department of Local Government together with Territory Health Services (THS), assist organisations in conducting a regular environmental health survey of their houses to collect environmental health information. Collection of information at determined intervals allows measurement of any progress, or lack of progress, in rectifying poor environmental health conditions. The Department of Local Government, as Program Manager, is responsible for reporting on these outcomes to IHANT.

In the 1998-1999 financial year IHANT allocated approximately seven million dollars in 'maintenance grants' to 70 community housing organisations throughout the Northern Territory. The value of the maintenance grant is determined by adding up the number of houses that the housing organisation is responsible for, and then multiplying the number of houses by \$1,700.

There is no intention that \$1700 should be spent on each house in each year. The funds are to be used to maintain housing according to need. The amount of \$1,700 is based on a number of studies about average maintenance costs which are estimated to be in the order of \$4,500 per year. The difference between the grant and the total cost of repairs is expected to be bridged by rent collection. However, this will be reviewed over time, in light of experience.

In 1998-1999, the Department of Local Government and Territory Health Services field staff visited the communities that received the maintenance grants, and surveyed the houses funded through the IHANT grants. Approximately 4,500 environmental health surveys were completed. It is hoped that in the future, environmental surveys will be completed by the communities.

The Menzies School of Health Research was approached by the Department of Local Government to conduct an analysis and evaluation of the data collected in this first round of surveys, and to make recommendations regarding the survey process, the survey instrument, and methods to improve data quality. To the extent possible we were also asked to report on:

- measurement of the level of functionality of environmental health infrastructure;
- measurement of the level of health risk posed;
- measurement of the change over time, the purpose being to create a baseline to monitor the progress being made on improving environmental health conditions;
- identification of the areas of greatest need;
- methods for production of information for immediate operational use, that is, the generation of repair and maintenance records;
- other related factors and issues (eg. comparisons between large and small communities; comparison between different localities such as coastal and arid; comparisons between rural communities, town camps and out-stations); and
- possible areas for future research.

1.2 Methods of evaluation

We used a variety of methods to evaluate the survey data, database organisation, and the survey process and instrument. To enable evaluation of the data set, we interrogated the Community Information Access System (CIAS) database using ORACLE Discoverer 3.1.

Interviews with relevant people provided us with an understanding of the conduct of the survey, and the establishment, maintenance and use of the database. These interviews addressed topics such as the conduct of the survey, the survey instrument, training of surveyors, data definitions, database organisation and data quality. We formally interviewed five people who carried out surveys across the Northern Territory in locations including the Alice Springs, Katherine, Tennant Creek, East Arnhem and Darwin regions. Their positions included those of Field Officer, Environmental Health Officer, Community Developmental Officer, and Department of Local Government Technical Officer. See appendix A for the interview questions.

We observed the survey process for one community in the current round of surveys. This survey was carried out by employees of both the Department of Local Government and the THS Environmental Health Program with the assistance of the community Council President.

The environmental health housing data was analysed for variations in housing condition. Uni-variate analysis was then performed to determine the diversity and number of dwellings, score for individual survey items, and house condition ratings. This analysis was carried out for the entire Northern Territory, and for each of the seven Aboriginal and Torres Strait Islander Commission (ATSIC) regions (figure 1.1).

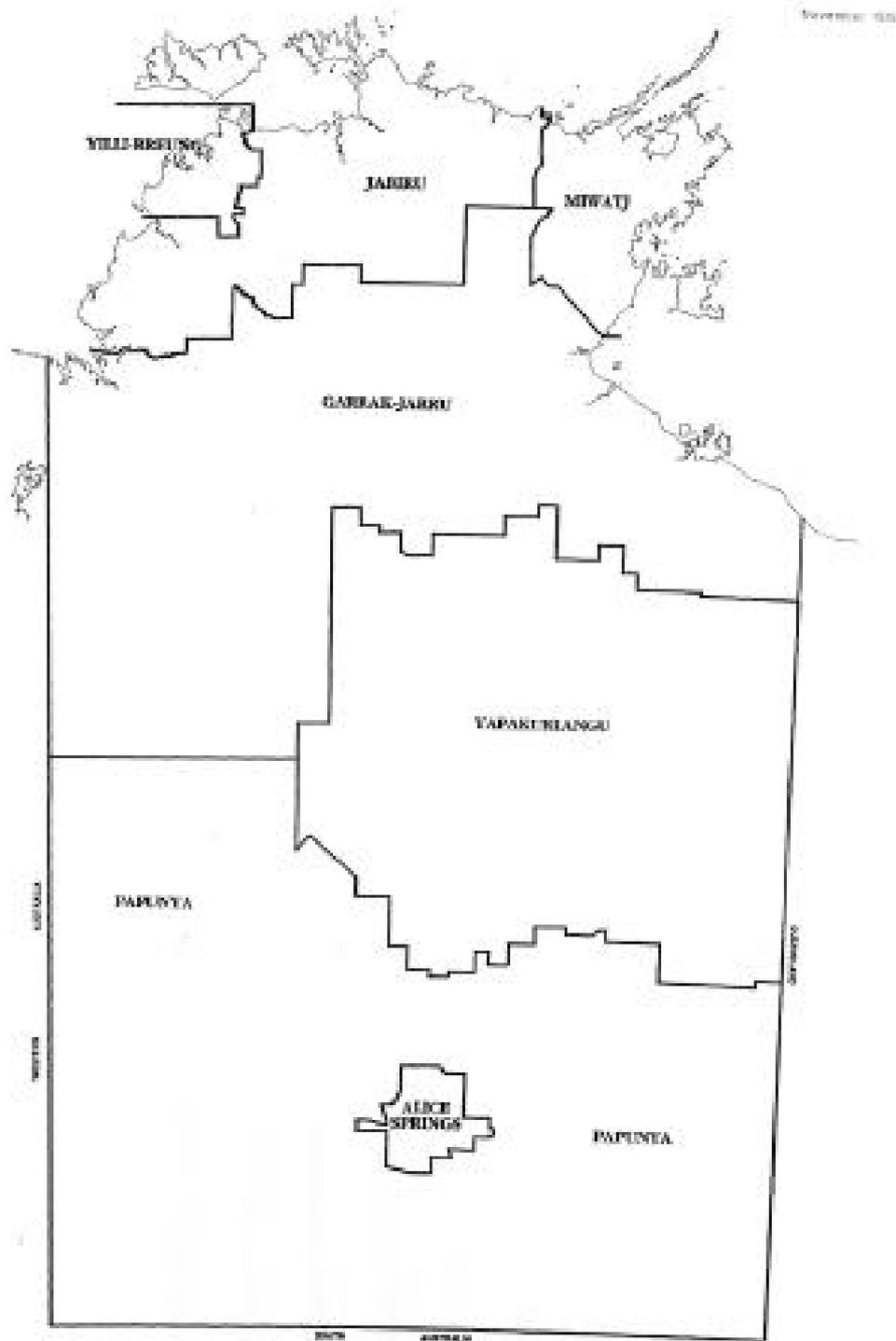


Figure 1.1 Map of the Northern Territory showing the seven ATSI regions

2. Summary of survey data and survey method

2.1 Communities and regions surveyed

During 1998 and 1999, housing data was collected from 263 communities within the seven ATSI regions of the Northern Territory (table 2.1, figure 2.1). In total, 3906 houses were surveyed and had data entered in all fields in the Community Infrastructure Access System (CIAS) database. Only houses covered by Indigenous Housing Authority of the Northern Territory (IHANT) grants were included in the survey, and not all houses in the community were surveyed. A total of 4936 rental grants for the period 1/7/98-31/5/99 were awarded by IHANT.

Table 2.1 Number and proportion of houses funded by IHANT between July 1998-May 1999, and the number and proportion of houses surveyed (with complete data) during 1999 in communities within ATSI regions/councils. The abbreviations refer to ATSI council names.

ATSI REGION/CODE	No. funded houses	No. of communities	No. of houses surveyed	% of funded houses surveyed
Alice Springs (AS)	225	6	50	22
Aputula (PP)	1049	77	955	91
Darwin (YR)	200	9	154	77
Katherine (GJ)	834	40	861	100
Jabiru (JAB)	1188	83	1096	92
Nhulunbuy (MW)	978	27	528	54
Tennant Creek (YP)	432	21	265	61
Total	4936	263	3906	79

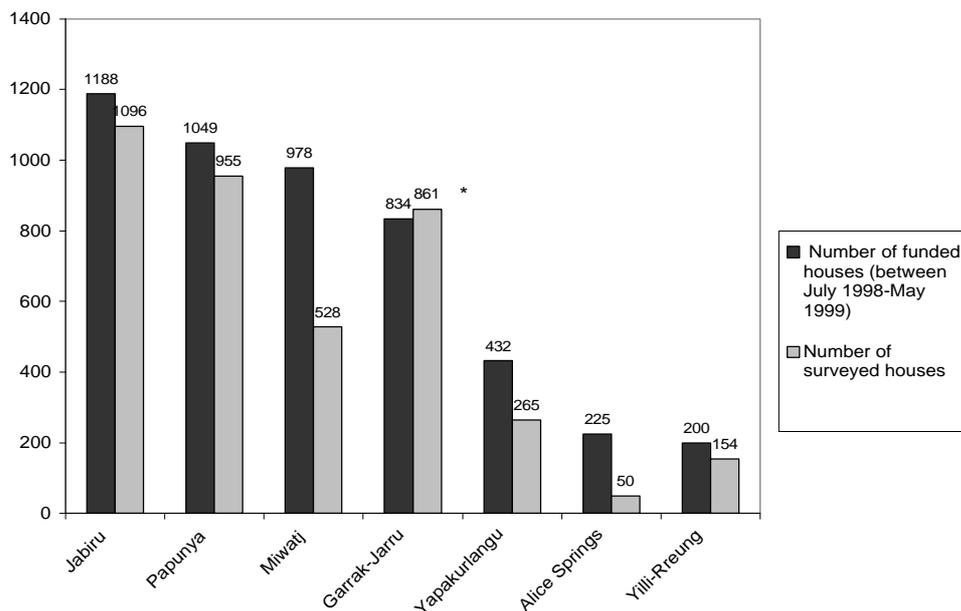


Fig 2.1 Frequency of houses surveyed during 1999 and houses funded by IHANT between July 1998 and May 1999.

* The number of funded houses may have increased between the date of recording the number of houses and the date of the survey.

2.2 Housing Types

The surveys were conducted on lots where the land use is classified as housing. The most common style of house was separate houses (3241 lots). Other dwelling types included cabins (170 lots), shelter/improvised dwellings (63 lots), flat, unit or apartments (10 lots), semi-detached houses (7 lots), hostels for single men (2 lots) or single women (2 lots) or aged persons (1 lot).

3. Summary of survey process

A range of people conducted the household surveys. These people included Community Development Officers and Technical Officers from the Department of Local Government, Environmental Health Officers from the Territory Health Department, Community Housing Officers and Council employees. As one of the aims of the project is to have local people carry out the surveys, local Environmental Health Workers and Housing Officers also conducted surveys.

Before a house was surveyed, surveyors or a community representative explained to the residents that no immediate repairs would be made as a result of the survey. During a survey, ratings of the presence and condition of up to 96 items were determined by a combination of observation, questioning residents, and physically testing some facilities. These 96 items were separated into six main categories of kitchen, laundry, bathroom, main toilet and 2nd toilet, services/exterior, and bedroom 1 to bedroom 5 (appendix B). Next to each item name, a box was available for recording the condition code. Items were coded according to the following scale:

- 0 - not present
- 1 - no maintenance (item fully functional)
- 2 - minor repairs (work required but not a major impact on health or safety)
- 3 - major repairs (item requires repair, otherwise it will impact on health and safety of the tenants)
- 4 - urgent maintenance required (this item is a health and safety issue)
- 5 - item not present but urgently needed
- 9 - absent data.

Additional data collection from the sheet involved recording whether the toilet types are flush, pit or other; the number of people living in the house; the number of dogs; and the type of pests (ants/cockroaches/rodents/other).

An explanatory sheet provided guidelines for the assessment of a subset of items. A third sheet titled 'Housing - environmental health survey repair/maintenance comments', allowed for details of work required to be written down (see appendix B for these three sheets).

After completion, survey sheets were delivered to the Department of Local Government in Darwin. The data was then manually entered into CIAS.

4. Survey data results

4.1 Condition ratings of items for all houses surveyed

The items most commonly scored as '4-requiring urgent maintenance' or as being '5-missing but urgently required' or '0-not present' (table 4.1) were the bathroom bench/shelf (51%), laundry shelf (51%), fence around boundary (43%), stove top (35%), and oven (38%). Examples of the frequencies of condition codes for the last two items can be seen in figure 4.1 and 4.2.

Items with a relatively high percentage (>70%) of condition ratings of '1-no maintenance required', were main toilet water supply (79%), laundry trough (75%), electrical wiring/switch (73%), main toilet electrical (73%), main toilet pan (71%), electrical board/earth (71%), bedroom 1 electrical (71%), and bathroom shower drain (70%). Kitchen hot taps had little data entered, as there was a technical problem in data entry into CIAS for this item.

Table 4.1 Condition ratings of items in the Northern Territory as the percentages of houses for which the particular code was scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	5	65	13	4	2	3	9
Kitchen bench	6	54	12	10	6	4	9
Kitchen dry food storage	12	53	10	5	3	8	9
Refrigerator	35	41	1	1	1	5	16
Stove top	14	41	8	6	10	11	10
Oven	15	44	4	4	11	12	10
Kitchen equipment storage	23	43	5	2	1	7	19
Kitchen electrical	6	65	7	3	5	2	13
Kitchen general structure	6	52	11	5	4	2	21
Laundry trough	5	75	4	1	2	2	10
Laundry taps hot	9	56	12	5	4	4	10
Laundry taps cold	6	64	12	4	2	3	10
Laundry shelf	44	35	1	1	0	7	11
Washing machine	40	40	1	1	0	5	12
Laundry drainage	34	42	5	3	2	3	11
Laundry electrical	9	69	6	1	2	2	12
Laundry general structure	5	61	10	4	3	2	15
Laundry other facilities	22	14	2	1	1	1	36
Bathroom basin	23	55	3	2	2	5	10
Bathroom taps hot	24	47	7	4	3	5	10
Bathroom taps cold	22	52	8	2	2	4	10
Bathroom bench	43	36	2	1	1	7	11
Bathroom shower head	4	66	10	3	4	4	9
Bathroom shower taps hot	6	61	13	4	4	3	9
Bathroom shower taps cold	3	69	12	3	2	2	9
Bathroom shower drain	4	70	8	4	3	2	9
Bathroom door	4	62	13	4	4	2	11
Bathroom electrical	6	54	5	2	3	2	13
Bathroom general structure	4	56	11	5	5	2	18
Bathroom other facilities	25	19	2	1	1	1	50
Main toilet pan	3	71	6	3	6	2	9
Main toilet cistern	6	67	7	4	5	2	9
Main toilet water supply	6	79	2	1	2	2	1
Main toilet door	4	68	12	3	3	2	9
Main toilet electrical	7	73	5	1	2	2	10
Main toilet drainage	23	56	5	2	2	2	11
Main toilet general structure	5	61	8	3	3	1	18
Main toilet other facilities	7	12	2	0	0	2	67

Table 4.1 continued next page

Table 4.1 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
2 nd toilet pan	73	7	0	0	0	0	19
2 nd toilet cistern	72	7	0	0	0	0	19
2 nd toilet water supply	72	8	1	0	0	0	19
2 nd toilet door	72	7	1	0	0	0	20
2 nd toilet electrical	78	7	1	0	0	0	20
2 nd toilet drainage	73	7	0	0	0	0	20
2 nd toilet general structure	72	7	0	0	0	0	20
2 nd toilet other facilities	75	2	0	-	-	0	22
External taps	3	61	11	4	4	1	16
Electrical board /earth	4	71	4	1	6	2	13
Electrical wiring/switch	3	73	4	2	4	1	14
Hot water service	9	57	5	3	8	5	14
Aircon/evaporative cooling	61	17	2	1	0	1	18
Septic tank systems	37	38	2	2	3	1	17
Exterior doors and windows	4	54	17	5	5	1	14
Exterior general structure	1	57	12	6	7	1	16
Services other facilities	30	22	3	2	2	0	41
Rubbish bin	14	63	0	0	0	1	21
Fence around boundary	39	30	3	1	0	4	23
Bedroom 1 storage	27	52	4	2	1	5	9
Bedroom 1 door	3	64	18	4	3	2	9
Bedroom 1 electrical	4	71	8	3	4	2	9
Bedroom 1 general structure	3	65	13	4	4	1	12
Bedroom 1 other facilities	23	14	2	1	1	0	59
Bedroom 2 storage	29	49	4	1	1	4	11
Bedroom 2 door	6	60	15	4	3	1	10
Bedroom 2 electrical	7	68	7	2	3	1	11
Bedroom 2 general structure	6	62	11	3	3	1	7
Bedroom 2 other facilities	25	13	2	1	0	0	59
Bedroom 3 storage	39	39	3	1	1	2	16
Bedroom 3 door	24	44	11	3	2	1	15
Bedroom 3 electrical	24	51	6	1	2	1	15
Bedroom 3 general structure	24	45	8	3	2	0	17
Bedroom 3 other facilities	72	3	0	0	0	0	24
Bedroom 4 storage	68	10	0	0	0	0	22
Bedroom 4 door	65	58	2	0	0	0	22
Bedroom 4 electrical	64	12	1	0	0	0	22
Bedroom 4 general structure	65	11	1	0	0	0	22
Bedroom 4 other facilities	72	3	0	0	0	0	24
Bedroom 5 storage	48	1	0	-	-	0	51
Bedroom 5 door	48	1	0	0	-	0	51
Bedroom 5 electrical	48	1	-	-	-	0	51
Bedroom 5 general structure	48	1	-	-	-	0	51

This data represents 79% of IHANT funded houses and 3906 surveyed houses.

Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

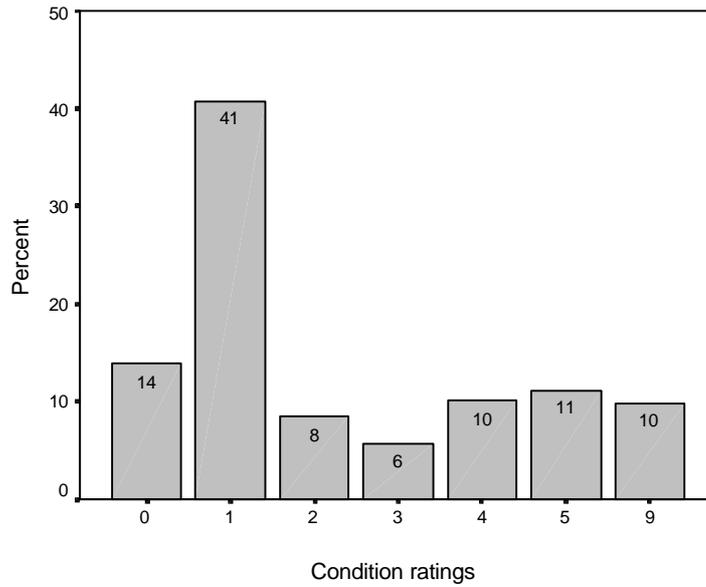


Figure 4.1 Condition ratings of stove-tops for all houses surveyed. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

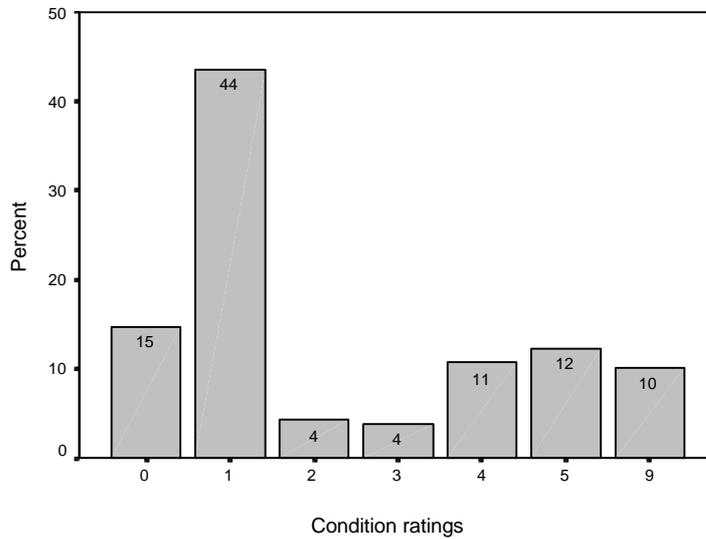


Figure 4.2 Condition ratings of ovens for all houses surveyed. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

4.2 Condition ratings of items in ATSI regions

A range of items in each region were recorded as requiring urgent maintenance or installation (table 4.2). Other items were recorded as missing but not urgently needed (table 4.3). The latter were scored as '0-not present'.

Table 4.2 Items where more than 20% of houses surveyed had codes of '4-urgent maintenance required' and '5-item not present but urgently needed'. The percentage and frequency of items within regions are tabulated.

Region	>20% of houses recorded as '4' and '5'.	% of houses	Number of houses
Aputula	Stove top	25	236
Aputula	Oven	26	255
Darwin	Kitchen equipment storage	20	31
Jabiru	Stove top	24	255
Jabiru	Oven	25	274
Nhulunbuy	Stove top	21	113
Nhulunbuy	Oven	23	122
Nhulunbuy	Bathroom general structure	22	119
Nhulunbuy	Hot water service	24	125
Nhulunbuy	Exterior general structure	32	166
Tennant Creek	Kitchen bench	28	72
Tennant Creek	Kitchen dry food storage	21	54
Tennant Creek	Stove top	29	77
Tennant Creek	Oven	32	84

Table 4.3 Items where over 20% of houses have codes of '0-not present'. The percentage and frequency of items within regions are tabulated.

Region	>20 % of houses recorded as '0'	% of houses	Number of houses
Alice Springs	Kitchen dry food storage	28	14
Alice Springs	Refrigerator	60	30
Alice Springs	Kitchen equipment storage	34	17
Alice Springs	Laundry shelf	48	24
Alice Springs	Laundry other facilities	79	40
Alice Springs	Washing machine	74	37
Aputula	Refrigerator	45	430
Aputula	Laundry shelf	36	344
Aputula	Washing machine	41	392
Aputula	Laundry other facilities	60	573
Aputula	Bathroom basin	34	325
Aputula	Bathroom hot taps	36	344
Aputula	Bathroom cold taps	36	344
Darwin	Refrigerator	23	35
Darwin	Laundry shelf	40	62
Darwin	Washing machine	38	59
Darwin	Laundry other facilities	41	27
Darwin	Bathroom door	73	112
Darwin	Bathroom other facilities	29	45
Darwin	Aircon/evaporative cooler	81	125
Darwin	Fence around boundary	54	35
Darwin	Bedroom 1 other facilities	39	25

Alice Springs Region

The data is not a good representative sample of this ATSI region as there are only 50 houses surveyed in this region, representing 22% of the total number of houses funded by IHANT. Items with a high proportion of scores rated as '0-not present', included the kitchen dry food storage, kitchen equipment storage, laundry shelf, laundry other facilities, bathroom bench, bathroom other facilities, main toilet other facilities, services other facilities, and bedroom 1 other facilities (table 4.4). Items which had more than 50% of condition codes of '0' and '4' and '5' combined were laundry other facilities (79%), bathroom other facilities (78%), laundry shelf (56%), bedroom 1 storage (56%), and bathroom bench (52%)

Table 4.4 Condition ratings of items in the Alice Springs region as percentages of houses for which the particular code was scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	0	84	4	2	0	2	8
Kitchen bench	0	36	44	8	2	2	8
Kitchen dry food storage	28	36	44	8	2	2	8
Refrigerator	60	16	2	0	0	0	22
Stove top	0	30	18	38	6	0	8
Oven	0	26	18	42	4	2	8
Kitchen equipment storage	34	34	14	4	2	2	10
Kitchen electrical	0	80	8	0	2	2	8
Kitchen general structure	2	74	12	2	2	0	8
Laundry trough	0	46	32	14	0	0	8
Laundry taps hot	0	86	6	0	0	0	8
Laundry taps cold	0	88	4	0	0	0	8
Laundry shelf	48	26	8	0	0	8	10
Washing machine	74	16	2	0	0	0	8
Laundry drainage	4	44	28	10	4	2	8
Laundry electrical	4	78	8	0	0	2	8
Laundry general structure	0	71	8	10	2	0	8
Laundry other facilities	79	9	0	0	0	0	12
Bathroom basin	2	38	38	10	2	2	8
Bathroom taps hot	2	82	8	0	0	0	8
Bathroom taps cold	2	86	4	0	0	0	8
Bathroom bench	48	28	6	4	0	4	10
Bathroom shower head	0	48	28	12	2	2	8
Bathroom shower taps hot	0	84	8	0	0	0	8
Bathroom shower taps cold	0	86	6	0	0	0	8
Bathroom shower drain	0	48	30	12	2	0	8
Bathroom door	0	64	22	4	2	0	8
Bathroom electrical	4	80	6	0	0	2	8
Bathroom general structure	0	75	15	2	2	0	8
Bathroom other facilities	78	8	0	0	0	0	14
Main toilet pan	0	30	24	32	4	2	8
Main toilet cistern	2	60	16	12	0	2	8
Main toilet water supply	4	80	8	0	0	0	8
Main toilet door	2	52	30	6	2	0	8
Main toilet electrical	4	84	4	0	0	0	8
Main toilet drainage	10	36	24	20	2	0	8
Main toilet general structure	4	68	12	4	2	0	10
Main toilet other facilities	45	36	0	0	0	0	18
External taps	2	72	14	2	2	0	8
Electrical board /earth	0	82	6	0	4	0	8
Electrical wiring/switch	0	86	4	0	0	0	10
Hot water service	0	84	6	2	0	0	8
Aircon/evaporative cooling	82	4	2	0	2	0	10

Table 4.4 continued next page

Table 4.4 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Septic tank systems	4	10	12	62	4	0	8
Exterior doors and windows	0	62	24	4	2	0	8
Exterior general structure	0	73	14	4	0	0	8
Services other facilities	36	0	0	0	2	0	61
Rubbish bin	12	78	2	0	0	0	8
Fence around boundary	6	35	22	24	4	0	8
Bedroom 1 storage	50	28	6	2	2	4	8
Bedroom 1 door	0	62	24	2	4	0	8
Bedroom 1 electrical	0	80	8	0	0	4	8
Bedroom 1 general structure	0	72	16	0	4	0	8
Bedroom 1 other facilities	55	2	0	0	0	0	43

Additional items such as 2nd bedroom are not included. This data represents 22% of houses that are IHANT funded, and 50 surveyed houses, consequently this data is not a good representative sample of houses in the Alice Springs region. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2-minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data

Aputula Region

In the Aputula region, thirteen items were recorded as missing but not urgently required (table 4.5). Those items which had more than 50% of condition codes of '0', '4' and '5' combined include laundry other facilities (60%), bedroom 1 other facilities (59%), bathroom other facilities (57%), and bathroom bench (57%).

Table 4.5 Condition ratings of items in the Aputula region as percentages of houses for which the particular code was scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	2	64	15	2	2	3	12
Kitchen bench	3	64	8	7	4	4	11
Kitchen dry food storage	6	67	4	1	2	9	11
Refrigerator	45	36	1	0	1	5	12
Stove top	10	41	6	6	15	10	12
Oven	11	42	4	4	15	12	13
Kitchen equipment storage	12	58	3	2	2	11	12
Kitchen electrical	4	71	3	2	7	1	13
Kitchen general structure	4	65	9	3	2	1	15
Laundry trough	2	76	4	1	3	2	12
Laundry taps hot	2	63	15	3	5	1	12
Laundry taps cold	2	66	15	2	2	1	12
Laundry shelf	36	40	1	0	0	10	13
Washing machine	41	36	2	1	0	8	13
Laundry drainage	43	35	5	2	2	2	13
Laundry electrical	4	73	4	1	3	1	13
Laundry general structure	2	78	4	1	1	1	13
Laundry other facilities	60	14	3	0	0	0	23
Bathroom basin	34	43	1	1	1	8	11
Bathroom taps hot	36	38	5	1	4	5	12
Bathroom taps cold	36	41	4	1	1	5	12
Bathroom bench	47	30	1	1	0	10	12
Bathroom shower head	3	62	17	2	3	3	11
Bathroom shower taps hot	1	66	13	3	4	1	11
Bathroom shower taps cold	1	71	13	3	1	1	11

Table 4.5 continued next page

Table 4.5 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Bathroom shower drain	1	71	9	4	3	1	12
Bathroom door	2	63	14	2	5	1	13
Bathroom electrical	3	73	4	1	3	1	15
Bathroom general structure	2	72	5	3	2	1	16
Bathroom other facilities	57	13	2	0	0	0	28
Main toilet pan	2	57	8	4	16	2	12
Main toilet cistern	2	65	8	3	8	1	13
Main toilet water supply	2	77	1	1	4	2	14
Main toilet door	3	66	13	1	4	1	13
Main toilet electrical	4	75	3	1	2	1	14
Main toilet drainage	36	42	4	2	2	1	14
Main toilet general structure	5	72	2	0	1	1	19
Main toilet other facilities	36	5	1	0	0	0	57
External taps	1	65	13	3	4	1	13
Electrical board /earth	3	64	5	1	13	3	12
Electrical wiring/switch	3	75	2	1	4	1	13
Aircon/evaporative cooling	51	29	4	3	0	0	13
Septic tank systems	10	59	5	4	9	1	13
Hot water service	3	66	4	3	9	2	13
Exterior doors and windows	1	59	20	3	2	1	13
Exterior general structure	0	72	7	3	3	0	14
Services other facilities	1	19	5	1	2	0	23
Rubbish bin	15	67	1	0	0	2	15
Fence around boundary	31	45	4	1	0	4	15
Bedroom 1 storage	28	54	1	0	0	5	11
Bedroom 1 door	1	59	20	2	4	2	11
Bedroom 1 electrical	4	74	3	1	5	2	11
Bedroom 1 general structure	0	75	10	2	2	1	11
Bedroom 1 other facilities	58	11	2	1	0	1	27

Additional items such as 2nd bedroom are not included. This data represents 91% of IHANT funded houses and 955 surveyed houses. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

Darwin region

Eleven items in the Darwin region were rated as missing but not required in over 20% of houses surveyed (table 4.6). Bathroom door (73%) and fence around boundary (54%) were all requiring installation or urgent repair in a large proportion of the surveyed houses.

Table 4.6 Condition ratings of items in the Darwin region as percentages of houses for which the particular code was scored

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	0	62	24	1	1	0	13
Kitchen bench	0	75	6	2	3	0	14
Kitchen dry food storage	1	81	3	1	1	0	13
Refrigerator	23	53	1	0	0	0	23
Stove top	3	60	5	1	18	0	14
Oven	4	61	1	0	20	0	14
Kitchen equipment storage	2	79	0	0	0	0	19
Kitchen electrical	1	75	4	1	3	0	16
Kitchen general structure	1	76	3	0	1	0	18

Table 4.6 Continued on next page

Table 4.6 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Laundry trough	1	87	0	0	1	0	12
Laundry taps hot	1	70	15	0	2	0	12
Laundry taps cold	1	71	16	0	1	0	12
Laundry shelf	40	47	0	0	0	0	13
Washing machine	38	48	0	0	0	0	14
Laundry drainage	60	26	1	0	1	0	13
Laundry electrical	7	73	4	1	2	0	14
Laundry general structure	1	79	2	0	1	0	17
Laundry other facilities	41	1	0	0	0	0	58
Bathroom basin	1	82	2	0	1	0	14
Bathroom taps hot	1	68	18	0	0	0	14
Bathroom taps cold	1	66	19	0	0	0	14
Bathroom bench	16	67	3	0	0	0	15
Bathroom shower head	0	83	1	1	1	0	14
Bathroom shower taps hot	0	73	12	1	1	0	14
Bathroom shower taps cold	0	70	15	0	1	0	14
Bathroom shower drain	1	84	1	0	0	0	14
Bathroom door	73	6	1	4	0	0	16
Bathroom electrical	1	75	3	1	2	0	18
Bathroom general structure	1	75	3	1	0	0	21
Bathroom other facilities	29	9	1	0	1	0	60
Main toilet pan	0	79	7	0	1	0	13
Main toilet cistern	0	79	5	1	2	0	13
Main toilet water supply	1	86	0	0	1	0	13
Main toilet door	0	77	6	2	2	0	13
Main toilet electrical	1	79	4	1	1	0	14
Main toilet drainage	16	70	0	0	1	0	14
Main toilet general structure	4	79	0	0	0	0	18
Main toilet other facilities	1	1	1	0	0	0	96
External taps	2	83	3	0	0	0	12
Electrical board /earth	1	80	0	0	1	1	18
Electrical wiring/switch	1	83	1	1	0	0	15
Hot water service	2	75	1	3	0	0	19
Aircon/evaporative cooling	81	7	0	0	0	0	13
Septic tank systems	76	10	0	0	1	0	13
Exterior doors and windows	1	59	14	3	7	0	16
Exterior general structure	1	79	3	0	3	0	14
Services other facilities	43	5	0	1	0	0	51
Rubbish bin	21	57	0	0	0	0	21
Fence around boundary	54	29	0	0	0	0	18
Bedroom 1 storage	7	84	0	0	0	0	9
Bedroom 1 door	1	77	9	1	3	0	9
Bedroom 1 electrical	1	77	8	1	3	0	9
Bedroom 1 general structure	1	86	3	1	1	0	9
Bedroom 1 other facilities	39	3	0	0	0	0	58

Additional items such as 2nd bedroom are not included. This data represents 77% of IHANT funded houses and 154 surveyed houses.

Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

Katherine region

More than 20% of houses in the Katherine region had combined scores '0', '4' and '5' for the items of laundry shelf (50%) and bathroom bench (45%). Thirteen items were not present in more than 20% of houses surveyed (table 4.7). Items which rated high in '1' and were in very good condition included main toilet water supply (79%), main toilet pan (76%), main toilet electrical (76%), laundry trough (74%), and electrical board/earth (74%).

Table 4.7 Condition ratings of items in the Katherine region as percentages of houses for which the particular code were scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	10	64	7	4	2	3	10
Kitchen bench	11	62	6	4	2	3	11
Kitchen dry food storage	23	53	4	1	1	7	11
Refrigerator	23	53	1	0	1	4	19
Stove top	11	42	14	8	6	7	11
Oven	12	51	6	4	7	8	12
Kitchen equipment storage	27	50	2	0	0	6	15
Kitchen electrical	9	61	7	3	3	2	15
Kitchen general structure	8	52	9	3	2	0	23
Laundry trough	11	74	2	1	0	2	10
Laundry taps hot	11	55	7	7	5	4	10
Laundry taps cold	11	67	3	4	2	3	10
Laundry shelf	44	38	1	1	0	6	11
Washing machine	33	46	1	2	1	4	14
Laundry drainage	22	55	3	2	2	4	12
Laundry electrical	11	69	4	1	1	2	13
Laundry general structure	10	59	7	3	1	2	18
Laundry other facilities	11	41	1	1	1	1	45
Bathroom basin	26	55	1	1	1	5	10
Bathroom taps hot	24	48	3	5	4	6	10
Bathroom taps cold	25	55	3	2	2	5	10
Bathroom bench	38	43	12	1	1	6	10
Bathroom shower head	8	67	7	4	1	3	10
Bathroom shower taps hot	7	63	9	6	4	2	10
Bathroom shower taps cold	7	73	4	3	2	2	10
Bathroom shower drain	8	71	4	3	2	2	10
Bathroom door	8	67	7	4	1	2	11
Bathroom electrical	7	70	3	1	2	2	14
Bathroom general structure	7	55	8	6	2	2	19
Bathroom other facilities	7	40	2	1	0	2	47
Main toilet pan	8	76	3	2	3	2	9
Main toilet cistern	8	70	4	4	4	2	9
Main toilet water supply	8	79	1	1	1	2	9
Main toilet door	7	72	7	3	1	1	9
Main toilet electrical	8	76	3	1	1	1	9
Main toilet drainage	8	72	3	2	2	4	10
Main toilet general structure	7	64	7	3	1	2	16
Main toilet other facilities	37	47	0	0	2	4	10
External taps	2	68	7	4	2	1	17
Electrical board /earth	1	74	4	2	3	0	16
Electrical wiring/switch	2	70	6	3	3	1	16
Hot water service	8	55	7	4	5	3	17
Aircon/evaporative cooling	45	28	2	2	1	2	20

Table 4.7 Continued next page

Table 4.7 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Septic tank systems	32	45	0	1	1	1	20
Exterior doors and windows	7	56	12	6	2	1	17
Exterior general structure	2	52	14	10	3	1	19
Services other facilities	7	47	3	2	2	0	40
Rubbish bin	5	70	1	0	0	1	23
Fence around boundary	23	41	4	2	1	4	24
Bedroom 1 storage	22	56	2	3	0	7	10
Bedroom 1 door	2	68	11	6	1	1	10
Bedroom 1 electrical	2	70	8	6	2	1	11
Bedroom 1 general structure	1	64	13	3	2	0	15
Bedroom 1 other facilities	4	34	2	1	1	0	59

Additional items such as 2nd bedroom are not included. This data represents 100% of IHANT funded houses and 861 surveyed houses. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2-minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

Jabiru region

In more than 20% of houses surveyed in the Jabiru region a range of items required urgent maintenance or installation. These included laundry shelf (53%), oven (48%), stove top (46%), and bathroom bench (44%). A total of sixteen items were missing but not required in 20% of these houses (table 4.8). Items that required little or no maintenance included main toilet pan (77%), main toilet water supply (75%), laundry trough (73%) and electrical wiring/switch (73%).

Table 4.8 Condition ratings of items in the Jabiru region as percentages of houses for which the particular code was scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	8	62	15	3	2	2	10
Kitchen bench	9	48	11	13	6	3	10
Kitchen dry food storage	11	50	11	7	3	7	10
Refrigerator	30	34	2	1	1	8	24
Stove top	22	37	4	2	7	17	12
Oven	23	37	2	1	7	18	12
Kitchen equipment storage	18	31	9	3	1	4	34
Kitchen electrical	8	66	6	2	2	2	14
Kitchen general structure	8	41	13	3	3	1	28
Laundry trough	7	73	4	1	1	1	13
Laundry taps hot	18	46	12	3	2	6	13
Laundry taps cold	8	57	15	3	2	3	13
Laundry shelf	44	30	1	1	1	8	15
Washing machine	37	40	1	0	0	7	15
Laundry drainage	42	32	7	2	1	2	15
Laundry electrical	14	62	6	0	1	2	15
Laundry general structure	7	52	14	3	3	1	19
Laundry other facilities	14	10	1	0	1	1	74
Bathroom basin	22	56	3	2	1	2	13
Bathroom taps hot	25	43	10	2	2	4	14
Bathroom taps cold	20	48	12	2	2	2	13
Bathroom bench	37	37	2	1	1	6	14
Bathroom shower head	5	71	4	2	4	4	10
Bathroom shower taps hot	14	51	15	2	2	5	10
Bathroom shower taps cold	4	63	16	3	2	3	10

Table 4.8 Continued next page

Table 4.8 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Bathroom shower drain	6	67	9	3	2	2	11
Bathroom door	5	56	15	5	5	2	12
Bathroom electrical	10	62	7	1	2	1	17
Bathroom general structure	5	48	14	5	4	1	21
Bathroom other facilities	9	17	1	0	1	1	73
Main toilet pan	4	77	4	2	2	2	9
Main toilet cistern	11	65	8	3	1	3	10
Main toilet water supply	11	75	2	0	0	1	10
Main toilet door	4	63	14	4	4	2	9
Main toilet electrical	11	67	6	1	2	2	11
Main toilet drainage	31	45	5	1	1	2	14
Main toilet general structure	5	53	12	3	4	2	20
Main toilet other facilities	14	23	3	1	1	1	57
External taps	3	59	11	2	2	1	23
Electrical board /earth	6	70	2	0	2	1	19
Electrical wiring/switch	3	73	3	0	1	1	20
Hot water service	17	48	1	1	6	7	20
Aircon/evaporative cooling	68	5	0	0	0	0	27
Septic tank systems	57	13	0	0	0	1	28
Exterior doors and windows	5	49	15	4	5	2	21
Exterior general structure	1	53	15	4	4	1	23
Services other facilities	27	8	1	0	0	1	63
Rubbish bin	19	47	0	0	0	2	31
Fence around boundary	38	15	1	0	0	4	39
Bedroom 1 storage	27	53	5	2	1	3	10
Bedroom 1 door	1	61	21	4	3	2	8
Bedroom 1 electrical	3	72	10	2	2	2	9
Bedroom 1 general structure	1	62	18	3	4	1	11
Bedroom 1 other facilities	3	2	0	0	0	0	95

Additional items such as 2nd bedroom are not included. This data represents 92% of IHANT funded houses and 1096 surveyed houses. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

Nhulunbuy region

Over 50% of houses surveyed in the Nhulunbuy region required urgent attention or installations of the following items: fence around boundary (82%), laundry shelf (73%), bathroom bench (71%), and kitchen equipment storage (56%). Twelve items were recorded as not present in over 20% of these houses (table 3.9). Those items requiring little or no maintenance included main toilet water supply (88%), laundry trough (78%), rubbish bin (77%), main toilet door (77%), main toilet electrical (76%), and electrical board/earth (74%).

Table 4.9 Condition ratings of items in the Nhulunbuy region as percentages of houses for which the particular code was scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	2	71	12	8	1	3	2
Kitchen bench	2	32	28	19	11	7	2
Kitchen dry food storage	10	31	25	15	9	8	1
Refrigerator	42	48	2	1	1	3	3
Stove top	15	40	13	9	11	10	2
Oven	15	47	6	6	12	11	2
Kitchen equipment storage	51	22	7	4	1	4	10
Kitchen electrical	3	56	10	5	10	4	11
Kitchen general structure	3	28	15	13	14	3	22

Table 4.9 Continued next page

Table 4.9 Continued

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Laundry trough	3	78	5	2	3	5	3
Laundry taps hot	8	60	11	7	5	7	2
Laundry taps cold	4	67	11	7	4	5	2
Laundry shelf	70	22	1	1	0	3	3
Washing machine	39	50	3	1	0	4	2
Laundry drainage	21	49		6	6	6	4
Laundry electrical	4	71	8	2	6	4	4
Laundry general structure	3	38	16	12	13	5	12
Laundry other facilities	24	13	4	6	3	0	50
Bathroom basin	5	71	5	4	5	6	3
Bathroom taps hot	8	59	9	9	5	8	2
Bathroom taps cold	5	67	8	7	4	6	2
Bathroom bench	67	22	3	1	1	3	2
Bathroom shower head	2	68	9	6	7	6	1
Bathroom shower taps hot	3	63	12	8	7	6	1
Bathroom shower taps cold	2	69	11	7	6	3	2
Bathroom shower drain	2	63	9	11	10	3	2
Bathroom door	2	60	17	8	6	3	4
Bathroom electrical	3	69	9	4	6	4	5
Bathroom general structure	3	30	16	13	18	4	15
Bathroom other facilities	19	8	4	5	4	0	44
Main toilet pan	1	81	4	2	5	5	2
Main toilet cistern	3	7	10	6	5	3	1
Main toilet water supply	3	88	2	1	1	3	2
Main toilet door	1	77	10	4	4	2	1
Main toilet electrical	4	76	9	2	3	4	2
Main toilet drainage	10	68	6	3	5	2	5
Main toilet general structure	1	42	12	10	13	3	17
Main toilet other facilities	3	5	1	0	0	0	91
External taps	3	43	16	13	16	2	6
Electrical board /earth	4	74	6	3	6	3	3
Electrical wiring/switch	4	65	8	5	12	4	2
Hot water service	6	55	9	4	11	13	2
Aircon/evaporative cooling	81	10	1	0	0	3	3
Septic tank systems	49	42	2	0	1	3	3
Exterior doors and windows	5	49	22	8	11	1	2
Exterior general structure	3	29	19	12	30	2	3
Services other facilities	33	17	6	6	6	0	32
Rubbish bin	11	77	0	0	0	2	7
Fence around boundary	79	7	1	1	0	3	8
Bedroom 1 storage	41	39	10	2	3	2	3
Bedroom 1 door	6	65	15	5	4	1	3
Bedroom 1 electrical	6	64	11	5	7	3	3
Bedroom 1 general structure	6	49	14	10	11	1	6
Bedroom 1 other facilities	7	10	5	6	3	0	69

Additional items such as 2nd bedroom are not included. This data represents 54% of IHANT funded houses and 528 surveyed houses. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2-minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

Tennant Creek region

In the Tennant Creek region, more than 20% of surveyed houses needed urgent attention or installation of items. These items were bathroom bench (50%), oven (45%), and fence around boundary (40%). Sixteen items were rated as not required (table 4.10). Those items with condition scores of '1' included bathroom shower drain (80%), electrical wiring/switch (79%), laundry trough (77%), exterior general structure (75%), main toilet water supply (74%), and main toilet electrical (72%).

Table 4.10 Condition ratings of items in the Tennant Creek region as percentages of houses for which the particular code was scored.

ITEM	CONDITION CODES						
	0	1	2	3	4	5	9
Kitchen taps cold	2	63	17	3	8	5	3
Kitchen bench	2	45	13	9	19	9	3
Kitchen dry food storage	5	50	12	9	5	16	3
Refrigerator	53	28	1	3	0	9	6
Stove top	9	45	8	4	13	16	5
Oven	13	42	6	3	15	17	5
Kitchen equipment storage	19	45	4	7	2	16	7
Kitchen electrical	5	62	16	3	6	4	4
Kitchen general structure	3	63	11	7	3	3	10
Laundry trough	2	77	9	2	3	2	5
Laundry taps hot	2	60	16	6	9	3	5
Laundry taps cold	2	66	16	5	4	4	5
Laundry shelf	21	46	6	6	2	14	6
Washing machine	68	20	2	0	1	4	5
Laundry drainage	27	56	7	3	0	1	6
Laundry electrical	7	70	11	2	5	1	5
Laundry general structure	5	69	9	7	3	1	6
Laundry other facilities	26	19	7	0	0	4	5
Bathroom basin	31	52	4	0	3	5	4
Bathroom taps hot	27	45	9	3	6	5	4
Bathroom taps cold	27	47	9	3	4	5	4
Bathroom bench	40	33	6	4	2	8	7
Bathroom shower head	2	54	16	6	9	9	4
Bathroom shower taps hot	2	62	18	5	8	3	4
Bathroom shower taps cold	2	65	18	5	6	2	4
Bathroom shower drain	2	80	9	0	3	1	5
Bathroom door	3	64	18	3	5	3	5
Bathroom electrical	7	69	9	3	4	2	5
Bathroom general structure	5	65	14	5	2	0	9
Bathroom other facilities	20	16	6	3	2	6	45
Main toilet pan	1	65	12	3	9	4	6
Main toilet cistern	6	54	11	6	12	5	6
Main toilet water supply	7	74	6	3	3	3	7
Main toilet door	2	63	17	2	6	2	7
Main toilet electrical	8	72	9	1	3	1	7
Main toilet drainage	17	64	8	1	2	0	8
Main toilet general structure	10	67	8	4	1	0	10
Main toilet other facilities	13	9	8	1	1	9	59
External taps	9	54	19	2	3	1	11
Electrical board /earth	5	69	6	1	9	4	7
Electrical wiring/switch	4	79	3	1	5	2	7
Hot water service	4	59	9	5	12	4	8
Aircon/evaporative cooling	69	8	3	0	0	1	18
Septic tank systems	21	57	2	1	3	0	16
Exterior doors and windows	3	54	18	6	8	4	8
Exterior general structure	3	75	7	5	2	0	9
Services other facilities	24	32	5	2	2	1	34
Rubbish bin	15	63	2	0	2	4	15
Fence around boundary	29	37	6	2	3	8	14
Bedroom 1 storage	20	43	7	3	1	16	10
Bedroom 1 door	10	45	15	8	4	8	10
Bedroom 1 electrical	12	59	12	2	5	1	9
Bedroom 1 general structure	18	55	3	5	2	0	18
Bedroom 1 other facilities	34	24	10	0	1	0	31

Additional items such as 2nd bedroom are not included. This data represents 61% of IHANT funded houses and 265 surveyed houses. Definitions of condition codes are as follows: 0-not present, 1-no maintenance required, 2- minor problems, 3-major problems, 4-urgent maintenance required, 5-item not present but urgently needed, 9-absent data.

4.3 Discussion of results

4.3.1 Entire Northern Territory

Bathroom bench/shelves, laundry shelves and fences around boundaries were facilities which required maintenance or installation in the highest number of houses in the Northern Territory with more than 40% of surveyed houses (1564 of 3910 houses) having condition codes of '0', '4' or '5' for these items. Part 3.8.3 of the Environmental health standards for remote communities in the Northern Territory (Aboriginal Health Strategy Unit, Territory Health Services 1999) states that adjacent to a shower, there 'must be a soap holder, towel rail(s), storage area for personal cleaning items, and the facility to hang or store clothes while people are bathing'. It also states that there must be 'adequate storage for cleaning items such as mops, buckets, brooms, etc., including the provision of lockable storage of dangerous chemicals, etc.'.

The item of fence around boundary had a very high proportion of condition codes of '0', '4', or '5', indicating maintenance or installation was required. Fences are required to define areas around houses to encourage maintenance of grounds within the boundary. One role they have is to assist with dust minimisation (via the restriction of vehicle movement) which relates to section B, 3.8.6.12, Outdoor Living/Landscaping, of the Environmental health standards for remote communities in the Northern Territory (Aboriginal Health Strategy Unit, Territory Health Services 1999).

There are a number of items that are missing in over 30% of the houses surveyed. These include refrigerators (35%), laundry shelf (44%), washing machine (40%), bathroom bench (43%), airconditioner/evaporative cooling (61%), fence around boundary (39%). These items were recorded '0-not present' and therefore are thought of by surveyors as not required. This may be understandable for the items of washing machine, refrigerator and airconditioner/evaporative cooling system, but not for all the other items that are required to be present in or around a house (in the case of the fence) for health and safety reasons.

4.3.2 ATSIC regions

Items relating to the kitchen made up the bulk of the items requiring immediate attention ('4' and '5' condition codes) in the Aputula, Jabiru, Nhulunbuy and Tennant Creek regions (table 4.2). Installation or repair ('0', '4', and '5' condition codes) of ovens and stove-tops was required for more than 45% of surveyed houses in the two regions of Jabiru and Tennant Creek. These items have been noted by another study, the Ramingining Housing Survey (Environmental Health Remote Services Operation North 1999) as having high rates of non-functionality. The Ramingining study found 30% of 53 houses had houses with a stove with less than two hotplates working. These are necessary for good nutrition, and one reason why this item may have such high levels of disrepair is the design. As very large pots are often used to cook with (Environmental Health Unit 1999), the standard design of stove-tops may be too weak to support the large weights placed upon them continually. Large pots are perhaps used instead of small pots as meals are often prepared for large numbers of people and bush foods such as magpie goose and fish do not adequately fit into small pots.

Other facilities where condition codes of '0', '4' and '5' were recorded for a very high proportion of surveyed houses (>40%) were the laundry in five regions and the bathroom in all six regions.

The regions of Alice Springs, Aputula and Darwin had items where over 20% of houses had codes of '0-not present' (table 4.3). The Alice Springs region had a total of four items not present in more than 20% of houses, Aputula had a total of six items not present in more than 20% of houses and Darwin had nine facilities not present in more than 20% of houses.

4.4 Limitations of data

The above analysis does not provide information about individual houses as whole units or the functionality of houses. Instead, it describes information concerning only items/facilities within houses. These item ratings are in isolation of other items within a house and the condition code of each item is only useful for repair and maintenance of each item rather than raising and maintaining the environmental health standards of a house.

It is not clear from the data why in many cases items were rated as '0-not present (item does not exist)' and not as '5-item not present but urgently needed', including items specified in the *Minimum Standards for Housing Management* (Indigenous Housing Authority of the Northern Territory 2000). This suggests there is an underestimate of items requiring urgent installation, implying that there is a higher proportion of houses requiring repair and maintenance than is shown by the data. There are three possible explanations of why items were rated as '0' and not '5'. The first explanation is that for some houses a whole facility is missing such as the additional bedrooms and 2nd toilet, or even the entire kitchen or laundry depending on the dwelling type. The second explanation is that individual items such as refrigerators, washing machines and airconditioner/evaporative cooling systems are not expected to be found in every house, and do not exist in the house. The third explanation is that the surveyor regards some items as less essential to the health of the household than other items, despite all these items being specified by the Environmental housing survey sheet. In this situation, and in other situations when an item is missing, that item should have the condition code of '5' selected rather than '0'. This is because the presence of all the items other than those optional items already mentioned, are necessary for healthy functionality of the house as stipulated by the Environmental Health Standards (Aboriginal Health Strategy Unit, Territory Health Services, 1999).

Condition ratings could not be analysed accurately at the community level. In order to make comparisons between communities there needs to be a representative sample of houses surveyed in each community or a high proportion of all funded houses should be surveyed. Information on the number of houses funded by IHANT in each community is required to determine the proportion of funded houses surveyed. Neither of these conditions was met. Only the number of houses funded by IHANT in particular community organisations was available.

Also, a large percentage of houses had some items that were coded '9' (absent data). As shown by table 4.11, there is some variability in scoring '9' (absent data) between ATSI regions. The percentage of code '9's varied between 9% and 21%. This suggests there was some variation in how the coding system was used by the surveyors in different regions.

After removing the non-essential items of refrigerator, washing machine and airconditioner/evaporative cooling system from the data set, the level of variation in scoring '0', '5', and '9' remained similar. This suggests that the surveyors' decisions on how to score items using the coding system were not influenced greatly by the perceived importance of these items.

Table 4.11 Variability in scoring between ATSI regions.

ATSI REGION	CONDITION CODES		
	0-Not present	5-Item not present but urgently needed	9-Absent data
Alice Springs	14%	1%	10%
Aputula	15%	3%	15%
Darwin	13%	0%	19%
Katherine	13%	3%	16%
Jabiru	16%	3%	21%
Nhulunbuy	15%	4%	9%
Tennant Creek	14%	5%	10%

4.5 Recommendations for data analysis

In order to compare houses on their functionality, we rated them in terms of the number of particular facilities that are fully operational. This involved selecting groups of items that are fundamental to a functioning house and which relate specifically to six particular activities done in houses.

This technique addresses the questions of whether there are facilities easily available to allow people to:

1. wash themselves and their children;
 2. wash clothing/bedding at this house;
 3. prepare and store food;
 4. remove waste-rubbish;
- and the additional questions of:
5. is there good drainage of waste water?
 6. is there a functioning toilet in the house?

The basis for selection of these items came from a combination of other research such as the Ramingining Housing Survey (Environmental Health Unit 1999), Uwankara Palyanyku Kanyintjaku (UPK) Report (Nganampa Health Council Inc. 1987), Housing for Health (Pholeros et al 1993), and Structure, Function and Health (Guthridge et al 1999).

The method for developing the functionality scores included the items specified in table 4.12. Non-standard items of washing machine, refrigerator, airconditioner/evaporative cooling system, and gas supply were excluded. If an item has a condition code of '1' or '2' then the item is scored as 'yes'. If the item has a condition code of '0', '3', '4' or '5' then the item is scored as 'no'. If all items relating to a particular facility have a score of yes, then it is assumed that the related activity can be performed easily within that house, and the facility is defined as functional. The items are grouped into six facilities that represent those required to carrying out 'standard living practices'. Houses without whole facilities were not included in this analysis.

The items of kitchen hot tap and laundry drainage are excluded from the functionality categories of 'wash clothes', 'remove waste water', and 'prepare and store food' for this data set. This was because the scoring of laundry drainage is ambiguous depending on the presence or absence of a drain pipe, and the data for the kitchen hot water item was not entered into the database due to a technical problem. This exclusion has lead to the probable overestimation of houses that have functioning facilities of 'wash clothes' (laundry drainage), 'remove waste water' (laundry drainage) and 'prepare and store food' (kitchen hot tap). The two items should be included in future analysis of data sets providing the problems with these items have been rectified.

In addition to six main categories relating to activities carried out within a house, other facilities were rated to determine the functionality of houses such as fence around boundary. Hot water systems and functioning electricity in all facilities of kitchen, laundry, bedrooms etc. are defined as components of a house necessary for a safe and healthy environment. However, these items were not included in the calculation of the summary score.

Table 4.12 Items included in calculations of functionality for the six standard living practices. Every item within each category must be scored as '1,' or '2' for that facility to be rated as functional, and the related activity to be rated as possible in that house.

1.Wash people	2.Wash clothes
Shower hot tap	Laundry trough
Shower cold tap	Laundry hot tap
Shower drainage	Laundry cold tap
Bathroom basin	5.Remove waste rubbish
Bathroom hot tap	Bin
Bathroom cold tap	6.Prepare and store food
3.Functioning toilet	Kitchen cold tap
Main toilet pan	Stove top
Main toilet cistern	Oven
Main toilet water supply	Food storage-dry
Main toilet drainage	Kitchen bench
4.Remove waste water	
Shower drainage	
Main toilet drainage	

Table 4.13 Items analysed in addition to and not part of the six standard living practices. All seven items within the category of 'electricity throughout', must be scored as '1' or '2' to be rated as functional. Only one item was rated for the facilities of hot water system and fence around boundary.

Electricity throughout	Other facilities
Kitchen electrical	Hot water system
Laundry electrical	Fence around boundary
Bathroom electrical	
Main toilet electrical	
Switchboard & earth	
Wiring, switches etc.	
Bedroom 1 electrical	

5. Survey data results after scoring for overall functionality

5.1 Functionality of all houses

Functionality of facilities that enable the six standard living practices ranged between 37% and 69% for surveyed houses. The facility that was most commonly not functional was the facility to 'prepare and store food' (62% of houses)(table 5.1). In 13% of surveyed houses, facilities were sufficiently functional to allow all six activities to be conducted. These results relating to the functionality of the six specific areas, are an overestimate of good functionality for three of the six categories due to the reasons described in the previous section.

Of the additional analysis not related to the six standard living practices, 29% of houses surveyed did not have a functional hot water system, and 59% of houses surveyed did not have electricity working in all parts of the house.

Table 5.1 Functionality of all surveyed houses in the Northern Territory. Percent of houses with fully functioning facilities are shown (a facility was classed as functioning if all the selected items had the condition codes of '1-no maintenance required' or '2-minor problems'). The total number of houses with all data was 3792 from 3906 surveyed.

Category or item	% functioning
Remove waste rubbish	69
Wash clothes	68
Hot water system	71
Remove waste water	61
Functioning toilet	55
Wash people	54
Electricity throughout	41
Prepare & store food	38
Fence around boundary	37

5.2 Functionality of houses in ATSI regions

Table 5.2 Functionality of houses in ATSI regions. The percent of houses with functioning facilities is shown (a facility was classed as functioning if all the selected items had the condition codes of '1-no maintenance required' or '2-minor problems').

Facility	% functional by council							
	(see table 2.1 for region names and corresponding council names).							
	AS	PP	YR	GJ	JAB	MW	YP	All NT
% of total funded houses surveyed	22	91	77	100	92	54	61	
Wash people	78	39 *	83	46	44	45	44	54
Wash clothes	85	75	86	38 *	57	65	70	68
Working toilet	50	35 *	70	70	45	62	51	55
Remove waste water	61	45 *	70	74	47 *	57	70	61
Remove waste rubbish	87	70	59	75	48 *	78	65	69
Prepare & store food	41	37	59	40	29 *	33	25 *	38
Mean % functional	67	50	71	57	45	57	54	57

* denotes facilities for which the proportion of houses with functional facilities was 20% less than for all NT surveyed houses.

Table 5.3 Functionality of additional facilities not related to the six standard living practices in ATSI regions. The percent of houses with functioning facilities is shown (a facility was classed as functioning if all the selected items had the condition codes of '1-no maintenance required' or '2-minor problems').

Facility	% functional by council (see table 2.1 for region names and corresponding council names)							
	AS	PP	YR	GJ	JAB	MW	YP	All NT
% of total funded houses surveyed	22	91	77	100	92	54	61	
Electricity throughout	0 *	50	53	46	42	54	39	41
Hot water system	98	73	77	67	50 *	63	68	71
Fence around boundary	61	51	30	48	16 *	8 *	44	37

* denotes facilities for which the proportion of houses with functional facilities was 20% less than for all NT surveyed houses.

Alice Springs region (AS)

Interpretation of data for this region is severely limited by the low proportion of surveyed houses. For those houses surveyed, the percentage of facilities that were functional in this region was above the Northern Territory average. A facility for which the proportion of surveyed houses in this region was 20% less than for all surveyed houses in the Northern Territory was that of electricity working in all parts of the house. No houses had all seven items relating to electricity (table 4.13) functioning.

Aputula region (PP)

In general, this region had a low percentage of facilities that were functional. Of the facilities related to the six standard living practices, for three of these, the level of functionality was less than 20% of the Northern Territory average. These categories included 'wash people', 'working toilet', and 'remove waste water'.

Darwin region (YP)

This region had the highest percentage (14% higher than Northern Territory average) of facilities related to the six standard living practices functioning.

Katherine region (GJ)

In general, this region had an average percentage of facilities that were functional. There were a lower percentage of houses (less than 20%) than in the total Northern Territory data with the facilities of 'wash clothes' as functional.

Jabiru region (JAB)

In general, this region had a very low percentage of facilities that were functional (12% below Northern Territory average of facilities relating to the standard living practices). There were a lower percentage of houses (less than 20%) than those in the total Northern Territory data with functional facilities related to the activities of 'remove waste water', 'remove waste rubbish' and 'prepare and store food'. Two facilities additional to those relating to the six standard living practices were functional in less than 20% of the Northern Territory average. These were hot water system and fence around boundary.

Nhulunbuy region (MW)

The interpretation of data for this region is somewhat limited by the low proportion of houses surveyed. Levels of functionality of the six standard living practices overall, was equal to the Northern Territory average. There were a lower percentage of houses (less than 20%) than those in the total Northern Territory data with the facility of fence around boundary as functional.

Tennant Creek region (YP)

Interpretation of data for this region is limited by the low proportion of houses surveyed.

Overall, the proportion of functional facilities as compared to the Northern Territory data was slightly below average. There were a lower percentage of houses (less than 20%) than those in the total Northern Territory data with the facility to 'prepare and store food' as functional.

5.3 Functionality of houses in communities

The functionality of houses in communities with ten or more houses surveyed, were analysed. The percent of houses within each community with fully functioning facilities is shown in table 5.4. Each community is rated on how many of the six activities can be performed. A rating of '6' represents communities where over 50% of houses were functional in relation to each of the six activities. A total of 86 communities were included in these calculations.

The most common rating for the number of facilities that are available in over 50% of houses was 5 (figure 5.1). The lowest functionality ratings were '0' and '1', and only 11 communities (13% of all communities analysed) had all six facilities functioning in more than 50% of surveyed houses.

Four communities had none of the six facilities functioning in more than 50% of houses. The six standard living practices functionality scores were averaged for each of the eleven top and four worst communities. The average rating was calculated by summing the six scores (relating to % of functional houses for each standard living practice) for a community and then dividing by six. The top rating communities in order of functionality were: Wallace Rockhole (88%), Finke (86%), Ngukurr (84%), Kulaluk, Nauiyu and Rockhole (83%), Yirrkala (82%), Kalkarindji and Minmarama Park (78%), Milingimbi (68%) and Woodykupildiya (55%).

The poorest rated communities included: Ankweleyelengkwe (23%), Amanbidji and Arawerr (17%) and Atneltyey (15%).

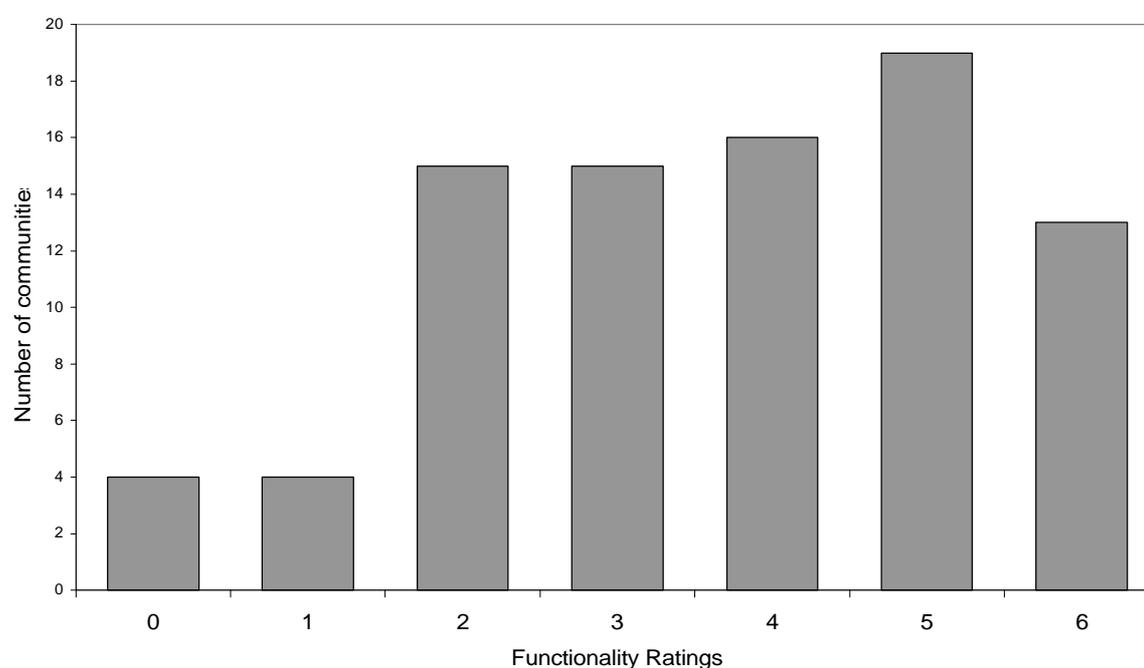


Figure 5.1 Functionality ratings of 86 communities across the Northern Territory with 10 or more houses surveyed. Ratings represent the number of facilities that are available in over 50% of houses, ie a rating of '4' represents 4 of the 6 standard living practices were available and functional in over 50% of houses. (These results are from data that is not necessarily an accurate representative set of funded houses, and so comparisons at a community level need to be made with caution.)

Table 5.4 Functionality of houses in communities with greater than 10 houses surveyed (all variables related to a facility must have had scores of '1' or '2' to be rated as functional). Ratings represent the number of functioning facilities available in over 50% of houses surveyed in that particular community. For example, a rating of '6' indicates that at least 50% of surveyed houses in a community have functioning facilities that allow all six standard living practices.

Community	Wash people	Wash clothes	Functioning toilet	Remove waste water	Remove waste rubbish	Prepare & store food	No. of houses surveyed	Rating
Alice Springs								
AMOONGUNA	70	75	50	61	91	39	44	5
Aputula								
AMPILATWATJA	37	82	70	70	100	33	27	4
ARAWERR	17	28	22	28	6	0	18	0
AREYONGA	48	59	59	67	89	82	27	5
ATITJERE	46	67	21	21	96	46	24	2
ATNELTYEY	17	39	17	17	6	11	18	0
ENGAWALA	28	78	11	17	78	11	18	2
FINKE	91	94	91	88	91	59	32	6
HAASTS BLUFF	57	93	7	36	86	100	14	4
HERMANSBURG	22	57	22	29	66	33	58	2
IMANPA	21	79	52	59	66	24	29	4
IRRWELTY	40	90	30	50	0	10	10	2
KALTUKATJARA	95	95	95	97	95	16	37	5
KINTORE	40	77	9	14	0	12	43	1
LARAMBA	42	85	27	39	94	24	33	2
MOUNT LIEBIG	40	80	40	50	75	35	20	3
MUTITJULU	19	91	43	86	95	52	21	4
NTURIYA	33	90	25	15	89	10	20	2
NYIRRIPI	31	82	31	33	90	54	39	3
PAPUNYA	38	56	12	15	59	65	34	3
PMARA JUTUNTA	19	59	19	33	82	15	27	2
SANTA TERESA	13	68	16	17	90	28	69	2
TITJIKALA	36	92	76	92	92	68	25	5
WALLACE ROCKHOLE	91	100	91	91	71	86	21	6
WILLOWRA	19	41	10	33	50	17	42	1
YUELAMU	10	81	52	71	91	33	21	4
YUENDUMU	19	69	19	21	82	13	67	2
Darwin								
ACACIA LARRAKIA	73	82	82	82	9	73	11	5
BAGOT	89	88	54	55	68	41	44	5
BELYUEN	75	73	59	62	48	59	44	5
KULALUK	90	100	95	95	60	55	20	6
MINMARAMA PARK	77	85	77	73	85	73	26	6
Katherine								
AMANBIDJI	14	14	10	14	48	0	21	0
BARUNGA	65	58	60	73	52	40	60	5
BESWICK	63	65	78	83	82	33	54	5
BINJARI	12	54	31	35	85	27	26	2
BULLA	48	72	68	64	60	36	25	2
BULMAN	42	79	79	84	63	58	19	5
DAGURAGU	12	43	65	76	67	16	49	3
EVA VALLEY	39	44	67	56	67	39	18	3
GARAWA	33	61	61	78	67	17	18	4

Table 5.4 Continued next page

Table 5.4 Continued

Community	Wash people	Wash clothes	Functioning toilet	Remove waste water	Remove waste rubbish	Prepare & store food	No. of houses surveyed	Rating
JILKMINGGAN	41	52	78	74	85	22	27	4
KALKARINDJI	70	72	85	89	83	67	46	6
LAJAMANU	34	55	70	78	64	31	64	4
MARA	48	39	44	48	74	17	23	1
MIALI BRUMBY	6	67	56	61	61	0	18	4
MINIYERI	32	63	61	61	76	56	108	5
NGUKURR	74	88	94	93	86	67	95	6
ROBINSON RIVER	29	29	61	55	90	16	31	3
ROCKHOLE	94	94	77	94	65	71	17	6
WEEMOL	36	79	93	93	64	57	14	5
YANYULA	35	39	65	78	74	13	23	3
YARRALIN	38	74	65	71	68	41	34	4
Jabiru								
KYBROOK FARM	38	52	76	76	52	43	21	4
MANINGRIDA	48	52	39	40	72	15	89	2
MILIKAPITI	57	66	33	38	70	35	88	3
MINJILANG	61	73	17	17	17	29	41	2
NAUIYU	88	80	80	84	77	87	55	6
NGUIU	29	58	53	55	66	21	202	4
OENPELLI	63	78	66	63	57	25	67	5
PALUMPA	78	79	33	33	76	49	33	3
PEPPIMENARTI	55	65	61	61	55	29	31	5
PIRLANGIMPI	53	69	50	45	15	53	62	4
WADEYE	34	41	63	66	21	16	92	2
WARRUWI	55	57	43	43	57	48	60	3
WOODYKUPILDIA	57	57	50	50	57	57	14	6
WURANKUWU	84	95	79	90	47	63	19	5
Nhulunbuy								
ANGURUGU	30	61	59	38	98	17	87	3
GALIWINKU	59	82	63	59	86	20	112	5
GAPUWIYAK	30	57	43	50	10	0	30	2
GUNYANGARA	59	59	27	32	86	18	22	3
MILINGIMBI	51	51	84	86	78	55	51	6
MILYAKBURRA	46	79	75	67	46	33	24	3
NUMBULWAR	31	79	76	52	95	68	62	5
RAMINGINING	69	69	31	46	92	23	13	3
UMBAKUMBA	32	36	57	59	77	30	44	3
YIRRKALA	76	86	83	79	90	76	29	6
Tennant Creek								
ALI CURUNG	71	100	71	71	76	40	38	5
ALPURRURULAM	30	57	57	81	96	23	47	4
ANKWELEYELEN GKWE	20	47	13	13	20	27	15	0
ELLIOTT NORTH CAMP	75	69	75	88	63	44	16	5
NGALPA NGALPA	85	100	92	100	69	39	13	5
NUDJABARRA	73	64	9	9	0	9	11	2
TARA	27	77	64	86	96	5	22	4
WILORA	39	74	9	31	39	17	23	1
WUPPA	20	60	40	90	80	0	10	3

5.4 Discussion of results

The survey data is limited in that the houses included in the survey are not representative of all houses funded through IHANT. Nevertheless, in most ATSI regions, the large proportion of houses included in the survey provides an adequate basis for comparison between these regions. Potential for accurate comparisons between communities is also limited by the unknown proportion of funded houses surveyed in communities. A further limitation is the uncertainty of consistency in the administration of the survey in different regions or communities. However, the highly structured nature of the survey sheets limits the potential for bias to some extent.

Only 13% of all communities analysed had all six facilities functional in over 50% of houses surveyed for the six standard living practices of 'washing people', 'washing clothes', 'removing waste water and waste rubbish', 'preparing and storing food' and a 'functioning toilet'. The facilities to 'prepare and store food' are not easily available in most surveyed houses in the Northern Territory.

The ATSI region of Darwin had the highest proportion of surveyed houses with functional facilities. This region had a mean functional percentage that was 14% higher than the Northern Territory average (table 5.2).

The houses in the Jabiru region had the lowest rate of functionality of houses. This region had a high proportion of houses surveyed and is a relatively accurate representative sample. In this ATSI region, half of the surveyed houses had no hot water available, and the facilities relating to 'remove waste water', 'remove waste rubbish' and 'prepare and store food' were functional in numbers 20% less than the Northern Territory average. In particular, the facilities relating to 'prepare and store food' were functional in only 29% of houses.

The community of Ngukurr was one of the three communities with the highest level of functionality. This community has been involved in a Housing Action Plan from 1994-1999 (Josif & Associates 1997). One of the priorities of this action plan was to complete 'healthy hardware' upgrades to 'enable people to pursue the first four (of nine) healthy living practices (washing people; washing clothes/bedding; removing waste; improving nutrition)' outlined in the report by Pholeros et al (1993).

These ratings of functionality are only indicative of the overall condition of housing because it is possible, for example, for a community to get a score of 6 where for each activity, only 50% of houses are functional, and for another community to get a score of 0, where for each activity 49% of houses are functional. While this is an extreme example, it does illustrate the potential limitations of this scoring system. The potential utility of other scoring systems should be explored.

5.5 Areas of greatest need

- The installation of missing items is urgently required for a high proportion of houses surveyed.
- The results indicate poor functionality of kitchens and a poor level of repair of many kitchen-related items especially stove-tops and ovens.
- Many houses did not have hot water systems working, which suggests the design of hot water systems needs review to ensure greater reliability of such fundamental features of housing infrastructure.
- Electricity was not working throughout entire houses for 59% of all surveyed houses. Electrical problems pose direct and indirect health risks.

Whilst the analysis of the data from this survey has identified the items most commonly in need of installation or repair, an assessment of greatest need in terms of health should take account of the relative risk to health posed by the absence or malfunction of each of the items or facilities. There is no direct empirical evidence on which such an assessment could be based for this setting. Collection and linkage of health status data to the environmental health survey data could provide such evidence.

6. Survey process: limitations and recommendations

6.1 Conduct of survey

Limitations identified through interviews.

Not all houses could be surveyed. Five Field Officers when interviewed said they could not survey between 2-10% of the houses. Two reasons for this was that residents were not at home (approximately 70% of reasons), followed by cultural business (approximately 30% of reasons). Cultural business most commonly involved funeral ceremonies. Other uncommon reasons that houses were not surveyed included occasions when a resident refused entry (less than 1% of reasons), and when renovations were being carried out (unknown proportion).

According to two Field Officers, some areas (those of out-stations) were not surveyed. This was because of inaccessibility due to damaged roads, availability of boats, time constraints linked to the remote location of some communities, and the commitment to survey only 'major' communities during the first round of surveys. According to the booklet entitled Northern Territory Aboriginal Communities (NT Department of Lands, Planning & Environment 1999), the definition of 'major' communities is those communities that have greater than 100 people, which are self governing, and have facilities expected in any town of this size (eg school, health centre, store etc.). Minor communities are those with between 20-100 people, are self-governing, and may provide resources to smaller out-stations

There was a large variation in the perception of Field Officers of housing quality in out-stations/homelands and regional/major communities. Some respondents said out-station housing was generally better due to less crowding and stronger feelings of resident ownership. Others described homeland dwellings as not up to minimum standards, badly designed, and lacking in design diversity. It is therefore not clear how the inclusion of these houses in the survey may have influenced the overall results.

As grant funding is based on the results of these housing surveys, there is a need to survey a high proportion of houses in all communities and out-stations. The small proportion of houses surveyed in some (or an appropriately selected random sample from) ATSI regions does not provide the basis for a fair assessment of housing conditions in general, as the houses surveyed are not sampled to be representative of the region or community.

The time it took to complete a survey was variable. According to five Field Officers, the average time ranged between 6 and 60 minutes. The shortest time ranged between 2.5 and 15 minutes and the longest time ranged between 12 and 120 minutes. This work was additional to the usual work routine of the Field Officers interviewed, and by some accounts takes substantial time to complete. Due to the time it takes to complete surveys, motivation to do them is important. The widely varying accounts of the time taken to conduct a survey suggest very different intensities of inspection of facilities.

There was no protocol for a number of steps in the data collection process. Areas where methods varied included determining which houses would be surveyed, how access for houses would be gained, who would give an explanation to the residents about the survey, what was done if no one was home. There was no protocol for what types of information was gathered by interviewing residents, nor for which resident was the most appropriate interviewee. There was no protocol for dealing with language or other communication difficulties. This lack of protocols meant there was a little basis for standardisation of the survey.

The way data was collected varied between Field Officers, and the way an individual officer collected data varied between houses. Firstly, the items might be observed. Secondly, but not always, items might be tested for functionality (eg. by turning a tap on). Whether items were physically tested sometimes depended on how 'clean' a house was. If it was clean, then the items were sometimes assumed to be functioning. A third possible approach was asking available residents if anything didn't work, and often providing the

name of an item that perhaps is not working. Unfortunately, sometimes this was the only action taken before certain item codes were recorded on the sheet. If a resident was not asked about all the items then they may not remember that some were not functioning. Language barriers were another potential source of error. Oral communication without observation and physical testing is likely to be an unreliable approach. However, when used in addition to observations and physical tests, it is a good way of obtaining more detail about concerns with housing and health. It also may assist in strengthening relationships between Field Officers and residents, providing any major repairs are forthcoming.

Prior to a house being surveyed either the Field Officers or a community representative explained the survey purpose to the residents. It was explained to them that surveys would assist in getting things fixed, but the surveys did not mean that new repairs would occur immediately to their house. Field Officers could not always be sure exactly what was told to the residents when community representatives spoke in their local language. Even with explicit explanations, three of the five Field Officers interviewed felt that the expectations of residents concerning outcomes of repair and maintenance were inappropriately raised as a result of this survey process.

Protocols will be useful in clarifying a range of factors concerning the conduct of the survey. These factors are: which houses are to be surveyed; how access to houses will be gained; who will give an explanation about the survey to the residents; what will be done if no one is home; what types of information are to be gathered by interviewing residents; and who is most appropriate to interview. Protocols for dealing with language or other communication difficulties will also be useful.

The method of assessing the condition of items should be standardised. Before data is recorded, surveyors should observe items and physically test the functionality of all those items that can be tested. This should be done whether the residents are questioned about function or not. Training workshops prior to the surveys would be a useful means of improving the standardisation and quality of survey data. During the workshops the consequences of failing to use the appropriate techniques of data collection can be explained in detail. In addition to training prior to surveys, ongoing training and support is beneficial throughout the survey. Ongoing quality control measures are also useful in this survey process.

Information needs to be added about the rating of 'optional' items of refrigerator, airconditioner/evaporative cooling and washing machine. In addition, decisions concerning each item need to be made on how they are to be rated in terms of the *Minimum Standards for Housing Management* (Indigenous Housing Authority of the Northern Territory 2000). To do this, all codes that are applicable to each item need to be decided upon.

Motivation was not high for all Field Officers. One Field Officer when talking about their degree of motivation to do more surveys and about the levels of house disrepair, stated that it is 'embarrassing if you go back next year and nothing has changed' and that it is 'disheartening on both sides, for the residents and the surveyors'. This has implications for the continuation of the survey process by all types of Field Officers and the continued collaboration between Government Departments.

There is no feedback to residents or Field Officers of results of the survey at this stage. This lack of feedback may jeopardise the relationship Field Officers have with residents and Community Councils particularly in cases where little required repair has been completed between surveys.

Motivation to complete the surveys is important to the overall success of this project. It is required for actually having the surveys done and also for maintaining data quality. Motivation is especially important to those Field Officers that might see this as a large additional workload to their usual routine. Ways to ensure commitment to the survey might include the following:

- emphasise health on the survey sheets so the application is more immediately obvious to those surveyors whose primary role is in health;
- ensure summary feedback reports are produced and delivered to the Field Officers and each community that was surveyed soon after the survey data is entered into the database. These reports can include a list of house ratings in terms of functionality, an overall rating for the community, or a list of condition scores for each community as percentages. Results from all previous surveys can be presented to show the rate of progress in improving house condition.

Recommendations:

1. survey a high proportion of houses in all communities and out-stations to gain a good representative sample;
2. design protocols to ensure consistency in the conduct of the survey;
3. standardise the method of assessing the condition of items;
4. run training workshops for surveyors prior to the surveys to improve standardisation and quality of survey data;
5. provide ongoing training and support to surveyors throughout the survey;
6. employ ongoing quality control measures;
7. encourage commitment to the survey by:
 - emphasising relationships to health on the survey sheets and in the training
 - producing feedback reports for Field Officers and each community surveyed as soon as possible after the survey.

6.2 Survey instrument

Limitations

Limitations of the survey instrument concern the items themselves, their meanings, and the number of condition codes available to the surveyor. Some items do not add significant information to the data set. These include 'general structure' and 'other facilities' of the kitchen, laundry, bathroom, main toilet, 2nd toilet, services/exterior, and bedrooms 1-5. The large percentage of missing data for these items may reflect confusion by Field Officers of what was meant by these items. The toilet type data of flush, pit, or other was not entered into the Lot data set but this information would be useful in interpreting if the septic system was coded as missing. Some item types are considered by some Field Officers as too unreliable to estimate. These include the number of people living in the house, and the number of dogs and pests. There is no categorisation for pests other than naming the animal type as 'ants', 'cockroaches', 'rodents' or 'other'. With no categorisation, the usefulness of the information is limited because information on the abundance of these pests is absent.

The meaning of some items is unclear or ambiguous. This allows for subjectivity to influence the data collected, which reduces data quality. The condition codes of '0' and '5' are also ambiguous. When there is no fence around the boundary, this item could be recorded as either '0-not present (item does not exist)' or '5-item not present but urgently needed'. This decision was thought by some to be a value judgement and some people have recorded this item as '0' and some have recorded it as '5'. The items of refrigerator and washing machine are items not supplied by the public housing system, and some Field Officers do not consider them as essential to healthy living. As a consequence these items if not existing, can be scored as '0-not present'. In some situations washing machines and refrigerators are located, and accessed by residents within close proximity to their house. Therefore, these particular items may not be urgently needed. The definition for absent data is that of 'could not get inside the house'. This requires surveyors to fill out 96 boxes with '0', which is time consuming. Some items are left blank with no indication of the reason for this.

An item that is missing from the survey instrument and which would be useful to encourage hygiene practises is toilet roll holder. If drainage of water is poor within a house, then any rolls resting on the ground will become unusable if in contact with water. Rolls placed on the cistern, may accidentally fall into the toilet pan, or onto the wet floor.

The main aspects of the survey instrument that could be improved include the items themselves, the condition codes, and the relationship between structure and health. With appropriate changes, the usefulness of the whole process and the data that is collected will be maximised.

Modifications to the survey instrument could make the process more efficient and more relevant to environmental health. Changes made to the survey sheet address recommendation four of the Structure, Function and Health Report, Draft (1999 Guthridge et al). This recommendation states:

The environmental health survey form needs to be revisited with consideration of simplification of scoring system, focus on function which relates to health, and the establishment of an indicator score for individual houses.

The reasons for modifying the survey sheet are to:

1. minimise the decision making process by narrowing the choices of codes available;
2. clarify the coding scheme;
3. reduce the level of subjectivity when determining item codes; and to
4. strengthen the link between aspects of health that are influenced by house function.

These changes include the following:

- ➔ Remove from the survey instrument those items that do not add significant information to the data set. These items are 'general structure' and 'other facilities' of the kitchen, laundry, bathroom, main toilet, 2nd toilet, services/exterior, and bedrooms1-5; the toilet type data of flush pit or other; the number of people living in the house; and the number of dogs.
- ➔ Pests could be categorised to include three levels of ant, cockroach, rodent or other infestation. These categories can be mild/moderate or severe infestation with an accompanying guide as to how to score these items. A space for the name of the pest if it is not an ant, cockroach or rat would be useful.
- ➔ The item of toilet roll holder could be added to the bathroom facility list of items on the survey instrument. The items of smoke alarm, kitchen drainage and kitchen sink should be added and the item name of 'basin' under the bathroom heading changed to 'hand basin'. Smoke alarms are required in all Class 1a buildings in the Northern Territory according to Part 3.7.2.2 of the Building Code of Australia. The Environmental Health Standards for Remote Communities in the NT (1998/1999) also refer to the importance of proper maintenance of smoke alarms.
- ➔ Reduction of the condition codes from seven choices to five is advantageous because this reduces the number of decisions available thus reducing error, subjectivity and time. Instead of completing an item in terms of structural condition, items could be viewed in terms of repair needs for both main tenance of the house and maintenance of health. The suggested codes are as follows:
 - 1 - no repairs
 - 2 - no maintenance
 - 3 - essential repairs (required to prolong the life of the house)
 - 4 - urgent repairs (repair required to make the house safe and healthy to live in).
 - 5 - item missing (installation required to make the house safe and healthy to live in).

These first four categories and their definitions are taken from the *Minimum Standards for Housing Management* (Indigenous Housing Authority of the Northern Territory 2000). Urgent repairs are necessary for a functional water supply into the house, adequate disposal of waste water draining out of the house, safe electrical wiring and physical security, particularly for women, children and old people. According to the *Minimum Standards for Housing Management*, urgent repairs should be attended to within 24 hours of a defect being reported, wherever practicable. If this is not feasible, they should be carried out as soon as possible. In using these definitions, surveyors are encouraged more directly than before to think about repairs in terms of consequences to residents' health and they can categorise the data according to the *Minimum Standards*. It may be useful to differentiate between the need for urgent and non-urgent installation of items by creating an additional category.

- ➔ Collapsing the seven categories of condition code to five, results in the merged condition code of '0-not present (item does not exist)' with '5-item not present but urgently needed', to form the condition code of '5-item missing (installation required to make the house safe and healthy to live in)'. The new code removes the necessity of moralising whether a missing item is a health issue by automatically assigning it to the status of maintaining health rather than only maintaining structure. Houses must comply with the 'performance provisions' set out in the Building Code of Australia (Australian Building Codes Board 1996) which has an objective (Objective 02.0) to: 'provide access to health hardware necessary for healthy behaviour'.

Other suggested modifications are the inclusion of extra boxes. A box titled, 'NO ACCESS TO HOUSE' will be useful as this need only be filled in once if the house is not entered instead of repeatedly as in previous sheets. Boxes for when an entire facility is absent will be useful as this need only be filled in once. With no option of '0-not present', it is important to know when a whole facility is not present as this denotes a minority dwelling type rather than the absence of individual essential items that need to be installed.

Recommendations:

- remove items from the survey instrument that fail to add significant information to the data set;
- re-categorise 'pests' to include three levels of ant, cockroach, rodent or other infestation, have an accompanying guide as to how to score these items and create a space for the name of the pest if it is not an ant, cockroach or rat;
- add the items of smoke alarm, toilet roll holder, kitchen drainage and kitchen sink to the survey instrument;
- rename the item 'basin' to 'hand basin';
- reduce the condition codes from seven choices to five;
- include a box for 'no access to house' and boxes for when an entire facility is absent;
- provide a clear description of code meanings.

6.3 Training of surveyors

Limitations

There was little training of Field Officers to prepare them for conducting surveys. Field Officers trained up to twelve other people to do these surveys. 'Trainees' included people employed by Council, Housing, Tiwi Health Board, Territory Health Services and National Aboriginal Health Strategy.

Field Officers were questioned as to whether they were confident that the data quality of the people they trained is of a high standard. Their responses varied from 'absolutely not', 'not 100% sure', 'don't know' and 'yes, as high as the overall process is'. Problems concerning the expectation that local people will carry out the surveys included cultural issues of kinship. Family avoidance prevents access to a proportion of houses in a community. As a consequence, up to six different local people would be required to survey some communities. If there is not adequate training to support written survey protocols then the interpretation of the written word is likely to influence the data process and data quality.

Recommendations:

- run training workshops for surveyors prior to the surveys to improve standardisation and quality of survey data;
- provide ongoing training and support to surveyors throughout the survey.

6.4 Data quality control and database organisation

Limitations

Factors that potentially influenced data scoring besides factors related to the survey instrument or training of surveyors included time, comparisons, work-related background, mood, gender and perceived goals. Field Officers thought the way they scored items changed within a day. For example, they may score one item as one code in the morning and if they had hypothetically surveyed the same house in the afternoon then they might score it with a different code. Another factor was whether they were comparing houses to other houses in the same community or elsewhere. People with a health-orientated background may score some items (those items more directly linked to health) more harshly than those people from a non-health

background. Another reason for varied scores from one Field Officer was how 'angry' they were (some felt anger when the bad condition of houses had not improved since their last visit). Some Field Officers thought gender may influence the harshness of scores on particular items. For instance, a female surveyor may score kitchen items more harshly than a male surveyor. There were some differences in the perceived goals of the survey by Field Officers. The existence of all of these influences suggests that the definition for each code is not clearly stated and the training on how to score the items is inadequate.

The problem of both intra-observer and inter-observer variability can be addressed through the clear description of codes and by good training of surveyors. Ongoing data quality control measures will assist in raising the standard of data collected.

Some items on the survey sheet were absent in the Lot data. These included gas supply, kitchen sink, kitchen floor, toilet type (flush, pit or other), the number of people, the number of dogs and pests. Some items not on the survey sheet were in the Lot data such as 'other facilities'. This is because two other different versions of the survey sheet have been used for past surveys and different data was collected.

When the data was entered, the condition codes for kitchen hot water could not be entered for some unknown reason. During the initial stages of data entry some previous data was overwritten.

There were difficulties in obtaining a data set with Environmental Health Data combined with the ATSI Region, dwelling type or community type. The ATSI regions eventually were entered manually.

Ongoing training for data entry personnel and ongoing quality control of data entry is essential. The database should have functions set to prevent mistakes from being made and the overwriting of data. Two examples are the creation of a function that prevents any data from being entered until a new survey date or title is entered and when data is entered, the cells should not have data from previous surveys in them. The data entry process should ideally ensure that every item on the survey sheet is entered into the database. To check that the data is entered correctly, random checks could be carried out regularly. These checks should compare the data from individual survey sheets and the data entered into the database. Accurate records are required of the number of houses with full data entered into the database.

Recommendations:

- provide ongoing training for data entry personnel;
- provide ongoing quality control of data entry;
- configure the database to include functions to prevent mistakes from being made such as the overwriting of data;
- carry out regular random data quality checks.

7. Conclusions

A number of key conclusions can be drawn from this evaluation of the survey data. In general this analysis confirms the low standard of functionality of the environmental health infrastructure in the Northern Territory. Many houses lacked functional facilities for standard living practices. This poses risks to the health and safety of house occupants. With currently available data it is not possible to quantify health risks in relation to specific components of infrastructure. However, linkage of the housing survey data to health status data of residents in these households would create an important opportunity to provide this sort of information.

The results of the analysis for this evaluation are presented in a manner potentially comparable to more recent and future survey data so the rate of progress on improving these environmental health conditions can be monitored.

The results of the uni-variate analysis indicate that the items of bathroom bench/shelf, laundry shelves, fences around boundaries, and oven and stove top required maintenance or installation in a high percentage of surveyed houses. A method was devised to provide information about individual houses or the functionality of houses. This approach addressed the questions of whether there were facilities easily available to allow people to perform six standard living practices of washing people, washing clothes, performing ablutions, removing waste water, removing waste rubbish, and preparing and storing food.

The results of this analysis indicate that the functionality of facilities that enable the six standard living practices ranged between 31 and 59% for surveyed houses. For instance, in 62% of houses the facility to prepare and store food was not functional. All six standard living practices were possible in only 13% of all houses surveyed. For three of the standard living practices, the results are an overestimate of good functionality. Hot water systems were non-functional in 36% of houses surveyed. Electricity was not working in all parts of the house in 59% of all those that were surveyed.

Identification of geographic areas or communities of greatest need is limited by the low or unknown proportion of houses surveyed in some regions or communities. The data from the houses that were surveyed indicate that the ATSI regions with the lowest level of infrastructure functionality are Jabiru and Aputula, and the region with the highest level of functionality was Alice Springs. Variations in the conduct of the survey, the quality of the data, and the representativeness of surveyed houses of all funded houses in the region or community mean the comparisons should be made with reservation.

8. Appendix A: Questions for surveyors of housing surveys

1. **Were there any localities that you could not survey?**
What % of all the localities in your district could you not survey?
Why could they not be surveyed?
What % of localities could not be surveyed for the first reason ?, second reason ? etc.
Were there any particular houses that you could not survey?
What % of the total houses could you not survey?
Why could they not be surveyed?
What % of houses could not be surveyed for the first reason ?, second reason ? etc.
2. How long did the surveys take to do?
What was the average time they took to complete?
How long was the shortest one you did?
How long was the longest one you did?
How does this work fit in with your usual work routine?
3. Are there any survey questions or items that have unclear meanings or are ambiguous?
Which ones?
How were they unclear?
Were you ever undecided as to whether to write down the Condition code of 0 or 5 for an item?
4. What did you tell the residents about the survey?
Did you tell them the survey did not mean new repairs would occur immediately to their house?
Do you think their expectations of repair and maintenance were raised too high?
5. Do you think there is a big difference in the housing of homeland/out-station communities vrs the regional communities that were surveyed?
6. Did you train anyone in how to carry out these surveys?
If so, how many people?
What were their positions?
Do you have expectations that in the future these people will do the surveys?
Are you confident that their data quality is of a high standard?
7. Was there a delay in carrying out surveys or other problems?
8. Were there factors that influenced your data scoring?
9. Do you have any suggestions for how to improve the survey sheet or process?
10. What is your general feeling with the surveys?

9. Appendix B: Environmental health housing survey sheets

i. HOUSING - ENVIRONMENTAL HEALTH SURVEY

COMMUNITY ID NO LOT NO
 (DO NOT LEAVE ANY BOXES BLANK)

KITCHEN (ability to cook and prepare food)		LAUNDRY (ability to wash clothes)		BATHROOM (ability to wash people)	
Item	Condition 0, 1-5	Item	Condition 0, 1-5	Item	Condition 0, 1-5
1. Sink		14. Trough		27. Basin	
2. Taps - Hot		15. Taps - Hot		28. Taps - Hot	
3. Taps - Cold		16. Taps - Cold		29. Taps - Cold	
4. Bench		17. Shelf		30. Bench / Shelf	
5. Food Storage - Dry		18. Washing Machine		31. Shower Head	
6. Food Storage – refrigerator....		19. Floor Drainage		32. Shower Taps - Hot	
7. Stove Top		20. Electrical		33. Shower Taps - Cold	
8. Oven		21. General Structure		34. Shower Drain	
9. Utensil/Equipment Storage....				35. Door	
10. Electrical				36. Electrical	
11. General Structure				37. General Structure	
12. Kitchen Floor					

MAIN TOILET		2nd TOILET		SERVICES / EXTERIOR	
Type (Flush:Pit:Other)	F P O	F P O	F P O	Item	Condition 0, 1-5
Item	Condition 0, 1-5	Condition 0, 1-5	Condition 0, 1-5		
40. Toilet pan.....		51.		61. Gas supply (bottled gas)	
41. Cistern.....		52.		62. External taps.....	
42. Water supply.....		53.		63. Electrical (switchboard & earth)...	
43. Door.....		54.		64. Electrical (wiring, switches, etc)...	
44. Electrical.....		55.		65. Hot water service.....	
45. Drainage.....		56.		66. Aircon/Evaporative cooling.....	
46. General structure.....		57.		67. Septic tank systems.....	
				68. Doors and windows.....	
				69. General structure.....	
				71. Rubbish Bin.....	
				72. Fence around boundary.....	

BEDROOM 1		BEDROOM 2		BEDROOM 3		BEDROOM 4		BEDROOM 5	
Item	Condition 0, 1-5								
73. Storage.....		78.		83.		88.		93.	
74. Door.....		79.		84.		89.		94.	
75. Electrical.....		80.		85.		90.		95.	
76. General Structure...		81.		86.		91.		96.	

No. of people living in the house.....	Number of dogs	Pests Ants / Cockroaches / Rodents / Other
--	----------------------	--

Survey by

Date.....

- Condition Codes**
- 0 - Not present (item does not exist).
 - 1 - No Maintenance required (item fully functional).
 - 2 - Minor problems (work required, but not a major impact on health or safety).
 - 3 - Major problems (item requires repair, otherwise it will impact on health or safety of the tenants).
 - 4 - Urgent maintenance required (this item is a health and safety issue).
 - 5 - Item not present but urgently needed
 - 9.- Absent data (eg could not get access to inside of house).

ii. HOUSING - ENVIRONMENTAL HEALTH SURVEY FORM

Guidelines for Assessing the Condition of Items

Numbers after each example indicate the likely category that would be assigned to such an item of work.

Item	Examples of condition assessment
Wet areas	
Floor drainage	Floor waste blocked (4). Water does not drain away quickly- partially blocked (3). Water ponds on floor-incorrect fall to waste (**). Floor grate missing or broken (2).
Showerhead	Showerhead badly blocked (3). No showerhead, but can still shower (2).
Toilet pan	Pan is blocked (4). Pan is broken (4). Pan is cracked but not leaking (2). Toilet seat missing (2). Waste water does not flush away quickly- partial blockage (3).
Cistern	Cistern does not work (4). Cistern/plumbing leaks water onto the floor (**). Cistern continually running (4). Top cover/lid missing but still works (2).
Sinks, basins and laundry troughs	Waste outlet blocked (4). Water does not drain away quickly (3). Waste plug-missing (2). Badly marked- looks untidy and should be replaced (1).
Hot & cold taps & spouts	Tap does not work (2). No hot water (3). Hot water is too hot- likely to scald (4). Tap handle-missing (2). Taps dripping (2). Cannot turn tap off (4). Water hammer (2).
Washing machine	Water leaking onto floor (**). Waste outlet blocked (4).
Electrical (typical all rooms)	Reports of electric shocks off taps, switches, power points, wiring, equipment (4 and disconnect). Power point needs to be relocated for safety (3). Power point unsafe (4).
Kitchen	
Bench tops, shelving	Benches are damaged and cannot be easily cleaned (2). Junctions around bench tops need sealing (2).
Stove top and oven	Oven does not work (3). One or two hot plates don't work (2). Knobs are missing (2). Oven door does not close properly (2).
Dry food storage	Pantry door cannot be closed or locked (3). Pest control treatment needed (2).
General structure	Wall area around sink and bench tops cannot be cleaned (2).
Services and exterior	
Gas supply	No compliance plate (3). Insecure gas bottle (3). Gas smell/leak (4).
External taps & plumbing	Tap does not work (3). Tap handle-missing (2). Taps dripping (2). Cannot turn tap off (4). Unsecured pipes (2). In ground water leak (3).
Electrical switchboard & earth-stake	Exposed wiring, broken switches (4). Earth stake disconnected or missing (4). Safety switches failed test (4). Door missing off switchboard (2).
Electrical wiring, outlets & switches	Exposed wiring (4 & disconnect). Power point not working (3). Replace power point with waterproof fitting (2). Power point unsafe (4). Rodents attacking wiring (3).
Hot water system	HWS not checked/tested within last 12 months (2). No hot water (3). Water too hot- scalding (4). Not enough hot water for all the people using the house (2-3).
Evaporative cooling	Leaking water onto ground (**). Causing corrosion to roof sheeting (2).
Septic tank system	Covers are insecure or broken (3 - 4). Pools of water/effluent around tank or along line of absorption drains (4). Septic tank needs pumping out. (3 - 4).
Doors and windows. (Typical all rooms)	Door/window will not close or lock (**). Windows/ security screens do not permit escape in case of fire (3). Flyscreens need replacing (2).
General Structure	Structural component unsafe- rotted floors, water tank stand unstable, unsecured wall/roof sheeting, termite damage, badly rusted steel support etc (3 or 4).

** Some items cannot be allocated to a certain category and a decision will need to be taken on site, depending on the impact on health and safety. The rating has nothing to do with the amount of work required or the cost. Similarly it has nothing to do with looks or cleanliness. It is about functionality.

As a guide. Low risk to health or safety = 2. High risk = 3. Actual risk = 4, No risk = 1.

iii. HOUSING - ENVIRONMENTAL HEALTH SURVEY REPAIR/MAINTAINANCE COMMENTS

Community.....Lot Number.....HSE No.....

Urgent- condition code 4 or 5

Item number from survey form	Detail of work required

Major - condition code 3

Item number from survey form	Detail of work required

Minor - condition code 2

Item number from survey form	Detail of work required

Survey by.....

Date.....

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