

**FROM TOP STRUCTURE TO HOME: INCREMENTAL GROWTH OF SUBSIDISED  
HOUSING IN MAMELODI**

by

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## CONTENTS

<b>CHAPTER 1 – INTRODUCTION</b>		
1.	INTRODUCTION	1
2.	BACKGROUND TO THE PROBLEM	1
3.	AIMS AND OBJECTIVES	4
4.	THE PROBLEM STATEMENT	4
4.1.	THE SUB-PROBLEMS	4
5.	RELEVANCE	4
6.	SCOPE	4
7.	LIMITATIONS	5
8.	DEFINITIONS OF TERMS	5
9.	STRUCTURE OF THE REST OF THE REPORT	6
<b>CHAPTER 2 – METHODOLOGY</b>		
1.	INTRODUCTION	7
2.	TYPE OF RESEARCH	8
3.	CASE STUDY	8
3.1	CRITERIA FOR SELECTING CASE STUDY AREAS	8
3.2	BACKGROUND ON MAMELODI	9
3.3	SELECTED CASE STUDY AREAS	11
4.	SUB-PROBLEMS	12
4.1.	SUB-PROBLEM 1	12
4.2.	SUB-PROBLEM 2	12
4.3.	SUB-PROBLEM 3	12
4.4.	SUB-PROBLEM 4	12
4.5.	SUB-PROBLEM 5	12
5.	SYNTHESIS	13
6.	DATA	13
6.1.	PRIMARY SOURCES OF DATA	13
6.2.	SECONDARY SOURCES OF DATA	13
6.3.	TIMELINE AND INCREASED FOCUS OF DATA	14
7.	SAMPLING	14
7.1.	SAMPLING METHOD	14
7.2.	SAMPLING PROCESS	15
7.3.	HOUSEHOLDS SELECTED FOR INTERVIEWS	16
<b>CHAPTER 3 – LOW INCOME HOUSING DELIVERY AND CONSOLIDATION</b>		
1.	INTRODUCTION	17
2.	DEFINITION OF CONSOLIDATION	17
3.	THE HOUSING CRISIS	17
3.1.	THE HOUSING CRISIS IN DEVELOPING COUNTRIES	17
3.2.	THE EXTENT OF THE HOUSING BACKLOG IN S.A.	18
3.3.	REASONS FOR THE HOUSING BACKLOG IN S.A.	18
4.	INTERNATIONAL APPROACHES TO THE HOUSING BACKLOG	18
4.1.	THE TRADITIONAL APPROACH	18
4.2.	SELF-HELP APPROACH	21
4.3.	A COMBINED APPROACH	26
5.	POST-APARTHEID HOUSING POLICY	27
5.1.	UNDERLYING POLITICAL OBJECTIVES	27
5.2.	POLITICAL PRESSURE FOR DELIVERY	27
5.3.	POLITICAL PRESSURE FOR HIGH QUALITY HOUSES	27
5.4.	GUIDING POLICY DOCUMENTS	27
5.5.	QUALITY GUIDELINES	29
5.6.	OUTCOMES	30
6.	HOUSING CONSOLIDATION	31
6.1.	EXPANDED DEFINITION OF TERM	31
6.2.	PROCESS OF CONSOLIDATION	31
6.3.	FACTORS THAT AFFECT CONSOLIDATION	32
7.	SOME SOUTH AFRICAN CASE STUDIES ON LOW-COST HOUSING AND CONSOLIDATION	35

7.1.	CATO MANOR (DURBAN)	35
7.2.	INANDA NEWTOWN (DURBAN) AND KHAYELITSHA (CAPE TOWN)	38
8.	CONCLUSION	40
<b>CHAPTER 4 – SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME</b>		
1.	INTRODUCTION	41
2.	SELECTED CASE STUDY AREAS	41
2.1.	DATE OF ESTABLISHMENT AND COMPLETION	41
2.2.	TYPE OF SUBSIDY	41
2.3.	ERF CONFIGURATION AND SIZE	41
2.4.	PROCESS, HOUSE CONFIGURATION AND SIZE	42
2.5.	INITIAL HOUSING LAYOUT	43
2.6.	CHANGES OVER TIME	44
3.	CONCLUSION	45
<b>CHAPTER 5 – CONSOLIDATION</b>		
1.	INTRODUCTION	48
2.	SECTION A	
2.1.	TYPOLOGY 1	49
2.2.	TYPOLOGY 2	63
2.3.	TYPOLOGY 3	77
3.	SECTION B	
3.1.	TYPOLOGY 1	91
3.2.	TYPOLOGY 2	104
3.3.	TYPOLOGY 3	119
3.4.	TYPOLOGY 4	133
<b>CHAPTER 6 – COMPARATIVE ANALYSIS</b>		
1.	INTRODUCTION	146
2.	TRENDS	148
2.1.	FAMILY SIZE	148
2.2.	NUMBER OF SOURCES OF INCOME	148
2.3.	TENANTS	148
2.4.	EMPLOYMENT	148
2.5.	EXPENDITURE	148
2.6.	SAVINGS	148
2.7.	NUMBER OF EXTENSIONS	148
2.8.	CHARACTERISTICS OF ADDITIONS	149
2.9.	TYPE OF EXTENSIONS	150
2.10.	LEVEL OF CONSOLIDATION	150
2.11.	TIME OF ARRIVAL	150
2.12.	TIME TAKEN BETWEEN EXTENSIONS	150
2.13.	USE OF SPACE WITHIN THE STRUCTURES	150
2.14.	USE OF SPACE OF THE ERVEN	151
2.15.	INTERFACE	151
2.16.	THE PROCESS OF DEVELOPMENT	151
3.	ANALYSIS OF THE USE OF SPACE	154
4.	OVERALL PICTURE	154
4.1.	SOCIO-ECONOMIC PROFILE	155
4.2.	BUILDING ACTIVITY PROFILE	161
4.1.	USE OF SPACE	165
5.	FACTORS AFFECTING CONSOLIDATION	166
5.1.	INTRODUCTION	166
5.2.	NON-CONSOLIDATORS	166
5.3.	CONSOLIDATORS	167
5.4.	OVERALL PICTURE	168
<b>CHAPTER 7 – QUALITY PROFILE OF RESIDENTS: PERCEPTIONS AND PRIORITIES</b>		
1.	INTRODUCTION	169
2.	PRIORITIES	169
2.1.	INTERNAL ASPECTS	169

2.2.	EXTERNAL ASPECTS	171
3.	PREFERENCES AND PERCEPTIONS	172
4.	CONCLUSION	174
<b>CHAPTER 8 - CONCLUSION</b>		
1.	INTRODUCTION	175
2.	IMPLICATIONS FOR HOUSING DESIGN AND DELIVERY	175
a.	DESIGN	175
b.	DELIVERY	176
3.	EXPERIENTIAL LEARNING	176
a.	COMPARISON	176
b.	CASE STUDY AREAS	177
c.	INTERVIEWING PHASE	177
4.	FURTHER RESEARCH	177
<b>BIBLIOGRAPHY</b>		178



## LIST OF FIGURES

<b>CHAPTER 1</b>			
1. FIGURE 1	-	Structure of chapter	1
2. FIGURE 2	-	Research aims and objectives	4
3. FIGURE 3	-	Structure of dissertation	6
<b>CHAPTER 2</b>			
4. FIGURE 4	-	Structure of chapter	7
5. FIGURE 5	-	Position of chapter within dissertation	7
6. FIGURE 6	-	Synthesis of data	14
7. FIGURE 7	-	Focus and detail	14
<b>CHAPTER 3</b>			
8. FIGURE 8	-	Structure of chapter	17
9. FIGURE 9	-	Position of chapter within dissertation	17
10. FIGURE 10	-	Summary of Norms and Standards in respect of Permanent Residential Structures ( <i>National Housing Code: 120</i> )	29
11. FIGURE 11	-	Changing priorities (Serageldin & turner, 1972)	32
12. FIGURE 12	-	Transitional phase (Serageldin & turner, 1972)	32
13. FIGURE 13	-	Plot layout (Eliasson, Hessle & Leonsson, 1998)	36
14. FIGURE 14	-	Housing type (Eliasson, Hessle & Leonsson, 1998)	37
15. FIGURE 15	-	Sections of housing type a (Eliasson, Hessle & Leonsson, 1998)	37
16. FIGURE 16	-	Sections of housing type b (Eliasson, Hessle & Leonsson, 1998)	37
<b>CHAPTER 4</b>			
17. FIGURE 17	-	Structure of chapter	41
18. FIGURE 18	-	Position of chapter within dissertation	41
19. FIGURE 19	-	Erf dimensions of extension 10	41
20. FIGURE 20	-	Erf dimensions of extension 6	41
21. FIGURE 21	-	Type of housing provided in extension 10	42
22. FIGURE 22	-	Dimensions of erf and top structure within extension 10	42
23. FIGURE 23	-	Dimensions of erf within extension 6	42
24. FIGURE 24	-	Pattern 1	45
25. FIGURE 25	-	Pattern 1 - alternative	45
26. FIGURE 26	-	Pattern 2a	45
27. FIGURE 27	-	Pattern 2b	45
28. FIGURE 28	-	Pattern 3a	46
29. FIGURE 29	-	Pattern 3c	46
30. FIGURE 30	-	Pattern 4	46
31. FIGURE 31	-	Pattern 4 - alternative 1	46
32. FIGURE 32	-	Pattern 4 - alternative 2	46
33. FIGURE 33	-	Pattern 5b	47
34. FIGURE 34	-	Pattern 5c	47
35. FIGURE 35	-	Pattern 5b - alternative 1	47
36. FIGURE 36	-	Pattern 5b - alternative 2	47
<b>CHAPTER 5</b>			
37. FIGURE 37	-	Position of chapter within dissertation	48
38. FIGURE 38	-	Structure of chapter	48
39. FIGURE 39	-	Pattern 1	62
40. FIGURE 40	-	Pattern 2	62
41. FIGURE 41	-	Pattern 1	76
42. FIGURE 42	-	Pattern 2	76
43. FIGURE 43	-	Pattern 1	90
44. FIGURE 44	-	Pattern 2	90
45. FIGURE 45	-	Pattern 1	103
46. FIGURE 46	-	Pattern 1	118
47. FIGURE 47	-	Pattern 1	132
48. FIGURE 48	-	Pattern 1 - phase 1	145
49. FIGURE 49	-	Pattern 1 - phase 2	145
<b>CHAPTER 6</b>			
50. FIGURE 50	-	Structure of chapter	147
51. FIGURE 51	-	Position of chapter within dissertation	147
52. FIGURE 52	-	Typology 1, pattern 1	152
53. FIGURE 53	-	Typology 1, pattern 2	152
54. FIGURE 54	-	Typology 2, pattern 1	152
55. FIGURE 55	-	Typology 2, pattern 2	152

56. FIGURE 56	-	Typology 3, pattern 1	152
57. FIGURE 57	-	Typology 3, pattern 2	152
58. FIGURE 58	-	Typology 1, pattern 1	152
59. FIGURE 59	-	Typology 2, pattern 1	152
60. FIGURE 60	-	Typology 3, pattern 1	152
61. FIGURE 61	-	Typology 4, pattern 1, phase 1	153
62. FIGURE 62	-	Typology 4, pattern 1, phase 2	153
63. FIGURE 63	-	Distinction of households from families	155
64. FIGURE 64	-	Hierarchy of needs and wants in extension 10	160
65. FIGURE 65	-	Hierarchy of needs and wants in extension 10 compared to extension 6	160
66. FIGURE 66	-	Hierarchy of needs and wants in extension 6	160
<b>CHAPTER 7</b>			
67. FIGURE 67	-	Structure of chapter	169
68. FIGURE 68	-	Position of chapter within dissertation	169
<b>CHAPTER 8</b>			
69. FIGURE 69	-	Structure of chapter	175
70. FIGURE 70	-	Position of chapter within dissertation	175
71. FIGURE 71	-	Alternatives for the use of space	175

## LIST OF CHARTS

## CHAPTER 6, TRENDS

1. CHART 1a	-	Family size	148
2. CHART 1b	-	Family size	148
3. CHART 2a	-	Number of income sources	148
4. CHART 2b	-	Number of income sources	148
5. CHART 3a	-	Tenants	148
6. CHART 3b	-	Tenants	148
7. CHART 4a	-	Employment	148
8. CHART 4b	-	Employment	148
9. CHART 5a	-	Expenditure	148
10. CHART 5b	-	Expenditure	148
11. CHART 6a	-	Savings	148
12. CHART 6b	-	Savings	148
13. CHART 7a	-	Number of extensions	148
14. CHART 7b	-	Number of extensions	148
15. CHART 8a	-	Total addition size	149
16. CHART 8b	-	Total addition size	149
17. CHART 9a	-	Temporary addition size	149
18. CHART 9b	-	Temporary addition size	149
19. CHART 10a	-	Permanent addition size	149
20. CHART 10b	-	Permanent addition size	149
21. CHART 11a	-	Total coverage	149
22. CHART 11b	-	Total coverage	149
23. CHART 12a	-	Temporary addition coverage	149
24. CHART 12b	-	Temporary addition coverage	149
25. CHART 13a	-	Permanent addition coverage	149
26. CHART 13b	-	Permanent addition coverage	149
27. CHART 14a	-	Occupational density	150
28. CHART 14b	-	Occupational density	150
29. CHART 15a	-	Temporary additions	150
30. CHART 15b	-	Temporary additions	150
31. CHART 16a	-	Permanent additions	150
32. CHART 16b	-	Permanent additions	150
33. CHART 17a	-	Time taken between additions	150
34. CHART 17b	-	Time taken between additions	150
35. CHART 18a	-	Use of space within structures	150
36. CHART 18b	-	Use of space within structures	151
37. CHART 19a	-	Use of space of the erven	151
38. CHART 19b	-	Use of space of the erven	151
39. CHART 20a	-	Coverage of additions	151
40. CHART 20b	-	Coverage of additions	151
41. CHART 21a	-	Complexity in the use of space	151
42. CHART 21b	-	Complexity in the use of space	151
43. CHART 22a	-	Need for privacy	151
44. CHART 22b	-	Need for privacy	152

## CHAPTER 6, OVERALL PICTURE, SOCIO-ECONOMIC PROFILE

45. CHART 23a	-	Household structure	155
46. CHART 23b	-	Household structure	155
47. CHART 24a	-	Family status	156
48. CHART 24b	-	Family status	156
49. CHART 25a	-	Number of years resident	157
50. CHART 25b	-	Number of years resident	157
51. CHART 26a	-	Employment status quo	157
52. CHART 26b	-	Employment status quo	157
53. CHART 27a	-	Type of employment	157
54. CHART 27b	-	Type of employment	157
55. CHART 28a	-	Location of employment	158
56. CHART 28b	-	Location of employment	158
57. CHART 29a	-	Sources of income	158
58. CHART 29b	-	Sources of income	158
59. CHART 30a	-	Number of sources of income	159
60. CHART 30b	-	Number of sources of income	159
61. CHART 31a	-	Household expenses	159
62. CHART 31b	-	Household expenses	159

**CHAPTER 6, OVERALL PICTURE, BUILDING ACTIVITY PROFILE**

63. CHART 32a	-	Materials used to construct shacks	161
64. CHART 32b	-	Materials used to construct shacks	161
65. CHART 33a	-	Cost of materials	161
66. CHART 33b	-	Cost of materials	161
67. CHART 34a	-	Material supplier	162
68. CHART 34b	-	Material supplier	162
69. CHART 35a	-	Transportation of building materials	163
70. CHART 35b	-	Transportation of building materials	163
71. CHART 36a	-	Funding sources	163
72. CHART 36b	-	Funding sources	163
73. CHART 37a	-	The builder	164
74. CHART 37b	-	The builder	164

**CHAPTER 6, OVERALL PICTURE, LAND USE**

75. CHART 38a	-	Use of space within structures	165
76. CHART 38b	-	Use of space within structures	165
77. CHART 39a	-	Use of property	165
78. CHART 39b	-	Use of property	165

**CHAPTER 7**

79. CHART 40a	-	What is important in a house - internally	169
80. CHART 40b	-	What is important in a house - internally	169
81. CHART 41a	-	What is important in a house - externally	171
82. CHART 41b	-	What is important in a house - externally	171
83. CHART 42a	-	Better off than previous shelter	172
84. CHART 42b	-	Better off than previous shelter	172
85. CHART 43a	-	Better off than people living in the township	172
86. CHART 43b	-	Better off than people living in the township	172
87. CHART 44a	-	Supportive government?	173
88. CHART 44b	-	Supportive government?	173
89. CHART 45a	-	Preference of housing	173
90. CHART 45b	-	Preference of housing	173

## LIST OF MAPS

**CHAPTER 1**

1. MAP 1	-	Location of Mamelodi	9
2. MAP 2	-	Location of case study areas within Mamelodi	11
3. MAP 3	-	Extension 10	11
4. MAP 4	-	Extension 6	11

**CHAPTER 2**

5. MAP 5	-	Households interviewed in extension 10	16
6. MAP 6	-	Households interviewed in extension 6	16

**CHAPTER 3**

7. MAP 7	-	Initial provision of housing in extension 10	43
8. MAP 8	-	Initial provision of housing in extension 6	43
9. MAP 9	-	Changes over time in extension 10	44
10. MAP 10	-	Changes over time in extension 6	44

**LIST OF ABBREVIATIONS**

<b>NHF:</b>	National Housing Forum
<b>UF:</b>	Urban Foundation
<b>RDP:</b>	Reconstruction and Development Programme
<b>HWP:</b>	Housing White Paper
<b>NHP:SPHP:</b>	National Housing Policy: Supporting the People's Housing Process
<b>HUD:</b>	Housing and Development Agency

ABSTRACT

FROM TOP STRUCTURE TO HOME: INCREMENTAL GROWTH OF SUBSIDISED HOUSING IN MAMELODI

by

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Degree: Master of Applied Science in the Faculty of the Built Environment

The aims and objectives of the study is to inform the design and delivery of low income subsidised housing in order to ensure a better end product, and to develop a better understanding of:

- the construction process
- the spatial configuration and use of space
- the socio-economic factors that impact on the consolidation process

Most research on low-cost housing focuses on satisfaction and socio-economic issues and much criticism is anecdotal and not based on in-depth research. There is a need to understand how consolidation takes place - how construction takes place (builders, materials, funding), what form it takes, how space is used and which factors (socio-economic, spatial) impact on the process. The future housing process and product would also benefit from such qualitative research.

First background information of the case study areas were gathered for the methodology, questionnaires were prepared, sampling carried out and finally interviews were conducted. Thereafter, analysis of the information was undertaken to enable the presentation of results and conclusions.

The placing of the roof structures in Extension Ten has resulted in the inefficient use of space, whereas the placing of the water closets in Extension Six has not interfered with the use of space.

Non-consolidators in Extension Ten are negatively affected by the number and type of income sources, lack of savings and expenditure levels.

In Extension Six, although the number of income sources was greater, the ability of the families to consolidate was restricted by expenses, family sizes, and the inability to make much savings.

Rental activity appeared prominent in this category of non-consolidators.

In terms of consolidators in Extension Ten, the small family sizes, larger incomes, and greater abilities to save, assisted in the process of consolidation so much so, that the many expenses made had little or no effect on consolidation.

In Extension Six, the large family sizes, and many expenses didn't prevent consolidation from taking place. Large income sources and the ability to save to a greater degree, assisted.

Overall, in Extension Ten and Six a direct correlation exists between the use of building skills and consolidation, i.e. an increase in one results in an increase in the other and vice versa. The high cost of building materials in Extension Ten have impacted negatively on consolidation, whilst residents of Extension Six thought the cost of materials were reasonable and has resulted in less consolidation. The use of space within the structures and on the erven tends to increase in complexity with formality. The space occupied by the house also tends to increase with formality in both extensions. In Extension Six, the use of space within the structures increases in complexity with formality but the use of the erven does not.

The conclusions have implications for housing policy in terms of delivery and design of housing. The needs, priorities and aspirations of residents have been filtered through the housing process in the two case study areas to inform the provision of housing that better matches the context and lives of the residents.

**Keywords:** consolidation, low-income subsidised housing, space, spatial configuration

- Angel, S., Benjamin, S. 1976. **Seventeen Reasons why the squatter problem cannot be solved**. Ekistics. Pgs 20-26
- Austin, A., Biermann, S. 1998. **Guidelines for Human Settlement Planning and Design - The Red Book**. CSIR, Pretoria.
- Ballantyne, P. 2004. **Background on Mamelodi**. [http://www.oneworld.org/ecdpm/pubs/pmr10khumbane\\_gb.htm](http://www.oneworld.org/ecdpm/pubs/pmr10khumbane_gb.htm)
- Dewar, D., Ellis, G. 1979. **Low income HOUSING POLICY in South Africa**. Citadel Press, Lansdowne, Cape.
- Dewar, D., Andrew, P., Watson, V. 1981. **Low Income Housing Procurement**. Urban Problems Research Unit.
- Dewar, D. 1982. **Seven Potential Dangers in the 'New Approach' to low income housing provision**. Urban Problems Research Unit. University of Cape Town - Project Report.
- Dewar, D. 1982. **Alternative Strategies for Housing: The case for South Africa**. Urban Problems Research Unit. University of Cape Town.
- Eliasson, A. S., Hessel, A., Leonsson, A. 1998. **A Top-structure is Not a Home. Densification of Low-cost Housing with a Women User's Perspective**. Lund University. Lund Centre for Habitat Studies.
- Finlayson, K.A. 1975. **Housing Research: National**. National Building Research Institute. Paper presented at the Institute of S.A. Architects Housing Conference.
- Finlayson, K.A. 1978. **Squatting and the role of Informal Housing in incremental Growth and self-improvement**. National Building Research Institute of the CSIR.
- Gilbert, A., Gugler, J. 1982. **Cities, Poverty and Development - Urbanisation in the Third World: The Housing of the Urban Poor**. Cities, Poverty and Development. Pgs. 81-115.
- Goodall, B. 1987. **Dictionary of Human Geography**. Penguin
- Hart, T., Hardie, G.J. 1983. **Factors Motivating residential consolidation in selected South African self-help housing contexts**. National Institute for Personnel Research. Council for Scientific and Industrial Research.
- Hattingh & Horn. 1991. **Background on Mamelodi**. [http://www.odsf.co.za/hbe/south\\_africa.htm](http://www.odsf.co.za/hbe/south_africa.htm)
- Koepfel, B., Tuck-Primdahl, M. 1989. **US, UK. - Self-help Key in Housing Poor**. The Urban Edge Issues & Innovations, Vol. 13. No. 10. pgs 1-5.
- Lawson, T., Garrod, J. 2000. **The complete A-Z sociology handbook, second edition**.
- Mackay, C.J. 1996. **The Development of Housing Policy in South Africa in the Post Apartheid Period**. Housing Studies. Policy Review. Centre for Housing Research, Magee College, University of Ulster. Pgs. 131-146.
- Minty, M. 2002. **Background information on Mamelodi**. Pretoria Council.
- Napier, M. 1998. **Core Housing and Residents' Impacts. Personal Experiences of incremental growth in two South African settlements**. TWPR, 20 (4). Pgs. 391-417.
- Napier, M., Meiklejohn, C. 1997. **Core Housing and Incremental Growth - Is the Vision being Realised?** CSIR, Pretoria. Division of Building Technology.
- Rust, K. 2003. **No Shortcuts: South Africa's progress in implementing its housing policy, 1994 - 2002**
- Serageldin, I., Turner, John. F.C. 1972. **Transitional Housing: Vehicle for social change**. Spotlight. Modern Government. Pgs 23-28.
- Waldeck, J. L. 2002.
- Ward, P. M. 1982. **Self-Help Housing. A Critique**. London. Mansell Publishing Limited. Chapters 1, 2, 3.
1994. **White Paper on Reconstruction and Development** (No. 1954 of 1994)
1995. **South African Housing White Paper**. Department of Housing.
1996. **Constitution of the Republic of South Africa** (Act No. 108 of 1996)
1997. **Housing Act** (No. 107 of 1997)



1998. **National Housing Policy: Supporting the People's Housing Process.**

1999. **Housing for Gauteng, newsletter.** Issue no. 2, 1999

2000. **National Housing Code: User Friendly Guide**

# **CHAPTER 1**

## **INTRODUCTION**

# **CHAPTER 2**

## **METHODOLOGY**

# **CHAPTER 3**

## **LOW INCOME HOUSING DELIVERY AND CONSOLIDATION**

# **CHAPTER 4**

## **SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME**

# **CHAPTER 5**

## **CONSOLIDATION**

# **CHAPTER 6**

## **COMPARATIVE ANALYSIS**

# CHAPTER 7

## PERCEPTIONS AND PREFERENCES



# **CHAPTER 8**

## **CONCLUSION**

## 1. INTRODUCTION

This study has been carried out for the attainment of a master's degree in applied science from the Department of Town and Regional Planning, University of Pretoria. The field of study is low-income subsidised housing in Mamelodi and it is focused on how the design of housing (form), be they starter units or site and service, how the placing of the top structures have affected the use of space, and the socio-economic issues prevalent within the selected areas has influenced the process of consolidation.

**For the purpose of this study consolidation is seen as:** *the process of formalisation of core/self-help housing. It refers to the process where self-help settlements undergo an incremental physical transformation toward a formal house (Hart & Hardie, 1983).*

Two case studies, with differing housing provision, form the basis of this research, i.e. Mamelodi extension 6 was provided with a site and service scheme whilst Mamelodi extension 10 was provided with roof structures and services.

The structure of this chapter is as follows (refer to figure 1 below):

- This chapter begins by discussing the background to the problem in the local context. This section focuses on the housing environment inherited by the ANC government in 1994. It sets the scene for the motivation of this study.
- The aims and objectives are then highlighted and the statement of the problem is spelled out accompanied by the sub problems.
- The relevance of the study with its limitations is then presented, which motivate the need for a refocus on the qualitative rather than quantitative approaches.
- The scope of the study is set out.
- Finally, the definition of terms is listed followed by the structure of the rest of the report.

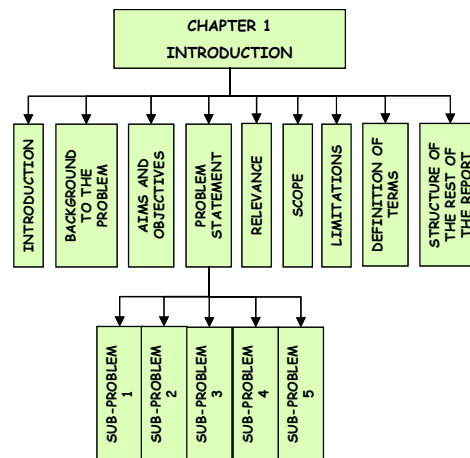


FIGURE 1: Structure of chapter

## 2. BACKGROUND TO THE PROBLEM

In 1994, the new government was faced with many severe problems inherited by the pre-democratic era. The policies and politics of this pre-democratic era, as stated within the National Housing Code: User Friendly Guide (2000), created a housing environment characterised by:

- **Housing backlog:** was estimated in 1990 as approximately 1,3 million units. By 1997, the housing backlog stood at 2.2 million. Despite the efforts made by government, the backlog continued to increase. As a result of population growth, the backlog figure is estimated to increase by 204 000 every year.
- **Lack of affordability:** Due to the high levels of unemployment and relatively low average wage levels, a large number of South Africans cannot afford to provide for their own housing needs independently. Approximately 80% of South African households appear to be without an income or earning up to R3500 per month (1996).
- **Fragmented housing policy and administrative systems:** The early 1990's were characteristic of a fragmented Housing Sector, which was inconsistently funded, lacked role definition and defined lines of accountability. Inappropriate laws and procedures inherited by apartheid needed to be amended or repealed as well.
- **Lack of capacity:** Due to the apartheid legacy, the Housing Sector also experienced a lack of capacity in terms of human resources and materials to provide housing fast.
- **Non-payment of housing loans and service payment boycotts:** Boycotts during the 1980's by communities resulted in many being unable or reluctant to pay for the bonds, rent and services.
- **Lack of end-user finance:** As a result of many reasons including the non-payment of home loans by the communities during the boycotts, lenders were reluctant to lend to low income families. This problem was exacerbated by redlining and discrimination, poorly designed credit instruments, and the lack of willingness of households to save.
- **Insufficient land:** Land identification, allocation and development was slow and complex, which resulted in insufficient land for housing development.
- **Inappropriate standards:** Infrastructure, service and housing standards were inappropriate to the needs

- of the low-income market. This resulted in difficulties in providing affordable housing.
- **Inappropriate standards:** Infrastructure, service and housing standards were inappropriate to the needs of the low-income market. This resulted in difficulties in providing affordable housing.
- **Different requirements between Provinces:** Different policy responses were needed in the different provinces as a result of unique circumstances in each case.
- **Special needs of women:** Demographic trends in South Africa show that women are poorer with less access to resources than any other groups. Special attention needs to be given to women in housing.
- **Inexperienced housing consumers:** Due to apartheid many people have never bought or rented a house. As a result, many inexperienced housing consumers make mistakes or fall prey to unscrupulous operators who steal their money.
- **A culture of building:** An inherent culture of building exists within many cultural groups in South Africa where households build their own homes via savings.
- **The Housing Sector as a contributor:** The Housing Sector has the potential to increase employment, individual wealth, encourage households to save, increase the demand for consumer goods and services, etc. If effective, it can contribute to the economy.

The severity of the problems displayed after apartheid appear daunting. However, this study will attempt to address the *culture of building*. This has come out as a way for households in the low-income bracket to build their own homes without the assistance of government. This study will explore this arena in two circumstances with the initial assistance of government, i.e. two different areas where two different types of housing have been provided. Details will be provided later on in this chapter and within chapter 2.

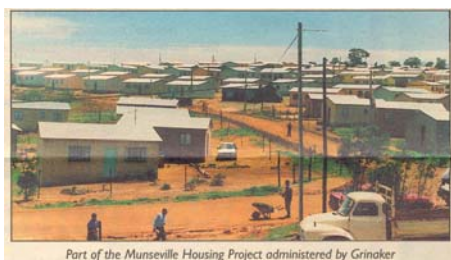
The study will also look at the appropriateness of housing provision:

- **Inappropriate standards:** previously (pre-democratic era) and presently, houses are built to high standards, which make it unaffordable for the low-income market (*lack of affordability*). This study will focus on two types of housing provision that would appear to reflect a more appropriate solution to increase affordability levels and the ability of households to consolidate,
- The different responses needed for different circumstances (*different requirements between provinces, special needs of women*): The uniqueness of each household will be displayed in an attempt to show the demand for a unique approach to housing, i.e. choice in the provision of housing is essential.

Government's response to the inherited environment was aimed at the *housing backlog* that developed over the 50 years of apartheid rule: Before the elections in June 1994, the African National Congress (ANC) government-in-waiting promised to build one million **houses** for low-income households within five years. This commitment, quantitatively a remarkable achievement, took six years to complete and today the periphery of South Africa's cities is covered in housing that has been erected over the past ten years.

Although the effort appeared to be successful in the number of units produced, problems emerged during the provision that began to challenge the initial objective. Amongst complaints, the major one was about the quality of houses being built. It is generally acknowledged that the need to deliver large numbers of houses within a short time span and with a limited budget has impacted negatively on the quality (*Rust, 2003*):

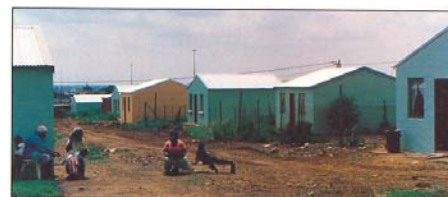
- only 30% of housing units produced complied with the standards imposed;
- there were reports of RDP houses that began to crack and crumble during floods (*Rust, 2003*); and
- the roofs were being blown off during storms (*Rust, 2003*);
- other complaints were of being generally located too far from centres of economic and social activity as well as being located on the urban periphery. (*Rust, 2003*);
- the repeated monofunctionality of the past became evident (*Finlayson, 1978*);
- investment was made in private spaces instead of public spaces;
- the design of units were still very limited (*Finlayson, 1978*):
  - the actual units built provided little choice for expansion;
  - the placing of the units was done arbitrarily.



Part of the Munseville Housing Project administered by Grinoker  
(*Housing for Gauteng, newsletter, issue no. 2, 1999*)



(*Housing for Gauteng, newsletter, issue no. 1, 1999*)



(*Housing for Gauteng, newsletter, issue no. 1, 1999*)

**Example 5**

The bricks used are already crumbling and externally porous  
(Waldeck, J. L., 2002).



(Waldeck, J. L., 2002)



(Waldeck, J. L., 2002)

**Example 1**

The pine door is not acceptable for external use and has essentially already failed  
The lintel detail above the windows and doors are not according to specification (Waldeck, J. L., 2002).

Three different types of brick, all different sizes, and two types of material were used on these houses:

Clay and cement bricks should not be used in the same wall due to differences in their coefficients of expansion and contraction.

Bricks of different sizes will cause a bonding problem especially where walls meet (corners, internal and external wall abutment)

The uneven roof is indicative of a low quality of workmanship (Waldeck, J. L., 2002).



(Waldeck, J. L., 2002)

Government strives to achieve two goals: eradicate the housing backlog and to provide the poor with proper houses. Government's attempts have revealed the impossible situation of trying to achieve both. DoH acknowledged in this regard in 1996: *'WE APPROACH MASS DELIVERY WITH A VERY REAL THREAT: THAT IN OUR CHASE OF THE QUANTITY, WE FALL SHORT ON THE QUALITY. IT WILL BE NO SOLACE AT ALL THAT WE CREATED OUR NEW GHETTOS DEMOCRATICALLY'* (Rust, 2003: 10).

The department took steps once again, but this time aimed at **protecting the integrity of the housing products** produced, i.e. a shift from quantity to quality. **Firstly**, norms and standards were introduced in the Housing Act of 1997. This time around these norms and standards would determine how the housing subsidy would be spent, i.e. the amount spent on land and services were reduced to allow more money to be spent on the construction of the housing unit. Previously more money was spent on the acquisition of land and services. In 2002, the **second** initiative was to extend the brief of the National Home Builders Registration Council (NHBRC) to include all houses into its warranty to ensure that all houses built were of good quality. The **third** step was where government placed more emphasis on the 'people's housing process' with the opinion that it often led to better quality homes in terms of size and finishes. In 2002, two more policy shifts were introduced: RDP houses would no longer be provided, and the focus would rather be on beneficiary responsibility where households would control the construction of their own homes.

However, this does not completely satisfy the Housing vision as stated within the Housing Act, 1997 (no. 107 of 1997):

1(iv) "...the establishment and maintenance of habitable, stable and sustainable public and private residential environments to ensure viable households and communities, in areas allowing convenient access to economic opportunities and to health, educational and social amenities, in which all citizens and permanent residents of the Republic will, on a progressive basis have access to:

- (a) permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and
- (b) potable water, adequate sanitary facilities and domestic energy supply."

The only aspects being satisfied in most cases is (b) and part of (a), i.e. secure tenure is provided. Therefore, problems persist. Although it is government's aim to develop final housing products, the actual product (called the top structure, instead of a house) was produced. Such a product has to grow incrementally because it does not address the needs of the residents in terms of size and space, etc. The focus back to quality (by government) was merely placed on the engineering quality of the structures produced with the involvement of beneficiaries, i.e. the house, with no mention about the environments created. The approach to the construction of the structures was also done 'with blinders on', i.e. the structures were built for the present context without consideration of the future. Presently houses are developed at a massive scale, placed randomly and no consideration is given to the expansion opportunities or consolidation of the initial product. This often hampers expansion possibilities by making it difficult and expensive. Internal and external privacy are not addressed either.

Many studies, especially Dewar, have indicated the importance of space on the quality of life especially of poor populations. Careful and informed design could have a major impact on the ability to consolidate and the quality of the end-product. Much international research has been done, especially on the process of consolidation, e.g. Turner, Gilbert and Gugler. Locally such research is conducted by Napier, Hart and Hardie, etc.

Now more than one million houses have been badly planned and are short of the quality target. These units are nevertheless improved incrementally by the residents that display space as a crucial component. This is an opportunity to study the process to inform large numbers of new houses to be built in the future. With this information government would be better enabled to provide an appropriate, sustainable form of housing that people can expand to their desired needs and would make optimal use of the limited resources to house more of the poor.

Most research on low-cost housing focuses on satisfaction and socio-economic issues and much criticism is anecdotal and not based on in-depth research. There is a need to understand how consolidation takes place - how construction takes place (builders, materials, funding), what form it takes, how space is used and which factors (socio-economic, spatial) impact on the process. The future housing process and product would also benefit from such information.

### 3. AIMS AND OBJECTIVES

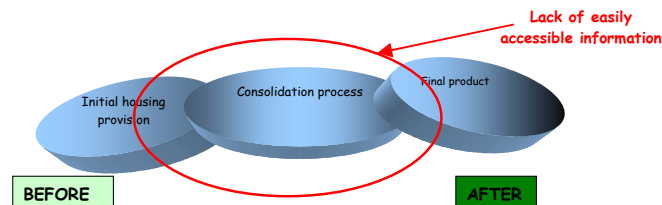


FIGURE 2: Research aims and objectives

Knowledge of what people were initially provided with, (BEFORE) is available. Knowledge of the existing houses is also easily accessible (AFTER). What is unknown, is **how** and **why** the final product looks the way it does. We also don't know the process followed and the **difficulties experienced**, by people that are still in the consolidation phase, to achieve that final product.

The aims and objectives of the study is to inform the design of low income subsidised housing in order to ensure a better end product, and to develop a better understanding of:

- **the construction process** (location and transport of material supplier, cost of materials, the builder, the time taken to construct the house/ extension, the cost of the builder, type of materials (permanent or temporary)
- **the spatial configuration and use of space** (the placing of the units/ extensions, the arrangement of space, the use of space on the erven, the use of space within the houses/ units)
- **the socio-economic factors that impact on the consolidation process** (the household structure, family structures, income, expenditure, employment, employment type, employment location).

### 4. THE PROBLEM STATEMENT

How does consolidation of low-income subsidised housing take place and how is this process influenced by spatial and socio-economic aspects in the case of Extension ten and Extension six in Mamelodi, Tshwane?

#### 4.1. THE SUB-PROBLEMS

##### Sub problem 1:

What were the original spatial configuration of housing provided and the process of delivery?

##### Sub problem 2:

How has the original spatial form of housing changed over time?

##### Sub problem 3:

What are the uses within the erven and structures today?

##### Sub problem 4:

What factors have impacted upon consolidation?

##### Sub problem 5:

What are the perceptions and levels of satisfaction of the residents?

### 5. RELEVANCE

A large number of houses have been constructed and many more planned since government's aim to construct one million houses within 5 years. However, the quality of these homes was in question.

This research could make an impact to future housing through achieving higher quality and appropriate housing by developing a better understanding of the process of incremental housing that residents undergo.

### 6. SCOPE

The scope of this study is on low income subsidised housing built after 1994. It covers the socio-economic profiles



of families residing in the case study areas, physical changes to the original product, the construction process, the current use, and the perceptions and levels of satisfaction of the residents and the efficiency of the use of space. Whilst consolidation can be defined as the number of units produced and the number of only permanent structures of produced, consolidation within this study will be defined as the production of permanent structures.

## 7. LIMITATIONS

The limitations of this study are as follows:

- Limited to two case studies
- Limited number of interviews with a focus on in-depth descriptive information rather than broad statistical representation.
- It does not question the housing delivery system, financial support, etc, but focuses on the actions of the residents toward consolidation.

## 8. DEFINITION OF TERMS

- Small areas within extensions have been selected for the study instead of the entire areas. The focus is on quality research and not quantities.
- Maps and drawings produced are not to scale.

**Consolidation:** the process of formalisation. Reaching a point of security that is brought about by making the house permanent/formal as opposed to informal. This permanency is achieved by making improvements to the house, extending, etc., with the use of permanent materials.

Consolidation refers to the process where self-help settlements undergo and incremental physical transformation. In the context of squatter settlements, it may include changes in conditions of tenure, changes in levels of service infrastructure, and the progressive upgrading of dwellings (*Hart & Hardie, 1983*).

**Housing delivery system:** the way in which housing is provided, e.g. in the form of mass housing or self-help housing. Housing can be provided via the local government, private institutions or housing associations.

**Housing:** In terms of this study housing will be defined not just as a unit but as shelter, improvement of living standards, improvement of the surrounding environment, access to housing credit, participation in the housing process, etc. Housing will be defined in terms of everything that is attached to process and the product. Much more emphasis will be placed on the product.

**Incremental:** A process that occurs in stages and eventually builds up to the end-product.

**RDP:** The Reconstruction and Development Programme (RDP) is a policy framework for integrated and coherent socio-economic progress. It seeks to mobilise all our people and our country's resources toward the final eradication of the results of apartheid. Its goal is to build a democratic, non-racial and non-sexist future and it represents a vision for the fundamental transformation of South Africa by:

- Developing strong and stable democratic institutions
- Ensuring representivity and participation
- Ensuring that our country becomes a fully democratic, non racial and non sexist society
- Creating a sustainable and environmentally friendly growth and development path (*The White Paper on Reconstruction and Development, No. 1954 of 1994*).

The Reconstruction and Development Programme is a developmental programme aimed at co-ordinating government's developmental efforts in terms of a common vision of reconstruction, development, growth, employment and redistribution (*National Housing Code - user friendly Guide, 2000*).

**Site and service:** Is the provision of a site with services (wet closet, sewerage, water). **Site and service** is the provision of a site with services such as sanitation, storm water drainage, lighting, electricity, drinking water, etc. The construction of the dwelling itself is left to the occupant (*Ward, 1982*).

**Roof structures:** Is the provision of a site with services and a roof structure. It is classified as a **non-habitable core** house, which has one or more of the major built components missing and therefore requires some input from residents before becoming habitable. These take the form of floor houses (slab only) and roof houses (normally a frame and roof)(*Ward, 1982*).

**Core Housing:** The provision of a core unit on a site with services. **Core housing** involves the construction of the basic structure with the intention that it be completed at a later stage. Completion is done by either the inhabitants or their direct agents. There are, however, further categories of core housing (*Ward, 1982*).

**Self-help:** The process of housing provision where recipients of housing build their own houses with the assistance of government in the initial stages. *'Self-help housing is the process where the people that are to be housed take*

responsibility for the planning, organisation, and implementation of particular tasks leading to the provision and maintenance of houses and residential infrastructure. Self-help housing implies the mobilization and self-management of various resources including time, personal savings, and individual and co-operative labour. These resources are consumed during the process. This process does not exclude the use of paid labour provided the contractor is organised by the self-help builder' (Hart & Hardie, 1983).

## 9. STRUCTURE OF THE REST OF THE REPORT

The methodology of the study is presented as chapter 2. The type of research undertaken is presented as the larger framework within which the study is scoped. The case study areas are introduced with brief descriptions, but prior to this, the criteria developed for the selection of the case study areas are illustrated. The sub-problems of the study are explained in terms of the data requirements, analysis and interpretation after which the types of data required are elaborated on. The acquisition of data involved interviewing residents of the areas. This, however, first required sampling to be done. The sampling method and process is explained in each area. The households selected for the interviews are represented on maps.

Chapter 3, Low income housing delivery and consolidation, serves as the theoretical framework for the basis for this research. It examines the origins of consolidation and the factors that affect consolidation.

Chapter 4 focuses on the case study areas. It provides the background to the process of housing provision, what the spatial configuration looked like and how it has changed since.

More in-depth investigation into the two case study areas is done in chapter 5. The focus of this chapter is on the socio-economic profiles of residents, the process of construction of the structures built, the changes over time, the uses of the erven, the uses of the structures and an analysis of privacy. Conclusions include the factors that affect consolidation between households in specific typologies.

Chapter 6 uses all the data and analysis presented in chapter 5 to develop trends, profiles of consolidators and non-consolidators, and most importantly, identifies the factors affecting consolidation.

Chapter 7 assesses the perceptions and priorities of residents of the two areas and comparisons are made.

Chapter 8 serves as the conclusion and provides guidance for the design and provision of housing.

Figure 3 indicates the different levels of analysis. Chapter 1, 2 and 3 provide the higher level framework and basis of the research. The focus is then moved onto the two case study areas in chapter 4. Chapter 5 analyses case study areas and within the case study areas, i.e. typologies developed within the case study areas and households. From this point, the level of analysis increases again to the comparative chapter, where comparisons are done at typology level and area level. Chapter 7 also displays comparisons at area level. The concluding chapter, chapter 8, brings the study back to the level initially started off with.

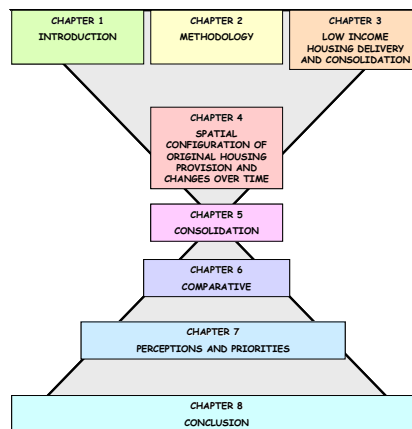


FIGURE 3: Structure of dissertation

A LEGEND HAS BEEN PROVIDED AT THE BACK OF THE DOCUMENT AND SHOULD BE REFERRED TO WHEN LOOKING AT THE VARIOUS DIAGRAMS. ANNEXURES HAVE ALSO BEEN OMITTED UPON REQUEST.

## 1. INTRODUCTION

This chapter describes the methodology pursued and defines the research process that was followed with reference to the two case studies selected.

The structure of the chapter appears as follows (refer to figure 4):

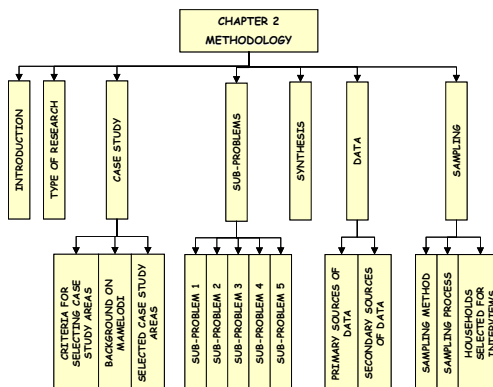


FIGURE 4: STRUCTURE OF CHAPTER

The type of research conducted is firstly discussed with the methods used, which sets the broader framework for the methodology.

Considering that the type of research is a case study, the next section elaborates on the case studies firstly by spelling out the criteria developed for the selection of the case studies before introducing the area within which the case studies exist and the specifics (location, size, date of establishment) of the case studies themselves.

A methodology is meant to describe the process followed in conducting the study, which requires a question/problem to be answered eventually. In order to answer the mentioned question/problem, it would have to be broken down into sub-problems, which will require information to be collected, analysed and presented in a manner that answers both the sub-problems and the main problem. As such the problem and sub-problems are presented with highlights on the synthesis that had been undertaken during the analysis of the data.

The information required is identified with the guidance of the sub-problems presented within the following section. The type of data is categorised twice, firstly into primary and secondary sources where the actual data required is listed and secondly into categories that inform the reader how the data will be captured, i.e. socio-economic profiles of residents, building activity, and land use is *primary data* that can be categorised as data that can be captured via *interviews and observations*. The data captured is then explained in terms of a timeline (from past to present) and the increase in focus and detail with the increase in time.

Part of the data capturing process required interviews and observations, which could not have been carried out without a strategic plan in place. Before these could be conducted, a questionnaire had to be developed and a sample selected. The following section details the sampling methods employed as well as the sampling process and selection. The households selected are presented in maps of the two areas with numbers corresponding with the presentation of data related to these households.

Within this dissertation, figure 5 indicates the present position of this chapter.

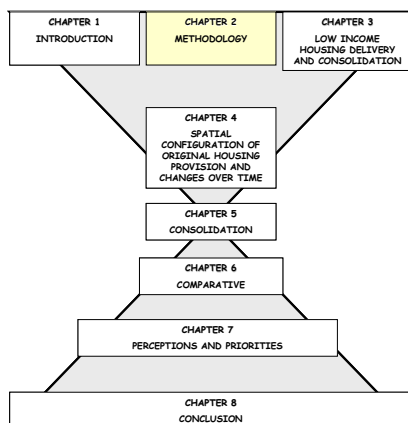


FIGURE 5: POSITION OF CHAPTER WITHIN DISSERTATION



## 2. TYPE OF RESEARCH

Within the broad framework of the study, the type of research conducted was a case study within which a combination of both qualitative and quantitative methods was employed.

**Case Study:** a detailed in-depth study of one group or event. The group or event is not necessarily representative of others of its kind, and case studies are sometimes used as preliminary pieces of research to generate hypothesis for subsequent research (Lawson & Garrod, 2000:28).

In this case, two case study areas were selected to demonstrate two purposes within the context of the form/type of housing provided. Firstly, to illustrate in-depth, detailed studies and secondly, to demonstrate the differences between one another.

The aspects focussed on, reflect qualitative research that does not only focus on housing aspects directly. It is meant to show the environment in which housing resides, the linkages this has with other aspects (spatial and socio-economic factors, etc.) and how these affect consolidation.

As mentioned above, both qualitative and quantitative research methods were used:

**Qualitative research methods** are defined as methods, which will result in mainly qualitative data. They include observation, participant observation and unstructured interviews. In using secondary data, the sociologist would be most likely to refer to personal documents (Lawson & Garrod, 2000:229).

For the purposes of this study, the qualitative methods included:

- Unstructured interviews conducted with relevant people that had background knowledge of Mamelodi Extension six and Extension ten consisting of general background knowledge and knowledge of the process of housing provision.
- During other interviews conducted with residents of the two areas, with the use of structured questionnaires, observation was also necessary. Certain aspects of the questionnaire required observation to be used in the acquisition of the correct data.

**Quantitative research methods** on the other hand are methods which will result in mainly quantitative data. They include social surveys and structured interviews (Lawson & Garrod, 2000:229).

Structured interviews were used for the collection of data from the residents of Mamelodi extension six and extension ten. These were made possible via a structured questionnaire.

Although the intention was to conduct qualitative research, the quantitative aspect of research could not be excluded. A combined effort was required for the purpose of answering the sub-problems posed, for example, the interview phase undertaken required the use of structured questionnaires and observations. The information required could not be gathered purely by just using the one or the other.

With the broader framework set out, the details of the methodology can be explained with the initial focus being on the case studies.

## 3. CASE STUDY

Two case study areas were selected with an emphasis on qualitative research and a desire to show the differences between the two areas. However, in order to ensure that comparisons could be made certain criteria had to be fulfilled:

### 3.1. CRITERIA FOR SELECTING CASE STUDY AREAS

The criteria used for the selection of the case studies encompass the following aspects, which will be elaborated on in the paragraphs to follow:

- Low income subsidised housing areas
- Differing types of housing delivery
- Period of residency (date of establishment until now)
- Accessibility (location, local informant, representative of area)
- Availability of data

**Firstly**, the selection of the areas had to be that of low-income subsidised housing provision by government considering that this is the focus of the study.

**Secondly**, the type of housing provision was a major consideration at play. In order to make a comparison of the design impacts on the level of consolidation in terms of the use of space, it was important to select two areas of differing housing types, i.e. site and service scheme and roof structures with services.

**Thirdly**, the age of these case studies had to be such that they reflected a significant change in structures over time. The time frame for such change had therefore been decided upon as being between five and ten years.

**Fourthly**, accessibility played a role in ensuring constant interaction with the case study areas at various levels, which was dependent on a number of factors. *Firstly*, the subject areas had to be located within a manageable travelling distance that ensured minimal travel. *Secondly*, a local informant was required to assist in the communication with the residents and to get approval from the community councils to conduct such a study in the areas. For safety reasons, entrance into the case study areas required the constant accompaniment of the local informant, the availability of which at times was poor. This required a quick response to conduct interviews when the availability of the

local informant was positive. *Thirdly*, during the interviewing stage, representatives of the specific areas had to accompany both the local informant and the interviewer to ensure accessibility into the resident's homes, transparency and the ease of communication between interviewer and interviewees. Such intense interactions were necessary in order to attain the appropriate level of detailed information required. Having case study areas close by and easily accessible ensured the ease of information flow.

**Lastly**, the availability of information (aerial photographs, background information, etc.) of the case study areas was also very important to the success of the study. Lack of such information would have cancelled out considering all of the above criteria. The supporting information was therefore crucial to the process.

The two case study areas selected were, therefore, within the confines of Mamelodi, i.e. Mamelodi extension 10 (roof structures and services) and Mamelodi extension 6 (site and service scheme). These areas are east of Pretoria and have been established for more or less ten years. In terms of the delivery of housing, there is a three-year difference between the two areas, i.e. delivery in extension 10 began in 1994 and in extension 6, in 1997. For more detailed information about the case study areas refer to the sections to follow and chapters 4 and 5. The context of the two case study areas has to be understood.

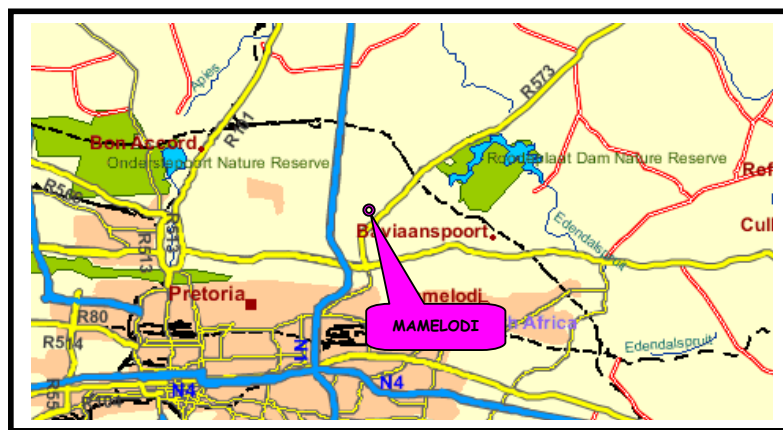
### 3.2. BACKGROUND ON MAMELODI

In the 1960's, African residential areas falling within the designated 'White group areas' were demolished. In Pretoria such areas included Mooiplaats, Schoolplaats, Bantule, Lady Selborne, Kilnerton, Eastwood, Newlands and Riverside. During this apartheid era, areas east (Mamelodi) and west (Atteridgeville) of Pretoria were built to accommodate a majority of the Black population. The Coloured population were accommodated in Eersterus, a former African cluster adjacent to Mamelodi that was redeveloped. Laudium was an Indian suburb situated in a south-westerly direction with a buffer of hills between them and Atteridgeville. Marabastad still remained the host for the remainder of the Indian population (*Hattingh & Horn, 1991*).

Mamelodi, established in 1945 to house black people, is an urban black residential area, 22km on the eastern side of central Pretoria with an estimated population of ±750 000 (*Central Statistics Service, 1995*). It is divided into three sectors, namely Mamelodi West, Mamelodi East and Stanza Bopape (*Ballantyne, P, 2004*).

In search of a cultural norm of black people a delegation from the Pretoria Council visited Botswana where rondavel huts were seen. As such, the first houses built in Mamelodi in 1947, were replicas of these huts. After much dissatisfaction displayed by the community, this 'lapa' plan was discontinued and replaced with four bedroom houses, more commonly known as 'match box' houses. Most of the residents of Mamelodi had been forcefully removed from mixed areas in Pretoria such as Lady Selbourne and Marabastad. 'As one study puts it "apartheid created Mamelodi as a bedroom community for black workers commuting to Pretoria"'. Residents, however, had to have special permits to live in Mamelodi (*Ballantyne, P, 2004*).

No housing took place in Mamelodi after the late 1960's until 1982 and was targeted at the high and middle income black people that were slowly emerging. The housing backlog had increased alarmingly by this stage, being fuelled by urban rural disparities and population growth from rural immigration. Some had received loans to build (part of policy to divide the black community), whilst others moving from the rural to urban areas in search of employment either stayed with relatives in the townships or in hostels. In order to deal with the increased population in these areas, those that were not awarded with loans, began to build back rooms (corrugated iron and other temporary materials) (*Ballantyne, P, 2004*).



MAP 1: LOCATION OF MAMELODI

Most black townships were faced with black on black violence in the late eighties and early nineties. However, Mamelodi was not affected by this. Its peaceful nature attracted more people to resettle in Mamelodi. The problem of housing therefore increased to far greater proportions (*Ballantyne, P, 2004*).

After the shock of the killing of 21 residents in 1986, the community (led by the Mamelodi Civic Association)

declared a rent and service charges boycott. The Council initially did not take the community seriously. In the late 1980's the Council eventually accepted the circumstances and began 'negotiations'. At this point, the arrears on taxes for services had reached alarming proportions and people were not able to pay back these backlogs once the boycotts were over. The agreement reached was to scrap the tax arrears in an attempt to encourage people to at least pay rent. Land was also made available for low income earners whilst those that were not allocated a piece of land, began to invade municipal land (*Ballantyne, P, 2004*).

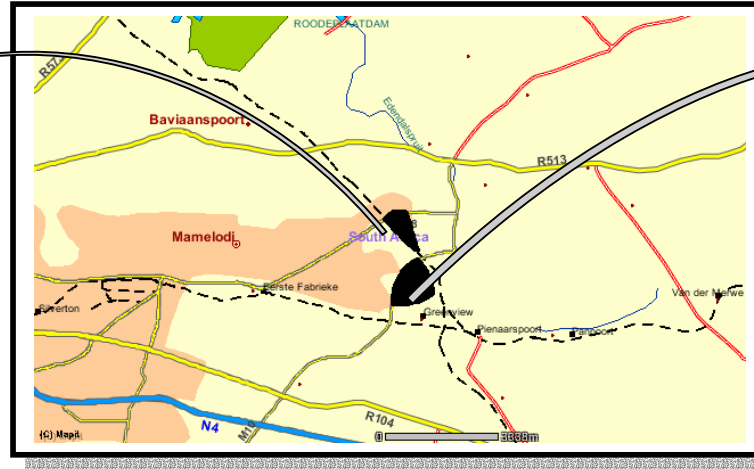
With the arrival of the new government, the housing backlog was more than 20 years old. As a result, not much could be done to change the existing situation. Joint action was taken, between the communities and the Pretoria Metropolitan and City Council in this regard (*Ballantyne, P, 2004*).

Apartheid has left behind unemployment rates in Mamelodi that stand at 60% and an estimated 150 000 people that live in informal settlements (*Ballantyne, P, 2004*). Extensions 10 and 6 have developed over a period of harsh reality. The present government has provided housing in these areas in the late 1990's where the status quo of these two areas are discussed in the following section.

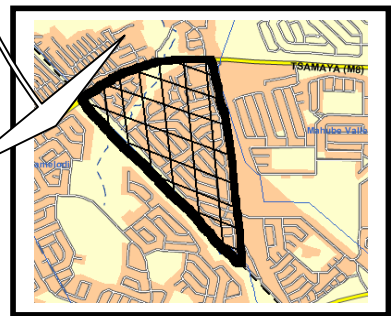
CHAPTER 2: METHODOLOGY

3.3. SELECTED CASE STUDY AREAS

3.3.1. LOCATION



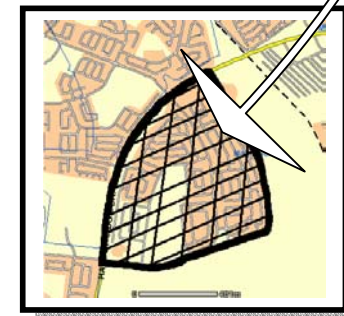
EXTENSION 10



MAP 3: EXTENSION 10

Extension ten has a triangular shape. The railway line forms the south western border with another major route (Tsamaya Road M8) forming its northern border. Mahube Valley and Mamelodi extension 7 is the eastern border.

EXTENSION 6



MAP 4: EXTENSION 6

Extension six also took the form of a triangle and was located along a major route (Hans Strydom Drive) through Mamelodi East. Hans Strydom Drive formed the western and north western border with a railway line to the east. Immediately south is land belonging to Spornet.

3.3.2. SIZE

It is approximately 22.22ha with a total of approximately 655 stands (Minty, 2002). Erven are approximately 208m<sup>2</sup> in size with dimensions of 16m x 13m.

Extension 6 is approximately 48.7ha. It has 1667 stands (Minty, 2002). The erven within this area are approximately 176m<sup>2</sup> in size (11m x 16m).

Housing provision began in 1994 and majority (provision of roof structures and services) was completed in 2000 (Minty, 2002).

Housing provision began in 1997 and majority (site and service) was completed in 1999 (Minty, 2002).

#### 4. SUB-PROBLEMS

##### 4.1. SUB PROBLEM 1:

###### **WHAT WERE THE ORIGINAL SPATIAL CONFIGURATION OF HOUSING PROVIDED AND THE PROCESS OF DELIVERY?**

The aim of this sub problem was firstly, to find out what type of housing was provided to each case study area and its spatial configuration. The data needed was therefore aerial photographs of the case study areas that reflected the original form of housing provided. Background information of the case study areas was also needed with specific relation to the process and provision of the type of housing. Such information needed to be acquired from interviews with relevant people. This sub-problem therefore required the use of primary (background information) and secondary data (aerial photographs, and layout plans).

The analysis of the data was also twofold: *firstly*, the data acquired from the interviews was cross-checked between one another and with the aerial photographs to ensure consistency. The data was then collated to answer this sub-problem. *Secondly*, a process of tracing the building footprints from the aerial photographs was conducted. The completed product was a 2D representation of the spatial configuration of the original provision of housing.

##### 4.2. SUB PROBLEM 2:

###### **HOW HAS THE ORIGINAL SPATIAL FORM OF HOUSING CHANGED OVER TIME?**

Once the original form of housing provided in each area had been captured, further analysis was required. The aim of this was to determine how the structures and their spatial configuration had changed since being built. The data needed had to address the following aspects: **firstly** the physical changes over time that looks at how the original structures had changed, and **secondly** the building activities related to this. These two aspects have sub issues related to them. The physical changes required determining how the structure had changed in configuration, use of materials (temporary and permanent), size, and height. It also focused on the placing of the new buildings, how the space in front of the structures were used, how the space at the back of erf was used, changes in erf dimensions, and perimeter fencing.

Such information was gathered from the interpretation and tracing of the new building footprints from the aerial photographs, interviews with the residents, and observation. The information was presented in groupings, i.e. the typologies that were developed. Comparisons were made between each household in their specific typologies and between each of the typologies.

##### 4.3. SUB PROBLEM 3:

###### **WHAT ARE THE USES WITHIN THE ERVEN AND STRUCTURES TODAY?**

###### **Phase 1:**

The aim of this sub problem was to examine the use of space of the erven. This had implications for the placing of structures and the amount of space needed in front and behind the structures. In order to do this, the analysis of the erven and their usage was necessary. With that in mind, activities such as gardening, rental housing, commercial activity, services, agriculture, and parking areas were closely looked at, not only in terms of the variety of activities but also in terms of the actual positioning of such activities in relation to the erf. Such data were acquired through the questionnaires and via observation.

The data had been analysed using excel spreadsheets and were presented in terms of the typologies that were developed. Comparisons were made within each typology, as well as between typologies.

###### **Phase 2:**

In order to fill gaps in information gathering (due to the absence of head of households, which didn't allow for the completion of the interviews, etc.) a second phase was conducted. It allowed for the cross-checking of the information gathered.

##### 4.4. SUB PROBLEM 4:

###### **WHAT FACTORS HAVE IMPACTED UPON CONSOLIDATION?**

The intention of this sub-problem was to extract the factors that have influenced consolidation in both areas through the analysis and synthesis of all the information gathered through the interviews and observation.

The intention was to develop a profile of both the structures and the residents because of the influences of one upon the other and of both upon the process of consolidation. It is important to understand the background of the people housed in order to better understand the decisions that they made in relation to the extensions to their homes. Such factors at play were family size, income levels, the use of space etc. The data needed was acquired through the questionnaires that were developed (primary data). The questionnaires are included as

Annexure A1 and A2. The factors that affect consolidation have been analysed between households in the respective typologies and have been presented to answer questions of affordability, the products produced, the process followed, the use of space on the erven and within the structures, and the public/private interface. It has also been presented at the end of the comparative chapter where a more detailed effort is made.

##### 4.5. SUB PROBLEM 5:

###### **WHAT ARE THE PERCEPTIONS AND LEVELS OF SATISFACTION OF THE RESIDENTS?**

An important distinguishing factor between the two study areas and the type of housing provision is the level of satisfaction of the residents and their perceptions. The aim is to determine how happy people are with being provided with roof structures compared to that of site and service schemes or vice versa.



The data needed for this sub-problem was with the residents of the two areas. The data was acquired through interviews and the use of the questionnaires developed.

## 5. SYNTHESIS

At various points in the analysis and answering of the sub-problems, data from across the various sub-problems were used, i.e. a mixture of information was used.

## 6. DATA

There are two types of data acquired for this study, i.e. primary and secondary data. Primary data is acquired directly from the source whilst secondary data is data that is already captured in some form, e.g. maps, etc.

### 6.1. PRIMARY SOURCES OF DATA

- a. Background information on the case study areas;
- b. Socio-economic profiles of the residents (family size, employment and income, expenditure, etc.);
- c. Building activity (how many structures they built, the materials used, the cost of materials, the transport of the materials, who constructed them, etc.);
- d. The land use and use of space (denotes how the residents make use of their erven and the space within their homes);
- e. Qualitative profile and background (period of occupation, how the residents feel about their new homes compared to the previous one, do they feel supported by government, how do they value a home in terms of internal and external characteristics, etc.)

#### 6.1.1. BACKGROUND INFORMATION

The background information of the case study areas selected had to be gathered and interpreted. The parameters of this information included the development of Mamelodi, the history of the formation of the study areas within Mamelodi, the type of housing provision within each area, the process of housing provision, and the problems and other issues associated with it. Gathering of the background information required an informed process of interviews with relevant people (people that had sound knowledge of the area) as well as internet searches. Two such people from the Pretoria Council were selected for the interviews, which were conducted on separate occasions. The information gathered via this process was merely captured and used in the dissertation where appropriate (refer to sub-problems).

#### 6.1.2. INTERVIEWS AND OBSERVATIONS

This was a more intense exercise of narrowing down to a concise set of questions in the form of a *questionnaire* aimed at extracting the necessary and vital information (displayed as numbers b. to e. above), required to adequately satisfy the expectations of the derived sub-problems. The availability of the contact person, representative of the area being visited, and residents determined the number of visits conducted within the timeframe.

It became necessary to test out the prepared generic questionnaires in order to determine their applicability and appropriateness. Initially it was tested in the first case study area (extension 10) upon which changes were made to better align the questioning to the uniqueness of the area in which it was applied. Such incremental changes to the questionnaire were made along the way during the interviewing process to ensure that the maximum and appropriate information could be captured. Due to the uniqueness of both areas, the questionnaire did call for the inclusion of one or more questions in the second area, extension 6.

### 6.2. SECONDARY SOURCES OF DATA

- a. aerial photographs, and
- b. layout plans.

#### 6.2.1. AERIAL PHOTOGRAPHS AND LAYOUT PLANS

The aerial photography purchased from AZUR represented Mamelodi extension 10 and 6 in 1999/2000. The photographs were acquired for the extraction of the initial provision of housing and the most recent state of settlement in the form of building footprints. The intention was to compare the structures that had existed from the initial stage of housing provision to the present state (depending on the availability of up-to-date aerial photographs). This gave a clear representation of the change of the physical form of the structures over time.

The formal (permanent structures), informal structures (temporary) and the development till 1999/2000 could be viewed from these aerial photographs. The formal structures were distinguishable from the informal ones merely by the regularity in shape and smoothness of the lines of the building footprints. The temporary structures also appeared multi-toned in comparison with a building footprint that appeared to have a rougher edge.

The capturing of the data from these photographs involved a process of tracing the built form and presenting them as diagrams. It **firstly** entailed the extraction of the type of housing provided by government.

The **second** involved the extraction of the structures built thereafter by the residents. Therefore, a comparison between the initial provision until the year 1999/2000 can be made to note the progress, or lack thereof, made by the residents. The capturing of this data also reflected the spatial configuration of the layouts. The layout plans of the two study areas assisted where the interpretation of boundary lines and fences weren't clear on the aerial photographs. The aerial photographs also served as a cross check for information gathered via the interview process with the residents.

The layout plans of the two study areas assisted where the interpretation of boundary lines and fences weren't clear on the aerial photographs. The aerial photographs also served as a cross check for information gathered via the interview process with the residents.

6.3. TIMELINE AND INCREASED FOCUS OF DATA

The data required for this study has been clearly defined into three categories, i.e. background information and layout plans, aerial photographs, and interviews and observations. Such data, if presented in the order of acquisition seemed to be representative of a timeline and increasing focus: the *background information* reflects that of the initial provision of housing in the two study areas and the movements of residents into these areas. This information dated back to between 1994 and 1997. The *layout plans* gathered were reflective of the period before housing provision could be implemented, whilst the aerial photographs illustrated the most recent of the areas, thereby representative of changes since the date of occupation until the year 2000. Lastly, interviews and observations enabled the gathering of information that reflected the process carried through, i.e. consolidation phase that resulted in the present situation. Therefore, this type of data not only presents the consolidation process but also the present status of the residents, their homes, and their erven. This data is therefore representative of 2003 and the period between 1994 and 2003. The movement was therefore from the past to the present:

	AGE OF DATA	DATA	SYNTHESIS OF DATA PROVIDES INFORMATION:
↑ PAST TO PRESENT	2003	Interviews and observations	<i>Between 1994 - 2003 &amp; 2003</i>
	1999 & 2000	Aerial Photographs	<i>1999 &amp; 2000</i>
	1994/1997	Background information and layout plans	<i>1994/1997</i>

FIGURE 6: Synthesis of data

The increasing focus from the study areas (background information and layout plans); to the overall housing structures and erven (aerial photographs); and finally down to the details of the residents, their homes, and their erven (interviews and observations) can be seen. With an increase in focus there was also an increase in detail.

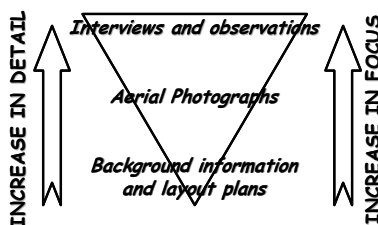


FIGURE 7: Focus and detail

7. SAMPLING

7.1. SAMPLING METHOD

Three sampling methods had been employed in this study, namely purposive sampling, random sampling, and stratified sampling.

**Purposive sampling:** (subjective or hunch sampling), in which samples thought to be typical of the population as a whole are chosen, usually for convenience, arbitrarily and subjectively by the researcher (Goodall, 1987: 420). In the case of this study, sample areas within each extension were selected. A large enough area was selected, in both cases, to be representative of the entire extension/s.

**Random sampling:** a way of choosing a smaller number of 'subjects' from a larger population, with each member of the population having an equal chance of being chosen, through the use of an unbiased selection method. Each subject in the population is given a number and then the sample is chosen by a random method. The sample is usually generated using random number tables, though picking names from a hat would also be effective. The benefit of using a random method is that it usually generates a group which is representative of the population as a whole (Lawson & Garrod, 2000:232).

Random sampling was used to identify the number of households to be interviewed. Within extension 10 the number of households decided upon to interview was fifteen and within extension 6, twelve. It was originally decided that each area would have the same number of households interviewed, but as a result of the typologies developed (discussed below), the number of households interviewed within extension 6 appeared sufficient to be representative of the area and the typologies developed.

**Stratified sampling:** a form of sampling in which the *survey population* is first divided into mutually exclusive groups and then a *sample* is drawn from each, the size of the sample in each being proportionate to the number of members

of that group in the survey population. For example, a survey of a college in which there were 2000 students, equally divided between males and females, might be conducted by drawing a simple random sample of 100 male and 100 female students. However, if the students were drawn from three distinct and very different neighbourhoods, in the proportion of 1000 students from neighbourhood A, 800 from neighbourhood B and 200 from neighbourhood C, the students could first be divided into three groups, A, B and C, reflecting their home neighbourhood. A sample could then be drawn from each group, with 100 from A, 80 from B and 20 from C, with equal numbers of male and female students in each, assuming that each group had a roughly equal balance of males and females. This arrangement is likely to be more *representative* than a *simple random sample* (Lawson & Garrod, 2000:276).

Typologies were developed, to represent the mutually exclusive groups necessary for stratified sampling. Samples were then selected from these typologies. Within typology 10, three typologies were developed (refer to 5.3.), which allowed for the number of households decided upon to be split between the three typologies, i.e. five households per typology. Four typologies had been developed within extension 6 (refer to 5.4.). This allowed for three households to be interviewed for each typology.

The households selected were, therefore, dependent on the typologies developed and the number of households to be interviewed per typology. This required a site visit to identify the households to be interviewed.

## 7.2. SAMPLING PROCESS

Upon being satisfied with the appropriateness of the questionnaire, the process of interviewing was determined by the uniqueness of each area. The aim was to interview between ten and fifteen households within each area. This total was based on the premise of categorisations (of the types of structures). The categorisations were meant to be representative of the incremental stages of growth of the structures from the provision of the housing until now and were directly derived from the type of housing delivery that took place in each extension. They are therefore not generic categorisations but are representative of the specific area. The households selected in both areas can be seen in the following:

### 7.2.1. SAMPLING IN EXTENSION 10

Extension 10 was provided with roof structures and services. The total number of stands was 655, of which 15 were selected for the interviewing phase. It was clear from the site visit that all roof structures were in certain phases of development. This made the categorisation possible, which reflected a gradual progression to a complete home. Therefore, by examining the different phases, the encouraging and inhibiting factors that lead to a completed home could be pin-pointed.

- **Typology 1:** a roof structure with no permanent additions, i.e. looks the same as when provided by government,
- **Typology 2:** a roof structure with permanent additions, but is an incomplete structure, and
- **Typology 3:** a completely enclosed roof structure.

The placing of the structures on the erven was also examined. Fifteen interviews were decided upon, i.e. five of each typology. The process of interviews involved driving through the streets and identifying suitable structures with available household members.

### 7.2.2. SAMPLING IN EXTENSION 6

Extension 6 was a site and service scheme with 1667 number of stands. 12 were selected for the interviewing phase. The criteria for categorisation differed in this case. The absence of the provision of a top structure by government meant that, in terms of the phases of development, one would have two, i.e. toilets with shacks, and the completed home. People in the phase of constructing permanent homes were not available for comment; therefore, another criterion had to be added to extract other information of importance, i.e. the location of the structures on the erven:

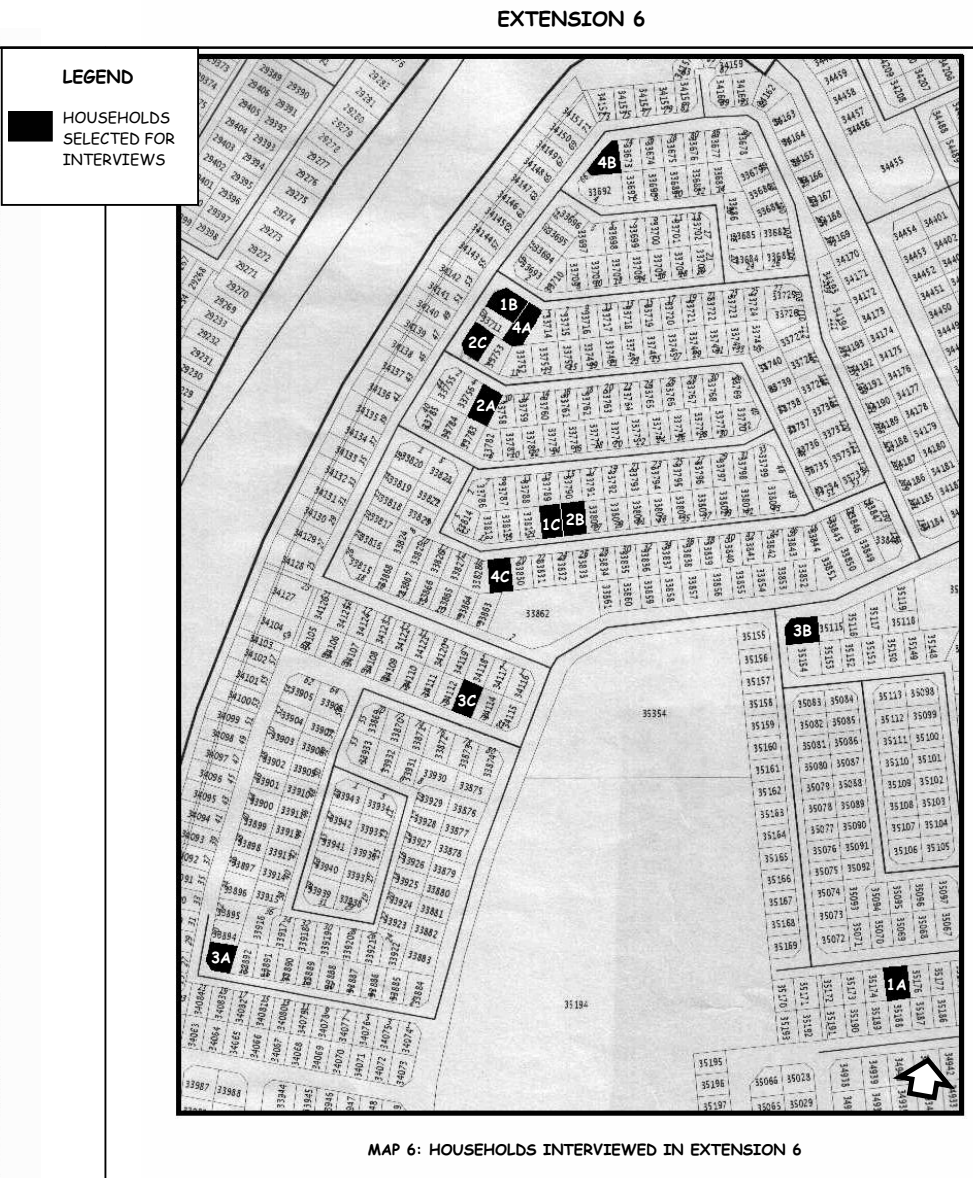
- **Typology 1** represents structures that have been positioned at the back of the erf.
- **Typology 2** is representative of structures placed at the side of the erf and
- **Typology 3** is characterised by structures placed at the front of the erf.
- The final, **typology (4)**, reflects complete houses.

The toilet and shack phase was therefore broken up into three categories. Three interviews of each typology were conducted, totalling twelve interviews with the same process as mentioned above in extension 10.



CHAPTER 2: METHODOLOGY

7.3. HOUSEHOLDS SELECTED FOR INTERVIEWS



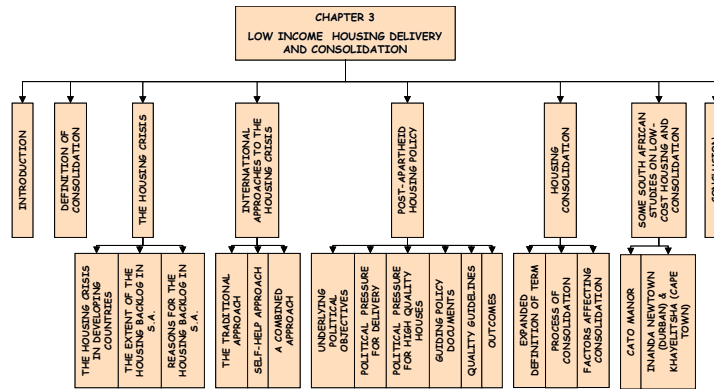
NOTE: The households have been numbered according to their typologies and correspond to the presentation of data in following chapters for purposes of consistency.



**1. INTRODUCTION**

This research is based on consolidation, as such; the following chapter serves as the theoretical framework of international and local research and experience in consolidation. The theoretical framework will aim to answer questions listed below:

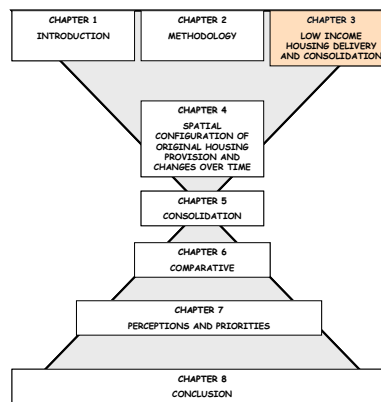
- What is consolidation?
- What are the origins of consolidation?
- What is the status (type of housing provided, problems, etc.) and background of housing in South Africa?
- How does consolidation fit within the context of South Africa?
- What are the factors that affect consolidation?



**FIGURE 8: STRUCTURE OF CHAPTER**

This theoretical framework firstly defines consolidation (refer to figure 8). It is necessary to understand the background of housing in both international and local contexts, as well as consolidation and its origins. As a result, the housing crisis is presented followed by the traditional and self-help approaches, (discussed at great lengths within international and local contexts), detailing the advantages and disadvantages of both, and finally illustrating the implementation of these two approaches, in both international and South African contexts. The South African housing environment is expanded upon in terms of policy, legislation, and the background to housing from 1994 until 2004 (Post-apartheid Housing Policy).

Consolidation and its influencing factors are further discussed. The last section illustrates studies that have been done in the field of consolidation in South Africa upon which this research is largely based.



**FIGURE 9: POSITION OF CHAPTER WITHIN DISSERTATION**

Figure 9 illustrates the exact position of this chapter within the broader framework of the dissertation.

**2. DEFINITION OF CONSOLIDATION**

*'The word consolidation is used to describe the development of the initial house towards completion either in extent, finish, or level of servicing. Consolidation is most commonly used in the discussion of informal settlements to describe the gradual improvement of housing from impermanent shack dwellings to permanent, conventional houses'* (Napier, 1998).

**3. THE HOUSING CRISIS**

**3.1. THE HOUSING CRISIS IN DEVELOPING COUNTRIES**

The housing crisis in developing countries is caused by aspects such as the process of urbanisation, migration, high birth rates, increasing population growth, poverty, unemployment, insufficient resources, and the inability of governments to deal with this problem on their own (South African Housing White Paper, 1995). People migrate to urban areas in search of employment, and upon arrival, find themselves homeless and jobless. Consequentially, squatter settlements develop because of the low rates of formal housing delivery that have to cope with providing for the naturally



increasing population growth as well as for the migrating population. The renting out of backyard shacks in low-income housing areas also begins to proliferate. This aggravates the issues of poverty, unemployment, and housing where the resources that are already at its minimum, need to be spread over a broader spectrum of people.

### 3.2. THE EXTENT OF THE HOUSING BACKLOG IN S.A.

In South Africa, the estimated backlog in 1995 was 1.5 million units, estimated to increase by 178 000 units per annum (*South African Housing White Paper, 1995*). Two years later (1997) the National Housing Department estimated the backlog at 2.2 million with an increase of 204 000 every year (*National Housing Code: User Friendly Guide, 2000*). The difference in the backlog estimation with a mere two years apart indicates the severity of the problem and the consistent increase despite efforts made by government to rectify the imbalances of the pre-democratic era.

The physical consequences of this were reflected in overcrowding, squatter settlements and increasing land invasions in urban areas, and poor access to services in rural areas. Socially and politically, this backlog contributes toward individual and communal insecurity and frustration, as well as high levels of instability and criminality (*South African Housing White Paper, 1995*).

### 3.3. REASONS FOR THE HOUSING BACKLOG IN S.A.

The housing environment inherited by South Africa after democracy is characteristic of policies and political turbulence of the period of apartheid where geographic segmentation of living areas was done according to race and class. Housing for the non-white residents was planned and built great distances away from facilities, services and work opportunities. The damaging effects of the illogical and fragmented policy of apartheid are physically visible in urban and rural areas in the dislocation of society.

In 1995, the Housing White Paper stated that although there were no accurate statistics, many households (in formally or informally housed areas) did not have access to social-cultural amenities within the neighbourhoods (schools, health care facilities, parks, etc). According to the South African Labour Development and Research Unit, 1994, a quarter of all functionally urban households did not have access to a piped potable water supply, whilst approximately half of the population had no access to electricity. The status quo of sanitation provision reflected 48% of all households with no access to flush toilets or ventilated improved pit latrines, 16% of all households had no access to any type of sanitation system compared to rural households (85% had some form of sanitation), and approximately 49% of farm workers relied on the veld.

According to the Housing White Paper of 1995 South Africa was faced with a relatively small formal housing stock, and decreasing rates of formal and informal housing delivery that have resulted in a large number of households seeking refuge in informal settlements, backyard shacks and in the overcrowded conditions in existing formal housing. Part of the existing housing stock required upgrading attention to meet the minimum standards of accommodation. Coupled with the housing shortfall and status quo, increasing pressure is felt by the escalating population growth rate and urbanisation rate that demand more housing.

South Africa is also plagued with a declining GDP and large-scale unemployment in the formal sector of the economy. Therefore, unemployment is set to increase even further. This has two impacts, i.e. it reduces affordability levels of households even further which contributes to the negative impacts on the investment made toward housing, and it diminishes Government's resource ability to assist the poor and unemployed. Affordability is a limitation felt by both government and the poor (*South African Housing White Paper, 1995*).

Constraints to resolving South Africa's housing crisis lay within the traditional system of housing delivery imposed by the pre-democratic era.

## 4. INTERNATIONAL APPROACHES TO THE HOUSING BACKLOG

### 4.1. THE TRADITIONAL APPROACH

#### 4.1.1. BASIC ASSUMPTIONS

There have been many different approaches to address the housing backlog, one of which is the traditional approach, also known as the modern, formal, or conventional approach. In order to know where to begin to attempt to resolve the abnormalities of the pre-democratic era and to realise the importance and origins of the incremental approach, it is essential to understand the traditional approach.

The traditional approach is identified by Angel and Benjamin (1976) as the **technological transfer**, where modifications of solutions to housing in the *developed world* are used for the *application in the developing world*. In the case of the developing world, problems regarding the scale and affordability of the approaches were important. The large housing backlogs required approaches aimed at housing many in as short a period as possible. Coupled with this are the increasing poverty and unemployment levels that require affordability to be a major consideration when housing is provided. The traditional approach was financed by the State (National Housing Fund) with the construction initiated, administered and controlled by government agencies. All the housing that was constructed had to comply with the standards and provisions of the Housing Code. This Housing Code laid down standardised production systems and nationally uniform standards, which resulted in the use of standardised building materials (*Dewar, 1982*).

The conventional approach of housing was identified as the provision of mass housing schemes where the homes

produced were of high quality (*Finlayson, 1978*). The focus of this approach was on producing modern, complete homes, where emphasis was on the speed of delivery and the number of units produced. Because of aiming for such homes, large contracts utilising industrialised, capital-intensive techniques were used (*Dewar, 1982*). However, the number of units produced was compromised by government's need to produce high quality, complete homes. All the investment was focussed on the unit. The result was that of a limited number of high quality homes being produced, insufficient to meet the needs of the large number of homeless people. Consequently, the backlog continued to increase despite the efforts made.

#### 4.1.2. DISADVANTAGES

The traditional approach to the housing problem is crowded by myths, principles and beliefs that are essentially the obstacles to the housing solution. Before discussing the failures of the traditional approach, it is pertinent to understand the attitude that was cultured against the squatters by such myths. From perception, it can be surmised that the failure of the traditional approach stems indirectly from the attitude that was stressed toward the squatter settlements. Many researchers have identified such myths. Some are characterised as technical and professional whilst others relate to the middle class and elite values. One such researcher, Mangin (1967) identified these myths. The first was that settlements were **chaotic and unorganized** (*Ward, 1982*). Settlements have indeed shown that they have an organised way of managing their own particular situations by means of establishing community organisations. These community organisations, stated by Finlayson (1975), undertake the necessary procedures and requirements essential to ensure the satisfaction of the community members that invest their time in their community. Settlements are therefore not chaotic or disorganised.

It was also perceived by the elite that the **social organisation of settlements conformed to the 'rural peasant village reconstructed in the city'** (*Ward, 1982*). Whilst this perception might be true in respect of some areas, there is a simple explanation for this type of organisational behaviour, which is simply that households are used to living their lives in this manner. Residents of settlements are generally people from the rural areas that moved to the city in search of employment opportunities. Upon arrival to the city, these rural dwellers were forced to settle in informal settlements because of the housing shortage, unemployment and little or no income. The lifestyle of a rural area does not disappear upon arrival to the city. The lifestyles of the settlers are therefore quite fixed. The third myth was that squatter and rural settlements are an **economic drain** on the nation (*Ward, 1982*). Fourthly, **social pathologies** such as crime, delinquency, prostitution and drug addiction were perceived to exist in such settlements (*Ward, 1982*). Such pathologies may or may not exist, but this remains to be proven. The following myths were that **squatters do not participate in city life**, are **poorly educated**, and were the **breeding grounds of radical political activities** (*Ward, 1982*). It was feared that people within squatter areas would join together and take what is rightfully theirs, i.e. the right to live where they pleased, to be a bigger part of the city life, to be recognised and respected, to be unrestricted. Because of these fears, drastic measures were taken to prevent this take-over. The two solutions were to prevent migration via legislation; and the second required the eradication and resettlement of the population in housing projects (*Ward, 1982*). People would therefore not rebel because they would receive benefits from being moved into new homes.

However, experiences with settlements by other researchers have proved most of these myths to be incorrect. For example, Mangin had experienced settlements and their activities in Peru where it was found that people lived in areas of the city before they began to invade further areas in an organized and shrewd manner. Even social pathologies such as crime, prostitution and delinquency were low, the internal structure of these settlements was clearly laid out, and there were mostly nuclear families. Attitudes of households toward the future were generally very optimistic. In cases such as Peru, the government had assisted in improving the physical structure of the settlements, over time via interventions, which included the installation of services with a mixture of self-help and mutual aid at household level. Such interventions by government in settlements demonstrate the need for interventions and assistance from government over time as opposed to the once off provision of housing practiced by South Africa and other developing countries. It was also evident that most households had regular employment (*Ward, 1982*). It is therefore apparent that this attitude was founded on face value perceptions. This attitude had led to further problems where misconceptions were made.

Central in all these myths to follow is the actual attitude toward squatters. Within this, there are many different myths. Firstly, the poor people are seen as **less mature, less experienced, and less responsible, less organised and less reliable**. Therefore, their problems must be solved for them (*Angel & Benjamin, 1976*). The poor have been treated in a condescending manner. This perception of them will dissipate simply by attempting to understand them; their history and the dynamics at play in their lives that affect their choices/decisions and behaviours. Further, in the conventional banking world, the poor are seen as **bad security risks**. They have little resources to hold as collateral, low savings and frequent debts, and they are unreliable in making regular payments. The poor therefore, need a financing system to meet their needs - small amounts, for long periods, and secured by the house itself (*Angel & Benjamin, 1976*). The attitudes of the banks also need to change.

The modern equivalent to charity is welfare. People become dependent on the government and in doing so lose their self-respect and self-reliance. Many feel that it is much more advantageous to remain charitable rather than face the demands and rights of the poor. This charitable attitude discourages the poor from organising into communities that could take effective action (*Angel & Benjamin, 1976*). In the eyes of those other than the poor, charity is seen as something good, but in this circumstance, it is an act of betrayal and deception. The ultimate aim viewed, is to

prevent the poor from realising the rights that they have, by sweetening them up with rewards.

It is further perceived of the middle-class that *squatters are untidy, dirty, and disorderly*. The solution sought was for removal without considering the reasons behind the situation. Squatter areas look the way they do because construction is continuously taking place. Looking at this debate in context: the middle class have solid structures/homes to live in, therefore, the smaller issues become a concern, i.e. untidiness, disorderly, etc. For a poor family, a roof over their heads is of vital importance compared to being tidy, etc. A lack of funds also means that the intermediate phase (construction) lasts much longer than those that can afford it. Moreover, shelter is in short supply and the consequence of removal of squatters will result in a net loss in housing at a large expenditure of money.

Although squatter settlements are negatively perceived, they serve a purpose that must be recognised. A guarantee that their homes would not be destroyed would spark some investment in the homes. Nevertheless, this guarantee cannot be given if the law is upheld. Providing these illegal occupants with the same privileges as law-abiding citizens was seen to be an insult to the very principle of law. This will inevitably lead to further law breaking. However, if the squatters are expected to respect the law, then the law must be changed to respect the circumstances in which these squatters find themselves. Squatters also have a traditional view of land ownership. They believe that people have the right to land they use, and by use, ownership is established. Because of land scarcity and the majority being landless, the government cannot protect their unused land from trespassers (*Angel & Benjamin, 1976*).

Further failures of the traditional approach lie in the definition of housing. It was merely seen as the provision of a unit/s, where the housing problem would be solved once enough units were provided. The developmental role inherent in housing was not seen. This role encompassed:

- Having the overall aims of fostering human development and improving the quality of life,
- It must be moulded by the overriding and fundamental developmental realities of South African society.

As a result of ignoring its developmental role, development realities were not clearly defined, which led to incorrectly defined policy objectives. The actions taken, which were based on short term perceptions of the problem; i.e. the shortage of units, were therefore inappropriate (*Dewar & Ellis, 1979*).

People are of the opinion that enough technology plus time and money will result in the 'modern solution' to low-income housing (*Angel & Benjamin, 1976*). However, is this the answer? New technologies are always fascinating but its application needs to be contemplated intensely beforehand. Is technology the answer? Is it really required? Is it appropriate? The answers to these questions can simply be answered by asking a few more questions: what is the end-result that we are aiming for? What is required to achieve it? Who are we providing for? Who are going to be affected? How can we help? These questions will narrow down what the actual approach should encompass. Instead, the desire to test or apply a new technology becomes very tempting. As a result, temptation wins, and instead of identifying the more appropriate approach, an inappropriate new, untested approach is used. Needs are mismatched, people are dissatisfied, the new technology becomes a failure, and inevitably the people who are supposed to be helped actually become the ones to blame for the failure. What we are left with are these modern homes with construction costs that put low-cost housing out of reach of the poor, unless of course these modern construction methods are supported heavily by subsidies. Housing needs to be an informed process.

However, the fixation on modernity is not strictly bound to the desire to use high standards and high standard materials. Amongst the broader spectrum of issues linked to 'modernity' is the aesthetic desire to produce finished products. Government feels the need to provide complete homes. The lack of provision of complete homes is felt to reflect badly on government. In reality though, communities take shape incrementally over long periods, but the needs of the people for shelter is immediate (*Angel & Benjamin, 1976*). They therefore need immediate basic shelter, which can be improved on later (expandable). Nevertheless, because of this need to provide complete homes, we find that the approach taken consumes a lot of time in which planning is done - time in which people remain homeless, shelter-less. The poor cannot wait for years of planning. Immediate action is required.

The myth of **professionalism** is also prevalent here. Most of the squatters in the Third World build their shelters on their own but this method is not accepted simply because professionals are not involved. There are two aspects related to this. Firstly, the professionals are poorly trained to deal with housing people in the developing countries, considering majority were trained in the developed world. In addition, even if they were adequately trained, there are not enough of them to go around. There are other fields of concern apart from housing and the volume of problems being experienced is increasing at a rate faster than professionals are qualifying (*Angel & Benjamin, 1976*).

The final myth stems from the **responsibilities within government**. Everyone in the government has well defined responsibilities and cannot overstep its authority. Low-income housing falls outside everybody's jurisdiction. Therefore, nobody wants to take responsibility for the housing problem. There also tends to be an extreme overlap of responsibilities, which creates further complications (*Angel & Benjamin, 1976*).

Although this traditional approach had the advantage of fitting in well with the aspirations of the elite middle class it **failed to recognise the realities** of the people they are providing for (*Angel & Benjamin, 1976*). Because of this approach, the needs of beneficiaries are misinterpreted and the scarce available resources are used poorly. The needs and expectations of the people trying to acquire adequate shelter were not being met. They were not satisfied and the backlog continued to build up. The social pathologies associated with this became aggravated, e.g. crime.

Many, many more results that are consequential became unravelled. People were housed in homes that they could not afford, they were housed in areas that were quite a distance from their place of work, and the facilities and services were inadequate. The environments produced were therefore monotonous, boring and wasteful. It was wasteful in terms of the natural resources that were being used for the conventional approach. People living in such areas become impoverished and restricted. This often leads to crime. With the increasing backlog, people were becoming more frustrated. Increasing problems of poverty, inequality and unemployment were growing. People were also becoming aware of the fact that housing was not contributing to the solution of the problems (*Dewar & Ellis, 1979*).

The myths are never-ending. The point of views projected from different researchers reflect the beginning of an understanding, and the realization of exactly what is required to assist people in low income housing. Essentially, what is called for is a change in attitude considering that the squatter problem is not going away (*Angel & Benjamin, 1976*).

#### 4.1.3. EXAMPLES

The examples gathered are meant to be representative of cases where the traditional approach was applied. The outcomes, in this case, denote negative outcomes, which also contribute to, and form part of the **disadvantages** of the approach.

##### A. Failure of the Traditional Approach

In the response to the need for housing for the low-income category of people, some parts of the world tended to adopt the provision of high-rise buildings. With limited resources in mind, the provision of housing needed to be cheap to ensure the procurement of as many units as possible. There is also a perception that there is insufficient land in cities and that squatters are making things worse. These buildings have been perceived to offer savings on land by increasing densities and savings on construction by using modern methods. All these assumptions were proven incorrect. The actual problem of land scarcity lies in making land available at an acceptable price (*Angel & Benjamin, 1976*). Further, studies have shown that building densities of multi-storey towers are the same when compared to three and four storey buildings. Maintenance costs of such towers far exceed the maintenance costs of low buildings. In Third World countries it is found that costs are higher because of the import of equipment and materials, the high level of skills and precision needed, and the extensive use of capital (often foreign sources). These lead to social costs because smaller units will be built. People will experience a further loss of contacts, small business opportunities and manufacturing work that could be done if families were close to the ground (*Angel & Benjamin, 1976*). One can therefore, scratch out the high-rise alternative, because the perceived benefits were in fact disadvantageous. Apart from proving that these benefits were incorrectly assumed, other drawbacks restrict people even further.

In connection with this, we find that large projects were also perceived to have benefits of savings because of repetition, shorter planning and construction time, buying materials in bulk, and industrialisation. Again, the result was not cheaper housing. Small projects are seen as more successful as opposed to large projects that require high management and maintenance costs, high administration and organisation costs, as well as the costs of inexperienced management in developing countries. Large projects also tend to deteriorate quicker because of vandalism. Small projects involve small groups of houses each owned and built by one or several families and are better kept, liked and cared for (*Angel & Benjamin, 1976*). The reason for this is that beneficiaries were part of the construction process of homes. The beneficiaries played a significant part in putting a roof over their heads and therefore earned the ownership rights to their home. In essence, being part of the process made the residents feel as if an achievement was made that was vitally important to their lives. A part of the residents became entrenched in the houses and thereby characterised the homes in a way that set it apart from the rest. Beneficiaries were allowed to build for their own particular requirements and their traditional family structure, maintained. These kinds of developments often improve over time (*Angel & Benjamin, 1976*).

As mentioned previously, the focus in South African housing was and remains on the speed of delivery, the number of units that could be delivered, and on modern, high quality homes. High building standards and standardised building materials characterised the focus on **physical standards** rather than on **performance standards**. Such houses put housing out of the reach of the poor in terms of affordability. A limited number of people were involved in the development of the housing areas which resulted in sterile, monotonous areas and in comparison to older areas, proved to be of inferior environmental performance.

The conventional approach was a uniform line approach where there were limited housing choices, context and environmental diversity (*Finlayson, 1978*). It did not allow for flexibility, change or choice. Taking into consideration the diversity of people and the contexts that they live in, it would require the housing approach to be flexible enough to accommodate change. There were also often long delays in getting projects off the ground even when funding was available (*Dewar & Ellis, 1979*). Other problems encompassed the scale of the housing and services backlog, and the rapid growth in housing demand. This remains an immense task for future housing (*South African Housing White Paper, 1995*).

#### 4.1. SELF-HELP APPROACH

*'Self-help housing is the process where the people that are to be housed take responsibility for the planning, organisation, and implementation of particular tasks leading to the provision and maintenance of houses and residential infrastructure. Self-help housing implies the mobilization and self-management of various resources including time, personal savings, and individual and co-operative labour. These resources are consumed during the process. This process does not exclude the use of paid labour provided the contractor is organised by the self-help builder'*



(Hart & Hardie, 1983).

Self-help may involve individual and group inputs and corresponds to a system of production, financing, and maintenance in which a significant part is organised and carried out by that particular group or individual. It usually involves the invasion into functions that are the responsibility of the public or private sector, but who are either unwilling or unable to carry them out. Two levels of self-help are identified. The first level refers to the specific and unrelated actions in which an individual or group take partial responsibility for organising and carrying through the installation of a particular work, building and financing their homes, services and maintaining an object. The second level is where a group may involve itself in several actions integrated vertically and aimed at transforming the local social and economic structure in a dramatic way. An example would be a group that not only constructs dwellings but also produces the basic materials such as bricks, tiles, cement, etc (Ward, 1982).

The origin of the self-help approach stems from the inadequacies of the conventional approach. **Self-reliant technology** is the reliance on traditional methods of people to build for themselves. It is used widely by squatters but was not acknowledged as an acceptable solution because it did not conform to the elite values of having neat and tidy environments, modern homes constructed with high standards, having a professional involved and approve of such development, etc (Angel & Benjamin, 1976).

In South Africa, previous models that involved the devolution of decision-making were avoided. However, eventually in the late 1980's, progressive housing strategies were taken seriously, where the people's potential to become involved creatively and personally in the housing process was acknowledged. It was thought that government should take on a **facilitative role** as opposed to its role as **provider**. The approaches taken thereafter permitted residents only the level of participation that suited the professionals and officials. Before the change of government in South Africa, certain types of self-help were attempted. Among them were site and service schemes, core housing schemes and upgrading of informal settlements (Napier, 1998).

The search for alternative approaches to Black housing was conducted in parallel to the growing advocacy of various forms of self-help housing. There were also many contributions made on the benefits to be gained from harnessing the participation of those seeking housing. Mangin and Turner began to champion the unrecognised resourcefulness that characterised the urban poor (Hart & Hardie, 1983).

These were the principles upon which the incremental approach was based:

- People can manage their own housing requirement and improve their living requirements over time;
- Authorities can make use of the existing community decision-making and back-up institutions to assist the community;
- People are better able to determine what their priorities are in respect of what they can afford;
- People's involvement in decision-making increases the level of satisfaction with the housing policy;
- People's needs and requirements change over time;
- Housing provision through the incremental approach is much cheaper than through the conventional approach because there is capitalisation of the homeowner's labour, and the use of localised materials, which are non-standardised (Dewar, Andrew & Watson, 1981).

Internationally, the 'principle' of self-help was seen as a priori positive, taking into consideration that housing was produced and that it was assumed that it lead to greater independence. It was therefore proposed that it should be the basis of a solution of the housing problem as well as other social problems (Ward, 1982). Internationally, it was argued that funds should be redirected toward infrastructure, the provision of construction materials and technical advice, and the regularization of tenure. This was seen as a method to ensure that a wider proportion of people were accommodated and their participation and investment in housing stimulated. Housing policies took into consideration the needs, priorities and behaviour of squatters. Hybrid alternatives of self-help were proposed: site and service schemes and core units (Ward, 1982). Although stereotypes persisted, squatter upgrading and self-help became actively or implicitly accepted strategies in the many Third World housing agencies and governments (Hart & Hardie, 1983).

In South Africa, there were two reasons why self-help was accepted in the previous government. Firstly, because of the success of projects implemented under a non-government organization, government was persuaded to allow participation. Secondly, aspects of self-help were used by government because of the pressure to change and with inadequate resources that make full provision unfeasible. So there was a gradual acceptance of this progressive approach. From 1994, a housing subsidy was introduced for people earning less than R800 a month. They were entitled to a subsidy of R15 000. It was a small grant, and it was recognized as such with the acknowledgement that further resources would be required. The governments' role would remain as **enabler** and not **provider**. With this in mind, the private sector was encouraged to contribute to low-income housing projects. This subsidy scheme favoured width (the broad availability of assistance) over depth (the delivery of an adequate product). As a result of the rising building and infrastructure costs, developers began to provide smaller homes, or even incomplete homes. The size of these homes ranged from 10 square meters to 30 square meters. The alternative was to allow beneficiaries to use this subsidy to build for themselves. In this way homes could be built to the required size with the amount of savings made. Government has set out to put in place support mechanisms for this approach (Napier, 1998).

There are a number of different kinds of self-help approaches. In a study conducted in U.S.A in 1969, where the



surveying and performance of self-help and mutual-help programmes were evaluated, archetypes of self-help approaches were identified.

- Firstly, there is *independent self-help*. This kind of self-help is carried out individually without external sponsorship, supervision or financial support except as solicited by the self-helper himself. Everything is done by the individual.
- The second type is *Organised Self-and Mutual-Help*. This kind of self-help is sponsored or supervised or supported or all three by agents other than the participant. Mutual help refers to working by a group in any or all phases of the process for the benefit of the individuals or the group. Beneficiaries enter a programme and go through a pre-construction orientation and training period. Thereafter construction takes place and occupancy. Upon occupancy, title and mortgage is transferred to the homeowner. A contractor can also initiate mutual-help. The developer may provide his services for a fee of ten percent or more of the construction costs. He may offer land or the opportunity of land acquisition, building materials at a reduced cost, house design, financing arrangements, and all the arrangements necessary for securing building permits. The technical process of construction is carried out in a variety of ways (Ward, 1982).
- *Employed Self-help* is where people participate in a program initiated and run by one or more organisations. Participants are employed for the construction of houses and a salary is paid (Ward, 1982).

Self-help housing was implemented in South Africa prior to being accepted. It took the format of site and service schemes, core housing schemes, and informal settlement upgrading.

- *Site and service* is the provision of a site with services such as sanitation, storm water drainage, lighting, electricity, drinking water, etc. The construction of the dwelling itself is left to the occupant.
- *Core housing* involves the construction of the basic structure with the intention that it be completed at a later stage. Completion is done by either the inhabitants or their direct agents. There are, however, further categories of core housing.
- A *habitable core house* contains all the main built components and is therefore habitable from the outset. It can take the form of a shell house, a small core house or a multi-storey core house (Napier & Meiklejohn, 1997).
- A *non-habitable core* house has one or more of the major built components missing and therefore requires some input from residents before becoming habitable. These take the form of floor houses (slab only) and roof houses (normally a frame and roof) (Napier & Meiklejohn, 1997).
- *Service cores* are either built as freestanding elements or attached to core houses. The provision of water and sanitation and other services may be included, sometimes services are provided at a point on the site. One may also find combinations of these types (Napier & Meiklejohn, 1997).
- *Upgrading* involved the improvement of already established settlements. Improvements included the provision of services such as water borne sewerage, tarred roads, electricity, etc.

However, for the research proposed, the only self-help types considered are the site and service and the non-habitable core (roof structure). The two areas selected for the case studies are an example of a site and service scheme and a 'roof structure' scheme.

#### 4.2.1. ADVANTAGES

There are many reasons why, internationally, governments began to appreciate the common sense behind the self-help approach. **Firstly**, it offered an alternative housing policy considering the failure of countries to obtain industrial and economic development over the 1960's. **Secondly**, attention had been drawn to the basic contradictions of the production process, which lead to further contradictions. The adoption and sponsorship of self-help offered a partial let-out that would benefit a larger proportion of the urban population than ever before without major increases in the proportion of investment allocated to housing. **Thirdly**, the serious consideration given to associated concepts such as '*intermediate technology*' and the emphasis on qualities of local-scale production and organisation created an environment suitable for self-help policies to grow. **Fourthly**, self-help has acquired some very powerful backers, such as the World Bank. **Lastly**, the growing scarcity of low-priced land, the rising costs of materials, the growing low-income populations and declining opportunities for access to the productive employment sector, together with the failure of traditional approaches to development, all demanded that greater institutional commitment now be undertaken (Ward, 1982).

Self-help allows a much larger population to be catered for. It also offers advantages of greater social control that is achieved through the organisation and the dissemination of benefits (Ward, 1982). The value of self-help to the user is greater than centrally provided housing. There are three benefits of this aspect. **Firstly**, the users are better able to mould the housing stock to their own requirements and priorities: there is a direct correlation between the mismatch of needs and the housing stock with increasing centralisation of housing systems. **Secondly**, the user can tie up expenditure on housing to income more closely. **Thirdly**, the user can utilise housing more effectively to improve his financial and credit rating. In this way, he/she has the ability to improve his/her condition by subletting and raising capital to develop further. One also finds that user satisfaction is greater under the self-help systems than under publicly provided housing. When people are responsible for their own homes, the imperfections become tolerable. Another benefit is the resultant improvement in environmental activity. '*Greater freedom results in greater richness of the physical fabric*' (Dewar, 1982).

In 1968, the Housing and Development Agency (HUD) in America made a grant available to conduct a study of

self-help in construction. A report in this regard was produced by Turner and The Organisation for Social and Technical Innovation (OSTI). In this report, economic arguments were put forward in support of self-help and mutual aid in housing. **Firstly**, it was thought that self-helpers could reduce construction costs through unpaid labour ('sweat equity') (Dewar, 1982) and unpaid management ('enterprise equity'). **Secondly**, it was thought that through self-help methods voluntary unpaid labour time could be converted into 'capital', where the use value of the home also has an exchange value on the market. **Thirdly**, it was thought that self-help could reduce monthly cash payments to banks over the mortgage period; and **finally**, that mutual aid could transfer a large part of the public costs of housing for low-income people to the 'private sector' (Ward, 1982). The concept of networks as opposed to hierarchies also gave a reason why savings should be accrued in the self-help systems. Hierarchies imply centrally administered systems of supply, whereas networks imply many routes to reach the same destination. Hierarchies of supply meant increased costs, whilst the self-help system is dependent upon a network of supplies that reduce costs (Dewar, 1982).

A self-build approach was conducted in Germany and the opinions of the participants in the process were taken into consideration. **Firstly**, many believe that self-build is the only way in which they can own a home. Taking into account the scarcity of housing, the only way to find a home would be to build one on your own. The self-build option provided that for these people. **Secondly**, the approach also offered them the ability to live undisturbed and without paying rent. **Thirdly**, they needed more space. The **fourth** reason is that it provides something for the children, not only for the present state of affairs, but also for years to come. One or two of their children might choose to raise families in that home in the future. It also provides the owners with a secure home in their old age. The **fifth** reason is that many prefer to live in the country and to have a higher quality house (Ward, 1982). Not only is the countryside visually more appealing but it also provides a safer environment in terms of fresher air. There are also fewer cars around to endanger the safety of children as compared to the city center as well as all the accompanying dangers associated with the city.

People were very happy with the social relations that developed through group work as well as the skills acquired and the experience of successfully achieving something (Ward, 1982). The building process is much more than just building a house. The most important thing to the participants is the education achieved the personal accomplishment, and social cohesion (Ward, 1982).

There were more lessons to be learned from the Third World. Turner and Serageldin (1972) conducted some research in Peru where self-help was introduced and a financing system was put in place to assist lower-income households to build their own erven, or to complete unfinished houses. Turner learned that the economy of their own forms of self-help were based on the capacity and freedom of individuals and small groups to make their own decisions, more than on their capacity to do manual work. In comparison to the self-help approach, the conventional approach proposed homes that people could not afford. Others that could afford them were persuaded to make use of heavy subsidies that they do not need. Turner summarised the two approaches: '**SELF-HELP - NEVER BEFORE DID SO MANY DO SO MUCH WITH SO LITTLE; CONVENTIONAL APPROACH - NEVER BEFORE WAS SO LITTLE DONE FOR SO MANY WITH SO MUCH**' (Ward, 1982:102).

#### 4.2.2. DISADVANTAGES

##### A. South African

In South Africa, even after the inclusion of the self-help approach with the change in policy with the new government in 1994, concerns were stressed. Government could not deal with the low-income housing problem on its own. The government required assistance and the utilization of the private sector finance seemed to be the answer. This, however, created more speculation. It was thought that the governments' responsibility to house would be passed over to the private sector. This brought to light two other aspects. **Firstly**, if responsibility were passed on to the private sector, the problem of affordability would be aggravated. The private sector is profit driven and as a result, people will be taken advantage of. **Secondly**, if the approach is properly applied, it should lead to a better environment. Governments' involvement is therefore required. It should not cut back on expenditure, but should rather attempt to redirect resources and energies to carry out the public functions well (Dewar, 1982).

Another critique of self-help was that it was seen as a **substitute** for the conventional approach and that there was a perceived 'benefit' to using the approach, which was to reduce the state expenditure when this is exactly what it wanted to avoid. If it were to simply replace the conventional approach then there would be no 'choice' provided. It would become as impositionary as the conventional approach (Dewar, 1982). The self-help approach would merely be a 'new name' for the conventional approach. It would be seen as a restrictive state measure that was designed to force people to use their own energies and time to provide housing for themselves at a cheaper rate. As such, the approach would obviously be rejected. The self-help approach must therefore be seen as a supplement to the conventional approach and not a replacement.

The state also attempts to implement self-help through the existing financial, decision-making and control institutions. Due to the confusion between self-help and self-build, self-help was interpreted as being just another form of physical delivery implemented through the same centralised institutional framework as the conventional approach. If self-help were to be implemented under the present financial, decision-making and control mechanisms and institutions, the result would be chaotic. The reason for this is that the self-help approach hinges on the decentralisation of decision-making, down to the local level. Large-scale implementation of the principle of self-help will therefore depend on innovative institutional design. The financial, decision-making and control institutions therefore need to reflect the

approach of concern (Dewar, 1982). Self-help is also seen to contribute toward the growing centralisation and oligopolization in the building material industry. The centralisation of the building material industry is essentially taking place because of the high building standards, which reject the use of localised building materials. These materials could be adapted through locally specific techniques to produce adequate levels of shelter. If the standards remained the same and the self-help approach were accepted, then it would be a different way to use the same materials; this would bring little cost benefits. The success of self-help rests on the use of locally produced building materials (Dewar, 1982).

The phasing out of subsidies sees a further danger. It was believed in the previous policy that the subsidy system should be phased out. This assumes that the poor can afford to pay rates and taxes, etc. There are, however, people at the very bottom that cannot afford to get access to housing. Removal of the subsidy system will trap these people in a cycle of poverty and exploitation. There is a second argument that subsidies are abused. The problem experienced here is that subsidies are attached to the unit and not to the family. This can be solved through the provision of grants to families, based on the family income. It could also be provided for the purpose of construction of the unit. In this way, the focus of providing the grants will be strictly for the improvement of the homes. There is also a danger that subsidisation may affect the return on investment from the private sector (Dewar, 1982). With subsidies in place, the private sector will not be able to compete, and will therefore lose interest. This will result in the investment made in low-income housing.

Another precondition for the successful implementation of the self-help approach is the security of tenure. People will not invest in their homes if they think that their homes are going to be removed (Dewar, 1982). Therefore, in order for people to consolidate, they will need some sort of assurance that their investments made in their homes will not be demolished or removed. At present people are living in fear of removal. If this fear can be removed then people can make the next step toward making their current home their permanent place of residence. Investment toward housing will thus increase. Security of tenure is thus vital toward motivating people to invest in their homes.

Not enough consideration is given to location. Housing costs would be cheaper if inhabitants were closer to their place of work, shopping areas, transport facilities, etc. The self-help approach should also be conducted in small packages on small parcels of land (Dewar, 1982). If savings can be made on other daily requirements, then the investment in housing will increase. The choice of location is also very important when considering housing people.

#### **B. International**

Traditional society built their homes for their 'use value'. With the introduction of capitalism, this 'use value' changed to 'exchange value'. The tendency became that of transforming any production into commodity production for exchange in the market. From this an interesting theory was put forward for the reasoning of the use of self-help approaches in capitalistic society. It was proposed that self-help emerged as a policy solution to housing problems when there was a crisis in capitalism. The major reason for self-help housing began in the late 1950s and early 1960s with the crisis of urban development in the Third World. From analyses it was brought to light, that government in most countries have intervened in situations related to workers' housing only in crises such as epidemics, economic depression and political unrest. In Latin America, self-help housing and site and service schemes were used as tools of crisis management. The aim was to contain existing or potential social movements in the squatter population. Self-help housing was used as an inexpensive policy for housing provision without changes in resource allocation or structural changes (Ward, 1982).

In America, self-help housing emerged against a background of the poor having certain choices because of the limited supply of public housing and being forced out of the market. People could double up with families, move into dilapidated housing of lower rent, and pay a higher percentage of incomes on housing. People could also build homes through self-help where land prices were low and building regulations were less strict or were not enforced. The final option was to organize collectively to put pressure on the dominating power group for basic changes in the prevailing system of housing provision, or they could just disrupt the housing system (Ward, 1982).

Organised self-help was promoted in Pennsylvania during the Depression of the 1930s. In the context of very high unemployment, social unrest broke out. The unemployed had also set up mass organizations to take action. The Local State agencies, instead, reacted by initiating a few examples of self-help projects in an attempt to reduce social strife. In the 1940s, Puerto Rico experienced major restructuring of agricultural production where labour-intensive methods were being replaced by capital-intensive techniques, which exacerbated the unemployment situation. Concern was raised for a potentially volatile political situation. Aided self-help programmes were therefore, initiated. These attempts did succeed for a little while until these residents later became redundant as a work force. Initiatives were then put in place to stimulate the 'private initiative' with a small plot of poor agricultural land and a promise of future home ownership. In essence, the combination of subsistence farming and self-help housing was an attempt to reduce the social costs of reproduction of labour in the context of high unemployment (Ward, 1982).

From these examples illustrated above, it can be concluded that the increase in importance of self-help programmes coincides with periods of crisis in capitalism (theory put forward by Hans Harms). The application of the self-help approach in the past was based on it being used as a tool to control political unrest and social conflict. In its application, however, we have come to realise its value, not only to us as the implementers but also the participants. Through experimentation, the benefits of the approach have been realised. Now the approach should be implemented under circumstances other than to prevent potentially political situations.

#### 4.2.3. EXAMPLES

##### A. Success of Self-Help

###### CABRILLO VILLAGE CO-OP (CALIFORNIA)

The lemon growers originally developed the Cabrillo Village Co-op in California to house farm workers and families in 1937. By 1975, the Californian State Government insisted on improvement because of safety violations. The owners decided to tear down the development and sell the land. These farmers decided to mount a campaign to stay and then to buy the buildings. The farmers eventually bought the land with the buildings with the help of relatives, friends and a Co-operative Corporation that was formed to handle the purchase. Residents were offered packages to suit their needs, which involved the upgrading of the homes first. Over time, more funds became available and more land was purchased. Consequently, more homes were built. People were also taught skills to build and to do farm work. Other skills were taught by outside contractors that were hired. Eventually, the cooperative purchased trucks to carry their building materials, opened up a ceramic tile factory, etc. This became the source of work. Further along, people opened up workshops to build cabinets. This project turned out to be a great success and the local government was willing to help because of this. Sometimes self-help is a success because of the willingness of the inhabitants (*Koepfel & Tuck-Primdahl, 1989*).

###### LONDON

An architect in London (1976), Brian Richardson, had convinced the council of his method to house people with no building skills, cheaply in their own constructed detached homes. Initially the availability of land was a problem, so a handful of people were selected for the project. People were of low or moderate incomes. A financing scheme was developed, which enabled the selected few to build homes without capital. The families had no savings and did not qualify for traditional home mortgages. Upon the construction of the homes, the council owned one half of the equity and the family the other. The council also made available low-interest mortgages for the repayment for land and materials. Labour was deducted from this because people built their own homes. Families could also pay rent on the council's share of the equity and the option of purchasing the council's equity was made possible over time. A second phase was also initiated, which allowed people to build at their own pace and people could help one another. From this example, it is evident that the councils' involvement is quite crucial. However, what is also required is the willingness of the people to build for themselves (*Koepfel & Tuck-Primdahl, 1989*).

##### B. Failure of Self-Help

The failures of the self-help programmes seem to stem from poor administration due to the lack of enthusiasm of local authorities. In Nairobi (Stren, 1975), the government managed to spend less than one-fifth of its site-and-service budget between 1969 and 1972. Tanzania (Stren, 1975), on the other hand, managed to build only 795 site-and-service units between 1969 and 1974 with the annual target set at 5 000. Papua New Guinea (Oram, 1976) and Bogotá (Gilbert, 1981) also denoted characteristics of slow progress. Between 1965 and 1971, Kuala Lumpur (Wegelin, 1977) tried nine schemes, which were reported as not being happy experiences. Bad administration also resulted in people waiting too long for their lots (Oram, 1976) and services (Hollnsteiner, 1974) or reduced the number of lots available (*Gilbert & Gugler, 1982:105*).

Further, in Kenya, the reluctance to lower standards kept costs up, which were not affordable to the recipients. Failures were also reported in Port Moresby due to over-strict building standards demanded of site owners (Oram, 1976) (*Gilbert & Gugler, 1982*).

Stren (1975) reported about a site-and-service project in Nairobi, where concrete slabs were used for foundations. With the high standards of infrastructure as well as the cost of those slabs, government were obliged to provide subsidies quite heavily to enable the inhabitants to repay loans for building materials (*Gilbert & Gugler, 1982*).

A squatter resettlement scheme in Zambia was argued by Tipple (1976) to be unsuccessful because it was based on the false assumption that squatters would want to move to a new serviced area and pay for services rather than living in an unserviced area and paying virtually nothing (*Gilbert & Gugler, 1982*).

#### 4.3. A COMBINED APPROACH

There are both positive and negative aspects to both approaches in the aim to satisfy the housing backlog and the poor. From the critique above, it can be seen that one approach cannot be implemented on its own, i.e. the replacement of the traditional approach with the incremental approach would appear impositionary on the recipients and would be rejected. It would also be a failure. A combined approach that capitalises on the positives of both approaches would be recommended. Dewar, Andrew & Watson (1981) had recognised the need for a combined approach:

*'The challenge of housing at the basic level is to provide security of tenure, adequate levels of shelter and services at prices that people can afford' (Dewar, Andrew & Watson, 1981).*

The incremental approach was viewed as a supplement to the traditional approach in meeting the housing challenge. The next steps of building up what has been provided (options available were tenured sites, site and service plus a firewall, etc) will depend on the encouragement of recipients. Assistance would also be required from the authorities to upgrade existing housing resources.

- Households would be better able to match their needs, priorities and what they can afford with more choices in housing.
- The use of different delivery systems in combination through the acknowledgement of self-help will enable



will enable the production of a better final product. Different agents can undertake task that they are best equipped to do.

The benefits to be accrued if the conventional approach were supplemented with the self-help approach:

- Capital: would be spread over many more recipients since each unit will require less money invested.
- Better fit: *there would be a closer fit between what people can afford and their priorities, and between the housing supply and the ability of people to afford housing (Dewar, Andrew & Watson, 1981).*
- Environmental quality: *of housing would improve (Dewar, Andrew & Watson, 1981).*
- Job Creation: *The fourth benefit would be the creation of more jobs, finance would be spread over a broader section of the population and self-reliance would be promoted (Dewar, Andrew & Watson, 1981).*
- Reduction of stop-start: *With the use of more small builders, the fifth benefit would be the reduction of the 'stop-start' problem and evening out the rate of supply. Again, there would be a higher level of satisfaction through greater local control of individuals and communities over their own affairs, and a greater degree of choice' (Dewar, Andrew & Watson, 1981).*

Incremental approaches to housing should not be seen as a universal panacea to the housing problems or a cheap way for the state to absolve their responsibility to provide proper housing for the poor. It should not be viewed as an alternative to the traditional approach either, but rather as a supplement, that allows for greater choice for the recipients of housing (Dewar, Andrew & Watson, 1981).

This is the point at which South Africa is now, i.e. taking a combined approach to housing.

## 5. POST-APARTHEID HOUSING POLICY

### 5.1. UNDERLYING POLITICAL OBJECTIVES

Between the late 1940s and the early 1960s, the housing policy permitted final structures to be built, which didn't allow for expansion possibilities. The focus was to provide for the moment without consideration of the future. The period between the early 1960s and early 1970s was characterized by a move of people to the homelands, to the cities and into backyard shacks. Prior to the 1980s, riots had broken out, which stressed government into doing something about it. As such, a political decision was taken to address housing with the handing over of ownership to the Black middle class. This was a political decision aimed at creating a divide within the Black communities. However, government, at this point, did not have the same amount of money that it did in the 1950s. Therefore, a parastatal, The Independent Development Trust (IDT) was established by government to provide housing to the citizens of South Africa. Private developers were used to build for the middle class whilst site and service was provided for the poorer. The result of the incremental approach around the late 1980s and early 1990s was a landscape of toilets built everywhere across South Africa and were in complete isolation. No one had occupied these sites. The beneficiaries of this attempt at housing were against it.

### 5.2. POLITICAL PRESSURE FOR DELIVERY

The ANC felt this type of housing provision to be politically unacceptable. With the ANC as the new government (1994), houses HAD to be built. Top structures and starter units were provided where a commitment was made to produce one million low-cost houses in five years. A commitment was made to quality and quantity due to the pressure for delivery to address the backlog. In aiming to fulfill the commitment problems were experienced, i.e. the quality of the houses produced was in question. There were media reports of RDP houses where roofs were blown off in storms; houses had crumbled after a flood, etc. There were also complaints made about the location of these housing areas on the urban periphery, away from economic and social activity. Expansion possibilities were also not looked into. Millions of houses were built and expansion was not possible. Housing was not adapted to the people. The quality of houses was compromised to produce the numbers.

### 5.3. POLITICAL PRESSURE FOR HIGH QUALITY HOUSES

Thereafter, government made changes to protect the integrity of the houses produced by developing the National Housing Code (contains norms and standards for housing). The norms and standards were adjusted to enable the housing subsidy readjustment for more money to be spent on the top structure. An emphasis was also placed on the people's housing process. Government perceived this approach to produce better quality homes. A change in policy was made from quantity to quality.

### 5.4. GUIDING POLICY DOCUMENTS

The National Housing Policy was formulated and implemented since 1994 with the aim to address and normalise these problems characterised by the irregularities resulting from the pre-democratic period (*National Housing Code: User Friendly Guide, 2000*). The National Housing Policy has five central themes:

- ***'Harnessing the energy of the people:*** *The housing policy is designed to unleash the energy of ordinary South Africans. This refers to programmes such as the People's Housing process, as well as to the roles of developers, financiers, and home seekers, professionals and others in the housing community.*
- ***Partnerships:*** *A fundamental prerequisite for the sustained delivery of housing and to address the inequities created by past policies is a working partnership between the various spheres of government and the private sector and communities. This partnership requires each party to argue for their rights as well as accept their responsibilities.*

- **Quality and affordability:** The policy is about ensuring good quality homes for all South Africans on a sustainable basis at an affordable price. An affordable price includes both the price paid for a dwelling unit and the long-term costs associated with rates and service charges, maintenance etc.
- **Assisting the poorest:** The policy is aimed at providing as much assistance as possible to the most needy of South African households. In this regard the very poorest receive the greatest assistance and this assistance is applied so as to reach as many households as possible.
- **Opportunities for creativity:** The Housing Policy is formulated so as to facilitate opportunities for creativity in delivery, for gearing resources and for building new approaches to housing in South Africa'.

The research proposed will attempt to test the affordability of housing provided and whether it assists the poor to house themselves. Although it is stated that there are opportunities for the creativity of delivery, this remains to be seen. Housing practice is characterized by the delivery of limited options to housing, which were placed arbitrarily on the erven.

The National Housing Policy was formulated and set out in a number of documents:

- The Constitution of the Republic of South Africa, 1996 (Act no. 108 of 1996)
- The Housing White Paper (1995)
- The White Paper on Reconstruction and Development (No. 1954 of 1994)
- The Housing Act (No. 107 of 1997)
- The Growth, Employment and Redistribution Strategy (GEAR)
- The Urban and Rural Development Frameworks
- The White Papers and policy frameworks pertaining to Local governments and the Public Service.

The aim of this section is not to go into detail of all the relevant legislation, policies, frameworks, etc. A few of them were selected instead.

#### 5.4.1. THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996 (Act No. 108 of 1996)

The Constitution is the supreme law of the country and is the basis of all activity in the Republic of South Africa. It defines the fundamental values, such as equality, human dignity, and freedom of movement and residence, to which our housing policy must subscribe (*National Housing Code: User Friendly Guide, 2000*) - these notions are contained broadly in the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996):

- Section 26 of the Constitution states that everyone has the right to have access to 'adequate housing' and that it is the states responsibility to ensure the achievement of this right on a progressive basis with legislation and other measures within its available resources. According to the Constitution, adequate housing is measured in terms of the legal security of tenure, the availability of services, materials, facilities and infrastructure, **affordability**, accessibility and location.

Previously in the pre-democratic era, and at present houses did not conform to the definition of adequate housing as put forward by the constitution, i.e. houses were built distances away from services and facilities, security of tenure wasn't offered, and housing wasn't affordable to the poor. What is set out by the constitution in the bullet above is an attempt to rectify the wrongs of the past. At present security of tenure is provided to housing settlements, planning is done to ensure the access to services and facilities, accessibility and location are being planned better. Nevertheless, whilst issues of tenure, accessibility and location are being addressed to a certain extent, affordability is still a major issue that needs attention. The proposed research proposal aims to address this aspect of affordability.

- The Constitution also permits that the right to adequate housing **cannot be achieved immediately but over time**. In this regard, government has to show that it has worked effectively as possible toward achieving this right: 12). The traditional approach attempted to provide a large scale of completed products immediately, failed in providing quality houses, and didn't meet the numbers required whereas the incremental approach demonstrated satisfaction of producing good quality houses over time whilst addressing the large numbers of houses needed. Attempting housing over time will ensure that the limited resources available will be spread over a wider audience of households. Interventions can be implemented over time to upgrade and assist with improvements and additions made.

#### 5.4.2. THE WHITE PAPER ON RECONSTRUCTION AND DEVELOPMENT (No. 1954 of 1994)

The RDP is an integrated, coherent socio-economic policy framework that seeks to mobilise all our people and our country's resources toward the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future. In terms of housing and services, this is stated:

**Right to housing:** within the RDP housing is viewed as a **human right** where all South Africans have a right to a secure place in which to live in peace and dignity. As such, one of the first priorities of the RDP is to provide for the homeless. The responsibility of providing housing to all resides in the government, via the creation of policy and legislation, irrespective of the delivery agent.

To ensure the **affordability** of housing to even the poorest of the South Africans, subsidy funds were to be allocated by the government from the budget to reach a goal of no less than five percent of the budget by the end of the five-year RDP. The approach to housing, infrastructure and services, as stated within the RDP, must involve and empower communities; be affordable, developmental and sustainable; take account of funding and resources constraints, and support gender equality.

The RDP is also committed to establishing viable communities in areas close to economic opportunities and to health, educational, social amenities and transport infrastructure (*White Paper on Reconstruction and Development, 1994*).

In terms of **housing standards**, the minimum requirements set out by the RDP were:

- must provide protection from weather,
- a durable structure,
- and **reasonable living space and privacy**.
- a house must include sanitary facilities,
- storm-water drainage,
- a household energy supply (whether linked to grid electricity supply or derived from other sources, such as solar energy),
- convenient access to clean water.
- **secure tenure** in a variety of forms.

These minimum standards must also be taken into consideration when upgrading of the existing housing stock is undertaken. Community organisations and other stakeholders must establish minimum basic standards for housing types, construction, planning and development, for both units and communities.

All that has been stated within the RDP (listed above) is relevant to the research proposed. However, specific focus is on the affordability of housing, security of tenure and the reasonable living space and privacy. Whilst the constitution focused on the affordability and security of tenure amongst other aspects, no mention was made regarding the living space and privacy of households, which is also an important aspect in providing housing. The traditional approach provided restrictively small erven that didn't cater for flexibility or expansion of houses. The research proposes to determine how the allocation of space (accompanied by the housing unit) has affected the abilities of households to consolidate.

5.5. QUALITY GUIDELINES

5.5.1. THE NATIONAL HOUSING CODE, 2000

The Housing National Code sets out the National Housing Policy of South Africa in one comprehensive document and is not intended to replace the key legislation and laws relating to the National Housing Policy. It is rather, a statement of present policy and provides an overview and confirmation of the existing policy that is in place. With the continually changing National Housing Policy, the Housing Code will change. Housing development within the Code is defined as follows:

" (vi) **"housing development"** means the establishment and maintenance of habitable, stable and sustainable public and private residential environments to ensure viable households and communities in areas allowing convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and permanent residents of the Republic will, on a progressive basis, have access to-

(a) permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and

(b) potable water, adequate sanitary facilities and domestic energy supply' (*National Housing Code: Annexure A, Chapter 3, Part 2: 1 - 2*).

Whilst permanent residential structures are provided, security of tenure is provided; potable water, sanitary facilities and energy supply are provided from a service and structure point of view, the assurance of internal and external privacy, as stated above, remains a challenge. **Firstly**, the size of erven provided is too small to cater for external privacy. **Secondly**, the structures provided are placed arbitrarily on the erven, which limits the flexibility of the use of space. Manoeuvrability on the erven to cater for privacy is restricted. The research proposal will investigate this aspect in respect of the two case study areas selected.

A. Norms and standards

The norms and standards set out in the Housing Code - Annexure A, Chapter 3, Part 2 (provided as Annexure E), range from the form of the top structures, to physical standards of durability, strength and stability, to the provision of good lighting and ventilation, and the provision of services such as water, sanitation and drainage. An environmental approach was taken regarding certain aspects. However, two aspects require some attention regarding the study

CATEGORY	FINANCE (R16 000 SUBSIDY)	SERVICE (MINIMUM LEVEL)	MEC EMPOWERED TO PERMIT DEVIATIONS	
Municipal Services	Maximum R7 500	Land acquisition and township establishment		
		Water: single metered standpipe per erf		
		Sanitation: VIP per erf		
		Roads: Access to erf with graded road		
		Stormwater: lined open channels		
		Street Lighting: Highmast security lighting (subject to conditions)		
Top Structure	Residual of R8 500	Top Structure: 30m <sup>2</sup> (gross floor area)		

FIGURE 10: Summary of Norms and Standards in respect of Permanent Residential Structures (*National Housing Code: 120*)

As stated within the Housing Code - Annexure A, Chapter 3, Part 2:

- **FORM**

*The buildings must be simple in form and straightforward to construct.*

The form of housing requires a structure that is simple and easy to construct which results in the unimaginative types of housing provided. It provides little choice to the beneficiaries.

- **DIMENSIONS**

*The minimum size of the completed structure shall be not less than thirty square metres. Any room or space must have dimensions that will ensure that such room or space is fit for the purpose for which it is intended.*

From the table above and the immediate bullet above, it is apparent that more money is spent on the top structure, but the size of the structure is very limited. This is unsuitable for large families. One of the case studies within the study proposal was provided with roof structures with 55m<sup>2</sup> of space. The research proposal will ascertain its success or failure in light of residents' satisfaction levels and the usage of space.

### 5.5.2. GUIDELINES FOR HUMAN SETTLEMENT PLANNING AND DESIGN

Guidelines for Human Settlement Planning and Design, otherwise known as the 'Red Book', was developed to assist professionals in producing townships that are efficiently serviced and to create sustainable and vibrant human settlements.

In the subdivision of land, consideration is given to:

#### **The range of housing types**

It is accepted that housing types differ in many ways, i.e. materials, permanence, design etc. It is also stated that determining the type of housing to be provided depends on certain factors:

- Residents or households in terms of the age structure, gender, opinions, beliefs and skills.
- The dwelling and how it is used by the households
- The existential context of the household (includes the qualities of the site and climate, access to resources, and relations to various social groupings;
- *'The individual dwelling within the broader settlement, with qualities of form, substance, function, meaning and locality' (Austin & Biermann, 1998, Chapter 5.6:2).*

As a result, it is motivated that ranges of residential lot sizes be provide to suit the different housing and household types with dimensions that meet the user requirements. A variety of lot sizes and housing types would provide diversity and choice to meet the different requirements and housing needs of people (Austin & Biermann, 1998). The study will identify the dynamics within households, i.e. households structure, income, expenditure, gender, opinions, etc.

#### **Cultural features**

No population group or community is completely homogenous. There are different people with differing needs, preferences, family or household structures, income levels, etc (Austin & Biermann, 1998).

All these factors should be taken into consideration when land subdivisions are made, implying that choice is important. Choice is a factor missing in low-income housing provision, which is as essential for satisfying the needs, preferences and characteristics of households, as creating a sustainable settlement.

#### **Accommodate change**

At a settlement level, it is stated that flexibility to change over time is necessary. As such, motivation is made for a variety of house types to ensure adaptability over time (Guidelines for Human Settlement Planning and Design, 2000).

The problem, generally, is the ability to expand the housing types provided in low-income areas. Therefore, housing types also have to be adaptable and flexible to achieve the objective of adaptable settlements. The study will investigate how residents have begun to expand the initial structures provided.

Apart from norms and standards, there are standards and guidelines that also need to be adhered to that can be found within:

- **Standards and Guidelines** manual - applicable to builders registered with the National Home Builders Registration Council
- **Building Regulations** - municipalities prescribe to this.

### 5.6. OUTCOMES

In the pre-democratic era, the focus was on producing high quality, complete homes. As a result, the number of houses required to meet the backlog were compromised to ensure good quality houses. Consequentially, government (1994) took measures to attempt to meet the backlog by producing one million houses in 6 years. The aim was to produce quantity. The outcomes were less than desirable. The question of quality became relevant:

- only 30% of housing units produced complied with the standards imposed;
- there were reports of RDP houses that began to crack and crumble during floods; and
- the roofs were being blown off during storms;
- other complaints were of being generally located too far from centres of economic and social activity as well as being located on the urban periphery. (Rust, 2003);



- the repeated monofunctionality of the past became evident (*Finlayson, 1978*);
- investment was made in private spaces instead of public spaces (*Finlayson, 1978*);
- the design of units were still very limited:
  - the actual units built provided little choice;
  - the placing of the units was done arbitrarily.
  - Gross floor area of top structures - 30m<sup>2</sup>.

Government then took steps to defend the quality of the top structures produced with the development and readjustments to the Housing Code (above).

In the comparison of the **RDP approach** to the **traditional approach**, there are some similarities and some differences.

Differences:

- Although the provision of high standard homes in the **traditional** approach was too costly and took too long, the quality produced was not questionable, but the number of units produced were,
- The aim of the approach by the **RDP** was on the number of units produced. The quality of the houses produced was therefore sacrificed.

Similarities:

- Houses were also built too far away from centres of economic growth as well as being located on the urban peripheries;
- the landscapes produced from such an approach were monotonous and sterile;
- The design of units provided little choice;
- the type of housing provision was a uniform line approach that allowed for limited housing choices, context and environmental diversity, i.e. it did not allow for flexibility or change. This may be the total opposite of the approach taken above (placing of units was done arbitrarily), but the results were similar - failures.
- the size of the units produced were also very small (30m<sup>2</sup>).

Although the approach taken by the new government in 1994 was different, the failures coincide with the traditional approach, except for the actual quality of the homes produced. The traditional approach produced homes of quality but was inappropriate in terms of affordability of the recipients. Although the self-help approach has more advantages compared to the traditional approach, there are still problems being experienced in the area of consolidation that requires attention. Negative factors play a role at inhibiting consolidation and need to be addressed by government to be able to resolve the irregularities of the past.

## 6.

### HOUSING CONSOLIDATION

#### 6.1.

#### EXPANDED DEFINITION OF TERM

Consolidation is the process whereby people make a house their permanent residence. People invest in it and make improvements depending on needs and priorities.

Consolidation refers to the process where self-help settlements undergo an incremental physical transformation. In the context of squatter settlements, it may include changes in conditions of tenure, changes in levels of service infrastructure, and the progressive upgrading of dwellings (*Hart & Hardie, 1983*).

#### 6.2.

#### PROCESS OF CONSOLIDATION

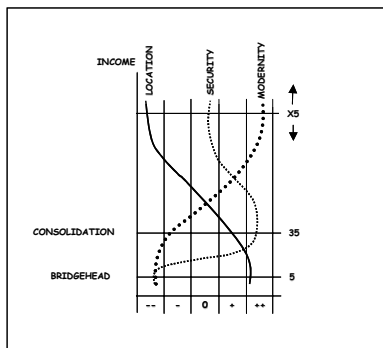
Within self-help areas, consolidation occurs in a piecemeal incremental way in a number of stages, during which the builder progresses from the basic shelter to a more substantial dwelling. The early stages of consolidation are linked to the need for shelter and that secure tenure is achieved through building. With progress, the more advanced stages of consolidation are linked to the pursuit of secure tenure and the desire to enjoy the benefits seen to accompany further consolidation. Ward (*1982*) puts forward three distinct consolidation phases. The first is the 'incipient' level of consolidation, where services have not yet been established, tenure is insecure and construction is rudimentary. At the 'consolidating' settlements level, services are being installed and house construction is taking place. The final phase is the 'consolidated' settlements. The settlements are finally fully serviced, active house construction has diminished, and a wide range of completed structures is present (*Hart & Hardie, 1983*).

It has been witnessed within legal townships that consolidation occurs in stages of house construction. At the primary level house, the purpose is for **basic protection and the securing of a site**; therefore, it is limited to basic **rudimentary shelter**. Secondary consolidation involves the **improvement and enlargement of shanties (upgrading and expansion sometimes with the inclusion of tenants)**, and a second **more substantial house** may be built. This stage may be divided into more subdivisions according to the nature of consolidation and the progress made, for example, in some cases newer, legally acceptable dwellings were built to replace the older temporary structures. In other cases, larger substantially structures were built and the older ones were kept. It is therefore context specific and need not be expanded unless required. The final consolidated stage is reached when most building and upgrading ceases (*Hart & Hardie, 1983*).

One of the reasons behind how and why these stages occur, according to Hart and Hardie (1983) and Serageldin & Turner (1972), relates quite simply to the change in the priorities of the inhabitants. Turner identified three

factors, i.e. location, security of tenure, and modernity (*Serageldin & Turner, 1972*) and illustrates how these aspects change in importance over time. This plays an important role in determining the most appropriate way to provide housing for people, and what influences consolidation.

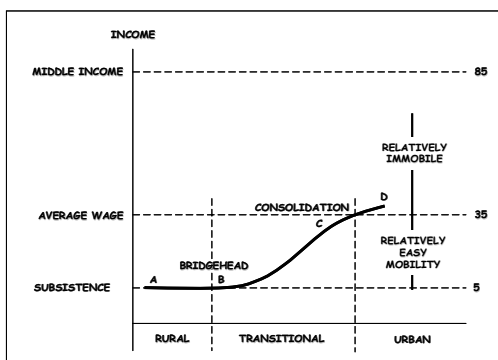
Large populations migrate from rural to urban areas in search of employment. Because of this, we find that the way in which people still live is a mixture of rural and urban where some farm animals and vegetation are planted to sustain themselves as in a rural situation, whilst also going into the city to work and having to live in smaller spaces compared to that of rural areas. The graph below represents households that have moved from rural areas to urban areas and are representative of an incremental approach to housing.



**FIGURE 11: Changing priorities**  
*(Seraeldin & Turner, 1972)*

By focusing at the very top of the graph, it is noticeable how the importance of these aspects changes all together from the initial stage at the bottom of the graph. Of relevance to the South African housing during the pre-democratic phase where the focus was on modernity, is the position of modernity in this graph in terms of its timing in the process of consolidation. When migrants initially settle in an urban environment, the most important aspect to him/her is the location of their home. Once this is established, security becomes important around the consolidation stage. On achievement of security, eventually modernity becomes the aspect of concern. Quite evident, therefore is that modernity takes a backstage position, initially. It gradually becomes important once other urgent aspects have been achieved (security and location). In the past the focus of housing provision has been based on high building standards with high standard materials, which in essence is the provision of modern homes, hence the fixation on **modernity**. As a result, efforts have essentially been concerned with modernity at the very beginning of the transition from rural to urban (bridgehead) before consolidation can even take place and when recipients of housing were initially concerned with location and security. South African attempts were, therefore, ill matched in relation to what was required/ preferred.

It is therefore important to look at the actual needs that people emphasize. Included in the needs of people is the type of people that are dealt with. We have to remember that people come from different backgrounds. In terms of this transitional phase (**refer to figure 12**) (*Serageldin & Turner, 1972*), people could be at different points in it. This also poses as vital information in beginning to understand the changes that people go through to eventually consolidate and become urban dwellers.



**FIGURE 12: Transitional phase**  
*(Serageldin & Turner, 1972)*

Interventions need to be made with the appropriate strategies to meet their various needs in a manner that will satisfy the type of people, taking into consideration the position in this transitional phase. Modern homes should therefore, not be provided at the very beginning, not only because it is of least interest to the residents but also because people will not be able to afford such homes. The approach developed needs to be a gradual, enabling one. More people can therefore be accommodated, because the money spent on providing these homes can now be spread over a larger amount of people by focusing on giving them a starting point that is appropriate for their circumstances.

6.3. **FACTORS THAT AFFECT CONSOLIDATION**

In a study conducted by Hart & Hardie of four areas namely, Constantia, Manguang, Ngangelizwe and Inanda, it was

hypothesized that self-help consolidation takes place because the potential self-helpers **need basic shelter**; believe that **consolidation is a necessary means to secure tenure**; or desire to partake of the **perceived rewards of owner building** that would be attained by consolidating. Within the study conducted by Hart & Hardie (1983), primary and secondary levels were distinguishable where **primary consolidation** was the early stages linked to the need for shelter and the belief that tenure is party to consolidation. **Secondary consolidation** is characterised as the more advanced stage linked to the direct aim of acquiring security of tenure (*Hart & Hardie, 1983*).

Although there may appear to be duplication of issues across both primary and secondary consolidation, the context (early stages or later stages) contributes to the differences between them. For example, security of tenure is mentioned in both primary and secondary consolidation. The context within the primary stage is where

security of tenure was offered as an incentive for consolidation to take place. The case for the security of tenure in the secondary phase is where people have already begun consolidation efforts (have invested time and resources) and now feels threatened by the prospect of losing the site and all that has been done on it. Security of tenure is therefore sought.

The sections below, i.e. primary and secondary consolidation, are divided into factors that promote consolidation and factors that inhibit consolidation. In both divisions, positive and negative factors play roles.

Issues may also be repeated as being both factors that promote and inhibit consolidation in the text below.

### 7.2.3. PRIMARY CONSOLIDATION

#### A. Factors that promote consolidation (positive and negative aspects)

In a study conducted by Hart & Hardie (1983) in Mangaung, Ngangelizwe, Constantia and Inanda Newtown, it was shown that primary consolidation took the form of self-help linked to the **need for basic shelter**. This was set against a backdrop of conditions that have resulted in either untenable accommodation or **homelessness**. There are further issues of the natural population increase and the formulation of new households, migration from peripheral areas, and the numerous forms of population relocation. Threatened tenure had also prompted primary consolidation, especially where administrators have tied legal occupation of sites to the speedy erection of a dwelling (*Hart & Hardie, 1983*). In this case, security of tenure was used as an incentive to encourage consolidation.

In Constantia, **basic shelter** was induced by **homelessness**. Constantia was developed as a reception area to accommodate the people that were going to be removed from Marabastad. The retired, disabled, and now unemployed former owners, deprived of rental income, received a minimal compensation for the vacated homes in Marabastad (*Hart & Hardie, 1983*).

The other factor that has been identified to promote consolidation is **location** (*Serageldin & Turner, 1972*). People first require location in close proximity to employment opportunities, services and facilities. Upon satisfaction of a suitable location, the next steps toward consolidation take place. Once employment is secured and inhabitants now have an income to supplement his/her family, other factors begin to play its course.

Land prices also have an impact on the ability of inhabitants to consolidate. The **effects of land prices** ensure that public housing is built on land that is cheaper at the edges of the city. This puts the poor out of the land market.

Due to the restricted supply of residential land and state-supported housing in Ngangelizwe and Manguang, the letting of rooms has proven a profitable enterprise. The **rental markets** played a role in stimulating the self-help extension of houses and the erection of backyard rooms (*Hart & Hardie, 1983*). People erect more rooms in order to earn an income or to supplement their other income. Not only does this rental market assist the government in providing homes that are in demand, but it also increases the income of these families, which enable further consolidation. The internal commerce of the community is improved as well and people are accommodated with shelter, thereby reducing the demand for the interim.

The inhabitants reasoned out that the rigours of primary and secondary consolidation are a small price to pay for gaining entry to a better housing system (*Hart & Hardie, 1983*). In essence, **the vision and aspiration for a better housing system** also promoted consolidation.

Ninety percent of the residential sites in Ngangelizwe were developed by private entrepreneurial activity (*Hart & Hardie, 1983*). Therefore, the **efforts of the people** also promoted consolidation.

#### B. Factors that inhibit consolidation

Consolidation could be retarded if **alternative basic shelter** were provided (*Hart & Hardie, 1983*). If an alternative were provided that spoon-fed the potential inhabitants without requesting efforts on their part, the initiative toward consolidation would diminish.

If the **link between consolidation and tenure were removed** (specifically related to the cases where local administrators had tied legal occupation of sites to the speedy erection of a dwelling) or believed to have changed, then consolidation would definitely stop (*Hart & Hardie, 1983*). Secure tenure is what majority of people are aspiring to. If they can achieve secure tenure via another route other than through consolidation, as perceived, then consolidation might not occur.

In other areas such as Kroonstad, residents had constructed shelters on leased land without the promise of tenure security. No incentives were offered to encourage consolidation either, which resulted in the fear of removal.

The uneasy **anticipation of removal** prevents people from making any improvements to the homes. If people were going to be removed from the homes at any time, it would be a waste of effort (labour) and resources at attempt consolidating. Residents of such areas, therefore, live in constant fear. Security of tenure is therefore, important to encourage consolidation.

**Miscommunication** between authorities and the communities also affected consolidation. A situation was illustrated where an individual on his/her property constructed a wall, which was later broken down. The assumption made by this person and the neighbouring residents, was that the wall was not of good quality. The actual reason for the demolition of the wall was that it crossed a building line (*Hart & Hardie, 1983*). Failure to convey the reason behind this incident led to these inhabitants employing professionals to do the job or not doing anything at all, because they cannot afford to hire a professional. Either way, consolidation is inhibited. Where the professional is hired, consolidation will take place at a slow pace because people will have to save money over a long period in order to have sufficient capital to pay professionals, whereas they could have saved on this expense by building the houses themselves (use of own labour). More construction materials could have been bought with this capital and therefore consolidation would have taken place at a faster pace. Miscommunication therefore created a tendency in people to discard the benefit of self-help (saving of labour costs).

The private rental market has an advantage and a disadvantage that influences consolidation, i.e. the **private rental market** is the prime source of rudimentary housing (*Hart & Hardie, 1983*) and can also be seen as a factor that prevents further consolidation from happening. It is the prime source of income for residents and depending on the cost; it can pose as a cheaper more convenient form of housing for new comers. Renting would become convenient for the renters, preventing the need to buy their own homes, depending on their priorities.

Whilst the **effect of the land market** assisted in making land available at lower rates, which encourage consolidation, it also has a negative effect. Cheaper land came at a cost of increased travelling expenses to the places of work in the city. Further, government servicing and zoning policies frequently have the effect of valorising land, which increases the land prices even further (*Kowarick & Brant, 1978; Gilbert & Ward, 1978*) (*Gilbert & Gugler, 1982*).

#### 6.3.2. SECONDARY CONSOLIDATION

##### A. Factors that promote consolidation (positive and negative aspects)

The secondary phase of consolidation is characterized by the **fear of eviction** and the **advantages and perceived benefits (entry to a better housing system)** to be rewarded (*Hart & Hardie, 1983*). The fear of eviction would presumably prevent people from consolidating, but within the context of the four areas studied (Manguang, Ngangelizwe, Inanda, and Constantia) the **fear of eviction** promoted consolidation. Residents believed that the erection of permanent high standard homes would be the only way to avoid eviction (*Hart & Hardie, 1983*). Turner (1972) had identified **security of tenure** to be very significant toward promoting consolidation (*Serageldin & Turner, 1972*). In some cases, security of tenure is needed to stimulate consolidation and in other cases, consolidation is seen as the way toward achieving security of tenure. Cases in different areas are unique.

**Exposure to self-help housing systems** seems to be one of the most significant factors influencing the tendency to consolidate (*Hart & Hardie, 1983*). Therefore, the role that self-help systems play in terms of consolidation needs to be promoted.

There is however, further **pressure** being experienced in these settlements to **build better houses**, which contributes toward consolidation. The **housing standards** therefore, influence and direct the tendency to act and shape the course of secondary consolidation. In Constantia and Inanda Newtown, **implied standards**, spread by rumour, have strongly influenced patterns of ongoing secondary consolidation. In Inanda, there is popular belief that **durable permanent shelter is a means of securing tenure**. This has helped to establish the **contractor-built Urban Foundation house as the local standard**. In the course of two years, almost a quarter of the residents had entered into secondary consolidation via the **aid of loans and skilled labourers**. This new standard set places further **pressure** on others to produce houses to that standard (*Hart & Hardie, 1983*).

**Housing loans** are promoted in order to stimulate secondary consolidation. Some inhabitants agree with such stimulation (*Hart & Hardie, 1983*). Some believe it will make a difference in their lives.

Upgrading in Ngangelizwe was associated by **improving or expanding their rental accommodation** in order to improve on their **profits** rather than on the vision to obtain this grand final house (*Hart & Hardie, 1983*). Attempts were made to curtail such developments but the residents found a way around the restrictions imposed. In Ngangelizwe, where the standards of building density are less restrictive, people have become quite **dependent on the rent** paid by tenants (*Hart & Hardie, 1983*). Some live entirely on this rent paid.

##### B. Factors that inhibit consolidation

In Constantia, there was a **lack of communication and trust** between residents and the Administration Board (*Hart & Hardie, 1983*). This limited the rate at which loans were negotiated and there seemed to be some reservations about housing loans. People have doubts about the long-term loans and the exploitative interest rates that accompany it. A further aspect that leads to the mistrust is that employers offer their employees interest free loans. In order for the residents to take advantage of the provision of such loans, the mistrust and communication between the

Board and the residents must be dealt with.

**Price increases** also impact on the ability of people to consolidate. Wages may stay the same, but the cost of building materials is continuously increasing. As urbanisation continues, more materials are being provided by the market (Burgess, 1978) (*Gilbert & Gugler, 1982*).

In other circumstances, the **decline in real incomes** could hamper the consolidation process further (*Gilbert & Gugler, 1982*).

With **urban growth**, land prices increase and the physical growth of the cities will increase. This will lengthen the distance to travel to work. The costs involved will limit the availability of capital to purchase materials. The distance travelled will also limit the time available to consolidate (build). The changing shape of the city will also affect the desirability of certain residential areas (*Gilbert & Gugler, 1982*).

The rate of settlement consolidation also depends on **the extent to which public agencies are able to provide infrastructure and service** to the spontaneous communities (*Gilbert & Gugler, 1982*).

Another factor that inhibited consolidation was **the restrictive control of work permits by the Port Natal Administration Board**. With the growing unemployment among their children, parents adopted a pessimistic view of the future of Inanda (*Hart & Hardie, 1983*). Consolidation efforts were negatively affected.

## 7. SOME SOUTH AFRICAN STUDIES ON LOW-COST HOUSING AND CONSOLIDATION

The two case studies have been selected to indicate the type of research to be conducted in this study by individually discussing different aspects of it. The first case study, Cato Manor (Durban), focuses on the design of housing based on the daily routines and activities of households, i.e. low-cost housing from a user's perspective. This study addressed four aspects from the study proposal made in chapter 2:

- **Depth vs. width**  
The depth of the study reflects a qualitative method approach where only a handful of households were selected. The emphasis was placed on the level of detail rather than the number of households interviewed.
- **Activities taking place within the erven**  
An investigation was done on the activities present on the erven and the location of the activities. However, the number of activities noted was limited because they were done specifically within the context of the everyday activities of the households.
- **The uses within the houses**  
Investigations were also done within the houses. Uses were noted also within the context of day-to-day activities, but more details were acquired in terms of the arrangement of furniture, etc. The study proposed will not go to such details since the aim of the study differs from the aim of the Cato Manor study.
- **Priorities**  
The priorities of the residents were also considered in the investigation.

The second case study, Inanda Newtown and Khayelitsha, was focussed on core housing and whether it had supported residents. Although this is not the intention of this study proposal, aspects of the Inanda Newtown and Khayelitsha study demonstrate the nature of the proposed research.

- **Case studies**  
Two case study areas with different housing types were selected.
- **Factors that affect consolidation**  
Conclusions are made on the factors that affect consolidation. However, in the case of the Inanda Newtown and Khayelitsha study, no factors relate to the spatial aspects or the influences on consolidation. The proposed study will focus on socio-economic factors as well as spatial factors.

### 7.1. CATO MANOR (DURBAN)

This study was undertaken between September and November of 1997 in Wiggins 5A in Cato Manor. Its focus was on women and the priorities and needs, and how the perspective of these women can be used in the design process of low-cost housing. The process involved fieldwork among people living in the informal settlement with the aim to get as close as possible to the people and their homes. It involved interviews with the women, documentation of their homes and interviews with professionals. The overall aim of this study was to investigate how to design low-cost housing from a user's perspective. It also explores the possibilities for densification. Seven women were selected for these interviews. A detailed analysis of each of their homes and their living conditions were done. Their use of space, in terms of how they arrange their furniture or what activities are carried out in certain rooms is also investigated. They were also presented with ranking cards to determine their priorities (*Eliasson, Hessel & Leonsson, 1998*).



From this study, the following conclusions emerged. In terms of **every day activities**:

- **Gardening** was done by most of the women as an alternative source of food and **water** was normally fetched by the women.
- Concerning the **kitchens**, most women were not satisfied because of the lack of space, smoke from the paraffin stove and ants getting into their food.
- There were also problems with the **bathing arrangements**. One woman washes herself in the corner of her house after dark. This is not safe. Most of them are not satisfied with the bathing accommodation because it is located outside and the women are afraid of being raped.
- The **toilets** were also located quite far away from the actual house. This is very inconvenient and dangerous. If the toilet is needed at night, there is fear of snakes or falling down steep terrain (*Eliasson, Hessel & Leonsson, 1998*).
- Women do their **washing** outdoors. The dust from outdoors often requires them to redo their washing. Further, when it rains clothes have to be dried inside the homes, which create problems, considering that the homes are small with high humidity.
- When it comes to the **sleeping arrangements**, these women are satisfied but would like more space, whilst others would like separate rooms. Space is also not available for the storage of belongings. When visitors arrive, the women do not have a separate space from the kitchen and sleeping areas in which to talk (*Eliasson, Hessel & Leonsson, 1998*). Overall, we can therefore see that space is a real issue to these women apart from the aforementioned dangers.

From the ranking exercise, it became obvious what the priorities of the women were. The most valuable thing in their lives is the homes, health, work, family, the gardens, and lastly security. The value of these aspects was ranked in that order (*Eliasson, Hessel & Leonsson, 1998*).

The women however, did see the value of using bricks for the construction of homes. Maintenance and durability were important when these women had to choose the type of materials that they would prefer to use in the construction of homes. Some had good things to say about wood, whilst others differed. Wattle and daub, concrete blocks and corrugated iron was ranked the lowest. When questioned about the type of home they would like to live in, most women chose single or semi-detached houses. These were chosen because of the possibility of extending and big yards that they did not have to share with neighbours (*Eliasson, Hessel & Leonsson, 1998*).

The most important aspects in a house, to women were water, electricity, ventilation, security and light. Given a choice of activities that are important, ranging from bathing; cooking; eating; sleeping; socialising; toilet; washing and working, the toilet was most important. Second was bathing and working followed by cooking, eating and washing. Sleeping and socialising was ranked the lowest because the waking state was considered more important (*Eliasson, Hessel & Leonsson, 1998*).

From this analysis, proposals were put forward to deal with the various issues that had arisen to suit the women's situations. The design criteria were developed according to the problems that were noted for example, one woman stated that when she cried, the first that should hear it is her neighbour. She therefore needed security around her home. This was the design that was developed for her situation: It was named the **House of Sustainable Security** (*Eliasson, Hessel & Leonsson, 1998*).

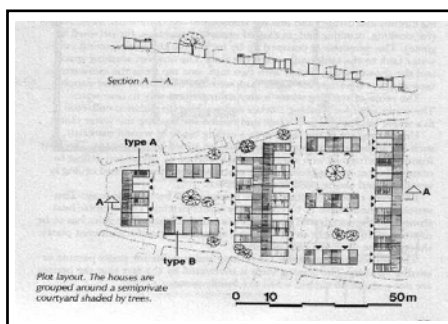


FIGURE 13: Plot Layout  
(*Eliasson, Hessel & Leonsson, 1998*)

The idea behind this house type is to create social interaction apart from creating a secure environment. Houses are therefore, grouped around a semi-private courtyard, which will be the place for meeting and for children to play in. In most informal areas, women gather around a standpipe. The courtyard will now take over the social function of the standpipe (*Eliasson, Hessel & Leonsson, 1998*).

There are two types of houses proposed, type A and type B. Both cover the same plot and floor area. There is a separate room for living and another for a wet core and a kitchen. The wet core also has an outdoor washing

space (Eliasson, Hessle & Leonsson, 1998).

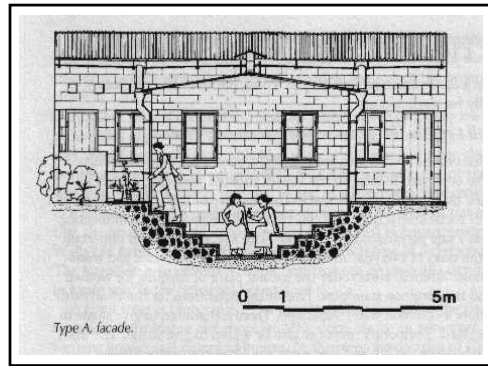


FIGURE 14: Housing type A  
(Eliasson, Hessle & Leonsson, 1998)

Since the collection of water is important, the wet core is built on top of an underground water tank where rainwater is collected from the roofs. Under the roof are two tanks, one for rainwater and one for communal water supply (Eliasson, Hessle & Leonsson, 1998). The reuse of water is stressed in this type of housing.

Under the roof in the living area, a ceiling is made of reused materials, which can be added on by the tenant to form an enclosure. The indoor climate can be improved by the absorption by the added material of the heat from the corrugated iron roofing. The space between the roof and the ceiling is ventilated. This space can also be used for storage (Eliasson, Hessle & Leonsson, 1998).

Just as this housing type solved a few problems identified, other housing types were developed to cater for the other issues. Each person's existing situation was taken into consideration as well as the resource constraints, to produce the most appropriate housing type for each concern. Further, more than one housing type was developed, which indicates the provision of choice.

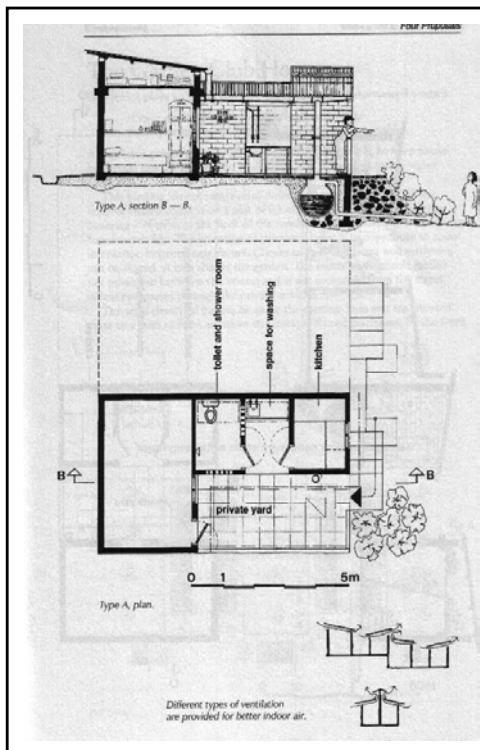


FIGURE 15: Sections of housing type A  
(Eliasson, Hessle & Leonsson, 1998)

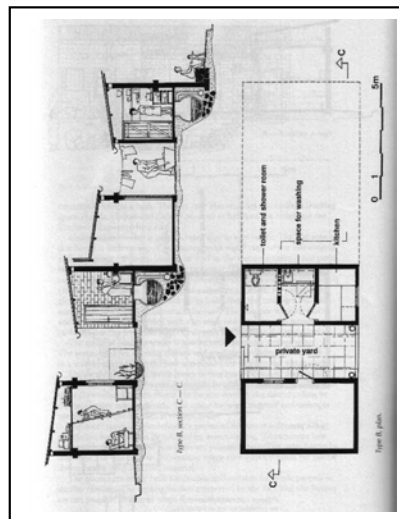


FIGURE 16: Sections of housing type B  
(Eliasson, Hessel & Leonsson, 1998)

### 7.1.1 CONCLUSION

The value of this study is in the importance of consumer participation in the process of the design of housing provision. The needs of the day-to-day activities and priorities of the residents are considered in the planning of the housing designed and the space surrounding the structure. The space around the house is just as important as the space within. Desirable environments and housing are created in this way.

### 7.2. INANDA NEWTOWN (DURBAN) & KHAYELITSHA (CAPE TOWN)

This study was conducted to ascertain whether core housing had supported residents. It also set out to determine whether the policies that created the environment in which core housing was likely to become a commonly implemented housing form would achieve the national goal of adequate 'housing for all' (Department of Housing, 1994).

The research methodology implemented consisted of:

- an aerial photography survey of all houses,
- the classification of houses according to the types of extensions,
- stratification of the frame and selection of a random sample,
- the composition of a questionnaire addressed to the residents,
- the formulation of a physical site survey of the house and surrounds,
- the implementation of the household and physical surveys for a 5% sample,
- interviewing of key actors (original project agents and contemporary community leaders),
- the capture of survey data,
- the statistical analysis of the collected data,
- and the interpretation of the data and report on key findings (Napier & Meiklejohn, 1997).

#### 7.2.1. BACKGROUND

##### A. Inanda Newtown

Inanda Newtown was initially established as a site-and-service scheme as a response to an outbreak of typhoid in 1979. The Urban Foundation (UF), a non-governmental organisation, became its main project agent. After a screening process, people were given a choice of the type of home they would like to live in. This area had a physical constraint of steep slopes. After five years, residents could obtain full title to their properties. However, with secure tenure, household participation and direct support from the project agents, some consolidation did occur: 20 percent of the residents had added formal extensions, 13 percent added informal extensions, and 5 percent added mixed extensions. 63 percent of households did not extend beyond the boundaries of their own homes because they had sub-divided internally and upgraded (Napier, 1998).

##### B. Khayelitsha

This area developed as a mass-housing scheme by private consultants. There was insecure tenure and rented accommodation was initially only offered. People, however, chose to remain as renters. The residents were not offered choices when it came to housing types, and the size of homes offered were much smaller than those offered in Inanda. This settlement experienced a lack of commitment from the authorities, limited choice, and continued insecurity. The type of extensions seen here included permanent extensions (24%), informal extensions (42%), and mixed extensions, which added up to 11 percent. The remaining 23% had not extended at all (Napier, 1998).



7.2.2. FACTORS AFFECTING CONSOLIDATION

It was found from this study that the key factors affecting consolidation in Inanda were:

- The varying levels of building skills within households  
Even though many families had financial means to extend, building skills were lacking in many cases.
- **Low levels of consultation with experts for advice and know-how**  
57% of residents did not consult with any experts for advice or support when constructing additions.
- **High costs of formal and informal building by builders**  
The high costs of employing builders prohibited extensions from being built. Instead, families chose to invest in the education of children.
- **Very low utility of end-user finance; varying household income**  
There was a large percentage of under-utilisation of end-user finance to build additions. Only 2% of households had used banks or building society loans to make extensions.
- **Larger core houses (reducing the need to extend immediately)**  
The larger core houses built in this area provided more habitable space from the outset. It therefore made the need for extending less urgent.
- **Differing age structure of households**  
Residents without additions to the houses were households with younger children. The need for independent space for the children was not needed yet and money was spent on education rather than on extending.
- **Physical constraints**  
The topography, shape and size of site platforms, and the form and siting of the core houses influenced the type of extensions made by the residents (*Napier & Meiklejohn, 1997*).

In Khayelitsha the factors that affected consolidation were:

- **Varying household incomes from employment (formal and informal)**  
The extenders had more income and those with the least income did not extend. It was stated by Napier that to a large extent formal employment determined income, except for mixed extenders that acquired income from self-employment or occasional work.
- **A general lack of building skills within households**  
Approximately 12% of households had building skills. Those with skills had built additions for themselves with the use of temporary materials whilst those with less skills and more money had employed builders. Residents with neither money nor skills have remained unextended.
- **Good access to cheap building materials (leading to low cost informal extensions)**  
It was relatively cheap to access building materials from local building material suppliers and to build informal additions.
- **Relatively high costs of formally built extensions**  
Residents with higher incomes managed to hire builders. Others have used their own building skills.
- **Better use of formal finance for extensions**  
In comparison to Inanda, more banks and building society loans were used to finance extensions (8% of extensions). 4% of households had used money from a savings club, 1% was assisted by employers and 87% used personal savings.
- **Lack of access to advice and support from authorities**  
Institutional support for the residents during the construction of additions collapsed at an early stage. 72% of households did not seek any professional or official support or advice when extending.
- **An absence of choice for, and participation by, residents**  
A mass production approach was employed in this area. There was therefore little choice by the residents in the type of house chosen and its location.
- **The size of core houses as motivator to extend in some way**  
Even though there were high levels of services provided and the public realm was planned, residents were dissatisfied with the size and construction of houses. However, considering the relatively inexpensiveness to build informal structures, many managed to cater for the family needs. A large portion was still unable to extend (*Napier & Meiklejohn, 1997*).

7.2.4. FACTORS THAT INFLUENCE EXTENSION

Employment and household income were two of the factors that influenced the extension of dwellings. Napier & Meiklejohn, 1997 stated that if people are unemployed they will not have an income, and can therefore not afford

to extend.

It was also found that the size and age of the family also plays a role. Families with more young adults had extended rather than those with younger children (Napier & Meiklejohn, 1997).

It was noted that people who had extended had better access to building skills. In Khayelitsha, 93 percent of people had no access to building skills (Napier & Meiklejohn, 1997).

Household size also promoted extension because of the crowding. With the growth of the families, houses grew. People therefore extend to reduce the overcrowding (Napier & Meiklejohn, 1997).

#### 7.2.5. SUCCESS AND FAILURE

From the research it was found, that mobilisation of personal finance and other resources is possible. People that were able to extend formally and informally revealed this. Formal and informal sectors could also be combined to maximum effect in the production of predominantly sound, informal rooms for habitation (e.g. Khayelitsha). Finally, a history of being involved in building one's own housing may aid in the household establishing itself in core housing (Napier & Meiklejohn, 1997).

The negative finding of this research is that a large number of people are still excluded. They are unable to add space because of a lack of personal participation; the absence of advice and skills training for residents; little or no institutional support; and the absence of appropriate financing mechanisms (Napier & Meiklejohn, 1997).

These two case studies therefore, show that the aim of achieving incremental growth of initially small houses into larger permanent homes is often not achieved (Napier & Meiklejohn, 1997).

#### 7.2.5. CONCLUSION

Even though the final statement made by Napier and Meiklejohn (1997) is in opposition to the core framework of the intended research proposal, it is important to note the numerous factors that had lead to the arrival of this statement. The factors that affect consolidation are the factors that need to be addressed to ensure the transition from the small houses into larger permanent houses. In this light, the intention of the research proposal is to extract these factors of consolidation from two different areas to add to this study (Inanda Newtown and Khayelitsha) in an attempt to motivate the appropriateness of the incremental approach to housing the poor, as opposed to the traditional approach.

### 8. CONCLUSION

Based on this research, the changes in the way housing has been provided over the past 50 years, and the context of housing provision at present, future adequate housing relies on two aspects:

- Better design of housing
- Overcoming the obstacles to consolidation

Housing policy indicates an incremental approach to providing housing to ensure adequate quality, to reach more people immediately, and thereby to spread limited resources further (refer to section 5.4.1.). The Housing Policy has also made a shift toward the people's housing process, where the emphasis is on the efforts made by the beneficiaries (Rust, 2003). However, in order to make this move work and ensure successful housing delivery and occupation, a review of what has been provided in the context of self-help options need to be done to identify problem areas and success stories to assist in this effort. As such, many studies (Napier, etc) have been conducted where the focus has been on consolidation. This is the major problem, where after occupation of the starter units or top structures, formalization does not take place. Studies have arrived at factors that affect the formalization / consolidation of areas. If more self-help options of housing delivery are to be done in future with an emphasis on efforts of beneficiaries, the challenge of obstacles needs to be addressed.

In general, it has been shown that the design and placing of structures on erven, depend mainly on engineering and maintenance costs. This often results in poor environments (monotonous), units were placed arbitrarily on the erven and provided little opportunity for expansion. The study above (refer to 7.1.) shows the importance of considering the lifestyles of people before providing housing. If this is done, the environments aimed at in the Housing Code, 1997 will be possible:

"housing development" means the establishment and maintenance of habitable, stable and sustainable public and private residential environments to ensure viable households and communities in areas allowing convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and permanent residents of the Republic will, on a progressive basis, have access to-

- (a) permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and
- (b) potable water, adequate sanitary facilities and domestic energy supply' (National Housing Code: Annexure A, Chapter 3, Part 2: 1 - 2).

**CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME**

**1. INTRODUCTION**

This chapter aims to provide details of the case study areas prior to and during initial housing provision. It is meant to be demonstrative of the considerations made toward providing housing by government, the processes followed, the date of establishment and completion, the type of subsidies implemented, and the end results (erf configuration and size, and house configuration and size). This chapter addresses sub-problem 1.

The structure of this chapter begins by discussing the case study areas selected in terms of the date of establishment and completion, the type of subsidy, the process of housing provision, erf and house configuration and size, and densities. Plans are used thereafter to illustrate the initial housing provided in each area (refer to figure 17 below). Figure 18 reveals the position of the chapter within the dissertation.

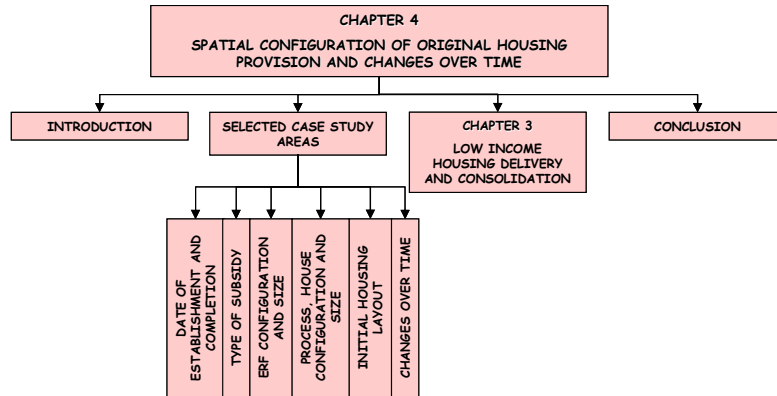


FIGURE 17: STRUCTURE OF CHAPTER

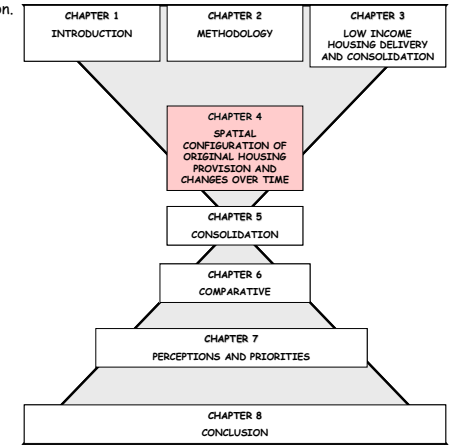


FIGURE 18: POSITION OF CHAPTER WITHIN DISSERTATION

**EXTENSION 10**

**EXTENSION 6**

**2. SELECTED CASE STUDY AREAS**

**2.1. DATE OF ESTABLISHMENT AND COMPLETION**

Housing provision began in 1994 and majority (the provision of roof structures and services) was completed in 2000 (Minty, 2002).

Housing provision began in 1997 and majority (the provision of sites and services) was completed in 1999 (Minty, 2002).

**2.2. TYPE OF SUBSIDY**

The type of subsidy applied in Extension Ten was Mayibuye (consisting of engineering design, township establishment and the transfer of properties) and Essential Services that covered the engineering design and the installation of engineering services, and the Consolidation Subsidy, which made provision for the top structure (Minty, 2002).

The subsidy provided within Extension Six reflects that of Mayibuye (consisting of engineering design, township establishment and the transfer of properties) and that of Essential Services, which covered the engineering design and the installation of engineering services (Minty, 2002).

**2.3. ERF CONFIGURATION AND SIZE**

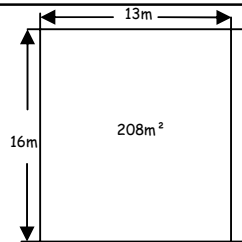


FIGURE 19: ERF DIMENSIONS OF EXTENSION 10

The average erf size within Extension Ten is 208m<sup>2</sup> with dimensions of 13m x 16m.

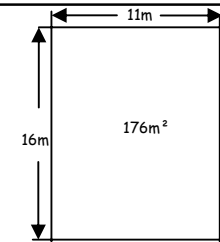


FIGURE 20: ERF DIMENSIONS OF EXTENSION 6

Extension Six is characterised by erf dimensions of 11m x 16m (average value) and average erf size of 176m<sup>2</sup>.

CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME

2.4. PROCESS, HOUSE CONFIGURATION AND SIZE

EXTENSION 10

Residents in Extension Ten were squatting in the area prior to development (since 1990/1991). Recipients had to be moved in order to carry out the provision of the housing, but toilets were being stolen. Therefore, the recipients were moved back in the area during construction for safety reasons. Other problems occurred out of this plan of action where some residents did not qualify for subsidies but were moved back to their properties for safety reasons. The removal of these residents that didn't qualify for subsidies became a difficult exercise. The resolution of this dilemma is ongoing as stated by an interviewee in 2002.

The project was initiated in 1994 and the majority of housing was completed in the year 2000. In total, there are six hundred and fifty five stands. It was decided by the present South African government that Extension Ten be provided with 24m<sup>2</sup> houses with 12m<sup>2</sup> enclosed with a toilet, windows and doors (refer to figure 21).

The developers, on the other hand, decided to provide a roof structure (9x6 - 55m<sup>2</sup>) coupled with the idea that the community would make their own bricks and build up from there. It was in the opinion of the developers that the 24m<sup>2</sup> house with 12m<sup>2</sup> enclosed with a toilet, windows and doors was not sufficient in terms of space. The developers also worked off the premise that people would want more space and would therefore be more enthusiastic about building their own homes. Province (housing department) didn't agree. They were merely carports in the eyes of Province, instead of homes (Minty, 2002).

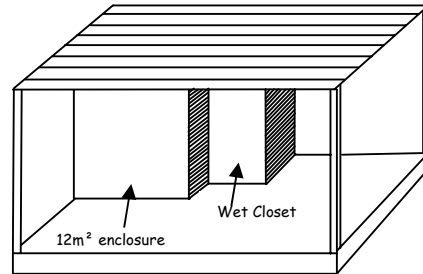


FIGURE 21: TYPE OF HOUSING PROVIDED IN EXTENSION 10

A compromise was reached, after many discussions, where an enclosure of 12m<sup>2</sup> was made (refer to diagram above). Beneficiaries requested that the wet closets be provided outside the roof structure for economic reasons (if they decide to build another extension at the back of the erf and rent out one of them, both the tenants and the owners have easy access to the wet closet without having to encroach on anyone's privacy). The following was provided with the wet closet at the corner of the erf:

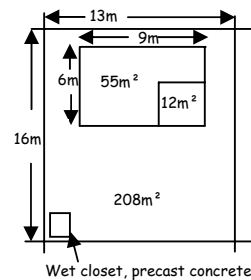


FIGURE 22: DIMENSIONS OF ERF AND TOP STRUCTURE WITHIN EXTENSION 10

Province had refused to pay the subsidy unless the enclosure was made. Initially many people didn't want the enclosure (sixty eight), but now many do. Eighty-nine still refuse to have any part of it and hence are not provided with the enclosure, as per their request.

To date today, seventy-five people have built up or enclosed the shelter provided. Eighty nine erven have no development on it due to requests from the residents and the remainder of the six hundred and fifty five have been provided with housing (roof structures with services inclusive of a wet closet).

EXTENSION 6

Extension Six was an open area prior to development. It was called the Greenfields project. People moved in from phase one of Stanza that was next to a refuse dump.

Housing provision in Extension Six began in 1997 and was completed in 1999. To date today, there are one thousand six hundred and sixty seven stands, one thousand five hundred and fifty six of which have been allocated to people. One hundred of these stands, at present, lay vacant. Out of these 1 667 stands only 1 616 subsidies were acquired (Minty, 2002).

There was one farmhouse on the property, owned by the council but the occupant refused to move. Extreme measures were sought to the point of eviction, but the resident refused to move. As a result, one RDP house was provided for him (Minty, 2002).

All the roads in this extension have been tarred taking into consideration the future monetary implications of maintaining a gravel road as opposed to a tarred road. Gravel roads tend to have higher maintenance costs compared to tarred roads in the sense that gravel roads would require frequent maintenance in comparison to tarred roads, where maintenance would be over long periods. A school is planned in an open area (Minty, 2002).

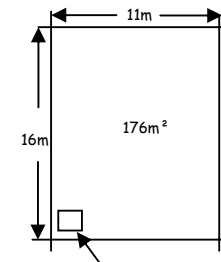


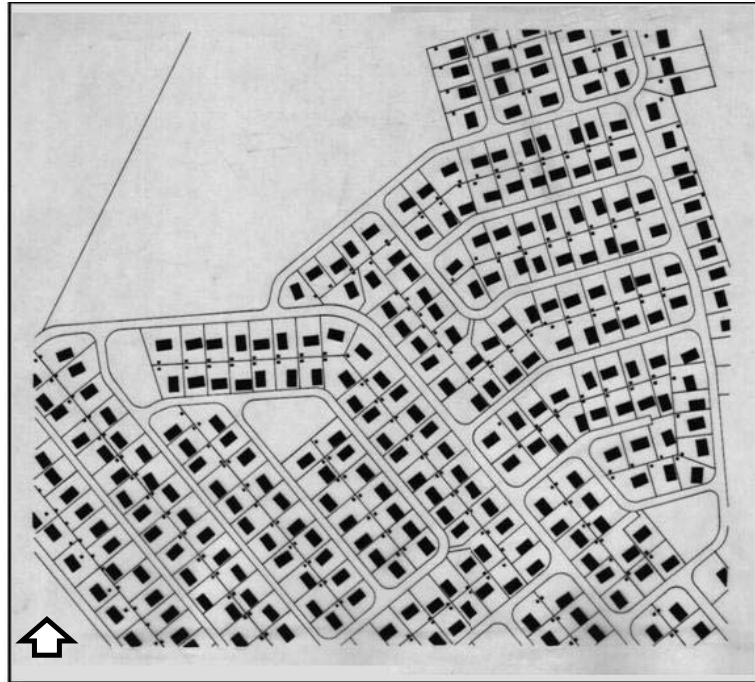
FIGURE 23: DIMENSIONS OF ERF WITHIN EXTENSION 6

The type of housing provided in Extension Six were merely wet cores with services because the subsidy provided by government only covered Mayibuye (consisting of engineering design, township establishment and transfer of properties), and Essential Services (consisting of engineering design and the installation of engineering services).

CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME

2.5. INITIAL HOUSING LAYOUT

EXTENSION 10



MAP 7: INITIAL PROVISION OF HOUSING IN EXTENSION 10

The representation of the initial provision of housing in this diagram has not taken into consideration the shacks already constructed by the residents prior to the provision of housing by government. Therefore, what appears in this diagram is merely a representation of the type of housing provided by government, i.e. roof structures with services.

GROSS DENSITY: 163p/ha  
NETT DENSITY: 266p/ha

The placing of the wet cores seems to take place at the back of the erven in either the left or right corners (influenced by the engineers). The wet closets have been placed in such a manner to save on service costs. The roof structures, on the other hand, seem to follow a different pattern. Although the wet closets seemed not to be influenced, in terms of positioning, by the presence of shacks, the roof structures were. The roof structures were placed in various positions on the erven depending on the position of residents' shacks. The majority appear to be placed away from the back boundary because of the presence of shacks. Most erven have the roof structures placed with the long side parallel to the road frontage. There is no clear consistent pattern as to the placing of these structures.

EXTENSION 6



MAP 8: INITIAL PROVISION OF HOUSING IN EXTENSION 6

The representation of the initial provision of housing in this diagram has not taken into consideration the shacks already constructed by the residents prior to the provision of housing by government. Therefore, what appears in this diagram is merely a representation of the type of housing provided by government, i.e. site and service.

GROSS DENSITY: 219p/ha  
NETT DENSITY: 364p/ha

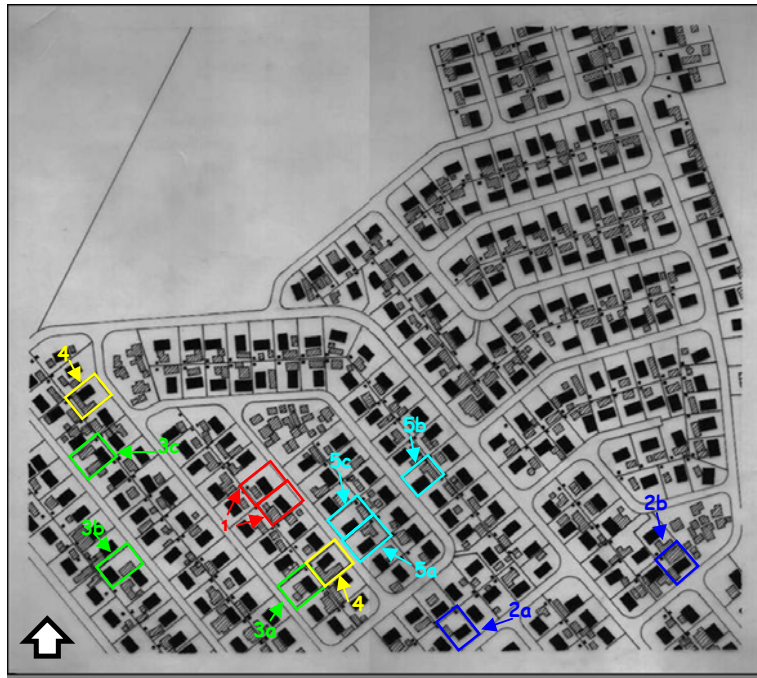
The placing of the wet closets in this extension also appear to be placed at the back of the erven in either the left or right corners to save on service costs. The placing of the wet closets has therefore been influenced by the engineers.



## CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME

2.6. CHANGES  
OVER TIME

EXTENSION 10



MAP 9: CHANGES OVER TIME IN EXTENSION 10

With the observation of changes taken place on the erven, four typical patterns can be extracted and are numbered correspondingly to the map above:

1. Roof structures placed **centrally** on the erven with the **long side parallel to the street**:
  - a. Temporary structures have been built at the back behind these structures. This creates minimal living space at the back of the erven with more space at the front.
2. Roof structures placed toward the **front** of the erven with the **long side parallel to the street**:
  - a. Structures have been built at the back or along the side of the erven. Privacy is created within the larger living space in comparison to 1 with enough space for a garden at the front.
3. Roof structures placed toward the **back** of the erven with the **long side parallel to the street**:
  - a. In some cases, roof structures have been placed at the back. With the initial placing of temporary structures on the erven, the placing of the roof structures appeared to be a difficult task, i.e. the size of the roof structure made it impossible to fit anywhere else. Two households appear to be fine in terms of living space, i.e. 3b and 3c. All structures have been arranged along the erven boundaries (back and sides). This creates maximum space for living and space in front for a garden. Privacy levels might be a bit lower. In the case of 3a, odd space has been created.
4. Roof structures placed in either **side** of the erven toward the **centre** (in relation to the front and back boundaries) with the **shorter side parallel to the street**:
  - a. Temporary structures have been built along the back and sides of the erven to create space between the structures. The arrangement appears somewhat cramped and creates more space at the front of the erven than between the structures.

EXTENSION 6



MAP 10: CHANGES OVER TIME IN EXTENSION 6

The typical pattern presented here is that of structures built at the back of the erven. This allows the use of space has been optimised for the future houses to be built. In this way, temporary structures would not have to be demolished or disturbed during the process of construction of the future houses.

CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME

5. 5c represent an example that works in terms of creating sufficient living space. Privacy can be created with the construction of additional units in time. The space created is not in small pockets but larger pockets, which is an advantage for future construction and expansion. In the cases of 5a and 5b two alternatives would have improved the size of the living space and would eliminate the odd pockets of space created:
  - a. The roof structure could be placed on the opposite side of the erf to meet the temporary structure extending along the side boundary, i.e. an extension to existing structures. The situation created would resemble that of 5c.
  - b. The roof structure could have been rotated 90° and placed closer to the street. In this way not only is the living space increased, but privacy is also created. Gardening space is reduced. This option could also apply to 5c.

INITIAL PROVISION

- Housing provision began at an earlier stage in Extension Ten (three years earlier, 1994) than Extension Six (1997) and has taken twice as long to complete in Extension Ten (6 years) than in Extension Six. The type of housing provided in each area could have influenced that rate at which they were provided.
- The type of housing provided within the two areas differs, i.e. Extension Ten has been provided with a roof scheme with services and Extension Six was provided with a site and service scheme. The type of subsidies applied within the two areas also differs: Extension Ten has been provided with the same as in Extension Six except for the additional consolidation subsidy, which allowed for roof structures to be provided with an enclosed room.
- In both cases, the wet closets have been placed (back of the erven in either corner) in a manner that has been influenced by the engineers in order to save on service costs. The placing of the wet closets has not been influenced by the temporary structures present on the erven, but the roof structures have been.
- The average erf configuration in both extensions is quite similar (ext. 10 - 16m x 13m, ext. 6 - 16m x 11m) but average erf sizes differ by 32m<sup>2</sup>. Residents of Extension Ten have more spacious erven than the residents of Extension Six. Gross and nett densities are proportionately higher in Extension Six. Coupled with the smaller erf sizes, this implies that more people occupy Extension Six than Extension Ten.
- In both cases, initial housing provision began after people had begun to squat on the land. Therefore, in most cases the process of development involved the building of the shack first, followed by the wet closet, then the roof structures, more shacks and finally, permanent structures.

3. CONCLUSION

CHANGES OVER TIME

Changes over time in Extension Six appear to have taken place at the back of the erven. All households have constructed the temporary structures in this way in anticipation of the construction of the formal, permanent structures in the future. The picture within Extension Ten is different. With the size the erven being approximately 208m<sup>2</sup>, family sizes averaging 5, and the gross and nett population densities being 163m<sup>2</sup> and 266m<sup>2</sup> respectively, space is limited. The amount of space available should therefore be optimised for living space of the occupants. As such, privacy also becomes an issue for the households. It is also important to note, before reading the conclusions, that gardening is generally the activity that tends to happen at the front of the erven:

1. Had the roof structure been placed a bit more toward the street, there would have been ample living space at the back and sufficient space for a garden at the front. Placing of structures has not optimised the use of space, i.e. only the large open area in front of the roof structure can be used. Small side spaces have been created that cannot be functionally used.

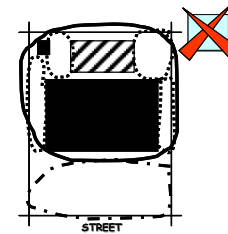


FIGURE 24: Pattern 1

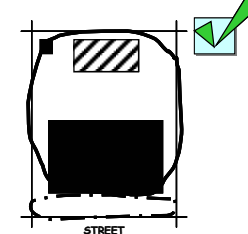


FIGURE 25: Pattern 1 - Alternative

2. This is how space is optimised for living rather than wasteful space created at the front of the erven for gardens. The placing of the structures have also assisted in ensuring that the rest of the space on the erven (not occupied by structures) can be optimally and functionally used, i.e. in 2a the structures (temporary structures and roof structures) have been placed in a manner where little pockets of space are avoided. Instead, larger spaces are created.

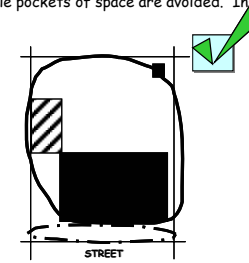


FIGURE 26: Pattern 2a

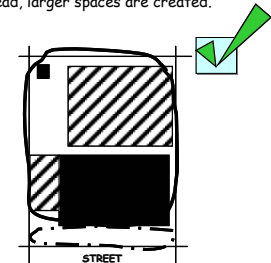


FIGURE 27: Pattern 2b

CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME

3. CONCLUSION

3. Not much could have been done to avoid this situation (3a) except to ask the residents to move structures so that the roof structure could be optimally placed. This would mean putting residents out of a home. However, two situations turned out to provide sufficient living space, but limited privacy levels.

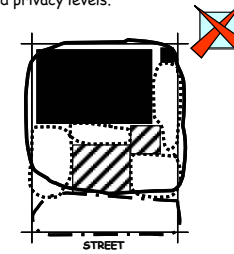


FIGURE 28: Pattern 3a

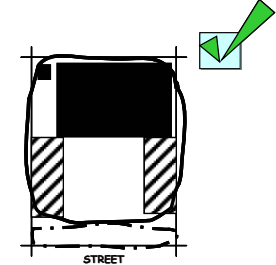


FIGURE 29: Pattern 3c

4. Placing of the structures has allowed an odd space to be created between the structures with a large space at the front. If the roof structures had been placed differently, greater living space and privacy would have been created:

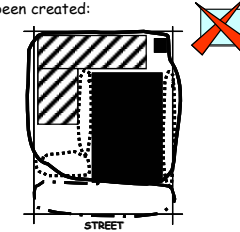


FIGURE 30: Pattern 4

- a. Had the roof structure been placed closer to the side boundary of the erven, more space would have been created between the structures, but space would still have been wasted at the front.

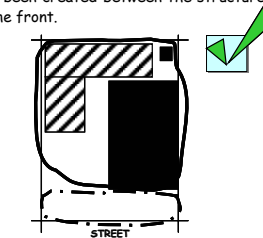


FIGURE 31: Pattern 4 - Alternative 1

- b. If the roof structure had been turned 90° (having the longer side parallel to the street) and placed closer to the street, living space and privacy would be increased to a great extent and the garden space reduced.

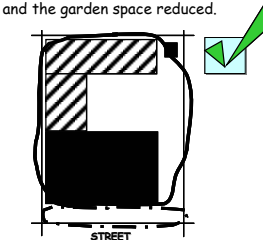


FIGURE 32: Pattern 4 - Alternative 2



CHAPTER 4: SPATIAL CONFIGURATION OF ORIGINAL HOUSING PROVISION AND CHANGES OVER TIME

3. CONCLUSION

5. 5c represent an example that works in terms of creating sufficient living space. Privacy can be created with the construction of additional units in time. The space created is not in small pockets but larger pockets, which is an advantage for future construction and expansion. In the cases of 5a and 5b two alternatives would have improved the size of the living space and would eliminate the odd pockets of space created:

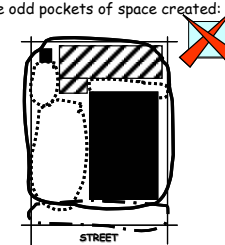


FIGURE 33: Pattern 5b

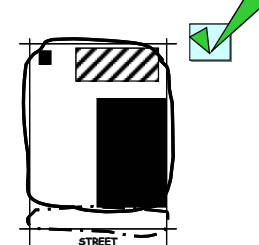


FIGURE 34: Pattern 5c

c. The roof structure could be placed on the opposite side of the erf to meet the temporary structure extending along the side boundary, i.e. an extension to existing structures. The situation created would resemble that of 5c.

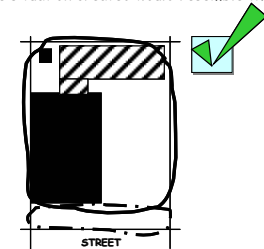


FIGURE 35: Pattern 5b - Alternative 1

d. The roof structure could have been rotated 90° and placed closer to the street. In this way not only is the living space increased, but privacy is also created. Gardening space is reduced. This option could also apply to 5c.

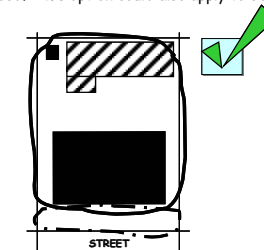


FIGURE 36: Pattern 5b - Alternative 2

The placing of the water closets in Extension Six doesn't seem to be affected by it, i.e. all structures have in any case been placed at the back of the erven. In the case of Extension Ten, however, not much thought was given to the placing of the roof structures. A little time spent on analysing the existing context before providing housing would improve the lives of the beneficiaries. The aim of the National Housing Policy, as stated within the National Housing Code, 2000, is after all:

- " (vi) "housing development" means the establishment and maintenance of *habitable, stable and sustainable public and private residential environments to ensure viable households and communities in area. convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and permanent residents of the Republic will, on a progressive basis, have access to-*
  - (a) *permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and*
  - (b) *potable water, adequate sanitary facilities and domestic energy supply'* (National Housing Code: Annexure A, Chapter 3, Part 2: 1 - 2),

where the focus is not just on building and adequate housing structure o shelter the beneficiaries, but also to create environments in which South Africans can live prosperously with privacy.

## 1. INTRODUCTION

This chapter will attempt to take the reader through the entire consolidation process, the difficulties experienced, and the characteristics of the households involved in both case study areas. This would firstly, entail detailing information about the structures built (the type of structures built, the dates of construction, the builders involved, etc.), the uses within the structures (kitchens, bedrooms, etc.) the erven uses (gardening, vehicular parking, rental, etc.), and addressing the issue of privacy and the efficiency of the use of the erven. The aim of this chapter is to provide a detailed analysis of the households in the process of consolidation and to arrive at factors that have influenced consolidation of the households selected.

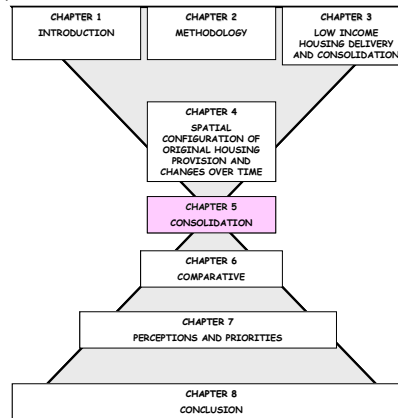


FIGURE 37: Position of chapter within dissertation

The structure of the chapter is firstly divided into two sections, A and B, which refers to extension 10 and 6 respectively. Figure 38 (opposite) represents the break down of one section. Both sections will be broken down in exactly the same manner except that extension 6 has four typologies.

Each section is further broken down into typologies. The typologies developed will be different between the two areas and are as follows:

**Extension 10:**

- **Typology 1:** a roof structure with no permanent additions, i.e. looks the same as when provided by government,
- **Typology 2:** a roof structure with permanent additions, but is an incomplete structure, and
- **Typology 3:** a completely enclosed roof structure.

**Extension 6:**

- **Typology 1** represents structures that have been positioned at the back of the erf.
- **Typology 2** is representative of structures placed at the side of the erf and
- **Typology 3** is characterised by structures placed at the front of the erf.
- The final, **typology (4)**, reflects complete houses.

The third level of the structure is within these typologies and appears as follows:

Each typology begins by introducing the households by describing the socio-economic status quo. The socio-economic status includes: family sizes and types, household sizes, the number of tenants, type of employment, the number of income sources, the sources of income and expenditure.

This is followed by more detailed information on additions. A step-by-step approach is used, to discuss each addition in detail (costs, builders, date of construction, type of addition etc.) - from the initial stages when government provided the top structures to the present status.

An analysis of the additions is made in terms of how the initial unit provided by government has changed over time. Changes range from, the move from temporary structures to permanent structures, the number of additions made, the size of the additions, the shape and configuration of the additions and the placing of the buildings, which analyses how efficiently space has been used and identifies obstacles to the process of consolidation. Further analysis is done on the use of space within the structures and on the erven.

The final issue discussed is the public / private interface, i.e. the interface of the structures and erven with the street. In essence, privacy is analysed at two levels, privacy from the public on the street, and privacy from the neighbours. At the end of each typology, a summary is made from which conclusions are derived.

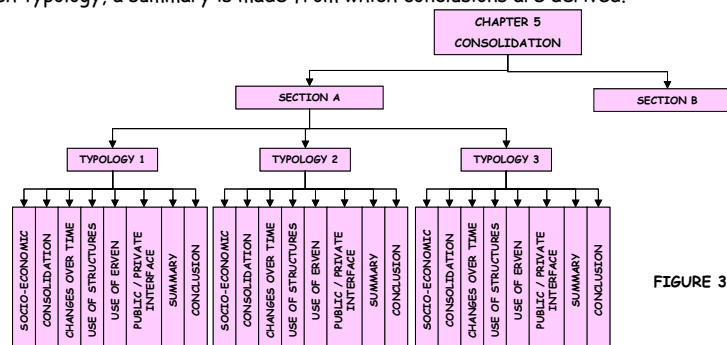


FIGURE 38: Structure of chapter

## 2. SECTION A EXTENSION 10 - ROOF STRUCTURES

- **Typology 1:** a roof structure with no permanent additions, i.e. looks the same as when they were provided,
- **Typology 2:** a roof structure with permanent additions, but an incomplete structure, and
- **Typology 3:** a completely enclosed roof structure.

### **HOW WERE THE TYPOLOGIES IDENTIFIED?**

Site visits were carried out and observations were made. From this, stages in the building up of the roof structures were apparent and it was decided upon to split the sample of fifteen evenly between these categories.

CHAPTER 5: CONSOLIDATION - 3.1.1. SOCIO-ECONOMIC INTRODUCTION

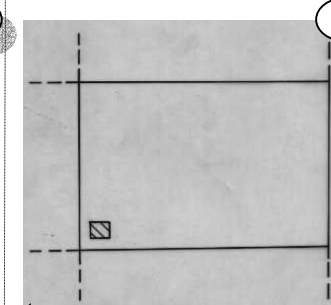
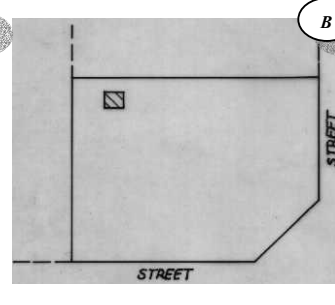
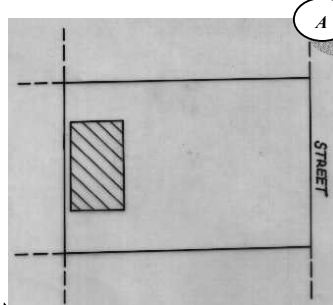
EXT. 6: TYPOLOGY 1

THE HOUSEHOLD	A	B	C
HOUSEHOLD PROFILE	<p>Family type: <i>Single nuclear family</i> Family size: 4</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 3 (<i>one child lives elsewhere</i>)</p>	<p>Family type: <i>Single nuclear family</i> Family size: 4 (<i>one child resides elsewhere</i>)</p> <p>Tenants: <i>Yes</i> No. of tenants: 1 Household size: 4</p>	<p>Family type: <i>Single nuclear family</i> Family size: 6</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 6</p>
EMPLOYMENT AND INCOME	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Full time</i> Location: <i>SAPS at Koedoespoort.</i></p>	<p>No. of sources of income: 2 Sources of income: <i>Father and tenant.</i> Employment: <i>Both part time.</i> Location: <i>Construction in Hardebeespoort and spaza shop in Mamelodi.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Mother</i> Employment: <i>Full time</i> Location: <i>PUTCO in Soshanguve.</i></p>
EXPENDITURE	<p>The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also a common expense.</p>		
WATER	X	X	X
ELECTRICITY	X	X	X
TRANSPORT	X	X	X
TELEPHONE			X
EDUCATION	X	X	X
FOOD	X	X	X
CLOTHING	X		X
ACCOUNTS	X		X
SAVINGS	X		
TAXES	X	X	X
SANITATION	X	X	X
WASTE REMOVAL	X	X	X
OTHER			X

CHAPTER 5: CONSOLIDATION - 3.1.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 1

INITIAL  
STRUCTURE

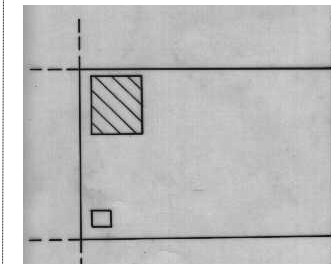
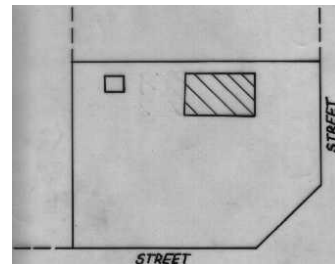
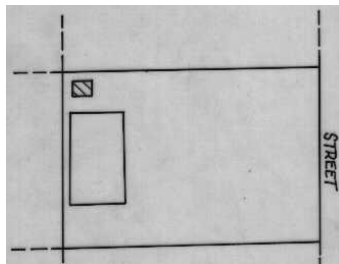


**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets  
**Material supplier:** Phase 1  
**Cost:** R1 300  
**Funding:** Savings  
**Builder:** Supplier. Owner constructed roof  
**Date of Constr.:** 2001  
**Problems:** Were without a toilet and water for 8 months.

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
1



**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** 2001  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden planks (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** 1997  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and precast slabs (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Private contractor  
**Date of Constr.:** 1998  
**Problems:** None

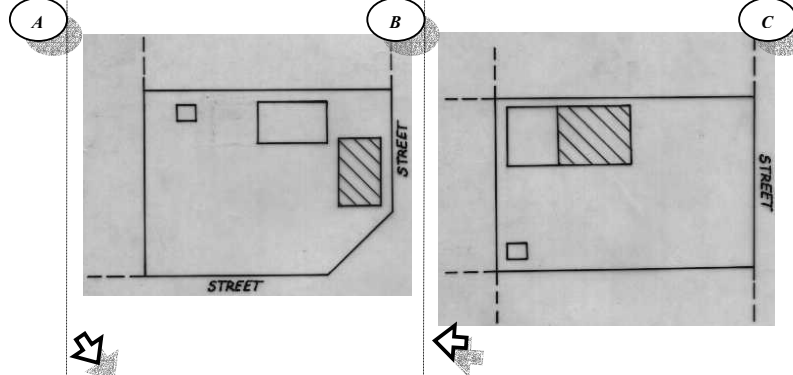
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 3.1.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 1

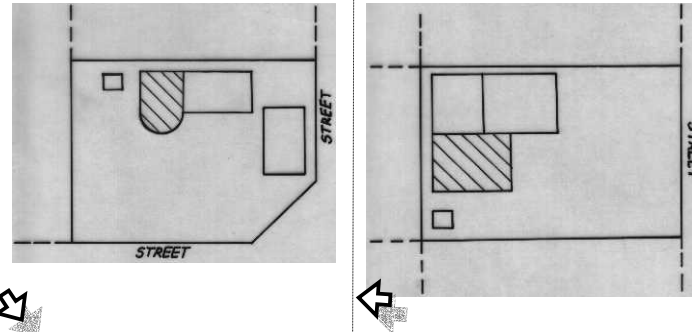
ADDITION  
2



*Description:* Temporary structure  
*Materials used:* Corrugated iron and wooden boards (temporary materials)  
*Material supplier:* Unknown  
*Cost:* Unknown  
*Funding:* Unknown  
*Builder:* Unknown  
*Date of Constr.:* Unknown  
*Problems:* None

*Description:* Temporary structure  
*Materials used:* Corrugated iron and precast slabs (temporary materials)  
*Material supplier:* Unknown  
*Cost:* Unknown  
*Funding:* Unknown  
*Builder:* Private contractor  
*Date of Constr.:* 1999  
*Problems:* None

ADDITION  
3



*Description:* One bedroom  
*Materials used:* Bricks (permanent materials)  
*Material supplier:* Waltloo  
*Cost:* R450 in addition to home made bricks  
*Funding:* Savings  
*Builder:* Owner  
*Date of Constr.:* 2001  
*Problems:* None

*Description:* Temporary structure  
*Materials used:* Corrugated iron and precast slabs (temporary materials)  
*Material supplier:* Unknown  
*Cost:* Unknown  
*Funding:* Unknown  
*Builder:* Private contractor  
*Date of Constr.:* 1999  
*Problems:* None

\*NOTE

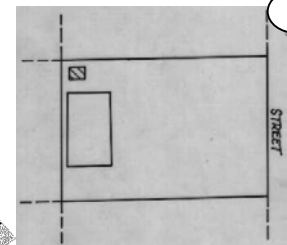
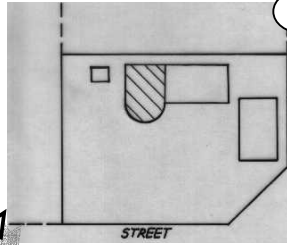
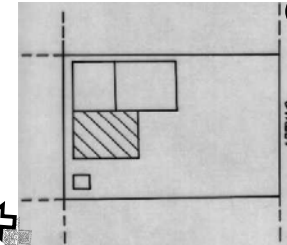
1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.



CHAPTER 5: CONSOLIDATION - 3.1.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 1

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

		
<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> One extension has been made. It was a shack that was made of temporary materials.</p> <p><b>SIZE</b> The size of the extension one is approximately 20m<sup>2</sup>.</p> <p>Erf size: 180m<sup>2</sup> Total area: 20m<sup>2</sup> Coverage: 11% Occupational density: 7m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The shack is rectangle in shape with dimensions of 3.5m x 5.9m.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions have been made. Temporary materials were used for the first two (shacks) and the third was a single room constructed from bricks.</p> <p><b>SIZE</b> The first and second extensions were approximately 13m<sup>2</sup> and 12m<sup>2</sup>, respectively, with the last estimated to be 8.5m<sup>2</sup>.</p> <p>Erf size: 186m<sup>2</sup> Total area: 33.5m<sup>2</sup> Coverage: 18% Occupational density: 8m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The first two shacks had a rectangular shape and measured 2.8m x 4.6m and 2.7m x 4.5m respectively. The single bedroom built had dimensions of square (2.8m x 2.8m) and a semi-circle (radius 5m).</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions were constructed to date. The construction of shacks made use of temporary materials.</p> <p><b>SIZE</b> The size of the first shack is approximately 12m<sup>2</sup>. The second extension has an area of 17m<sup>2</sup> and the third 18m<sup>2</sup>.</p> <p>Erf size: 173m<sup>2</sup> Total area: 47m<sup>2</sup> Coverage: 27% Occupational density: 8m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> All structures appear as rectangles but the dimensions of each differ: extension 1 (3.2m x 3.8m), extension 2 (4.6m x 3.8m), and extension 3 (3.6m x 5m).</p>

**\*NOTE**

- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).*
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
- Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.

**PLACING OF BUILDINGS:** With the size of the erven being approximately 176m<sup>2</sup> and gross and nett densities estimated at 219p/ha and 364p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.

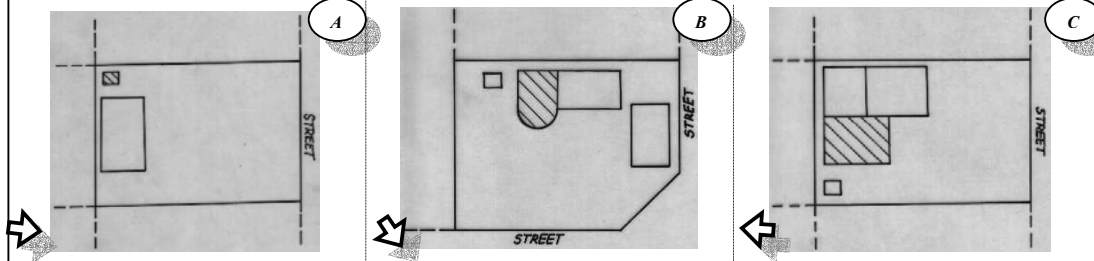
**PLACING OF BUILDINGS**  
The structure has been placed at the back of the property along the southern boundary line and the toilet on the southwestern corner.  
The use of the space on the erven has been maximised. There is a large open space in front of the temporary structure. Space has been used efficiently.  
  
The temporary structure has been placed in such a manner to allow for the construction of their future home in the ideally situated area (centre of the erf) as expressed by the owner. The placing of the shack was therefore deliberate.

**PLACING OF BUILDINGS**  
The toilet was placed in a southerly position on the erf. The first extension was placed very close toward the southern border in a central position, with the second shack placed along the western boundary line. The third extension was an addition to the first and now the two structures appear as a single unit.  
A generous amount of space has been created in front of the structures built, which allows for flexibility when deciding on its use. The small pocket of space created between the structures has been used for vegetable gardening. The structures protect the garden from onlookers and potential thieves. Space has been optimally

**PLACING OF BUILDINGS**  
Extension one was placed at a northeasterly position at the corner of the erf. The second is placed south of the first extension and the third is placed west of the first extension. In combination, all these shacks take an 'L' shape. The toilet was placed toward the northern end of the erf.  
The placing of the structures along the back and side boundary lines enable the optimum use of the rest of the space on the erf. The space created occurs in one large pocket. This assists for flexibility of usage as opposed to small pockets created by the interruption of other structures.  
  
The family wanted to ensure that there was

CHAPTER 5: CONSOLIDATION - 3.1.2. PHYSICAL CHANGES

EXT. 6: *TPOLOGY 1*



used on this erven.

space for the future development of their house and indicated that the centre of the erf would be suitable.

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

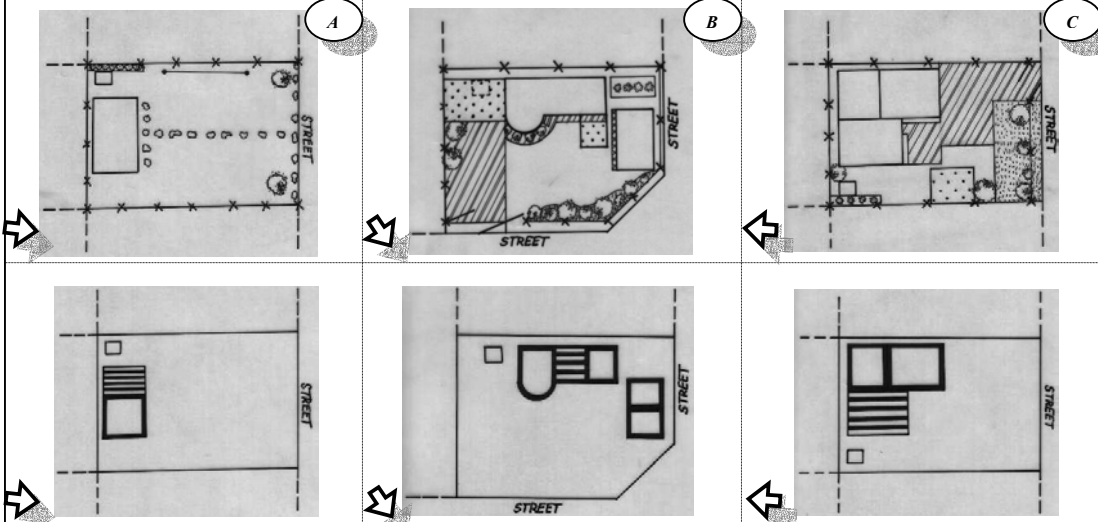
\*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

CHAPTER 5: CONSOLIDATION - 3.1.3. LAND USE AND THE USE OF SPACE

EXT. 6: *TYPOLGY 1*

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- One bedroom.
- Occupied by the owner - two bedrooms.
- Tenants - two bedrooms.
- Total = four
- Two bedrooms.

KITCHEN

- Part of the informal structure is used as a kitchen. It shares space with the bedroom.
- One kitchen.
- One kitchen.

DINING ROOM

LOUNGE

TOILET

- One toilet - government provision
- One toilet - government provision
- One toilet - government provision

BATHROOM

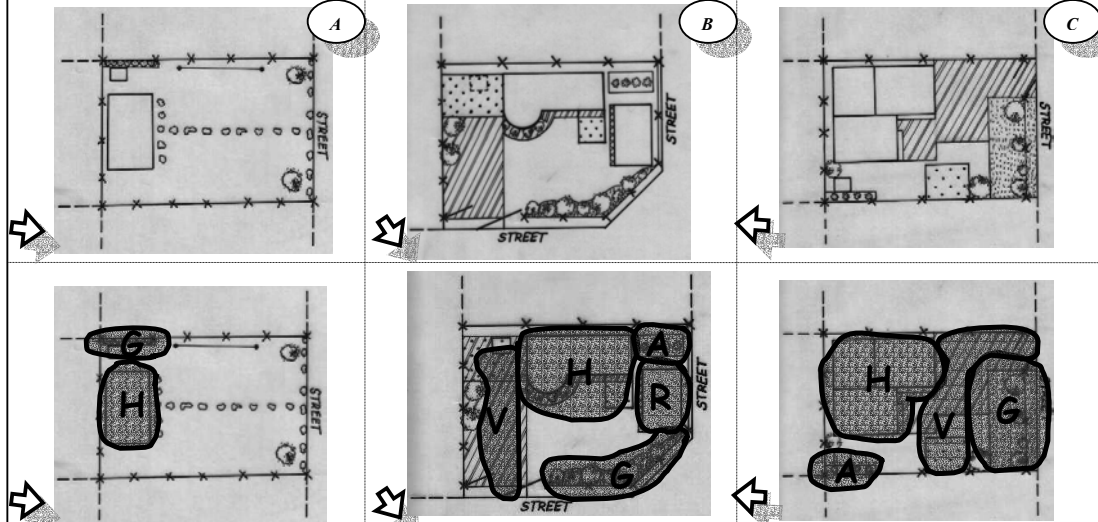
WHY IS IT USED IN THIS WAY?

**\*NOTE**  
1. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 3.1.3. LAND USE AND THE USE OF SPACE

EXT. 6: TYPOLOGY 1

HOW IS THE PROPERTY BEING USED IN TERMS OF:



**GARDENING**

A little garden is present at the back of the property along the right hand side boundary line.

The garden exists along the street boundary.

The garden is found at the street boundary.

**RENTAL HSG**

The unit along the street boundary is rented out.

**COMMERCIAL**

**SERVICE**

**AGRICULTURE**

A little vegetable garden is planted at the back of the erf between the two housing structures.

A vegetable garden exists next to the toilet along the left hand side boundary.

**PARKING**

Parking for vehicles takes place on the left hand side of the erf, next to the house.

Vehicles are parked under a carport on the left hand side of the erf.

**OTHER**

A clothesline has been placed on the western side of the erf.

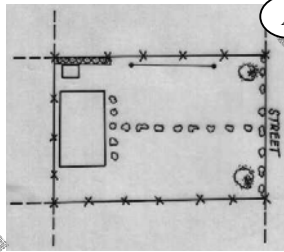
A tent was erected in front of the entrance to the kitchen. This serves as a veranda.

The erected tent serves as a carport.

CHAPTER 5: CONSOLIDATION - 3.1.4. PUBLIC / PRIVATE INTERFACE

EXT. 6: TYPOLOGY 1

PUBLIC/  
PRIVATE  
INTERFACE



RELATION TO THE STREET:

**Street Boundary Definition**

There is no fence in front of the erf, but stones have been placed to define the boundary line. This effort prevents the definition of private space and facilitates interaction with the street.

**PRIVACY:**

**Side and Back Boundaries**

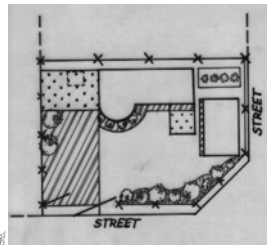
The other three sides of the erf is defined with low (approximately a meter) wire fencing. The intrusion of neighbours clearly prevents the creation of private space.

**Placing of units**

The unit is placed at the back of the erf. Private space is not defined. It allows for the intrusion of the public space from the street onto the erf.

**Placing of the front door**

The door faces the road and the open space created in front by the positioning of the unit at the back, thereby creating interaction with the street and the open space.



RELATION TO THE STREET:

**Street Boundary Definition**

Both street frontages are fenced off with a tall wire fence (1.5m). It is transparent, but strategically placed trees and structures help to block out intrusion from the street. There is a gate at front to restrict entry.

**PRIVACY:**

**Side and Back Boundaries**

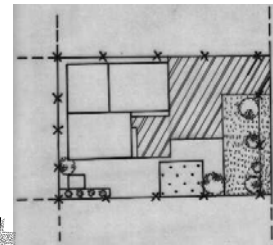
The remaining sides of the erf are also fenced, making use of the same fencing. Its transparent nature prevents the creation of privacy.

**Placing of units**

The original owners unit has been placed at the back of the erf and the tenants structures along the other street frontage to create some privacy from strangers on the street. Together these structures form an 'L' shape, which creates a central socialising space.

**Placing of the front door**

There are many doors all of which seem to face this central space created.



RELATION TO THE STREET:

**Street Boundary Definition**

There is a tall wire fence at the front of the erf (2m). Its transparent nature is strengthened by the strategic placing of trees, which prevents privacy from being created, nevertheless, but facilitates some degree of interaction with the street. There is a gate at the entrance of the erf.

**PRIVACY:**

**Side and Back Boundaries**

The same type of fencing is used around the remaining three sides of the erf. They do not assist in the creation of privacy.

**Placing of units**

Units have also been paced at the back of the erf in an 'L' shape along the boundaries. This shape defines space in front of it (socialising space).

**Placing of the front door**

The door opens out into the socialising space and a sense of security is evident, i.e. the entrance to the erf is on the southeast corner with a fence (bordered by trees) that prevents any other entrance. The second addition to the home acts as a further barrier by extending a bit in front of the entrance to the structure. The neighbour to the east is blocked out in this way.

1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>All single nuclear families reside here.</li> <li>Average family size is 4.5, ranging between 4 and 6.</li> <li>One household has one tenant.</li> <li>Average household size is 4, ranging from 3 to 6.</li> <li>The average source of income is one.</li> <li>Types of employment reflect an equal distribution between part-time and full-time employment.</li> <li>On average the number of expense amount to 10.</li> <li>Household A is the only one able to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>Initial structures were two thirds of the time a toilet that was placed at the back of the erven in either corner.</li> <li>Seven additions have been made.</li> <li>Of the seven additions, six were temporary structures and one was a formal structure.</li> <li>Household A made one addition whilst households B and C made three.</li> <li>All temporary structures were made of temporary materials and formal structures out of permanent materials.</li> <li>Where information was available, the following was noted: <ul style="list-style-type: none"> <li>Materials were sourced from within and outside Mamelodi.</li> <li>Materials that were sourced from within Mamelodi were for the construction of shacks (temporary structures). The construction of permanent structures required the acquisition of materials from outside Mamelodi.</li> <li>Costs range between R450 - R1300 with an average of R875.</li> <li>Savings was used in most cases to fund the additions.</li> <li>The use of private contractors and owner's skills in the construction of additions appear equally distributed between permanent and informal structures.</li> <li>The time lapse between additions appears to be between one and two years.</li> </ul> </li> </ul>
3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of two extensions was made.</li> <li>All shacks were constructed from temporary materials and formal structures from permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Average erf size: 180m<sup>2</sup></li> <li>Average extension size: 14m<sup>2</sup></li> <li>Average area : 34m<sup>2</sup></li> <li>Average coverage: 19% (ranged between 11% and 27%)</li> <li>Average occupational density: 8m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>Shape: majority have a rectangular shape.</li> <li>Average dimensions: 3.2m x 4.5m</li> </ul> <p><b>SHAPE AND CONFIGURATION*</b></p> <ul style="list-style-type: none"> <li>Shape: majority have a rectangular shape.</li> <li>Average dimensions: 3.2m x 4.5m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All extensions have been placed at the back end of the erf, next to the wet core.</li> <li>In two cases 'L' shapes are formed.</li> <li>All structures built have been placed at the back of the erven and creates large open spaces at the front used for socialising space and gardens for now until the permanent structures are built.</li> <li>Most reason that the units were placed in such a manner in order to keep place for the actual house to be built.</li> </ul>
<p><b>*NOTE</b></p> <ol style="list-style-type: none"> <li>The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).</i></li> <li>Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>No reasons for the use of space within the structures could be obtained.</li> </ol>	



4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>• On average, there are two bedrooms per household.</li> <li>• Everyone has a kitchen.</li> <li>• Only the outside toilet is available to all households.</li> <li>• People require the essentials.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>• All households have gardens. Two have them in front and the other on the side.</li> <li>• Two households have vegetable gardens, both at the back of the erven.</li> <li>• Vehicular parking is facilitated in the front of the erven of two households.</li> <li>• Tents have been erected on two erven as carports (B and C). Household B also erected another tent attached to the informal structure that adds to the social space.</li> <li>• Household A has a clothesline on the erf.</li> </ul>
6. PUBLIC/PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• An attempt is made by all households to cordon off their properties from the street with the use of fences (transparent), gardens/trees and stones (landscaping). Two households have made more of an effort to define these boundaries (B and C).</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>• Transparent fencing has been used in all households. This doesn't enable the creation of privacy.</li> </ul> <p><b>RELATION TO THE STREET:</b> <i>Placing of units</i></p> <ul style="list-style-type: none"> <li>• The units have been arranged in a manner that allows for some level of privacy and safety, except for the first household.</li> <li>• All units have been placed at the back of the erven along the boundaries.</li> <li>• <i>Household A:</i> The lack of complexity in the use of space causes a lack of a positive interaction between the street and the erf. Poor fencing and placing of the unit prevents the creation of private space.</li> <li>• <i>Household B:</i> A little complexity has played in the favour of this erf. The strategic planting of trees and the placing of the structures has also played a big role in the creation of diverse usage of space. The presence of two street frontages has influenced that placing of the structures.</li> <li>• <i>Household C:</i> There is a little complexity inherent on this erf but sufficient to create a little semi-public space.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>• All households have their doors facing the central space created by the placing of the structures. This is used in most cases as a socialising area. This compensates for the lack of space within the structures for lounges and other socialising spaces.</li> </ul>
*NOTE	<ol style="list-style-type: none"> <li>1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).</i></li> <li>2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>3. The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>8. No reasons for the use of space within the structures could be obtained.</li> </ol>

**AFFORDABILITY**

- **Family structure:** All families are single and nuclear.
- **Family sizes:** range between 4 and 6.
- **Sources of income:** All families are supported by one source of income (either part-time employment or full-time), except for household B that has another source of income acquired from the tenant. The ability of these families to save and make additions is therefore limited to a certain degree considering that this one income source has to support the families.
- **Expenses:** Although household B receives two incomes, the expenditure made, accounts for less in comparison to the other two families. This would enable this family to either save or spend on building additions.
- **Savings:** Households A and C have numerous expenses to account for but household A is the only one that is able to make savings.

**Conclusion**

In this case, household B appears to be in a better position, in terms of affordability, to be able to make additions due to fewer expenses, more income sources and a family size of 4. Household C would seem to be less able to make additions due to the larger family size and many more expenses coupled with one source of income.

**PRODUCT**

- **Number of additions:** In total seven additions had been made. Households B and C had made three and Household A, one.
- **Time:** With reference to the affordability of the households, household A should have been able to make more than one extension since this is the only household that has the ability to save but seems to be having difficulties in extending. This can be accounted for by the dates of occupancy of each household. Households B and C arrived in this extension in 1997 and 1998 respectively and household A in 2001. This would have given households B and C the advantage, i.e. these households had more time to consolidate.
- **Type of structures:** Household B should also be in a much better position to make more additions, because of the two sources of income and few expenses, but seems to be in line with household C, i.e. three additions each. In this case, although the numbers of extensions are the same, the type of extensions differs. Household B managed to build a permanent structure amongst the other two temporary structures, but household C had built only temporary structures. Household B is therefore still ahead of the other two households in terms of the level/quality of consolidation.
- **Level of formalisation:** The affordability levels of the households become quite evident when one looks at the type of additions that have been made apart from the number of additions. Six temporary structures (made of temporary materials) and one formal structure (permanent materials) have been constructed. These households could not afford to build permanent structures.
- **Size of additions:** Additions have been progressively made with an average size of 14m<sup>2</sup> and ranging from 8.5m<sup>2</sup> to 20m<sup>2</sup>. In most cases, such a space would have to be divided into different uses, i.e. kitchen and bedroom. The affordability levels of these households have influenced the small size of the extensions made. Household A has made the largest additions and household B the smallest. In comparison to the large family sizes, the size of the additions made is insufficient.
- **Configuration:** The average dimensions of structures prevalent here is 3.2m x 4.5m.
- **Area of additions:** On average the amount of space occupied by the dwellers is also insufficient (34m<sup>2</sup> - average area of all additions combined) ranging from 20m<sup>2</sup> to 47m<sup>2</sup> considering the number of people that actually occupy that space.
- **Occupational density:** This leaves an average occupational density of 8m<sup>2</sup> per person (ranging from 7 m<sup>2</sup> to 8 m<sup>2</sup> per person) within this typology.
- **Coverage:** The additions cover an average of 19% of the erven and range from 11% to 27%. It appears that a small amount of the erven is occupied by structures. This leaves a lot of the area around the structures open for activities or for future construction.
- **Shape:** Characteristic of additions here is a rectangular shape.
- **Arrangement of structures:** However, the arrangement of the additions generally takes on an 'L' shape along the back and side boundaries. It appears to be an indication of the desire to restrict the use of the central area of the erf in expectation of the construction of the house. This space is used as socialising space at present. Space has been efficiently used in anticipation of the construction of the future permanent houses.
- **Type of employment:** The type of employment seems to have no affect on the additions made, i.e. even though household B had two sources of income from part-time employment, the level of formalisation is a degree higher than the other two households that had one source of income from a full-time employment source.

**Conclusion**

Household B seems to have been the successful household to build a permanent structure. Factors that have played a role here in comparison to the other households is the low expenditure levels, more income sources, fewer family members, and having more

**\*NOTE**

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time to consolidate.

*Household C* also had more time to consolidate than household A, but had more family members, one income source, and many expenses inhibiting consolidation.

*Household A* had one addition but was the largest one across all the households. Although household A had the same family size as household B, it was inhibited from consolidating by arriving later than the other two households, one source of income, and numerous expenses.

Thus, the factors that affected consolidation in this case are the number of income sources, expenses, family sizes and time. These factors have acted positively (less expenses, smaller family sizes, more time, etc.) to assist with consolidation. The negative side to these factors have inhibited consolidation (less time, larger family sizes, more expenses, etc.). However each factors cannot be isolated, i.e. the interplay between the factors create the suitable or unsuitable situations for consolidation.

### PROCESS

- **Sourcing of materials:** Quite interestingly to note is the sourcing of materials. In relation to temporary materials, these were sourced within Mamelodi and permanent materials were sourced outside. The poor financial state also lead to one household making their own bricks.
- **Cost:** Costs of these additions are low. Each addition cost between R450 to R1300 averaging R875. Not much more could be afforded.
- **Funding:** Access to credit was not an option in these households since all had used savings.
- **Builders:** There was an equal usage of private contractors and owners skills in the construction of additions. In light of the affordability levels being affected by so many inhibiting factors, private contractors are still made use of in addition to the building skills within this typology.
- **Time:** The time between each addition is quite small, indicating that people save up a little over a small period and then build small additions.

### USE OF SPACE

#### *Within structures*

- The uses within the additions are the essentials, i.e. kitchens and bedrooms. On average, each household has two bedrooms, one kitchen and makes use of the toilet provided by government. The number of bedrooms is insufficient for the family sizes prevalent (4 to 6). It appears that these households are surviving on the essentials based on their poor financial situation and the family members to support.

#### *Within erven*

- **Gardens:** The uses on the erven itself indicate some level of diversity. In general, the flower gardens are placed at the front and vegetable gardens at the back of the erven. It seems that flower gardens are decorative and are placed at the front for passers by to admire. Vegetable gardens can also be admired, but its purpose differs slightly. Not only is it decorative but it also provides the owners with food. The placing of such gardens at the back is for the protection of this investment and potential guarantee of food, if taken care off. The presence of vegetable gardens can be seen as a survival strategy. It provides a saving of money.
- **Parking:** Parking for vehicles is accommodated at the front of the erven. This use was probably not planned for initially and hence takes such a position. Both households have fenced off their homes that help protect their cars. The cars parked in these properties belong to friends and are not luxuries of these households.
- **Tenants:** Household B has a renter in the structure placed against the boundary along the street (10% of the property is used for rental purposes).
- **Other:** Tents have also been erected here to serve as the carports and a social space. A clothesline appears in household A.

### PUBLIC/PRIVATE INTERFACE

- **Street boundary:** All households have attempted to cordon off their properties with either fencing or the use of stones. Two households are much more defined in their attempts than household A. The use of stones in household A creates a decoration but does not succeed in preventing people from invading their space, i.e. public space from the street invades the erven thereby creating interaction, increasing security risks and preventing the creation of privacy. Besides the use of fencing in the other two households, trees and plants are used to create a secure environment within the erven.
- **Side and back boundaries:** Although the fencing is continuous throughout all boundaries on all erven, this fencing does not serve the purpose of creating privacy because of its transparent nature. Rather, the placing of the additions in the 'L' shape

#### \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

- along the boundaries and the placing of the gardens facilitate the desire for privacy and satisfy that need to a certain degree. Private space is therefore created in household B.
- **Placing of units:** All structures have been placed along the side and back boundaries, leaving a large central space open in front of the structures. It has been used mainly for socialising.
- **Placing of the front door:** All doors in all households face this central socialising space created.

*Pattern:* All structures have been placed at the back of the erven leaving maximum space open in front. Gardens and trees exist at the entrance with vegetable gardens at the back.

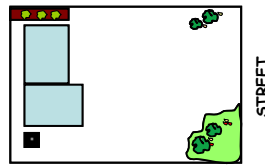


FIGURE 45: Pattern 1

**\*NOTE**

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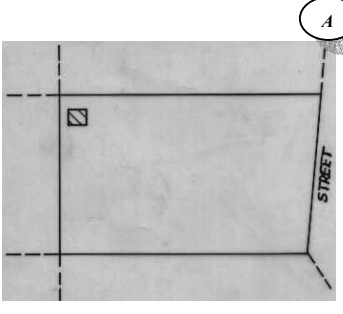
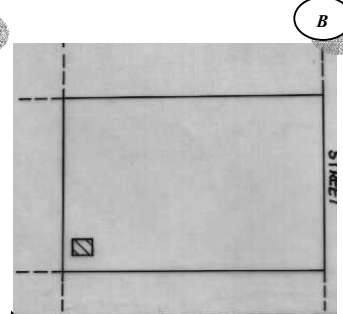
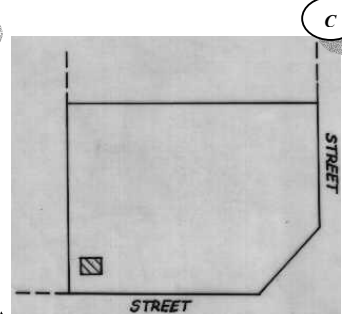
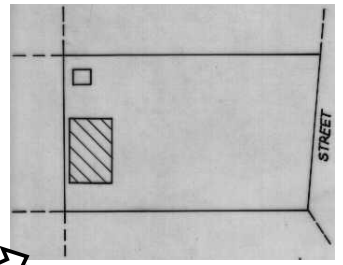
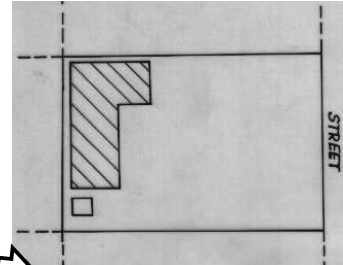
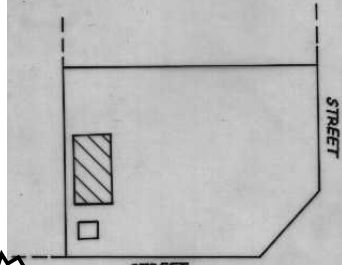
CHAPTER 5: CONSOLIDATION - 3.2.1. SOCIO-ECONOMIC INTRODUCTION

EXT. 6: TYPOLOGY 2

THE HOUSEHOLD	A	B	C
<b>HOUSEHOLD PROFILE</b>	Family type: <i>Single nuclear family</i> Family size: 4  Tenants: <i>Yes</i> No. of tenants: 3 Household size: 7	Family type: <i>Single nuclear family</i> Family size: 4  Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 4	Family type: <i>Single nuclear family + extended</i> Family size: 7  Tenants: <i>Yes</i> No. of tenants: 5 Household size: 12
<b>EMPLOYMENT AND INCOME</b>	No. of sources of income: 5 Sources of income: <i>Father, two tenants and two grants.</i> Employment: <i>All full time.</i> Location: <i>Transnet in Koedoespoort and Heatherly dumping site.</i>	No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Contract</i> Location: <i>AVIS in the CSIR.</i>	No. of sources of income: 8 Sources of income: <i>Father, son, 5 tenants, and 1 pension.</i> Employment: <i>Entrepreneurial/informal, 2 x full time, 4 x part time.</i> Location: <i>Spaza shop from home, construction in Rustenburg, chemical field, Shoprite (Queenswood), Pretoria central, and as a taxi driver (Mamelodi) and a shop attendant.</i>
<b>EXPENDITURE</b>	The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also common expenses.		
WATER	X	X	X
ELECTRICITY	X	X	X
TRANSPORT	X	X	X
TELEPHONE	X	X	X
EDUCATION	X	X	
FOOD	X	X	X
CLOTHING	X	X	X
ACCOUNTS	X	X	X
SAVINGS			X
TAXES	X	X	X
SANITATION	X	X	X
WASTE REMOVAL	X	X	X
OTHER		X	

CHAPTER 5: CONSOLIDATION - 3.2.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 2

<p>INITIAL STRUCTURE</p>			
	<p><i>Description:</i> Water Closet <i>Materials used:</i> Precast concrete <i>Material supplier:</i> Government <i>Cost:</i> Subsidy <i>Funding:</i> Government <i>Builder:</i> Government <i>Date of Constr.:</i> Unknown <i>Problems:</i> None</p>	<p><i>Description:</i> Water Closet <i>Materials used:</i> Precast concrete <i>Material supplier:</i> Government <i>Cost:</i> Subsidy <i>Funding:</i> Government <i>Builder:</i> Government <i>Date of Constr.:</i> Unknown <i>Problems:</i> None</p>	<p><i>Description:</i> Water Closet <i>Materials used:</i> Precast concrete <i>Material supplier:</i> Government <i>Cost:</i> Subsidy <i>Funding:</i> Government <i>Builder:</i> Government <i>Date of Constr.:</i> Unknown <i>Problems:</i> None</p>
<p>ADDITION 1</p>			
	<p><i>Description:</i> Temporary structure <i>Materials used:</i> Corrugated iron and metal sheets (temporary materials) <i>Material supplier:</i> Unknown <i>Cost:</i> Unknown <i>Funding:</i> Unknown <i>Builder:</i> Owner <i>Date of Constr.:</i> 1997 <i>Problems:</i> Leakages</p>	<p>888 <i>Description:</i> Temporary structure <i>Materials used:</i> Corrugated iron and metal sheets (temporary materials) <i>Material supplier:</i> Phase 5 <i>Cost:</i> R3 000 (mater), R300 (constr) <i>Funding:</i> Credit with supplier <i>Builder:</i> Private contractor (Mamelodi West) <i>Date of Constr.:</i> 1997 <i>Problems:</i> Rain destroyed the property</p>	<p><i>Description:</i> Temporary structure <i>Materials used:</i> Corrugated iron and wooden boards (temporary materials) <i>Material supplier:</i> Unknown <i>Cost:</i> Unknown <i>Funding:</i> Unknown <i>Builder:</i> Unknown <i>Date of Constr.:</i> Unknown <i>Problems:</i> None</p>

\*NOTE

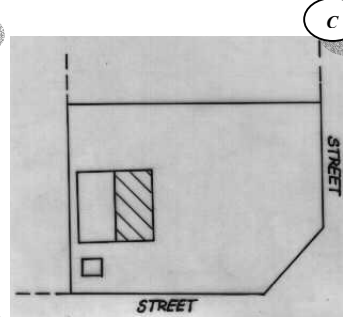
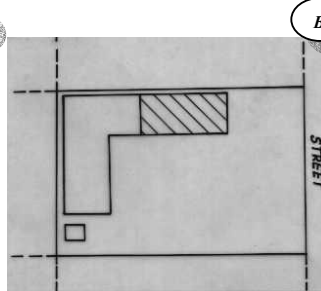
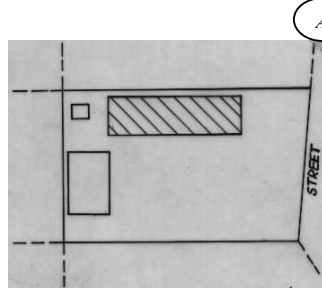
1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.



CHAPTER 5: CONSOLIDATION - 3.2.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 2

ADDITION  
2

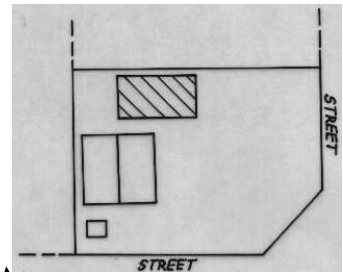
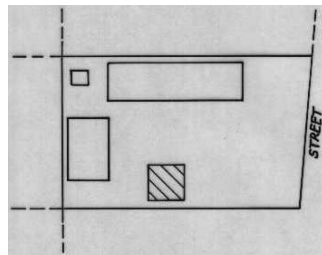


**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Unknown  
**Cost:** R1 700  
**Funding:** Unknown  
**Builder:** Owner was assisted  
**Date of Constr.:** 1997  
**Problems:** Leakages

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Phase 6  
**Cost:** R570 (mater), R300 (constr.)  
**Funding:** Credit with supplier  
**Builder:** Private contractor (Mamelodi West)  
**Date of Constr.:** 2000  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
3



**Description:** Temporary structure

- Materials:** All initial structures were toilets situated at the back of the erven on either left or right corners.
- A total of 11 additions have been made
- All additions were shacks constructed of temporary materials.

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** Unknown  
**Problems:** None

\*NOTE

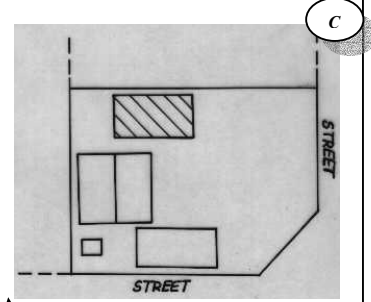
1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 3.2.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 2

ADDITION  
4

A

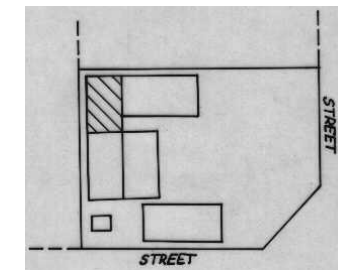


C



Description: Temporary structure  
Materials used: Corrugated iron and metal sheets (temporary materials)  
Material supplier: Unknown  
Cost: Unknown  
Funding: Unknown  
Builder: Unknown  
Date of Constr.: Unknown  
Problems: None

ADDITION  
5



Description: Temporary structure  
Materials used: Corrugated iron and wooden boards (temporary materials).  
Material supplier: Unknown  
Cost: Unknown  
Funding: Unknown  
Builder: Unknown  
Date of Constr.: July 2002  
Problems: None

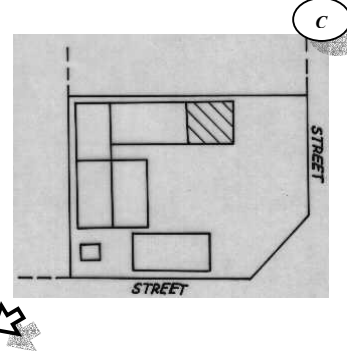
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 3.2.2. PHYSICAL CHANGES

EXT. 6: *TYPOLGY 2*

ADDITION  
6



**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** August 2002  
**Problems:** None

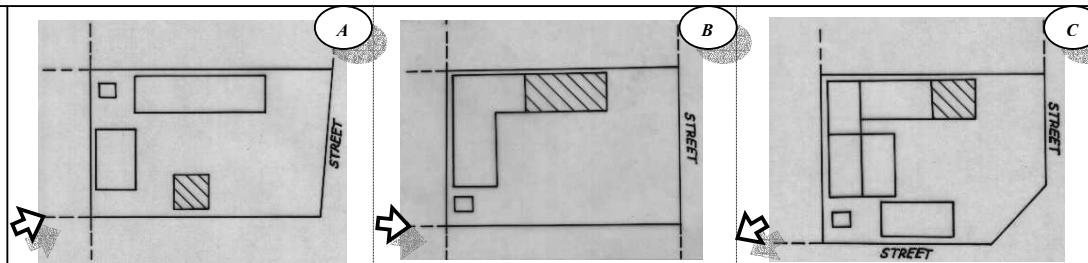
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CHAPTER 5: CONSOLIDATION - 3.2.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 2

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:



**NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS**

Temporary materials were used in the construction of these three shacks, but not the toilet (provided by government).

**SIZE**

The size of the first extension is approximately 13m<sup>2</sup>, the second 25m<sup>2</sup> and the third is estimated at 7m<sup>2</sup>.

Erf size: 180m<sup>2</sup>  
 Total area: 45m<sup>2</sup>  
 Coverage: 25%  
 Occupational density: 6m<sup>2</sup>/person

**SHAPE AND CONFIGURATION**

All shacks take the form of a rectangle with dimensions of 4.5m x 3m (ext. 1), 9.4m x 2.7m (ext. 2), and 2.6m x 2.6m (ext. 3).

**NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS**

In total, two extensions have been made, i.e. two shacks. The two shacks have been constructed from temporary materials.

**SIZE**

Roughly, the first shack totals 28m<sup>2</sup> and the second extension is 14m<sup>2</sup>.

Erf size: 175m<sup>2</sup>  
 Total area: 42m<sup>2</sup>  
 Coverage: 24%  
 Occupational density: 11m<sup>2</sup>/person

**SHAPE AND CONFIGURATION**

The shacks are attached to one another to form an 'L' shape. The first has dimensions of two rectangles, i.e. 'L' shaped 5.1m x 2.6m and 5m x 3m. The second is 5.6m x 2.6m.

**NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS**

To date, six shacks have been constructed. All have been built from temporary materials.

**SIZE**

Shack 1 - area of approximately 9m<sup>2</sup>. Shack 2 - 9m<sup>2</sup>. Shack 3 - 12m<sup>2</sup>. Shack 4 - 12m<sup>2</sup>. Shack five - 8m<sup>2</sup>. Shack 6 - 8m<sup>2</sup>.

Erf size: 166m<sup>2</sup>  
 Total area: 58m<sup>2</sup>  
 Coverage: 35%  
 Occupational density: 5m<sup>2</sup>/person

**SHAPE AND CONFIGURATION**

All shacks have a rectangular shape but when they are arranged all together they appear as an incomplete 'U' shape. The configurations are as follows: extension 1 (4.3m x 2.2m), extension 2 (2.2m x 4.3m), extension 3 (2.6m x 4.8m), extension 4 (4.8m x 2.4m), extension 5 (3.6m x 2.2m), and extension 6 (3m x 2.6m).

**\*NOTE**

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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

**PLACING OF BUILDINGS:** With the size of the erven being approximately 208m<sup>2</sup> and gross and nett densities estimated at 219p/ha and 364p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.

**PLACING OF BUILDINGS**

The first structure appears almost against the southern boundary line in a central position. The second and third shacks are built along the western and eastern boundaries respectively. The toilet appears in a southwesterly position.

Space has been optimised by the placing of the structures against the boundaries. A large central space is created and used for socialising.

The family wanted to ensure that there was space for the future development of their house. The central area was therefore kept open.

**PLACING OF BUILDINGS**

The toilet is placed in the southeastern corner. The initial shack is placed at the back of the erf at the southwestern corner. The second extension was attached north of extension one.

A large open space is created in the centre and front of the erf. The placing of the structures has facilitated leaving a maximum amount of functional space available for the construction of their house. Space has been used efficiently.

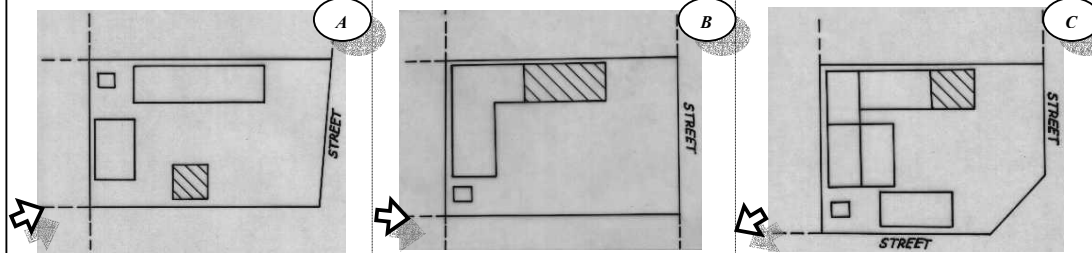
**PLACING OF BUILDINGS**

The toilet is placed in the northwestern corner. The first extension is placed in a northerly position (close to the boundary line) with the second attached to its southern facing side. Extension three appears in an eastern position along the boundary line and extension four on the opposite side (western boundary line). The fifth one is attached to the east of extension one and extension six is attached to the southern end of extension three.

The central and front areas of the erven have not been occupied. This space has been created deliberately for socialising (refer below). Space has been used efficiently.

CHAPTER 5: CONSOLIDATION - 3.2.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 2



The spa shop was the central feature that required the positioning of the other structures in such a fashion. It required some space where people could socialise and easily see the spaza shop when entering the erf.

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

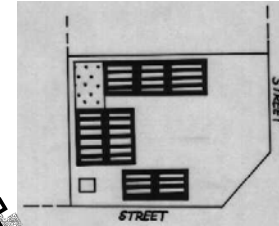
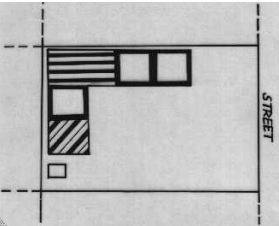
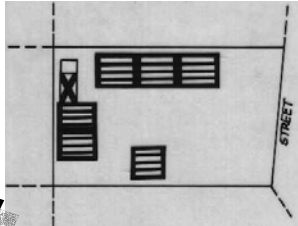
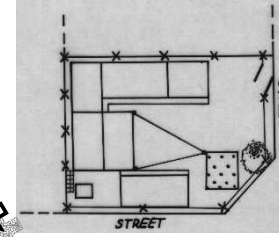
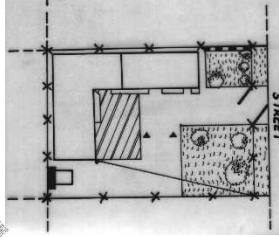
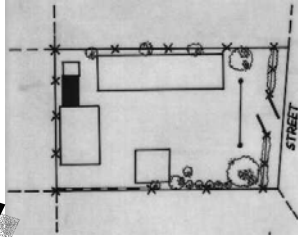
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CHAPTER 5: CONSOLIDATION - 3.2.3. LAND USE AND THE USE OF SPACE

EXT. 6: *TPOLOGY 2*

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- Total of six bedrooms:
  - Owners - two
  - Tenants - four

- Three bedrooms.

- All structures are divided into bedrooms and kitchens. Seven bedrooms in total.

KITCHEN

- For every bedroom there is a kitchen, i.e. five.

- One kitchen.

- Seven kitchens.

DINING ROOM

LOUNGE

- One lounge.

TOILET

- One toilet - government provision.

- One toilet - government provision.

- One toilet - government provision.

SPAZA SHOP

- One structure is used as a spaza shop.

WHY IS IT USED IN THIS WAY?

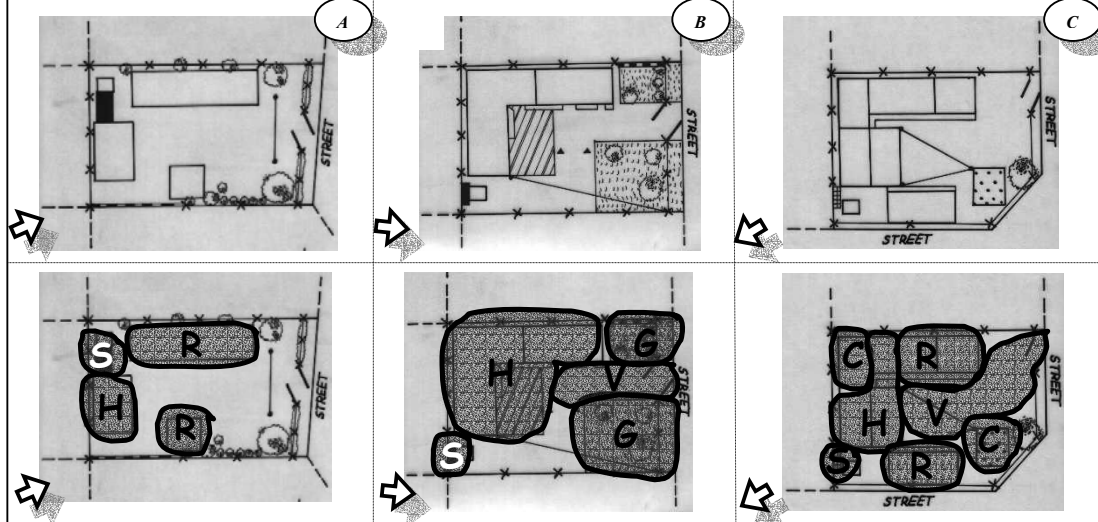
\*NOTE  
1. No reasons for the use of space within the structures could be obtained.



CHAPTER 5: CONSOLIDATION - 3.2.3. LAND USE AND THE USE OF SPACE

EXT. 6: *TPOLOGY 2*

HOW IS THE PROPERTY BEING USED IN TERMS OF:



**GARDENING**

The front of the erf has a garden on either side of the gate.

**RENTAL HSG**

Two structures on the side boundaries of the erf are rented out.

The structures bordering the side boundaries are rented out.

**COMMERCIAL**

A spaza shop exists at the back of the erf - eastern corner. Associated with this is the rest area in the opposite corner.

**SERVICE**

**AGRICULTURE**

**PARKING**

Cars are parked in front of the house structure.

Cars are parked in the central space.

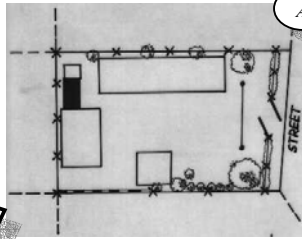
**OTHER**

A storage facility exists between the toilet and the main structure. A clothesline cuts across the entrance to the erf.

A storage facility exists behind the toilet. A clothesline cuts across from a corner of the structure to the front fence.

Building materials are stored at the back of the erf and clotheslines are attached from the tented area to one structure. The tented area serves as a place for customers of the tuck shop to relax or converse with others.

**PUBLIC/  
PRIVATE  
INTERFACE**



**RELATION TO THE STREET:**

**Street Boundary Definition**

A tall (1.5m) wire fence has been erected in front of the house with gates. It is semi-transparent because of the creepers and trees growing over it. It successfully keeps the public space out of the erf and creates some semi-public space.

**PRIVACY:**

**Side and Back Boundaries**

The other sides of the erf are also fenced with wire fencing of the same height. On the eastern boundary the fence is re-enforced by a brick wall and some weeds that have been allowed to grow tall. This is to prevent intrusion from the neighbour. The western boundary is also re-enforced by the placing of trees. Some degree of privacy is created.

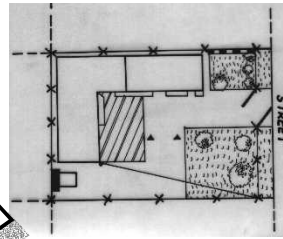
**Placing of the units**

The structures have been placed in a 'U' formation along the boundaries at the back and sides. This creates socialising space in the centre. The placing of the structures in this way also prevents intrusions from outsiders by blocking their views into the erf.

The structures have been placed in such a manner to facilitate the construction of the actual formal structure (house).

**Placing of the front door**

All doors of the shacks face the centre of the erf (socialising space).



**RELATION TO THE STREET:**

**Street Boundary Definition**

The transparent nature of the one and a half meter tall wire fence and gate in front of the yard facilitates interaction with the street. Trees planted along the fence aid in keeping out the public but are not successful at creating privacy.

**PRIVACY:**

**Side and Back Boundaries**

The other sides of the erf are fenced off with the same type of wire fencing used in front. It does not succeed in creating privacy. A short wall exists at the front of the erven on the west side.

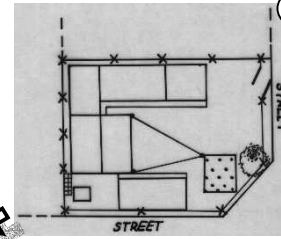
**Placing of the units**

The structures have been placed in an 'L' shape that borders two boundaries and creates an open area in the centre of the erf. The structures prevent intrusion from outsiders along the two boundaries and together with the short wall, it blocks out the neighbour on the west side totally.

The structures have been placed in such a manner to facilitate the construction of the actual formal structure (house).

**Placing of the front door**

All shacks have their doors facing the centre of the erf. This appears to be the area for socialising.



**RELATION TO THE STREET:**

**Street Boundary Definition**

There are two street frontages with one defined entrance to the erf: The presence of a short weak transparent fence in front lacks the necessary requirements to create privacy. A gate is present at the entrance. The other street frontage is blocked off by the positioning of a structure.

**PRIVACY:**

**Side and Back Boundaries**

The remaining sides of the erf are fenced off making use of the same type of fencing. It demonstrates boundary definition and lacks the ability to create private space.

**Placing of the units**

The structures form a 'U' shape that surrounds an open space. The intention was to create interaction between the spaza shop located on the erf and the passers by as well as those that purchase goods from there. The arrangement of structures is, therefore, to create a social space.

**Placing of the front door**

All doors face the centre of the erf, which is the focal point of the erf.

1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>The Family Types are divided between two single nuclear families and one single nuclear family with extended family members.</li> <li>The average family size is 5, ranging from 4 to 7.</li> <li>Households A and C have tenants.</li> <li>Total number of tenants is 8.</li> <li>The average household size is 8 ranging from 4 to 12.</li> <li>Average number of sources of income is 5, ranging from 1 to 8.</li> <li>The type of employment is characterised mainly by full-time and part-time employment with one entrepreneurial/informal activity.</li> <li>The average number of expenses is 11.</li> <li>Only one household managed to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>All initial structures were toilets situated at the back of the erven on either left or right corners.</li> <li>A total of 11 additions have been made</li> <li>All additions were shacks constructed of temporary materials.</li> <li>Household A made three additions, household B made two and household C made six additions.</li> <li>Where information was available, the following was noted: <ul style="list-style-type: none"> <li>Materials were sourced from within Mamelodi.</li> <li>Costs range between R870 and R3300 with an average of R2085.</li> <li>Credit was used as funding.</li> <li>In most cases, private contractors were used. Owners used either their skills or had been assisted in two cases.</li> <li>The time lapse between additions ranged from a few months to three years.</li> </ul> </li> </ul>
3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of approximately 3.6 shacks had been constructed.</li> <li>They range between two and six.</li> <li>All shacks had been constructed of temporary materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Average erf size: 174m<sup>2</sup></li> <li>Average extension size: 14.5m<sup>2</sup></li> <li>Average area: 48m<sup>2</sup></li> <li>Average coverage: 28% (ranging between 24% and 35%)</li> <li>Average occupational density: 7m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>Shape: Majority take a rectangular shape, except one (square).</li> <li>Average dimensions: 2.6m x 4.75m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All shacks occupy the space at the back and sides of the erven.</li> <li>Two of them have placed shacks along the east boundary.</li> <li>All have placed shacks along the west boundary.</li> <li>Two households have shacks that have been arranged to form 'U' shapes, whilst the other take an 'L' shape.</li> <li>The placing of the structures along the boundaries have assisted in creating functional space in the centre and front of the erven. Space has been used efficiently.</li> </ul> <ul style="list-style-type: none"> <li>Two households reason that space was reserved for the construction of the house.</li> <li>In household C space was kept for socialising and easy entrance to the spaza shop.</li> </ul>

**\*NOTE**

- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
- Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.
- No reasons for the use of space within the structures could be obtained.

4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>• There are 16 bedrooms in total, an average of five bedrooms per household.</li> <li>• There are 13 kitchens, an average of 4 kitchens per household</li> <li>• There is a lounge in only one household</li> <li>• Toilets provided by government are used in each household</li> <li>• One household has a spaza shop</li> <li>• The use of space is dictated by the essential needs of the residents.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>• Just one household has a garden.</li> <li>• Households A and C have renters on the properties. In both cases, the renters have been placed on the side boundaries of the erven.</li> <li>• Space for vehicular entry and parking is facilitated by household B and C in the centre of the erf.</li> <li>• All households have storage spaces for building materials and have clotheslines.</li> <li>• Household C has a tent erected for the relaxation of the customers of the spaza shop.</li> </ul>
6. PUBLIC/PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• In all households, fences were erected but the purpose of these fences differs. The first two households erected fences in order to define some private space and boundaries. The last household wanted interaction with the public in order to attract business. The attempt for privacy is much more evident in the first household where an attempt is made to cut the public off from the erf.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>• All boundaries have been made with the use of wire fencing that is transparent in nature. In some cases walls have been erected to create privacy, which were successful to a degree.</li> <li>• The boundaries (both sides and back) are however enforced by the arrangement of the structures and trees.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>• The placing of the units has been done in a manner that facilitates the creation of social space as well as reinforcing the definition of the boundaries.</li> <li>• The placing of the structures also facilitates the construction of the future houses by keeping space for the structure.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>• All doors face inward toward the central space created. This facilitates security and a socialising space.</li> </ul>

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
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6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

**AFFORDABILITY**

- **Family structure:** All families are single and nuclear except for household C. This family has extended family members as well (single, nuclear + extended).
- **Family size:** Family sizes within this typology range between 4 and 7, however two households have tenants which results in the household sizes ranging between 4 and 12. Family sizes appear regular except for the household with 7 family members. This particular household has extended family members, apart from the tenants, that accounts for such a large family size.
- **Sources of income:** Household B has only one source, whilst household C has eight sources of income to support its family of seven. Household A is supported with five sources of income.
- **Savings:** In terms of saving only household C is able to.
- **Expenses:** Every household has numerous expenses but household B seems to have the most amounts of expenses. Combined with the limited income sources, this would reduce the ability of this household to extend.

**Conclusion**

The affordability levels of households A and C seem to be higher than household B due to the numerous sources of income in relation to household and family sizes. In general, though the affordability levels prevalent within this typology is low when considering the large family sizes and numerous expenses.

**PRODUCT**

- **Number of additions:** A sum of eleven additions had been made between the three households, which would give an average of 3.6 per household. A comparison between the households reveal how the numbers of extensions are representative of the income levels and family sizes, i.e. as mentioned before, it appeared that household B would not be able to make many additions and has managed two additions. Household A, although supplied by many sources of income, has managed to construct three additions in comparison to household C that constructed six additions. Households A and C have therefore been quite successful in making many additions. This can be accredited to the fact of many sources of income and the need for space in terms of family size - evident in household C.
- **Time:** The initial structures on the erven were a toilet, which implies that the households had arrived after the provision of housing had taken place. In this case, the households had settled here a few months after provision in 1997, i.e. all households had arrived in the same year. The time of arrival on the erven is therefore not a factor that has affected the number and type of extensions produced.
- **Type of structures:** All extensions were shacks constructed of temporary materials.
- **Level of formalisation:** Considering that all structures were made of temporary materials, the level of formalisation is not advanced. None have progressed to building permanent structures.
- **Size of additions:** On average extension sizes were 14.5m<sup>2</sup>, ranging from 7m<sup>2</sup> to 28m<sup>2</sup>. Household A had made the smallest extension and household B the largest. Low affordability levels have characterised the size of additions made, which are unsuitable for the large household sizes indicated.
- **Configuration:** Average dimensions of these rectangular shape additions appear to be approximately 2.6m x 4.75m.
- **Area of additions:** On average the areas of additions were 48m<sup>2</sup>, ranging between 42m<sup>2</sup> and 58m<sup>2</sup>. These areas are small in comparison to the number of people that have to live in these structures.
- **Occupational density:** Each person living on these erven has approximately 7m<sup>2</sup> to him/herself (ranging from 5m<sup>2</sup> to 11m<sup>2</sup> per person).
- **Coverage:** On average the extensions on the erven cover 28% of the erven (erven sizes ranging from 166m<sup>2</sup> to 179 m<sup>2</sup>). Coverage sizes range between 24% and 35%. Considering that erven sizes are small, coverage is still small and allows for more additions to be in future with the large spaces created.
- **Shape:** All additions appear rectangular.
- **Arrangement of structures:** All shacks constructed seem to have been placed at the back or side of the erven in formations of 'U' and 'L' shapes. Households A and B explained that this arrangement of the shacks was for the reservation of space for the construction of the future houses. Household C arranged the shacks in this manner in order to create a socialising space for the customers of the spaza shop in one of the structures. The use of space of the erven has been efficiently done. Two households have deliberately placed the structures to create these spaces for the future construction of the permanent structures, whilst household C has created the space for socialising (an extension to the spaza shop).
- **Type of employment:** The type of employment does not seem to have an effect on the level of formalisation or the number of additions produced.

**\*NOTE**

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2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.



**Conclusion**

Household C seems to be the most successful in terms of the number of extensions produced. The factors that have facilitated its success are the numerous income sources and the ability to save. Inhibiting factor was the number of family members and numerous expenses.

Household A is also quite successful considering the number of additions produced in comparison to household B. The beneficial factor here is also the number of income sources available. The factors that inhibited growth were the number of family members and the expenses.

Household B had numerous expenses to contend with as well as just one source of income. However, this household managed to produce the largest structure of the three households.

It seems that from the analysis the factors inhibiting consolidation were many expenses and large family sizes. Factors that assisted in the consolidation process were the number of income sources and the ability of households to save. The interplay of these factors contribute toward influencing consolidation, i.e. the factors cannot be isolated.

**PROCESS**

- **Sourcing of materials:** All materials were sourced within Mamelodi (all structures produced were temporary).
- **Cost:** Costs range between R870 to R3300 with an average of R2 085.
- **Funding:** In most cases credit was the main source of funding, which re-emphasises the low affordability levels and poor savings abilities inherent in this typology.
- **Builders:** The use of private contractors also became quite apparent. Only in two additions did the owners use their own building skills. Although affordability was an issue, private contractors were used in abundance compared to using their own skills.
- **Time:** The period between extensions seem quite small (between a few months to three years). Household B took three years between extensions, which seems to be related to the limited income sources. Although lots of time was taken, household B was able to build the largest addition. The other two households managed to build up quite quickly and smaller additions were made.

**USE OF SPACE***Within structures*

- In terms of the use of space within the additions, they appear to be the basic needs, i.e. bedrooms and kitchens. One household (B) does however have the *luxury* of a lounge. All households make use of the toilet provided by government.
- In total there are 15 bedrooms which average out to five bedrooms per household. The number of bedrooms is related to the number of people residing between these three households.
- The number of kitchens can be explained in much the same manner, i.e. there are 13 kitchens in total with 4 per household as the average. The number of people occupying the households explains the large number of kitchens and bedrooms.

*Within erven*

- **Gardens:** Within the erven, the uses extend from gardens to the use of tents. Only one household has a garden in front of the house. **Parking:** Space for the parking of vehicles is made in the centre of the erf. Household B and C do possess cars (*luxury*) of which one is in working condition (household C).
- **Tenants:** Renters exist in the other two households (A and C) along the side boundaries (15% of the erven).
- **Commercial:** In household C the *survival strategy* employed is that of a spaza shop (25% of the property) that occupies one temporary structure at the back of the erf.
- **Other:** Other uses include storage spaces for building materials which is generally kept at the back of the erven. All households have storage facilities or spaces. Clotheslines are also erected between extensions or on the side of the erven. In household C a tent is erected for the relaxation of its customers.

**PUBLIC/PRIVATE INTERFACE**

- **Street boundary:** The attempt at definition of private space within households A and B are quite evident with the use of fencing in the front and the planting of trees and creepers. However household C attempted to create interaction with the street in order to attract people to the spaza shop. The street definition of each household is therefore different for the different intentions pursued.
- **Side and back boundaries:** All side and back boundaries appear to be made of transparent wire fencing. Some side boundaries are re-enforced with walls and trees. This helps to facilitate the definition of semi-private space, which seems to be successful in household A.

**\*NOTE**

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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.



- **Placing of units:** The placing of the units on all erven is done in such a manner that a central socialising area is created. The units also re-enforce the boundaries that were attempted to be defined by the fencing. The placing of the units therefore plays two roles, i.e. creation of socialising space and boundary definition.
- **Placing of the front door:** All doors face the central space created (socialising space).

*Pattern:* All structures have been placed along the side and back boundaries either in 'L' or 'U' shapes creating a central space for socialising, presently. The entire erf is fenced with a garden or trees planted at the entrance. All structures focus on the central area.

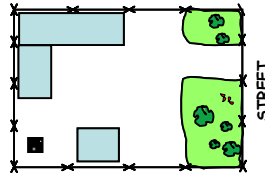


FIGURE 46: Pattern 1

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
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CHAPTER 5: CONSOLIDATION - 3.3.1. SOCIO-ECONOMIC INTRODUCTION

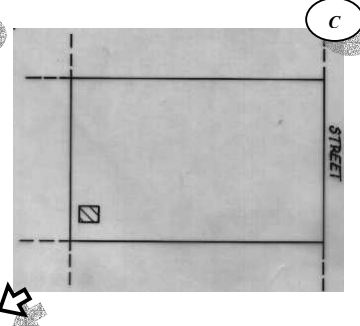
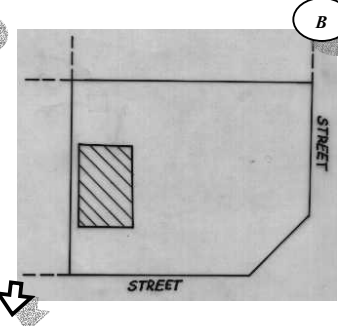
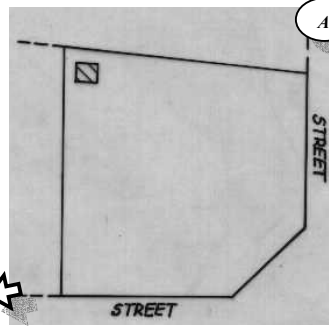
EXT. 6: TYPOLOGY 3

THE HOUSEHOLD	A	B	C
<b>HOUSEHOLD PROFILE</b>	<p>Family type: <i>Single woman-headed family + extended</i>                      Family size: 10</p> <p>Tenants: <i>No</i>                      No. of tenants: <i>NA</i>                      Household size: 10</p>	<p>Family type: <i>Single nuclear family + extended</i>                      Family size: 6</p> <p>Tenants: <i>No</i>                      No. of tenants: <i>NA</i>                      Household size: 5 (one child resides elsewhere)</p>	<p>Family type: <i>Single nuclear family</i>                      Family size: 7</p> <p>Tenants: <i>Yes</i>                      No. of tenants: 1                      Household size: 8</p>
<b>EMPLOYMENT AND INCOME</b>	<p>No. of sources of income: 3                      Sources of income: <i>Mother and daughter.</i>                      Employment: <i>2 x full time and entrepreneurial/informal.</i>                      Location: <i>Centurion (as a packer in a factory), in Kilner Park (as a domestic), and snacks are sold from the household.</i></p>	<p>No. of sources of income: 3                      Sources of income: <i>Mother, father and extended family member.</i>                      Employment: <i>2 x Full time and Entrepreneurial/informal</i>                      Location: <i>Salon in Moreleta, catering shop in town, from home.</i></p>	<p>No. of sources of income: 2                      Sources of income: <i>Father and tenant.</i>                      Employment: <i>Full time.</i>                      Location: <i>In the construction field.</i></p>
<b>EXPENDITURE</b>	<p>The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also common expenses.</p>		
WATER	X	X	X
ELECTRICITY	X	X	X
TRANSPORT	X	X	X
TELEPHONE	X		X
EDUCATION	X	X	X
FOOD	X	X	X
CLOTHING	X		X
ACCOUNTS	X	X	
SAVINGS	X		X
TAXES	X	X	X
SANITATION	X	X	X
WASTE REMOVAL	X	X	X
OTHER			

CHAPTER 5: CONSOLIDATION - 3.3.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 3

INITIAL  
STRUCTURE

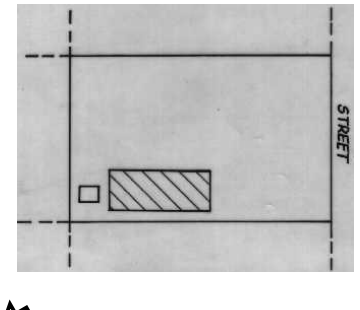
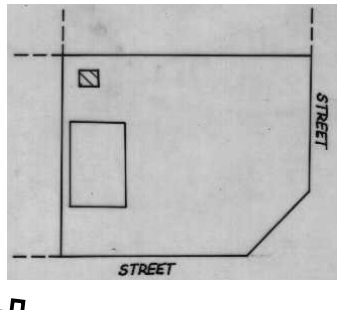
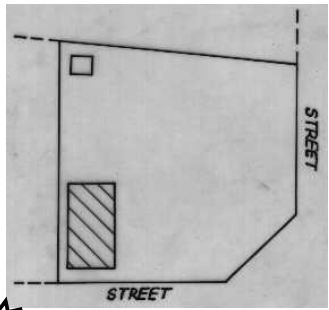


**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and other temporary materials  
**Material supplier:** Given to them by family member  
**Cost:** None  
**Funding:** None  
**Builder:** Unknown  
**Date of Constr.:** 2000  
**Problems:** Water wasn't connected upon arrival.

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
1



**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Mathibestad - phase 1  
**Cost:** R3 000  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1998  
**Problems:** Not properly structured. Is problematic during rainy days.

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Phase 1  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Owner  
**Date of Constr.:** Unknown  
**Problems:** None

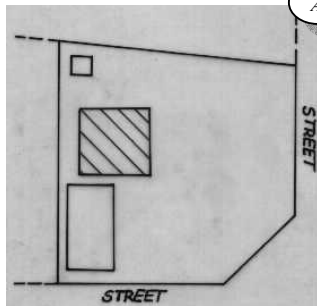
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

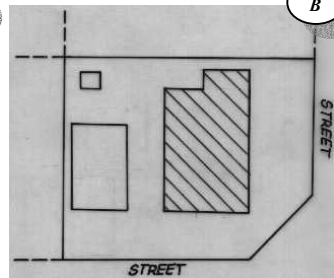
CHAPTER 5: CONSOLIDATION - 3.3.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 3

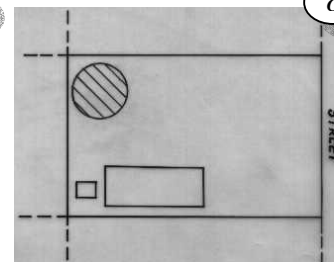
ADDITION  
2



**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** Unknown  
**Problems:** None

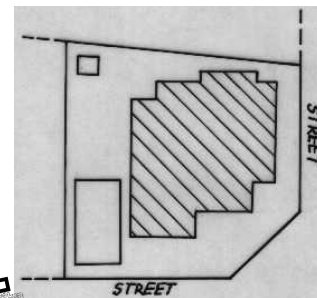


**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** In the neighbourhood  
**Cost:** R2 000  
**Funding:** Salary and savings  
**Builder:** Unknown  
**Date of Constr.:** Nov 2001  
**Problems:** Funding

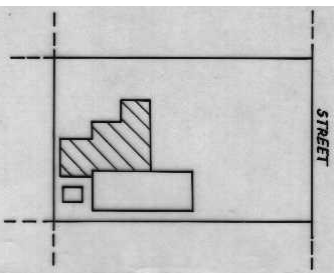


**Description:** Rondavel  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
3



**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Silverton - Silbo  
**Cost:** R100 000  
**Funding:** Savings and loan from work.  
**Builder:** Private contractor  
**Date of Constr.:** 1999  
**Problems:** Construction was slow.



**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Given to them by father's employer  
**Cost:** None  
**Funding:** None  
**Builder:** Owner  
**Date of Constr.:** Unknown  
**Problems:** None

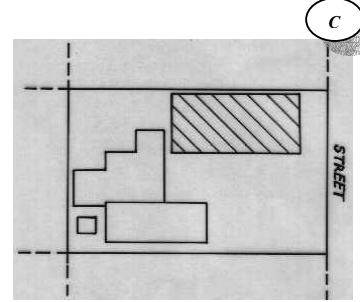
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 3.3.2. PHYSICAL CHANGES

EXT. 6: *TPOLOGY 3*

ADDITION  
4



*Description:* Completed house  
*Materials used:* Bricks, paving bricks, etc (permanent materials)  
*Material supplier:* Factory near Vista  
*Cost:* Unknown  
*Funding:* Savings and salary  
*Builder:* Owner  
*Date of Constr.:* 2002  
*Problems:* None

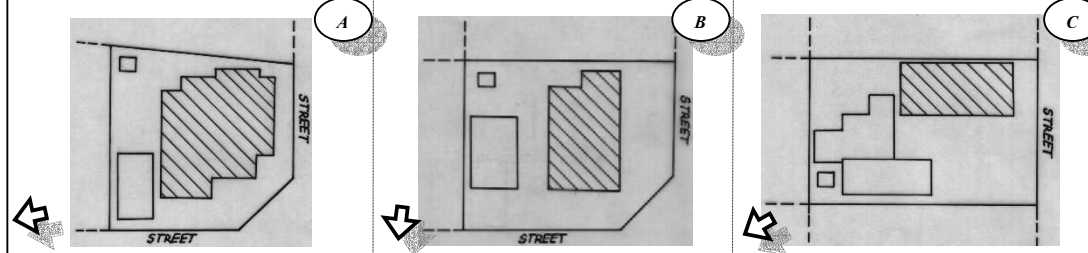
**\*NOTE**

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 3.3.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 3

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:



\*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are approximated from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

**NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS**

Three extensions have been made. The first were two shacks (made of temporary materials) and the third, a house (built with permanent materials).

**SIZE**

The size of extension one is approximately 12m<sup>2</sup>. The other, constructed at the same time, was later destroyed. The house occupies an area of approximately 52m<sup>2</sup>.

Erf size: 175m<sup>2</sup>  
 Total area of temporary structures: 12m<sup>2</sup>  
 Total area of permanent structures: 52m<sup>2</sup>  
 Total area: 64m<sup>2</sup>  
 Coverage of temporary structures: 7%  
 Coverage of permanent structures: 30%  
 Coverage: 37%  
 Occupational density: 6m<sup>2</sup>/person

**SHAPE AND CONFIGURATION**

The shack is a regular rectangular shape, but the house has an irregular shape (stepped). It has average dimensions of 7m x 7.5m. The shack has dimensions of 2.6m x 4.7m.

**PLACING OF BUILDINGS:** With the size of the erven being approximately 208m<sup>2</sup> and gross and nett densities estimated at 219p/ha and 364p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.

**NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS**

Two additions have been made. First a shack was built from temporary materials, then a completed house (from permanent materials).

**SIZE**

The initial shack occupies an estimated 18m<sup>2</sup>, whilst the house occupies 44m<sup>2</sup>.

Erf size: 192m<sup>2</sup>  
 Total area of temporary structures: 18m<sup>2</sup>  
 Total area of permanent structures: 44m<sup>2</sup>  
 Total area: 62m<sup>2</sup>  
 Coverage of temporary structures: 9%  
 Coverage of permanent structures: 23%  
 Coverage: 32%  
 Occupational density: 12m<sup>2</sup>/person

**SHAPE AND CONFIGURATION**

An 'L' shape is formed by the house (7.8m x 5.3m + 2.9m x 1.2m) and the shack (3.5m x 5.3m) takes a rectangular shape.

**NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS**

Four extensions have been made of which, two were shacks, one a rondavel and the other a house. Only the house made use of permanent materials. The rest of the extensions were constructed from temporary materials.

**SIZE**

The first shack covered an area of 16m<sup>2</sup> whilst the second was demolished (rondavel). The third amounted to approximately 18m<sup>2</sup> and the fourth is approximately 29m<sup>2</sup>.

Erf size: 173m<sup>2</sup>  
 Total area of temporary structures: 34m<sup>2</sup>  
 Total area of permanent structures: 29m<sup>2</sup>  
 Total area: 63m<sup>2</sup>  
 Coverage of temporary structures: 20%  
 Coverage of permanent structures: 16%  
 Coverage: 36%  
 Occupational density: 8m<sup>2</sup>/person

**SHAPE AND CONFIGURATION**

The rondavel was round. Shack number one and extension four are rectangular and number three is 'stepped' (2.4m x 2m + 1.8m x 3m + 1.8m x 4.5m). Extensions one and four have dimensions of 2.5m x 6.3m and 3.7m x 8m, respectively.

**PLACING OF BUILDINGS**

In relation to one street (south), the initial shacks were placed at the back of the erf in a northerly position and the house was placed in front of the shack in a central position but is close to the street. The toilet appears in an easterly position. In relation to the other street, the shack and house appear side by side with the shack being closer to the street.

**PLACING OF BUILDINGS**

The toilet was placed in a south easterly position. The shack was placed along the eastern border and the house in a central position facing the street.

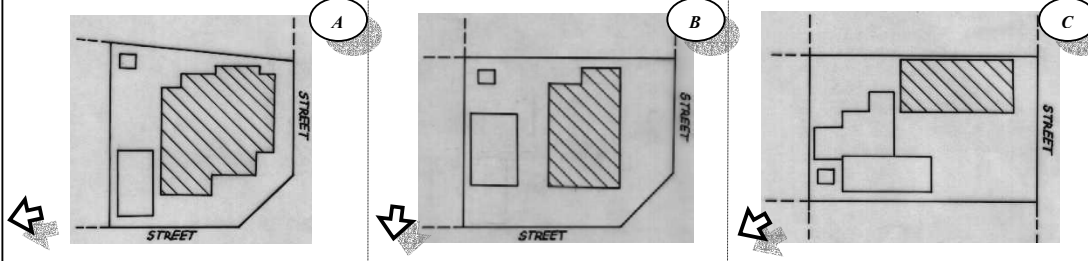
**PLACING OF BUILDINGS**

The toilet appears in a northerly position at the corner of the erf. The initial structure appeared in a westerly position along the boundary line with extension three attached to the right of it. Extension four is placed along the eastern boundary line.



CHAPTER 5: CONSOLIDATION - 3.3.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 3



**PLACING OF BUILDINGS**

Space is created at the front and side of the house (facing the street) for the gardens. A pocket of space is also created at the back where some privacy exists. Space is used functionally and efficiently.

Shacks were placed at the back in preparation for the construction of the home, the positioning of which was informed by the architect.

**PLACING OF BUILDINGS**

Space is created between the structures and in front of them. Too much of space is wasted at the front of the structures (used for gardens) and less is used for living space between the structures. Space could have been used more efficiently but this was the only position for the house that was suitable.

Sewer pipes were running across their property. The house could therefore not be built on such pipes.

**PLACING OF BUILDINGS**

A private space is created at the back of the property, but is not used for any purpose. A large open space exists at the front. It is used for gardening (vegetables as well) and for the parking of vehicles. Space is used efficiently.

**\*NOTE**

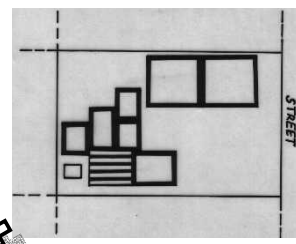
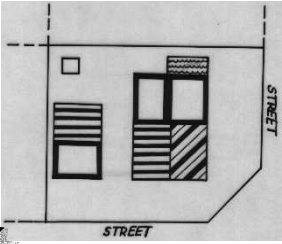
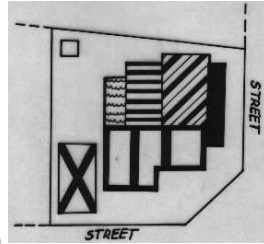
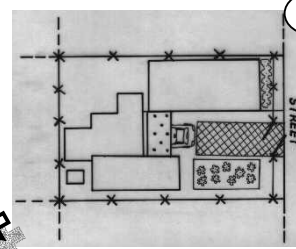
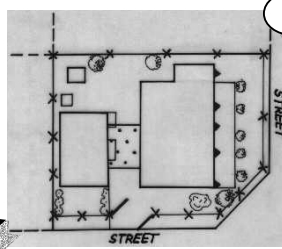
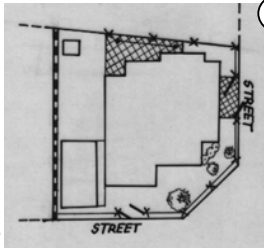
1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).*
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4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

CHAPTER 5: CONSOLIDATION - 3.3.3. LAND USE AND THE USE OF SPACE

EXT. 6: TYPOLOGY 3

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- Three bedrooms.

- Five bedrooms, four in the house and one in the shack.

- Four bedrooms.

KITCHEN

- One kitchen.

- Two kitchens - one in the house and one in the shack.

- One kitchen.

DINING ROOM

LOUNGE

- One lounge.

- One lounge.

- One lounge.

TOILET

- Two - Government toilet and indoor

- Two - Government toilet and indoor

- Two - Government toilet and indoor.

BATHROOM

- One bathroom.

- One bathroom.

WHY IS IT USED IN THIS WAY?

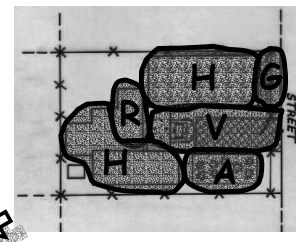
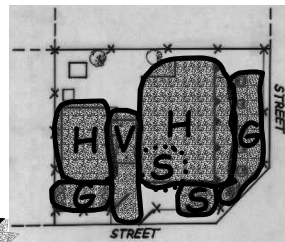
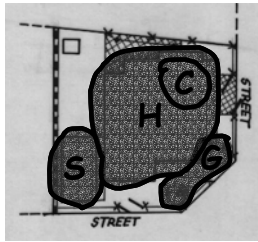
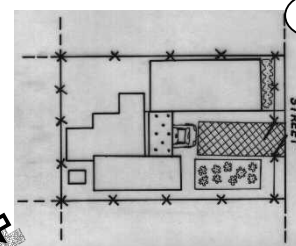
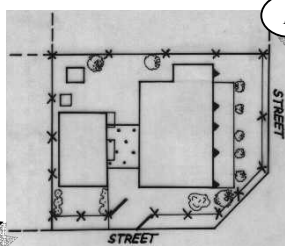
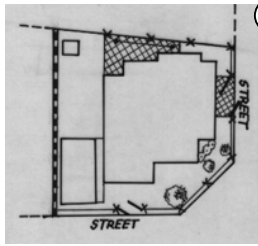
\*NOTE

1. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 3.3.3. LAND USE AND THE USE OF SPACE

EXT. 6: TYPOLOGY 3

HOW IS THE PROPERTY BEING USED IN TERMS OF:



GARDENING

There is a small garden in front of the house.

There is a small garden in front of the house.

There is a small garden in front of the house.

RENTAL HSG

The central structure houses a renter.

COMMERCIAL

Goods are sold from the house.

SERVICE

A service is provided from within the house.

AGRICULTURE

Opposite the flower garden is a vegetable garden.

PARKING

Vehicles are parked under the tent between the house and the shack.

Cars can be parked between the shack and the house under a carport.

OTHER

A previously occupied shack is now used as a storage facility. A clothesline is built on one side of the boundary.

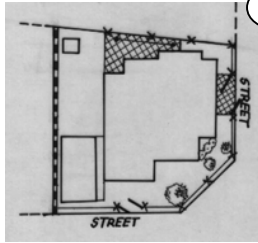
Building material is stored in front of the erf. The tents are also used for socialising space.

The tents are also used for socialising space.

CHAPTER 5: CONSOLIDATION - 3.3.4. PUBLIC / PRIVATE INTERFACE

EXT. 6: TYPOLOGY 3

PUBLIC/  
PRIVATE  
INTERFACE



RELATION TO THE STREET:

**Street Boundary Definition**

A short wire fence (1m) at the front of the house exists with a gate. It is transparent in nature and thereby facilitates interaction with the street.

PRIVACY:

**Side and Back Boundaries**

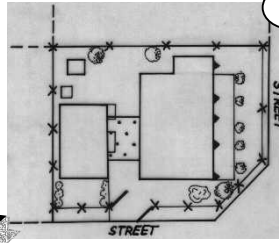
The same type of fencing is used around the entire erf except for the boundary shared by the neighbour to the north. This boundary is a brick wall. Privacy from this neighbour is achieved. It does not succeed in creating privacy from the other neighbour or the street.

**Placing of units**

The shacks were placed at the back of the erf and the house at the front. The demolition of one shack has allowed for the creation of some space at the back of the erven. This space is not totally private, i.e. the wall built prevents interaction with one neighbour whilst the other neighbour can still intrude. People on the street cannot intrude in this space.

**Placing of the front door**

The front door of the house faces the street. It is a small distance away from the street and therefore facilitates interaction with the street.



RELATION TO THE STREET:

**Street Boundary Definition**

The front of the erf is fenced off with transparent wire fencing (1m). Interaction with the street is encouraged.

PRIVACY:

**Side and Back Boundaries**

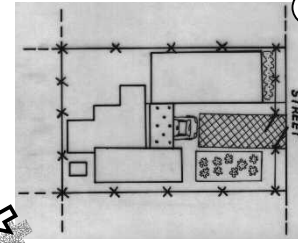
The same type of fencing is used around the remaining three sides of the erf. They do not assist in the creation of privacy due to their transparent nature.

**Placing of units**

The placing of the units encourages interaction between the shack and the house and not with the street. The structures have been placed parallel to one another. Privacy is enhanced by the tents. Some space at the back of the erf is private from the public but not the neighbours.

**Placing of the front door**

The door of the house and shack face one another, thereby creating a sense of privacy and security.



RELATION TO THE STREET:

**Street Boundary Definition**

A short (1m) transparent dilapidated wire fence is present at the front of the erf. It does not assist in creating private space.

PRIVACY:

**Side and Back Boundaries**

The rest of the erf is fenced off with the same fencing, which does not assist in the creation of private space.

**Placing of units**

The units have been placed along the side and back boundaries. Such positioning creates a space in the eastern corner that is only accessible once passage through the property is granted. Neighbours can still intrude in this space, i.e. privacy was not created but privacy from the public was.

**Placing of the front door**

The doors have been strategically placed, i.e. hidden from outsiders. The entrance to only one structure faces the street. All entrances to the structures open into the socialising space created by the tent.

1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>• There are three different family types: woman-headed and extended, single nuclear and extended, single nuclear family.</li> <li>• The average family size is 8, ranging from 7 to 10.</li> <li>• One household has one tenant.</li> <li>• The average household size is 8, ranging from 5 to 10.</li> <li>• The average number of sources of income is 3, ranging from 2 to 3.</li> <li>• Full-time employment is in the majority with two cases for entrepreneurial/informal activity.</li> <li>• The average number of expenses is 11.</li> <li>• Only two households are able to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>• Initial structures were mostly toilets. One household had constructed a shack initially.</li> <li>• 9 additions have been made of which 5 are shacks (temporary materials), 1 is a rondavel, and 3 are completed homes (permanent materials)</li> <li>• Household A constructed 3 additions, household B constructed 2 and household C, 4 additions.</li> <li>• Where information was available, the following was noted: <ul style="list-style-type: none"> <li>○ Materials were acquired from a number of sources, i.e. some were given to a household, others purchased from within Mamelodi, and some purchased from outside Mamelodi.</li> <li>○ All temporary materials were purchased from within Mamelodi.</li> <li>○ Permanent materials were purchased mostly from outside Mamelodi.</li> <li>○ Costs of temporary structures are approximately R3 000.</li> <li>○ Costs of permanent structures range from R2000 to R100 000.</li> <li>○ Sources of funding include mostly, savings. One household had acquired a loan.</li> <li>○ Owners seem to dominate the actual construction with the employ of a few private contractors. The association of private contractors with the construction of permanent structures is not evident here. Private contractors and owners build both permanent structures as well as shacks.</li> <li>○ The time lapse between additions seems to range between a few months to a year.</li> </ul> </li> </ul>
3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>• An average of three additions has been made.</li> <li>• All formal structures were constructed of permanent materials. Temporary materials were used for the construction of the shacks.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>• Temporary structures total area: 64m<sup>2</sup></li> <li>• Temporary structures average area: 21m<sup>2</sup></li> <li>• Temporary structures average size: 16m<sup>2</sup></li> <li>• Temporary structures average coverage: 12%</li> <li>• Permanent structures total area: 125m<sup>2</sup></li> <li>• Permanent structures average area: 42m<sup>2</sup></li> <li>• Permanent structures average size: 42m<sup>2</sup></li> <li>• Permanent structures average coverage: 23%</li> <li>• Combined average extension size: 27m<sup>2</sup></li> <li>• Combined average area : 63m<sup>2</sup></li> <li>• Combined average coverage: 35%</li> <li>• Combined average occupational density: 9m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>• Majority of extensions take on a rectangular shape except for the houses constructed.</li> <li>• The houses take on odd shapes, i.e. one appears trellised and the other 'L' shaped to a certain degree.</li> <li>• Average dimensions of temporary structure are 2.9m x 5.6m and houses are 5m x 8m.</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>• Initial additions were placed at the back of the erven next to or in line with the toilets.</li> <li>• Houses were placed either at the centre of the erven or at the side.</li> </ul>
*NOTE	<ol style="list-style-type: none"> <li>1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).</i></li> <li>2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>3. The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>8. No reasons for the use of space within the structures could be obtained.</li> </ol>

4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>• 12 bedrooms in total.</li> <li>• An average of four bedrooms</li> <li>• Each household has one kitchen.</li> <li>• All have a lounge.</li> <li>• Everyone makes use of the government toilet and have an indoor toilet. There is an average of two across all households.</li> <li>• Two bathrooms.</li> <li>• One house was designed by an architect and the other uses space in the way it does because it is sufficient for the use of the family.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>• All have gardens at the entrances to the erven.</li> <li>• Rental housing occurs in household C.</li> <li>• Household A conducts some commercial activity.</li> <li>• A service is provided from within Household B.</li> <li>• One vegetable garden.</li> <li>• Vehicular parking is accommodated in two households.</li> <li>• Building materials are stored on two erven.</li> <li>• Household A has a clothesline.</li> </ul>
6. PUBLIC/ PRIVATE INTERFACE	<p><b>Street Boundary Definition</b></p> <ul style="list-style-type: none"> <li>• The use of transparent fencing across all households did not create private space.</li> </ul> <p><b>PRIVACY:</b></p> <p><b>Side and Back Boundaries</b></p> <ul style="list-style-type: none"> <li>• Side and back boundaries are weak because of their transparent nature. It does not create privacy.</li> <li>• Privacy from the public is created but not from neighbours except for household A. The wall in household A cuts off interaction with one neighbour.</li> </ul> <p><b>Placing of units</b></p> <ul style="list-style-type: none"> <li>• The placing of the units tends to create private space at the back of the erven in all households.</li> <li>• Circumstances made the placing of these structures in household B appear side by side. Some privacy is created between the structures.</li> </ul> <p><b>Placing of the front door</b></p> <ul style="list-style-type: none"> <li>• Doors have been orientated differently.</li> <li>• Household A creates interaction with the street by placing the door in a manner that faces the street.</li> <li>• The other two households attempt to create privacy and security by focussing on a socialising space created by tents.</li> </ul>

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. **Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).**
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.



**AFFORDABILITY**

- **Family structure:** Typology three is characteristic of single families but with variances in each. There is one single nuclear family, one single nuclear family with extended family members and one woman-headed family with extended members.
- **Family size:** Family sizes range between 6 and 10. These are quite large families. Due to one child living elsewhere and the existence of tenants, household size ranges from 5 to 10. Household B has the smallest family size and household A the largest.
- **Sources of income:** In relation to income sources, families are supported by two to three sources. For such large family and household sizes, these incomes sources could be insufficient to meet the needs of the family and enable the construction of additions.
- **Type of employment:** The types of employment tend to be full-time across all households with additional entrepreneurial/informal activity.
- **Expenses:** In terms of expenses made, household A has the most expenses. Coupled with such a large family size, this would be an inhibiting factor for consolidation. Household C has more or less the same amount of expenditure and household B has the least expenses. This should place household B in a better position to make additions than the other households, not only because of the minimal expenses but also because of the small family size.
- **Savings:** Only two households have managed to save (A and C), despite their numerous expenses.

**Conclusion**

Household B would appear to be at a greater advantage because of the smaller household size and fewer expenses. Households A and C seem to have similar affordability levels - expenses and family sizes are similar. However, households A and C have the ability to save.

**PRODUCT**

- **Number of additions:** Nine additions have been made across all households. Five were shacks, one a rondavel and three were completed homes. In total six temporary structures and three permanent structures were built. Household A had constructed three additions, household B built two additions and household C managed to construct four additions.
- **Time:** Two households had toilets as the initial structure whilst the other had constructed a shack. In this case this does not imply that household B had arrived before the others. Household B had not been provided with a toilet upon arrival. A toilet was connected later on. What had enabled the construction of three additions in household A and two in household B? This can be explained by the time of arrival. Household A had arrived in 1998 and household B in 2000. Household A therefore had more time to save, plan and build. Date of arrival of household C is unknown, but the appearance of the houses seems to be of better quality in household A than the other houses. The fundamental difference between household A and C is the amount of income sources, i.e. household A has three and household C has two. This could be the factor enabling household A to construct such an appealing house.
- **Type of structures:** All households have constructed temporary structures initially with completed houses as the final structures.
- **Level of formalisation:** Not only are there many extensions but the type of housing includes three formal structures. Despite large families and numerous expenses, these families have managed to produce permanent structures. To be more specific, household A constructed three additions of which one was the completed house, household B managed to build two additions (one shack and one completed house), and household C built a house, a rondavel and two shacks. Each household managed to build one completed house. 30% of all additions made were permanent structures.
- **Size of additions:** Average addition size is  $27\text{m}^2$ , ranging from  $12\text{m}^2$  to  $52\text{m}^2$ . On average temporary structures were  $16\text{m}^2$  (ranging between  $12\text{m}^2$  and  $18\text{m}^2$ ). Sizes of permanent structures ranged between  $29\text{m}^2$  and  $52\text{m}^2$  with an average of  $42\text{m}^2$ . Permanent structures appeared to be two and a half times larger than temporary structures but are still small in comparison to the amount of people that needs to be accommodated (refer to family size).
- **Configuration:** Temporary structures generally had dimensions of  $2.9\text{m} \times 5.6\text{m}$  whilst permanent structures appeared larger ( $5\text{m} \times 8\text{m}$ ). Dimensions of permanent structures are larger than temporary structures.
- **Area of additions:** The average area of all additions combined is  $63\text{m}^2$ . Permanent structures on their own have an average area of  $42\text{m}^2$  (range 29 - 52); whilst temporary structures have an average area of  $21\text{m}^2$  (range 12 - 34). Temporary structures are half the size of permanent ones.
- **Occupational density:** People on the erven have at least  $9\text{m}^2$  to themselves. This ranges from  $6\text{m}^2$  to  $12\text{m}^2$ .
- **Coverage:** In terms of coverage of the erven, the average coverage is 35%. This leaves more than half of the property open for development or activities. Temporary structures have coverage of 12% and permanent structures, 23%. Temporary structures occupy less space.
- **Shape:** The houses built take irregular shapes but all shacks were rectangular.

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. **Toilet - area ( $1.2\text{m}^2$ ), dimensions ( $1\text{m} \times 1.2\text{m}$ ) and shape (rectangle).**
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

- **Arrangement of structures:** The shacks were all placed at the back of the erven and houses either in front or in the centre. The reason for each household is different for the structures being placed in such a manner but eventually the centre of the erven was the area of selection. Two households have used space efficiently with the placing of the structures. Household B was forced to use space in such a manner.
- **Type of employment:** In this case the type of employment could attribute to the level of formalisation, i.e. although household C has a full-time employment source plus rental money, households A and B have **two full-time** employment sources coupled with entrepreneurial/informal activity, where the latter two households have managed to produce permanent structures of better quality than household C.

### Conclusion

Household A has managed three additions with a high quality permanent structure. Although the family size was large and expenses were large, the presence of three sources of income (two of which were full-time employment sources) and arriving on the erven earlier and having savings has enabled this household to construct a formal structure of good quality.

Household B has also managed to produce a good solid permanent structure after the construction of one temporary structure. The factors that have enabled the transition from temporary to permanent structure seem to be the number and type of sources of income accompanied by limited expenses. Family size could have limited the level of formalisation to standards produced by household A.

Household C also has a large household size with many expenses, savings and two sources of income. Although this household has managed to construct many temporary structures, the permanent structure produced is of less quality than the other two households' houses. The type and number of employment sources become relevant here, where this household has only one full-time employment source that is supplemented by rental income.

The factors presented cannot be isolated from one another and pinpointed as the factor that has assisted consolidation. Each household presents a situation with variances in certain factors (e.g. large family size, few income sources, limited expenses, whilst another household could have fewer family members, greater savings, greater number of income sources, etc.) that either support consolidation or inhibit it. In general, the factors that have assisted in consolidation in some households were the number of income sources, time, savings, the type of income sources, and limited expenses. The factors that appeared to have inhibited consolidation were the large family sizes and many expenses.

### PROCESS

- **Sourcing of materials:** Materials for building had been acquired from numerous sources but the interesting observation to note is the acquisition of temporary and permanent materials from almost distinctly different sources, i.e. the trend visible here is of temporary materials being purchased from within Mamelodi and permanent materials mostly being purchased from outside Mamelodi.
- **Cost:** The costs generally ranged from R2000 to R100 000 for permanent structures and R3 000 for temporary structures.
- **Funding:** The costs of these additions were expensive in the case of these families that had used their savings in most cases. A loan had been acquired for the construction of one addition.
- **Builders:** Owners had used their own skills in the construction of their additions. Private contractors had been employed in one or two cases. The level of skills usage within this typology is therefore quite high. The use of private contractors and owners had been used for the construction of both shacks and formal additions.
- **Time:** The time lapse between additions range from a few months to a year. The speed of delivery is fast. This implies that the families are able to mobilise money fast enough to enable the construction of additions. Having construction skills also benefit the time within which additions were completed.

### USE OF SPACE

#### *Within structure*

- The spaces within the structures are used as follows: bedrooms, kitchens, lounges, toilets, and bathrooms.
- **Bedrooms:** In total there are 12 bedrooms with an average of four per household. This is a large number of bedrooms that attempt to accommodate the large household structures.
- **Kitchens:** Each household has at least one kitchen - four kitchens in total.
- **Lounge:** All households also have a lounge. These households are able to make space for socialising within the structures as well, which is seen as a luxury.
- **Toilets:** The toilets provided by government are use as well as indoor toilets (luxury).
- **Bathrooms:** Two households have the luxury of bathrooms.

#### \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
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3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

- Households have divided spaces into uses that suit the needs of their families and what they can afford to build. They exceed the basic needs (kitchens and bathrooms) by building indoor toilets and bathrooms, lounges and many bedrooms. Comfort needs of the households are also catered for and many luxuries have been attained.

#### Within erven

- Garden:** In terms of use of space on the erven, each household has a garden at the entrance to the erven. One household (C) has a vegetable garden in front of the erven.
- Survival strategy:** Each household generates other income either via providing a service (repairs of refrigerators, etc), selling goods or renting out a structure. Each of these activities is specific to each household. On average, each household uses 8% of the erven for income generating activities.
- Parking:** In two households the centre of the erven are used to accommodate vehicles.
- Storage:** Storage of building materials tend to happen on two erven, one at the front and one at the back. Storage of materials therefore happens where space is available, whether in front or at the back.
- Other:** Just one household has a clothesline erected at the side of the erf.
- The use of space on the erven is very diverse. The only commonality between all three households is the presence of gardens at the front of the erven.

#### PUBLIC/PRIVATE SPACE

- Street boundary:** Fencing at the front of the erven doesn't assist in creating privacy since the fencing used is transparent.
- Side and back boundaries:** Side boundaries tend to be weak where privacy is not accomplished. Privacy from the public is created but neighbours can intrude. Household A on the other hand had built a wall along one boundary that creates some privacy from the adjoining neighbour.
- Placing of units:** The placing of the structures has facilitated private space at the back of the erven generally. The houses have been placed either in the centre of the erven or at the side.
- Placing of the front door:** The orientation of doors in each erven differs. Whilst household A offers itself for interaction with the street by placing the front door facing the street, the other two households prefer to create some privacy. Households B and C have placed their doors on the sides and have attempted to re-inforce this by placing tents in appropriate positions. The use of tents in each case has been used above entrances to structures and attempts to break down the use of space to become more private.

**Pattern:** All temporary structures were initially placed at the back with the permanent structures in front leaving space at the back which is private from the public but not from the neighbours. All erven are fenced with gardens at the entrances. Tents are used at entrances to structures to create a break from public to private space and to create some socialising space.

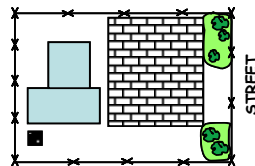


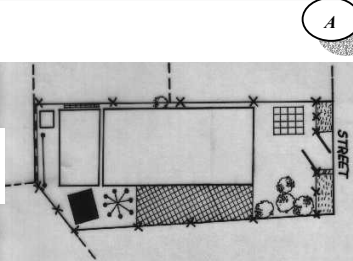
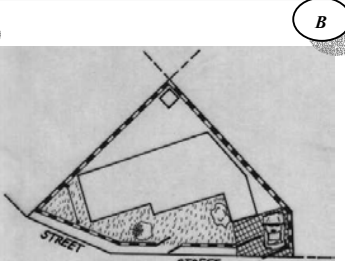
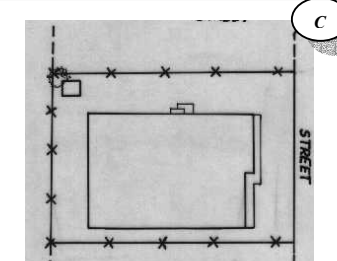
FIGURE 47: Pattern 1

#### \*NOTE

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CHAPTER 5: CONSOLIDATION - 3.4.1. SOCIO-ECONOMIC INTRODCUTION

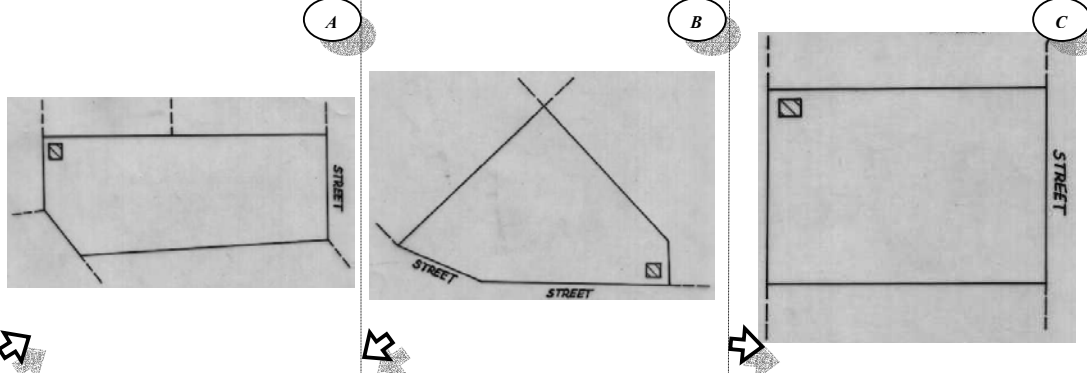
EXT. 6: TYPOLOGY 4

THE HOUSEHOLD			
HOUSEHOLD PROFILE	<p>Family type: <i>Single nuclear family</i> Family size: 8</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 8</p>	<p>Family type: <i>Single nuclear family</i> Family size: 6</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 6</p>	<p>Family type: <i>Single nuclear family</i> Family size: 4</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 4</p>
EMPLOYMENT AND INCOME	<p>No. of sources of income: 2 Sources of income: <i>Father and daughter.</i> Employment: <i>Full time and part time.</i> Location: <i>Waterkloof European Embassy and in extension six (selling vegetables), respectively.</i></p>	<p>No. of sources of income: 3 Sources of income: <i>Husband and wife.</i> Employment: <i>2 x entrepreneurial/informal and 1 part time.</i> Location: <i>The husband runs a taxi and the wife runs the spaza shop from their home. The husband also tenders for electrical work at times.</i></p>	<p>No. of sources of income: 2 Sources of income: <i>Husband and wife</i> Employment: <i>Full time and Entrepreneurial/informal</i> Location: <i>SAA cargo and extension six Mamelodi (selling goods).</i></p>
EXPENDITURE	<p>The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also common expenses.</p>		
WATER	X	X	X
ELECTRICITY	X	X	X
TRANSPORT	X	X	X
TELEPHONE	X	X	X
EDUCATION	X	X	X
FOOD	X	X	X
CLOTHING			X
ACCOUNTS		X	X
SAVINGS	X	X	X
TAXES	X	X	X
SANITATION	X	X	X
WASTE REMOVAL	X	X	X
OTHER			

CHAPTER 5: CONSOLIDATION - 3.4.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 4

INITIAL  
STRUCTURE

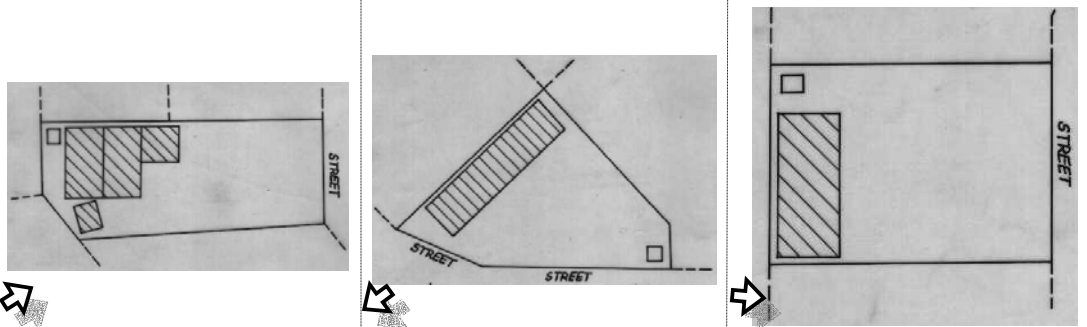


**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Unknown  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Unknown  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Unknown  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
1



**Description:** Temporary structures  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Given to them by husband's employer  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Owner  
**Date of Constr.:** 1997  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Metal sheets (temporary materials)  
**Material supplier:** Phase 1  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Owner  
**Date of Constr.:** 1998  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** 1997  
**Problems:** None

\*NOTE

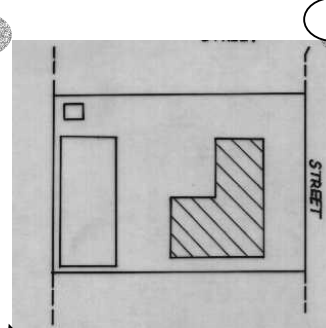
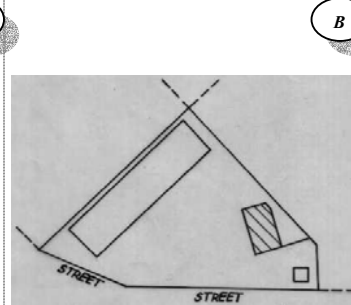
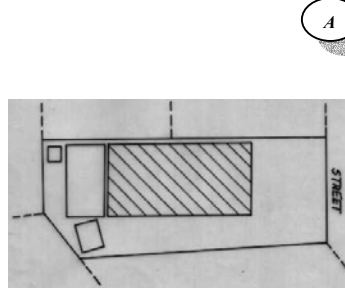
1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.



CHAPTER 5: CONSOLIDATION - 3.4.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 4

ADDITION 2

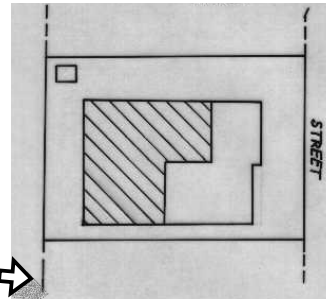
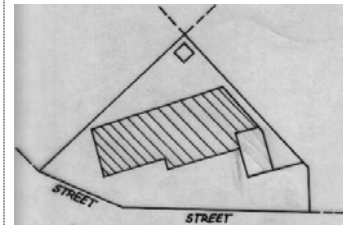


**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Reiten  
**Cost:** R4 225 (mater), R15 000 (constr.)  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** August 2002  
**Problems:** Funding

**Description:** Garage  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Corobrick - Olifantsfontein  
**Cost:** R17 000  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** Dec 2000  
**Problems:** None

**Description:** House  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Loan from husband's place of work  
**Builder:** Private contractors  
**Date of Constr.:** 1998  
**Problems:** None

ADDITION 3



**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Unknown  
**Cost:** R20 000  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** September 2001  
**Problems:** Funding.

**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Loan from husband's place of work  
**Builder:** Private contractor  
**Date of Constr.:** 2000  
**Problems:** Lack of funds and material shortage

\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.



CHAPTER 5: CONSOLIDATION - 3.4.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 4

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

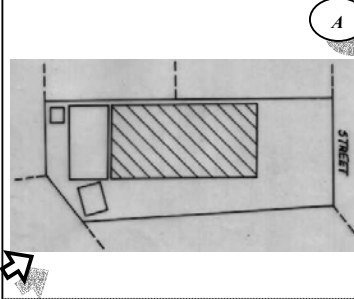
<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Two extensions have been made. First, to be constructed were the shacks constructed of temporary materials (4 shacks) and the final one (house) built with permanent materials.</p> <p><b>SIZE</b> Two shacks were demolished. The two that were retained covered an area of 4m<sup>2</sup> (now used as a storage facility) and 17m<sup>2</sup>. The house is approximately 64m<sup>2</sup>.</p> <p>Erf size: 187m<sup>2</sup> Total area of temporary structures: 21m<sup>2</sup> Total area of permanent structures: 64m<sup>2</sup> Total area: 85m<sup>2</sup> Coverage of temporary structures: 11m<sup>2</sup> Coverage of permanent structures: 34m<sup>2</sup> Total coverage: 45% Occupational density: 11m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> All structures take a rectangular shape. The storage facility is 2.2m x 1.8m, the shack is 5.7m x 3m and the house is 5.7m x 11.2m.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three additions were made. The initial structure built by the dwellers made use of temporary materials (shack). The other two extensions were built with permanent materials (garage and house).</p> <p><b>SIZE</b> The initial shack was demolished to enable the construction of the house. The garage occupies 5m<sup>2</sup> whilst the house is approximately 50m<sup>2</sup>.</p> <p>Erf size: 179m<sup>2</sup> Total area of permanent structures: 55m<sup>2</sup> Total area: 55m<sup>2</sup> Coverage of permanent structures: 31m<sup>2</sup> Total coverage: 31% Occupational density: 9m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The garage (2.5m x 2m) is a regular rectangle shape and the house is trellised (10.7m x 4m + 7.7m x 1m).</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions have thus far been noted. The first was a shack (temporary materials). The second was the initial construction of the house (permanent materials) and the final extension made use of permanent materials (completed house).</p> <p><b>SIZE</b> The first shack was destroyed for constructing their new home. The construction of the three rooms occupied 38m<sup>2</sup>. The final additions to the house (additions to the three rooms) occupied an addition 38m<sup>2</sup>, totalling a 76m<sup>2</sup> house.</p> <p>Erf size: 176m<sup>2</sup> Total area of permanent structures: 76m<sup>2</sup> Total area: 76m<sup>2</sup> Coverage of permanent structures: 43m<sup>2</sup> Coverage: 43% Occupational density: 19m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The initial shack was rectangular and the following two extensions were both 'L' shaped. The dimensions of the house are approximately 7m x 11m.</p>
<p><b>PLACING OF BUILDINGS:</b> With the size of the erven being approximately 208m<sup>2</sup> and gross and nett densities estimated at 219p/ha and 364p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.</p>		
<p><b>PLACING OF BUILDINGS</b> The toilet was placed at the west end of the erf with the initial shacks placed at the back of the erf (south end) and the house in a more central location but along the western boundary line.</p>	<p><b>PLACING OF BUILDINGS</b> The garage was placed at the entrance to the erf (north westerly position). The house was attached to it in a central position across the erf. The toilet exists at the south easterly end of the erf.</p>	<p><b>PLACING OF BUILDINGS</b> The toilet appears in a southerly position. The shack was placed in a southerly position. The three rooms appeared closer to the street (north) and the final additions were attached to the south end of the three rooms.</p>

\*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

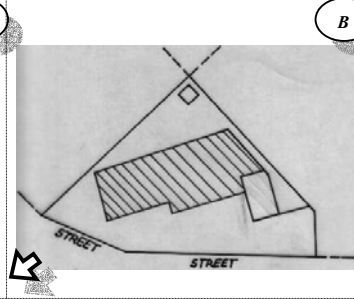
CHAPTER 5: CONSOLIDATION - 3.4.2. PHYSICAL CHANGES

EXT. 6: TYPOLOGY 4



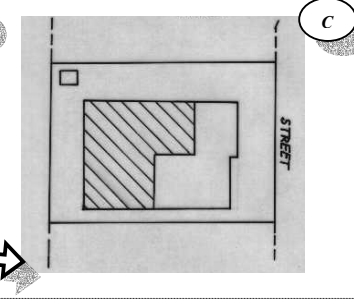
**PLACING OF BUILDINGS**  
 Due to the odd shape of the erf not much could be done to avoid odd spaces being created. However, this household managed to create private space at the back, an elongated space on the east side and a garden space at the front. The housing structures take up most of the space. Space has been optimally used considering the circumstances except that more space could have been created at the back if the house had been placed closer to the street.

The house is placed in the ideal position, as claimed by the household. Other shacks were demolished for the construction of the house.



**PLACING OF BUILDINGS**  
 This erf is also an odd shape, but space has been created at the back of the erf (private space) and space has been created at the front. Odd spaces could not be avoided, but have been used efficiently.

The households claimed this to be the ideal position for the house.



**PLACING OF BUILDINGS**  
 The same amount of space created at the front has been created at the back and west side. Had the house been placed closer to the street, more private space could have been created at the back. The area for living space occupies most of the erf. Space has been used efficiently in this circumstance.

Households reflected that this was the ideal position for their home and the shack was built at the back to enable its development.

**\*NOTE**

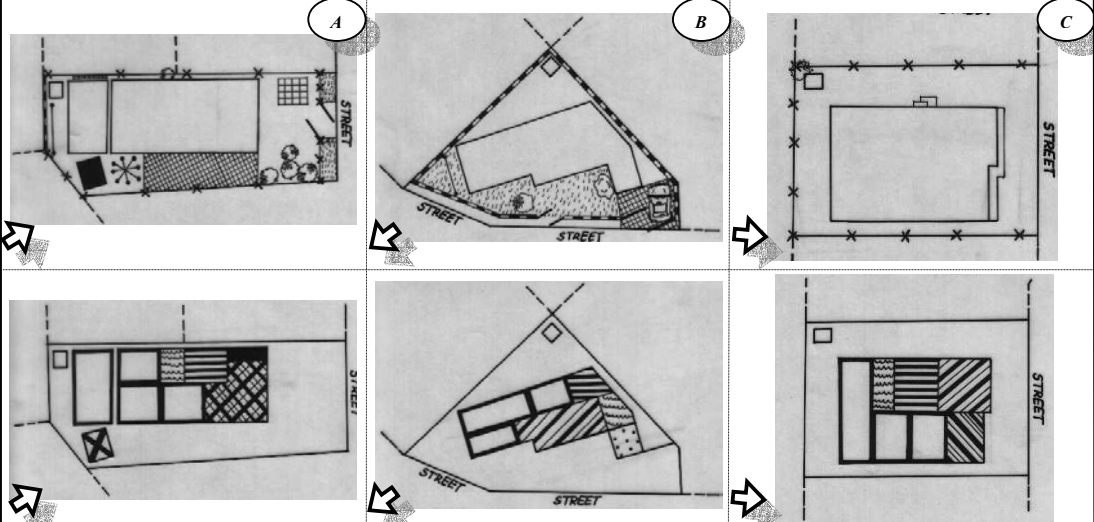
1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

**HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:**

CHAPTER 5: CONSOLIDATION - 3.4.3. LAND USE AND THE USE OF SPACE

EXT. 6: TYPOLOGY 4

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- Four bedrooms: three in the house and one in the temporary structure.

- Three bedrooms.

- Three bedrooms.

KITCHEN

- One kitchen.

- One kitchen.

- One kitchen.

DINING ROOM

- One dining room.

- One dining room.

LOUNGE

- One lounge.

- One lounge.

- One lounge.

TOILET

- Two toilets - one government provision and one indoors.

- Three toilets: two indoors and one government provision.

- Two toilets: one government provision and one indoors.

BATHROOM

- One bathroom.

- Two bathrooms.

- One bathroom.

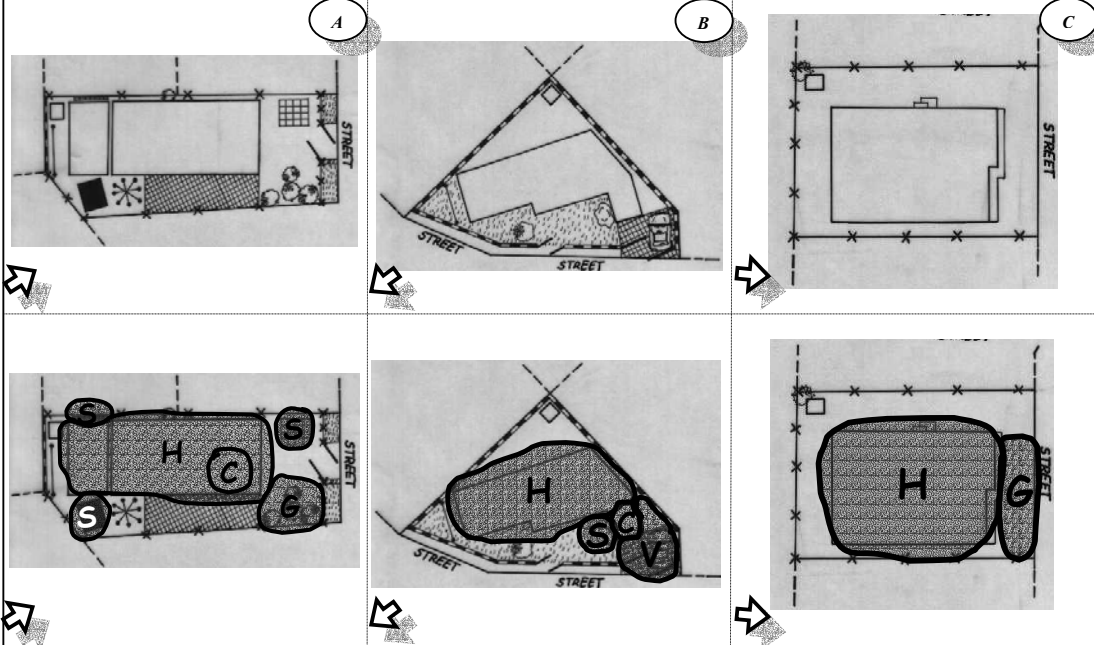
WHY IS IT USED IN THIS WAY?

\*NOTE  
1. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 3.4.3. LAND USE AND THE USE OF SPACE

EXT. 6: TYPOLOGY 4

HOW IS THE PROPERTY BEING USED IN TERMS OF:



GARDENING

The entrance of the erf has a little garden.

The front of the house has a small garden.

RENTAL HSG

COMMERCIAL

Goods are sold from within the house.

Half the garage is used as a spaza shop.

SERVICE

AGRICULTURE

PARKING

Cars are parked either in the second garage or in front of it.

OTHER

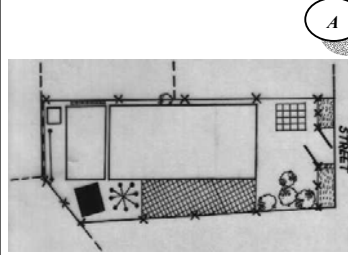
A previous occupied shack is now used as storage. Building materials are also stored in front of the house and numerous clotheslines exist on the side of the erf and at the back.

Building materials are stored in front of the erf and a clothesline is placed to the side of the erf.

CHAPTER 5: CONSOLIDATION - 3.4.4. PUBLIC / PRIVATE INTERFACE

EXT. 6: TYPOLOGY 4

PUBLIC/  
PRIVATE  
INTERFACE



RELATION TO THE STREET:

**Street Boundary Definition**

The 2m tall wire fence at the front of the house with a gate appears transparent. It facilitates interaction with the street.

PRIVACY:

**Side and Back Boundaries**

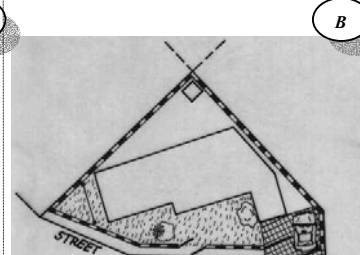
All other sides of the erf are fenced with the use of the same material except for the back boundary. This boundary is a wall and prevents interaction with the neighbour at the back. The rest of the fencing allows for intrusions from neighbours and the public.

**Placing of units**

The house is placed in front of the shacks along the western boundary (influenced by the narrow shape of the erf). The placing of the house and the shacks has blocked off one neighbour to the west but the other (east) can still invade the privacy of this erf with the use of such transparent fencing.

**Placing of the front door**

Entrance to the house is made possible via the side where the paving is done. This creates a bit of privacy and security.



RELATION TO THE STREET:

**Street Boundary Definition**

The entire erf is fenced off with the combination of a wall and fencing spikes (1.5m). This facilitates the interaction with the public to a certain degree.

PRIVACY:

**Side and Back Boundaries**

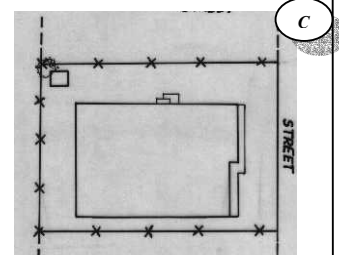
The wall assists in creating privacy at the back of the erf. Neighbours cannot intrude since it is a solid wall with no spikes. Semi-private space is created around the rest of the erf due to the presence of the type of boundary definition.

**Placing of units**

The triangular shape of the erf has influenced the positioning of the house across the centre of the erf, thereby creating a private space at the back.

**Placing of the front door**

Since the erf is a meter or two above road level, the front door is slightly hidden. The door faces the street.



RELATION TO THE STREET:

**Street Boundary Definition**

The entrance to the erf has no fence and is therefore open to the public space.

PRIVACY:

**Side and Back Boundaries**

The other sides of the erf are fenced off with short (1m) transparent wire fencing. It does not assist in creating privacy.

**Placing of units**

The unit is placed at the centre of the erf. It doesn't assist in the creation of any private space. It does, however allow for the creation of space around the house.

**Placing of the front door**

There are two entrances, i.e. one at the front (main) and one at the side (kitchen). The main entrance appears to face the side as well. This seems to be an attempt to create privacy and prevent interaction with the public.



1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>All families are single and nuclear.</li> <li>The average family size is 6, ranging from 4 to 8.</li> <li>No households have tenants.</li> <li>The average household size is 6, ranging from 4 to 8.</li> <li>The average number of sources of income is 2.</li> <li>There is an even mix of part-time, full-time and entrepreneurial/informal employment.</li> <li>The average number of expenses is 11.</li> <li>All households are able to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>All initial structures were toilets. Two were placed at the back of the erf and one in front.</li> <li>Eight additions have been constructed in total.</li> <li>Three additions were shacks, three were completed houses, one was an incomplete house and one was a garage.</li> <li>Household A constructed two additions; household B constructed three additions and household C, three.</li> <li>Where information was available, the following was noted: <ul style="list-style-type: none"> <li>Material suppliers were sought in Mamelodi and outside Mamelodi.</li> <li>Temporary materials were purchased within Mamelodi and permanent materials, outside Mamelodi.</li> <li>Costs of permanent structures range from R17 000 to R20 000 (no costs of temporary structures were provided).</li> <li>Savings is used mostly. Two loans had been acquired as well for certain extensions.</li> <li>Owners had used their own building skills in the construction of shacks.</li> <li>Private contractors had been employed to construct the permanent structures (houses).</li> <li>The time lapse between additions appears to be between one to five years.</li> </ul> </li> </ul>
3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>Eight additions have been made, with an average of 2.5 extensions.</li> <li>All shacks were constructed of temporary materials and all houses were constructed of permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Temporary structures total area: 21m<sup>2</sup></li> <li>Temporary structures average area: 21m<sup>2</sup></li> <li>Temporary structures average size: 10.5m<sup>2</sup></li> <li>Temporary structures average coverage: 11%</li> <li>Permanent structures total area: 195m<sup>2</sup></li> <li>Permanent structures average area: 65m<sup>2</sup></li> <li>Permanent structures average size: 49m<sup>2</sup></li> <li>Permanent structures average coverage: 36%</li> <li>Combined average extension size: 31m<sup>2</sup></li> <li>Combined average area: 72m<sup>2</sup></li> <li>Combined average coverage: 40%</li> <li>Combined average occupational density: 13m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>Shape: more or less rectangular</li> <li>Average dimensions of temporary structures: 2.4m x 4m</li> <li>Average dimensions of permanent structures: 5m x 9m</li> <li>Combined average dimensions: 7m x 4m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All temporary extensions began at the back of the erven.</li> <li>All houses have been placed centrally on the erven in relation to the front and back boundaries.</li> <li>Two odd shaped erven have resulted in odd spaces being created but have been used efficiently. However, space as been used efficiently in two erven. The placing of the house in household A could have been closer to the street to enable more space to be created at the back instead of being wasted at the front</li> </ul>
*NOTE	<ol style="list-style-type: none"> <li>The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).</i></li> <li>Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>No reasons for the use of space within the structures could be obtained.</li> </ol>



## University of Pretoria etd, Velayutham P (2006)

4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>• Ten bedrooms in total.</li> <li>• An average of 3 bedrooms.</li> <li>• All households have one kitchen.</li> <li>• Two households have one dining room.</li> <li>• All have a lounge.</li> <li>• Every household makes use of the toilet provided by government.</li> <li>• Each household has at least one indoor toilet. Total of seven toilets.</li> <li>• Each household has at least one bathroom (four bathrooms in total).</li> <li>• The space utilisation was sufficient for the needs of the family members.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>• Two households have gardens in front.</li> <li>• Commercial activity takes place in two households.</li> <li>• Cars are accommodated in Household B.</li> <li>• Storage of building materials is possible on two erven.</li> <li>• Clotheslines are also visible on the same two erven (household A and B).</li> </ul>
6. PUBLIC/ PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b></p> <p><i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• There is an indication of different degrees of fencing that has been done.</li> <li>• Household C displays the smallest attempt at fencing off the house. There is no fence.</li> <li>• Household A uses transparent wire fencing.</li> <li>• Household B goes built a brick wall. Privacy and security is achieved.</li> </ul> <p><b>PRIVACY:</b></p> <p><i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>• Transparent fencing has been used in two households. This does not enable the creation of privacy.</li> <li>• Household B has defined the boundaries with walls. This provides security and privacy.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>• All permanent units have been placed at the centre of the erven. This allows for the creation of private space at the back of the erven.</li> <li>• In two cases the space behind the house is too small, i.e. a shack has been retained at the back in households A and households C has very little space on the erf.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>• All doors have been placed in a manner that suggests the need for security and privacy.</li> </ul>

## \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

**AFFORDABILITY**

- **Family structure:** The family structure prevalent in this typology is single nuclear families.
- **Family size:** Family and household sizes range between four and eight (no tenants).
- **Sources of income:** In relation to the sources of income, the largest and smallest household sizes have two sources of income whilst, household B, family of six, has three sources of income.
- **Type of employment:** Household A has one full-time, one part-time income source, whilst household C has one full-time, and one entrepreneurial income source. These households have at least one full-time income source compared to household B. Household B has income sources from two entrepreneurial/informal activities and one part-time employment source.
- **Savings:** All households are able to save, thereby enabling additions to be built.
- **Expenses:** Household C has the most expenses, followed by household B and then household A.

**Conclusion**

There is no distinguishing factor that would imply one household would be more successful than the other in making additions. Each household has one beneficial factor and two inhibiting ones in comparison, i.e. where households A and B have large family sizes, household C has a small one. Where households A and C have fewer income sources, household B has one more. Where household B and C have more expenses, household A has the least.

**PRODUCT**

- **Number of additions:** In total, eight additions had been built, of which three were shacks, three were completed houses, one was a garage and one an incomplete house. Household A had constructed two additions, and households B and C had constructed three additions. The number of additions produced by each household appears regular, i.e. 2, 3, 3.
- **Time:** The initial units constructed were toilets, which were placed at the back of the erf in two cases and one at the front. This would imply that all households had arrived after housing provision had been conducted. Households A and C had arrived in 1997 and household B in 1998. Households A and C would therefore be at an advantage of a year.
- **Type of structures:** All households had initially constructed temporary structures, which were quickly followed by permanent structures. The number of permanent structures produced exceeds the number of temporary structures built.
- **Level of formalisation:** Each household went through the phase of constructing an initial shack, followed by a permanent structure and in two cases another permanent structure. The transition from temporary structures to permanent was therefore quick. More than sixty percent of additions were permanent. Households are better able to build additions.
- **Size of additions:** Average extension sizes appear to be 31m<sup>2</sup>. The average size of temporary additions is 10.5m<sup>2</sup>, whilst for permanent structures the average size is 49m<sup>2</sup> (5m<sup>2</sup> - 76m<sup>2</sup>). Permanent structures tend to dominate in this typology, in numbers and in size. Considering the family sizes that need to be accommodated, the size of additions appears sufficient.
- **Configuration:** The combined configuration of additions is 7m x 4m (temporary structures - 2.4m x 4m and permanent structures - 5m x 9m).
- **Area of additions:** The average area covered by all extensions is 72m<sup>2</sup>, which account for 40% of the erven. Almost half of the erven has been occupied. This implies a larger amount of space per person. On average permanent structures, occupy 65m<sup>2</sup> and temporary structures, 21m<sup>2</sup>. The area of permanent structures is three times as much as temporary structures.
- **Occupational density:** Each person residing within any one of these additions has at least 13m<sup>2</sup> (ranging between 9m<sup>2</sup> and 19m<sup>2</sup>) to himself or herself. The additions built promote comfortable spaces to reside in if family sizes were smaller.
- **Coverage:** Permanent structures have 36% (ranging between 31m<sup>2</sup> and 43m<sup>2</sup>) coverage whilst temporary structures have coverage of 11%. Permanent structures occupy three times as much space as temporary structures.
- **Shape:** The dominant shape is rectangular.
- **Arrangement of structures:** The placing of the shacks at the back and the houses in the centre of the erven imply that the households had planned to build their houses in the centre. They were keeping space for the houses by building the shacks at the back. All households had admitted that this was the ideal place for their houses. The arrangement of the structures has created functional space for the erven. Some spaces appeared odd in shape (small pockets of space). These were created because of the odd shaped erven. In this case, the shapes of the erven have affected the efficiency in the use of space. Two households were successful in using space efficiently.
- **Type of employment:** There is no clear relation between the type of employment and the level of formalisation. It does not seem to have affected any households' ability to consolidate.

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

- **Coverage:** Permanent structures have 36% (ranging between 31m<sup>2</sup> and 43m<sup>2</sup>) coverage whilst temporary structures have coverage of 11%. Permanent structures occupy three times as much space as temporary structures.
- **Shape:** The dominant shape is rectangular.
- **Arrangement of structures:** The placing of the shacks at the back and the houses in the centre of the erven imply that the households had planned to build their houses in the centre. They were keeping space for the houses by building the shacks at the back. All households had admitted that this was the ideal place for their houses. The arrangement of the structures has created functional space for the erven. Some spaces appeared odd in shape (small pockets of space). These were created because of the odd shaped erven. In this case, the shapes of the erven have affected the efficiency in the use of space. Two households were successful in using space efficiently.
- **Type of employment:** There is no clear relation between the type of employment and the level of formalisation. It does not seem to have affected any households' ability to consolidate.

### Conclusion

Household A managed to build a good quality house despite the large family size and two sources of income. This household had fewer expenses and an advantage of a year compared to household B.

Household B had an advantage of three income sources and a small family size. This household managed to build the best quality house inclusive of the boundary walls despite arriving a year later than the other households. Household C had the most expenses, the smallest family size and the same number of income sources as household A. Even after being on the erven for a year before household B had arrived, this household has produced permanent structures but not to the same standard and quality as household B. Household B and C produced the same number of additions.

All households had the advantage of having the ability to save.

The factors within these households that have influenced consolidation positively appear to be time, the number of income sources, and small family sizes. Factors inhibiting consolidation were larger family sizes, many expenses and arriving later than other households. However, each household presents a different situation where the factors at play either produce positive or negative outcomes for consolidation. Factors can also not be isolated as 'THE' factor. Instead, how the factors interplay with one another determines whether a household will be able to consolidate or not. Another factor that has affected consolidation is the oddly shaped erven.

### PROCESS

- **Sourcing of materials:** The purchasing of temporary materials was done within Mamelodi and for permanent structures, outside Mamelodi.
- **Cost:** The costs of extensions within this typology ranged from R17 000 to R20 000 for permanent structures. A lot of money was invested.
- **Funding:** For certain extensions loans were acquired, but in most cases savings was used.
- **Builders:** In relation to the type of additions made, i.e. temporary or permanent, the type of labour employed correlates. Owners had used their own skills to build their shacks but employed private contractors to build their homes.
- **Time:** The time lapse between additions appears to be between one and five years.

### USE OF SPACE

#### Within structure

- The use of space within the houses displays diversity and the ability of these households to afford to build such homes to accommodate such uses. The uses go beyond the basic needs of a kitchen and bedroom. Each household has an average of three bedrooms, one kitchen, a lounge, an indoor toilet and a bathroom, the latter three uses being luxuries.
- In total there are ten bedrooms across the three households. Two households have a dining room (luxury) and every household makes use of the toilet provided by government apart from their indoor ones.

#### Within erven

- **Gardens:** Two households have flower gardens in front of their homes (decorative).
- **Parking:** One household is able to accommodate a vehicle. Household B has the luxury of owning a car.
- **Survival strategy:** Commercial activity is conducted from within households A and B and on average accounts for approximately 8% of the erven.
- **Other:** Storage of building materials occurs on two erven (household A and B) and clotheslines are erected at the back and on the side.

#### \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

- Uses of the erven are not very simple.

#### PUBLIC/PRIVATE SPACE

- **Street Boundary:** Some cases reflect a desire for privacy with the construction of a brick wall whilst in the other cases transparent fencing is used or not at all. There are varying degrees in the type of fencing built. Household B allows for some interaction at the front of the property with the use of spikes in combination with the wall.
- **Side and back boundaries:** The definition of boundaries is quite apparent in all households. However, the use of materials used differs: household A and C have used transparent fencing, which defines boundaries but creates no privacy. Household B constructed a wall, which allows for a great degree of privacy.
- **Placing of units:** All structures have been placed at the centre of the erven which allows for the creation of private space at the back of the erven. It is successful in the case of household B but not to such a degree in the other households because of the type of fencing used.
- **Placing of the front door:** Although household B encourages interaction with the street, this is via the garage (location of the spaza shop). The door of the house is placed in a way that suggests the need for privacy. Households A and C have placed the doors on the side of the houses, which also suggests the need for privacy.

*Pattern: Initially temporary structures were placed at the back of the erven with permanent structures placed in front of them. Some temporary structures were removed in order to construct the house. There are differing levels of boundary definition with little diversity in the use of space.*

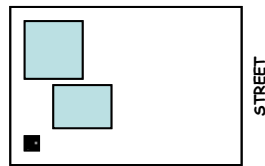


FIGURE 48: Pattern 1 - Phase 1

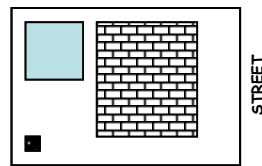


FIGURE 49: Pattern 1 - Phase 2

#### \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x1.2m) and shape (rectangle).*
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 2.1.1. SOCIO-ECONOMIC INTRODUCTION

EXT. 10: TYPOLOGY 1

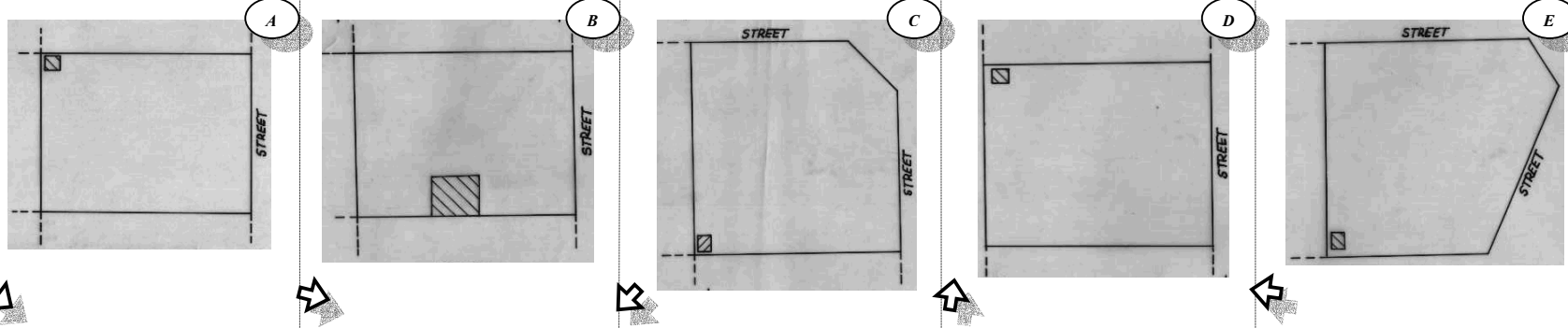
THE HOUSEHOLD	A	B	C	D	E
HOUSEHOLD PROFILE	<p><b>Family type:</b> <i>Single woman-headed family</i> Family size: 5</p> <p>Tenants: <i>Yes</i> No. of tenants: 4 Household size: 9</p>	<p><b>Family type:</b> <i>Single nuclear family</i> Family size: 5</p> <p>Tenants: <i>Yes</i> No. of tenants: 2 Household size: 7</p>	<p><b>Family type:</b> <i>Single nuclear family</i> Family size: 6</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 6</p>	<p><b>Family type:</b> <i>Single nuclear family</i> Family size: 5</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 5</p>	<p><b>Family type:</b> <i>Single nuclear family</i> Family size: 6</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 6</p>
EMPLOYMENT AND INCOME	<p>No. of sources of income: 2 Sources of income: <i>tenants</i> Employment: <i>Full-time and entrepreneurial/informal</i> Location: <i>Restaurant in WaterMeyer Park, Taxi owner</i></p>	<p>No. of sources of income: 3 Sources of income: <i>Father and two tenants</i> Employment: <i>Part-time and two full-time</i> Location: <i>Willows, and unknown</i></p>	<p>No. of sources of income: 3 Sources of income: <i>Mother and father</i> Employment: <i>Full-time, part time, and entrepreneurial/informal</i> Location: <i>Johnson Control (Deneboom, in a plaza (Nelstroom), and a spaza shop from home.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Mother</i> Employment: <i>Entrepreneurial/informal</i> Location: <i>Sells food at a school in extension 7.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Entrepreneurial/informal</i> Location: <i>Sells vegetables from his home.</i></p>
EXPENDITURE	<p>The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also a common expense.</p>				
WATER	x	x	x		x
ELECTRICITY		x	x	x	x
TRANSPORT	x		x	x	x
TELEPHONE			x		x
EDUCATION	x	x	x	x	x
FOOD	x	x	x	x	x
CLOTHING		x		x	x
ACCOUNTS					x
SAVINGS					x
TAXES	x	x	x	x	x
SANITATION	x	x	x	x	x
WASTE REMOVAL	x	x	x	x	x
OTHER			x		x



CHAPTER 5: CONSOLIDATION - 2.1.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 1

INITIAL  
STRUCTURE



**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

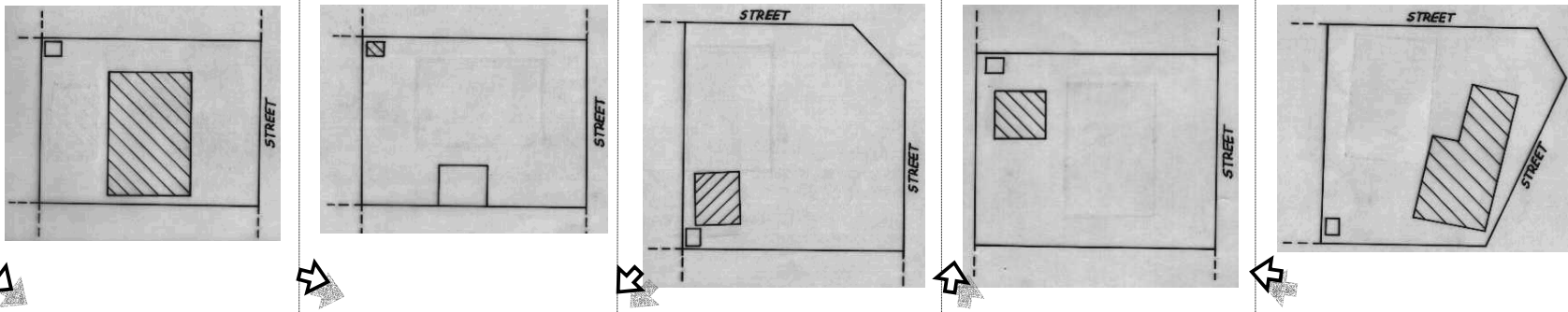
**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** R650  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1996  
**Problems:** Financing. Savings had to be used to build this temporary structure.

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
1



**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Phase 3  
**Cost:** R1 500  
**Funding:** Savings  
**Builder:** Owner  
**Date of Constr.:** 1997  
**Problems:** It had to be demolished in order to build the house.

**Description:** Temporary structure  
**Materials used:** Metal sheets and wooden boards (temporary materials).  
**Material supplier:** Pretoria West  
**Cost:** R1 200  
**Funding:** Savings  
**Builder:** Owner was assisted by friends.  
**Date of Constr.:** 1996  
**Problems:** None.

**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials).  
**Material supplier:** Informal supplier  
**Cost:** R2 400  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1995  
**Problems:** Financing and unemployment.

\*NOTE

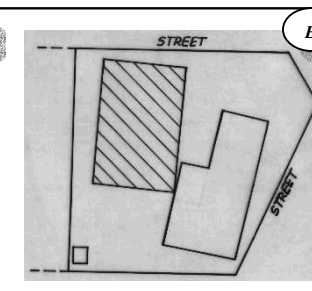
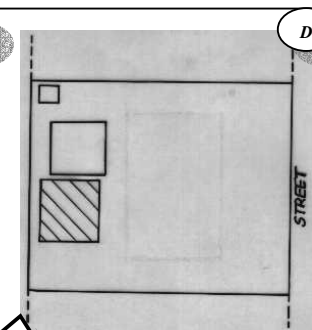
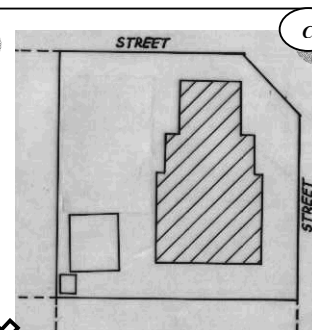
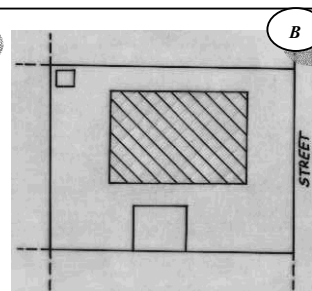
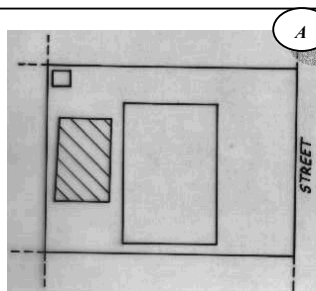
1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.



CHAPTER 5: CONSOLIDATION - 2.1.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 1

ADDITION  
2



**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Phase 1  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1996  
**Problems:** Leakage of water into the shelter. Rats.

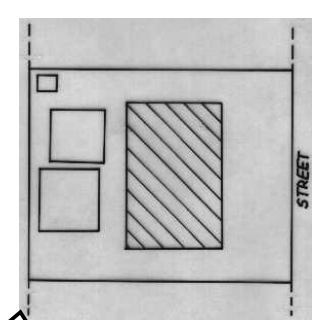
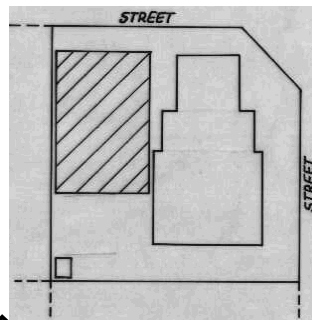
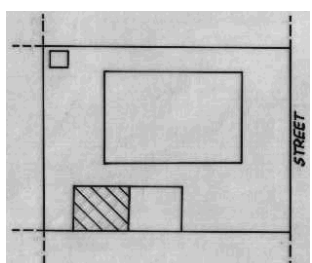
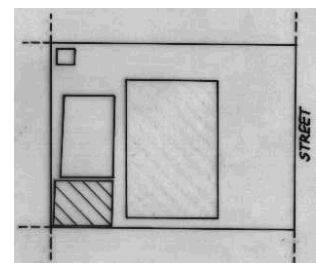
**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** House  
**Materials used:** Face bricks (permanent materials)  
**Material supplier:** Bought in Ernasteen  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** End of 1998  
**Problems:** Financing. The cost of materials results in an incomplete house.

**Description:** Temporary structure  
**Materials used:** Corrugated iron roofing and wooden boards (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** R780  
**Funding:** Savings  
**Builder:** Supplier  
**Date of Constr.:** 1997  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
3



**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Phase 1  
**Cost:** R950  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** June 2001  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** Between R750 and R850  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1998  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

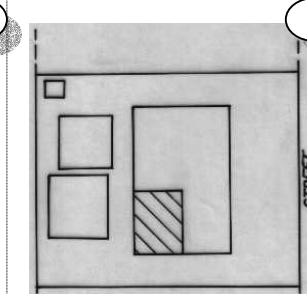
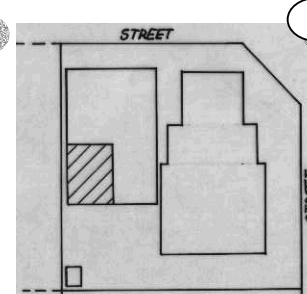
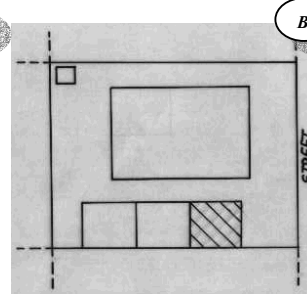
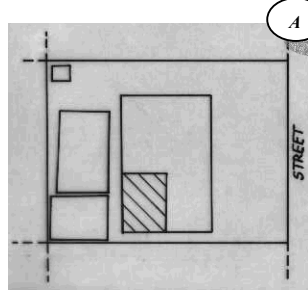
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.1.2. PHYSICAL CHANGES

EXT. 10: *TYPOLOGY 1*

ADDITION  
4



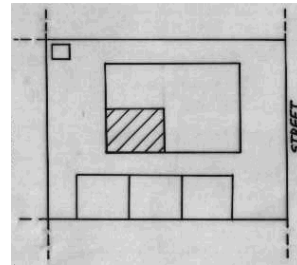
**Description:** One room under the roof structure.  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Concrete precast slabs. (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** Unknown. The tenant constructed it when he moved in.  
**Funding:** Unknown  
**Builder:** Tenant  
**Date of Constr.:** 1999  
**Problems:** None

**Description:** One room under the roof structure.  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** One room under the roof structure.  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** 1998  
**Problems:** None

ADDITION  
5



**Description:** One room under the roof structure  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Government  
**Cost:** Unknown  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.1.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 1

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

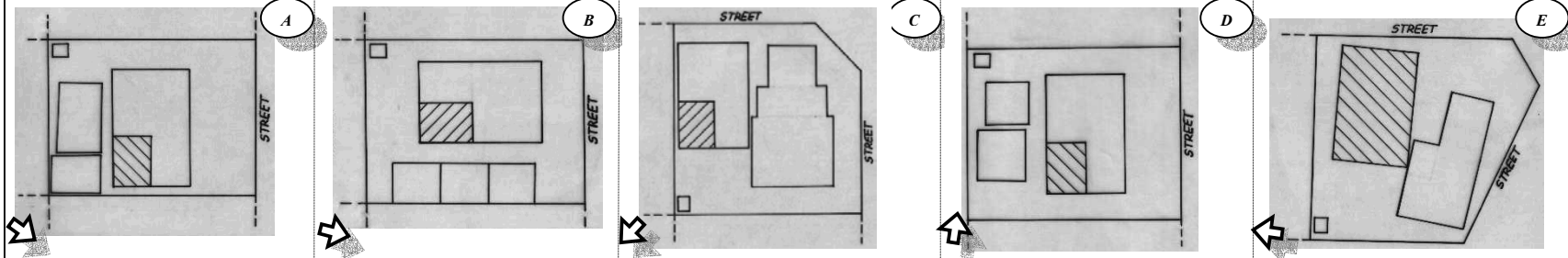
A	B	C	D	E
<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> There have been two extensions made in total. Both were shacks made of temporary materials.</p> <p><b>SIZE</b> The size of extension one is approximately 18m<sup>2</sup> and the second 11m<sup>2</sup>.</p> <p>Erf size: 192m<sup>2</sup> Total area: 29m<sup>2</sup> Coverage: 15% Occupational density: 4m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> Each shack has a rectangular shape. Extension one is 5.4m x 3.4m and extension two is 3.8m x 3m).</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions were constructed on this erf made of temporary materials (shacks).</p> <p><b>SIZE</b> All three extensions roughly covered 11m<sup>2</sup>.</p> <p>Erf size: 192m<sup>2</sup> Total area: 33m<sup>2</sup> Coverage: 17% Occupational density: 5m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> Each shack is attached to the next and takes the form of a rectangle but is internally subdivided. The dimensions of each addition are 3.8m x 3m.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Two extensions were undertaken here. The first extension was a shack (temporary materials) that was destroyed in order to construct their actual home (permanent materials).</p> <p><b>SIZE</b> The size of the shack is unknown, but the house is approximately 65m<sup>2</sup>.</p> <p>Erf size: 248m<sup>2</sup> Total area: 65m<sup>2</sup> Coverage: 26% Occupational density: 11m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> This large house takes quite an odd shape. At first glance, it looks like a 'stepped' house, i.e. it starts broad and narrows down. The average dimensions are 12m x 6m. The shack took a rectangular shape.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> There are two shacks that have been constructed of temporary materials.</p> <p><b>SIZE</b> Each shack covers a small area of approximately 11m<sup>2</sup> and 14m<sup>2</sup> (in order of appearance) respectively.</p> <p>Erf size: 208m<sup>2</sup> Total area: 25m<sup>2</sup> Coverage: 12% Occupational density: 5m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> They take the form of rectangles. The first is 3.2m x 3.4m and the second is 3.7m x 3.8m.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> There has only been one extension (a shack) made of temporary materials.</p> <p><b>SIZE</b> It is approximately 41m<sup>2</sup> in total.</p> <p>Erf size: 236m<sup>2</sup> Total area: 41m<sup>2</sup> Coverage: 17% Occupational density: 7m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> This shack takes an 'L' shape and resembles three shacks that are joined together to form one unit. The dimensions for calculation purposes are as follows: 7m x 4.1m.</p>

\*NOTE

- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
- Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.

CHAPTER 5: CONSOLIDATION - 2.1.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 1



**PLACING OF BUILDINGS:** With the size of the erven being approximately 208m<sup>2</sup> and gross and nett densities estimated at 163p/ha and 266p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

**PLACING OF BUILDINGS**

The toilet was placed at the back of the erf. The roof structure was placed in a central position with the longer side facing the road frontage and the two shacks, next to one another at the back end of the erf, along the back boundary line and behind the roof structure.

This leaves lots of space at the front, which is often used for gardens or is abandoned instead of being added to the living space. There is little space at the back of the erven where privacy and larger amounts of living space is needed. The arrangement of the structures has created a narrow strip between them (roof structure and temporary structures).

**PLACING OF BUILDINGS**

All three shacks were arranged along the east boundary. The roof structure lies parallel to the arranged shacks with the shorter side facing the road and the toilet was placed once again at the back end of the erf.

Odd pockets of space are created around the structures (roof structure in particular) which prevent the optimal use of the erven although privacy is created at the back and there is space for a garden at the front.

**PLACING OF BUILDINGS**

The house is placed at the front of the erf along one street and the roof structure is placed behind it, with the shorter side closely paralleled to the other street. The toilet was placed at the back of the erf in a northerly position.

The arrangement of the structures has created living space and privacy at the back, behind both structures. Space was also kept for a garden along one street. Space on this erfven appears to be optimally occupied. The roof structure has since the interviewing phase been converted into a garage.

This was the ideal position for their house as expressed by the owner.

**PLACING OF BUILDINGS**

The shacks are placed at the back of the erf, next to one another and behind the roof structure. The positioning of the roof structure was in front of the shacks in a central position on the erf. The longer side of the structure lies parallel to the street. The toilet was placed at the back of the erf.

A narrow space is created between the roof structure and the temporary structures (limited living space). Odd spaces are also created on the sides of the structures and a large space is made available at the front of the erf, which is occupied by a garden. The use of space on this erfven is not optimal for living space. Too much space is used for the garden.

**PLACING OF BUILDINGS**

The shack is built close to one of the road frontages on the southern side of the erf (it is a corner property that has two road frontages). The roof structure appears at the back of the property with the shorter side facing the other road frontage and the toilet is placed in the northern corner.

The placing of the temporary structure has allowed for odd spaces to be created on this irregular shaped erven. This, however, has allowed for a garden to be planted along one street. The added placing of the roof structure has contributed to the creation of more odd spaces and the eventual inability to make the optimal use of space. The two structures have also been placed close together with little or no space between them.

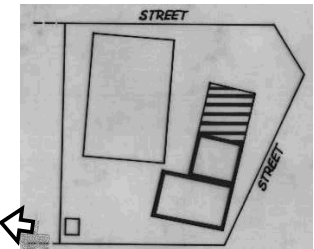
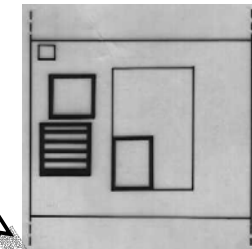
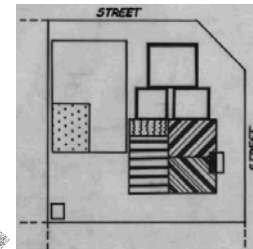
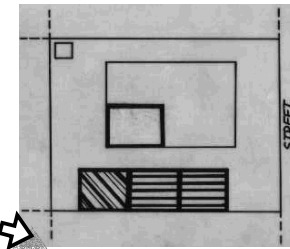
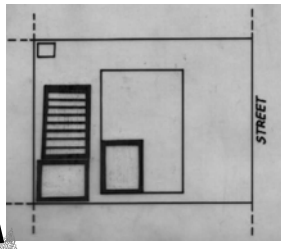
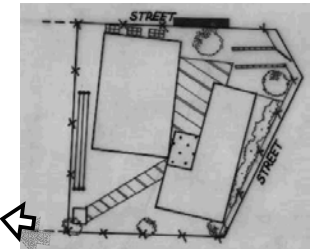
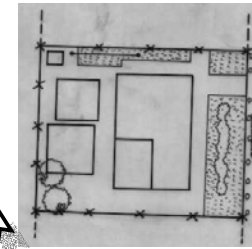
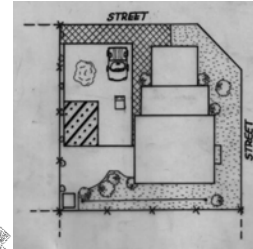
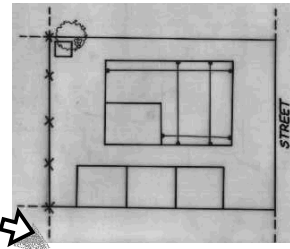
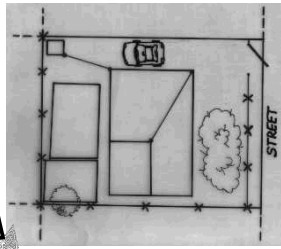
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2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

CHAPTER 5: CONSOLIDATION - 2.1.3. LAND USE AND THE USE OF SPACE

EXT. 10: *TYPOLOGY 1*

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- Three bedrooms: Owner - 1, tenants - 2

- Four bedrooms: Owner - 2, tenants - 2.

- Three bedrooms.

- Three bedrooms: one in each shack and one under the roof

- Two bedrooms.

KITCHEN

- One kitchen.

- Two kitchens.

- One kitchen.

- One kitchen.

- One kitchen.

DINING ROOM

- One dining room.

- One dining room.

LOUNGE

- One lounge.

TOILET

- One toilet - government provision

- One toilet - government provision

- Two toilets: indoor -1, government provision - 1

- One toilet - government provision

- One toilet - government provision

BATHROOM

- One bathroom.

COMMERCIAL

- One spaza shop.

WHY IS IT USED IN THIS WAY?

\*NOTE

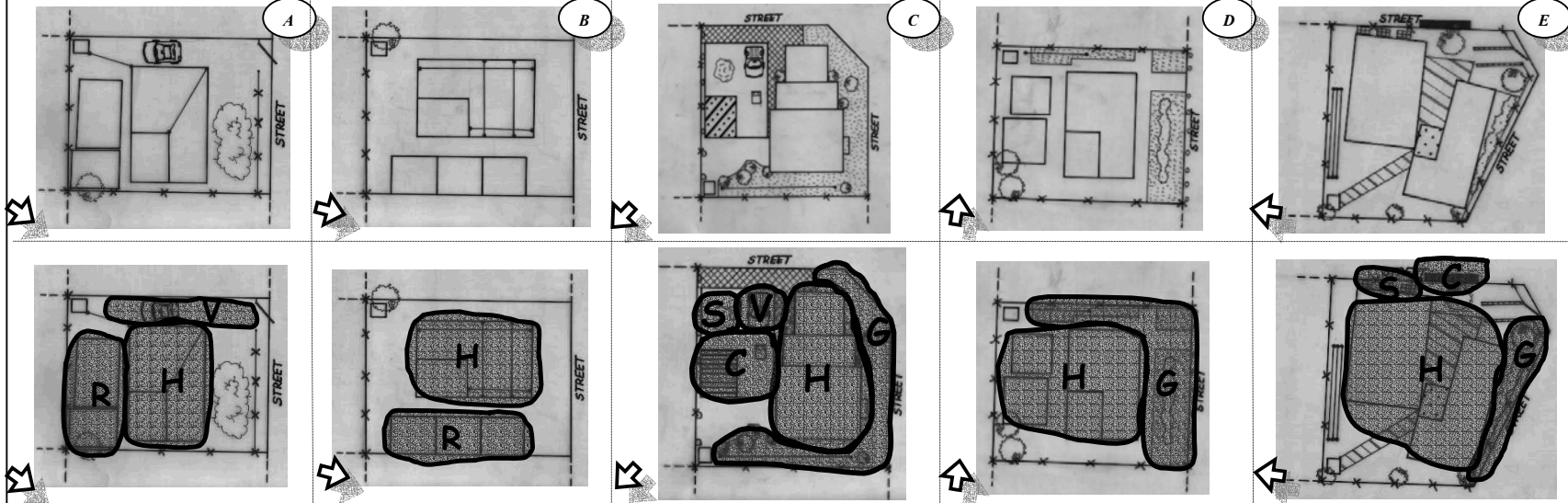
1. No reasons for the use of space within the structures could be obtained.



CHAPTER 5: CONSOLIDATION - 2.1.3. LAND USE AND THE USE OF SPACE

EXT. 10: TYPOLOGY 1

HOW IS THE PROPERTY BEING USED IN TERMS OF:



GARDENING

The entire erf is filled with trees and plants. There is a well-kept garden in front.

There is a small garden in front of the house and on the side of the house.

There is a little garden in front of the house with large trees within the erf.

RENTAL HSG

The tenants are housed at the back in two shacks that were brought there by the tenants.

The tenants are housed in shacks that border the left side of the erf, hence forming an edge.

COMMERCIAL

The commercial activity (spaza shop and game machine) is undertaken from within the enclosure provided under the roof structure and outside it.

Vegetables are sold from the home. A stall was built on the east side of the erf for this activity.

SERVICE

AGRICULTURE

PARKING

One of the tenants has a vehicle, which is parked, on the right-hand side of the roof structure.

Vehicles are parked underneath the roof structure.

OTHER

The roof structure is used to house a clothing line as well as the space between the roof structure and the toilet.

Once again we find the use of the roof structure to be for numerous clothes lines.

There is a clothesline on the side of the erf and building materials that are housed under the roof structure.

There is a clothesline on the erf.

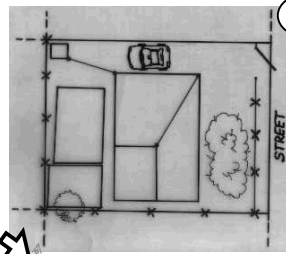
There are numerous trees that border the erf as well with clothes lines along the side boundary and bricks stored along one road frontage. A vegetable stall is built outside the erf, on the pavement.



CHAPTER 5: CONSOLIDATION - 2.1.4. PUBLIC / PRIVATE INTERFACE

EXT. 10: TYPOLOGY 1

PUBLIC/  
PRIVATE  
INTERFACE



RELATION TO THE STREET:  
*Street Boundary Definition*

There is a transparent wire fence (1m) at the front of the house. Privacy is not created.

PRIVACY:

*Side and Back Boundaries*

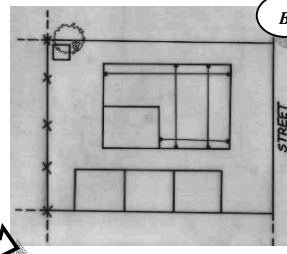
Two other sides of the erf are fenced with the same wire fencing. This attempts to provide a barrier for the creation of private space but doesn't satisfy this requirement due to its weak, transparent nature.

*Placing of units*

The shacks being placed next to one another do to some degree create some semi-private space between the shacks at the roof structure. A tree has been planted on the west side to create some private socialising space. It is successful to a certain degree. The other side is quite open to street passer-bys and the other neighbour.

*Placing of the front door*

The entrance to the single room under the roof structure and the shacks face one another. In this way private space is created as well as security.



RELATION TO THE STREET:  
*Street Boundary Definition*

There is no fencing in the front of the erf. This opens the erf up to being part of the public space.

PRIVACY:

*Side and Back Boundaries*

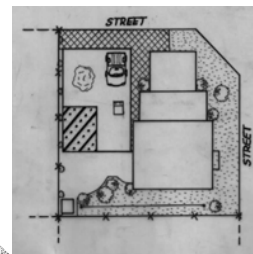
The only fencing appears at the back end of the erf. It is also quite weak and transparent, playing a boundary defining role. No privacy is created.

*Placing of units*

Privacy is attempted via the placing of the shacks along the boundary. This creates a barrier between the neighbours.

*Placing of the front door*

The front door of the room under the roof structure faces the street. It is quite open to the street. The doors of the shacks face the roof structure. In this case privacy or security was sought.



RELATION TO THE STREET:  
*Street Boundary Definition*

The lack of fencing releases the space in front of the home to become public space.

PRIVACY:

*Side and Back Boundaries*

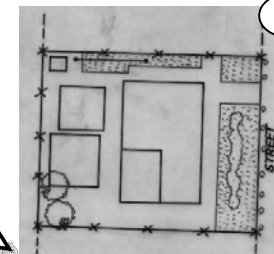
The both sides of the erf that are shared with neighbours are fenced with wire fencing (tidy) and reinforced with trees. The need for privacy is expressed and achieved.

*Placing of units*

The roof structure and house have been placed next to one another. The area behind the roof structure and the home becomes the private space and has been facilitated very well by the fencing, trees, and positioning of the structures.

*Placing of the front door*

The house has two entrances, one that faces the street and one that is hidden at the back of the erf. This facilitates interaction and privacy.



RELATION TO THE STREET:  
*Street Boundary Definition*

A weak representation of a fence is depicted by the placing of stones along the street. No barriers are created and no privacy created.

PRIVACY:

*Side and Back Boundaries*

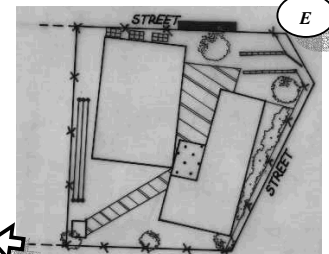
All the others sides of the erf are fenced off with wire fencing. Its transparency fails at creating any private space.

*Placing of units*

A certain degree of semi-private space is created between the shacks and the roof structure. The shacks have been placed side by side with the roof structure in front of them as protection. Security is created.

*Placing of the front door*

The entrances to the shacks face the street but are buffered by the roof structure and the room under it. Security and a bit of privacy are achieved. The door of the room under the roof structure faces the side of the erf.



RELATION TO THE STREET:  
*Street Boundary Definition*

The common transparent wire fencing (1m) here also fails to define semi-public or private space.

PRIVACY:

*Side and Back Boundaries*

The boundaries shared with the neighbours are lined with either trees or clothes-lines (when clothes are hung up privacy is created) to create some privacy, but is still quite open. Privacy is not created.

*Placing of units*

The structures have been placed next to one another. Some private space is created between them.

*Placing of the front door*

The entrance to the house faces the roof structure. Privacy is created in this way (faces away from the street).

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>1. SOCIO-ECONOMIC STATUS</b></p>	<ul style="list-style-type: none"> <li>• All families are single and nuclear except for one. There is one woman-headed family.</li> <li>• Family sizes range from 5 to 6 and average of 6.</li> <li>• Two households have tenants (A and B).</li> <li>• The average household size is 7, ranging from 5 to 9.</li> <li>• On average each household has two sources of income. It ranges from 1 to 3.</li> <li>• The dominant employment source is through entrepreneurial/informal activity, follows by full time employment and then part-time employment.</li> <li>• The average number of expenses within each household is 9.</li> <li>• Only one household is able to save (E).</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>2. ADDITIONS</b></p>	<ul style="list-style-type: none"> <li>• Four out of five initial structures were toilets. One household had built a shack.</li> <li>• Roof structures were provided by government after toilets were provided. This was followed by one room under the roof structure.</li> <li>• Ten additions by residents had been made in total.</li> <li>• Nine additions were shacks and one was a house.</li> <li>• Three households had made two additions (households A, C and D), one household had made three additions, and household E had made one addition.</li> <li>• All shacks were made of temporary materials and houses of permanent materials.</li> <li>• Where information was available, the following was noted:             <ul style="list-style-type: none"> <li>○ Materials for shacks were sought in Mamelodi and materials for houses were sought outside Mamelodi.</li> <li>○ Costs range from R650 to R2400.</li> <li>○ In most cases savings was the source of funding.</li> <li>○ Builders: a large number of private contractors were used. A few owners built their own additions and others employed the material suppliers.</li> <li>○ The time lapse between additions range from one to four years.</li> </ul> </li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>3. HOW HAS THE UNIT CHANGED OVER TIME?</b></p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>• An average of two extensions per household has been made.</li> <li>• All shacks were constructed of temporary materials and formal structures from permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>• Average erf size: 215m<sup>2</sup></li> <li>• Average extension size: 21m<sup>2</sup></li> <li>• Average area: 39m<sup>2</sup></li> <li>• Average coverage: 17%</li> <li>• Average occupational density: 6m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>• Shape: All shacks appear rectangular in shape. The houses constructed take irregular shapes: trellised and 'L' shaped.</li> <li>• Average dimensions: 3.6m x 5.2m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>• In most cases shacks were placed at the back of the erven and roof structures either centrally or squeezed in next to existing shacks.</li> <li>• One household (C) has optimised the use of space on the erven for living space. The placing of the roof structures on all other erven has limited the optimisation of space for living or any other uses except gardening as a result of the creation of small, odd pockets of space.</li> <li>• The owner of households C had constructed a house and reflected that the location of his house was the ideal position.</li> </ul>
<p><b>*NOTE</b></p> <ol style="list-style-type: none"> <li>1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <u>Toilet</u> - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). <u>Roof structure</u> - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). <u>Room under roof structure</u> - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).</li> <li>2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>3. The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>8. No reasons for the use of space within the structures could be obtained.</li> </ol>	

4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>• An average of three bedrooms per household and a total of 15.</li> <li>• Each household has at least one kitchen.</li> <li>• Two households have a dining room and one a lounge.</li> <li>• One household has a spaza shop.</li> <li>• Another household has a bathroom.</li> <li>• Each household makes use of the toilet provided by government. One household also has an indoor toilet.</li> <li>• In most cases the reason for expanding has been the need for more space for their children.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>• Three households have gardens.</li> <li>• Two households make provision for the parking of cars.</li> <li>• Commercial activity is conducted by two households.</li> <li>• Two erven have renters.</li> </ul>
6. PUBLIC/ PRIVATE INTERFACE	<p><b>RELATION TO THE STREET</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• Only two households have erected fences in front of their homes. Others have either placed stones defining the front boundary or not erected anything up front. This allows for public space to invade the space of the erven.</li> </ul>

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet* - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). *Roof structure* - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). *Room under roof structure* - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
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## AFFORDABILITY University of Pretoria etd, Velayutham P (2006)

- **Family structure:** A single, nuclear family is typical within this area with just one woman-headed household.
- **Family sizes:** Family sizes range between 5 and 6, which is quite consistent. Household sizes tend to be much larger because of the presence of tenants in some households (range between 5 and 9). Households A and B have tenants.
- **Sources of income:** On average each household has two sources of income. These sources can be accounted for by entrepreneurial/informal activity (mostly), rent, part-time employment and full-time employment. The family within household A is completely supported by rental money. Affordability of this family will be restricted as a result. The ability of these families to make additions is limited to a certain degree considering the amount of people that have to be supported.
- **Expenses:** These families have numerous expenses (9). Combined with the large family sizes and the limited income sources, the abilities of these families are further restricted.
- **Savings:** The lack of ability of households to save limits the ability to make good quality additions. Only one household is able to save.

**Conclusion**

Household B would appear to be in the most favourable situation with five family members, fewer expenses and three sources of income. The next household with greater potential for building additions would be a tie between households A and C. Household E seems to be in the worst position. This household's ability is restricted by many factors irrespective of its ability to save.

**PRODUCT**

- **Number of additions:** In total ten additions have been made. Household B had made three additions followed by households A, C and D with two additions each and household E with one addition. Household B had been the most successful in building many additions, which reinforces the statement made above.
- **Time:** All households had arrived around the same time (1996) except for two households (C and E). Household C had arrived in 1997 and household E in 1995. This shows that time was not a factor in terms of consolidation in this typology, i.e. arriving in 1995 would imply that this household would have either made more additions or consolidated to a greater extent than the others considering being there for a longer period. The total opposite holds true. Household E is the least consolidated and has produced the least amount of additions. Household C had arrived in 1997 (more or less a year later than the majority), which would imply the least consolidated and the least amount of additions. Instead, this household is the most consolidated (permanent structure) with the average number of additions made.
- **Type of structures:** All structures produced were temporary structures except for one produced by household C (a house made of bricks). 90% was therefore temporary structures.
- **Level of formalisation:** The level of formalisation within this typology is low considering that only one household had managed to produce a permanent structure (10%).
- **Size of additions:** Additions have an average size of 21m<sup>2</sup>, ranging from 11m<sup>2</sup> to 65m<sup>2</sup>. Excluding the permanent structure in the calculation, the average size of additions would be 16m<sup>2</sup>. The size of the additions has been influenced by the large family sizes, limited income sources, numerous expenses and the inability to save. The levels of affordability have had an impact on the size of structures produced.
- **Configuration:** Average dimensions appear to be 3.6m x 5.2m.
- **Area of additions:** On average the total area of additions within each erven is 39m<sup>2</sup> and ranges between 25m<sup>2</sup> and 65m<sup>2</sup>. Considering the number of people that live within this space, this is a small area.
- **Occupational density:** On average each person has 6m<sup>2</sup> to himself or herself.
- **Coverage:** The coverage of these structures on their erven range from 12% to 26% with an average of 17%. This leaves a large amount of space available for other activities. But the placing of the units does not capitalise on this. The placing of units create small, odd pockets of space.
- **Shape:** All structures are rectangular except for the house built (appears 'trellised').
- **Arrangement of structures:** In general temporary structures have been placed either at the back of the erven or along the side boundaries. In response to this, the roof structures have been either placed centrally on the erven with the longer side parallel to the street or along the side boundary with the shorter side parallel to the street. The placing of the roof structures was dependent on the placing of the temporary structures. The placing of the roof structures have resulted in the inefficient use of land in four cases except for household C. Small, odd pockets of land are created and the living space is limited.
- **Type of employment:** The household that has managed to build a house has been supported by three sources of income, which include a part-time job, full-time job and entrepreneurial/informal activity. All other households are supported by income from tenants, entrepreneurial/informal activity mostly with one part-time employment. The type of employment in this case appears to have influenced the ability of these households to consolidate.

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. **Toilet** - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). **Roof structure** - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). **Room under roof structure** - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

**Conclusion**

Household C is the most successful household, managing to build a permanent structure. The factors that have assisted this household appear to be the type of employment and the number of income sources. This household arrived later than the others, has the second largest amount of expenses, and one of the largest family sizes (6), but has still managed to produce a permanent structure.

Household B managed to produce three temporary structures, which were assisted by the type of employment (part-time and rental income), the smaller family size, being one of the few to arrive earlier (1996), and the number of income sources. Expenses were also minimal. In comparison to household C, this household only differs by the type of employment, where household C is at the advantage, but household B has fewer expenses, the same number of income sources, a smaller family size and the advantage of arriving a year earlier. The type of income sources therefore plays an important role in this typology.

Household A managed two additions. The factors that played a role here are the smaller family size, fewer income sources, the type of income sources (rental income), the year of arrival (1996) and fewer expenses. In comparison to household C it has the advantage of fewer expenses, a smaller family size, and a year. It however lacks in terms of income sources and the type of income sources.

Household D has constructed two additions. The factors that have been taken into consideration in comparison to household C, include a smaller family size, a single income source, the type of income source (entrepreneurial/informal), the time of arrival (1996) and fewer expenses. This household also lacks in the number and type of income sources.

Household E produced one temporary structure. It has the largest amount of expenses, the same type and number of income sources as in household D, the same family size as in household C and arrived in 1995).

Quite evident from above, is the fact that none of these factors can be looked at on their own and be stated to be 'THE' factor that has influenced consolidation. It is the interaction between the factors that either creates a suitable environment for consolidation or not. With than in mind, the factors that have influenced consolidation positively were the type of employment, number of income sources, small family sizes, time, and few expenses. Factors that have hampered consolidation are in some cases the number of income sources, the type of income sources and many expenses.

**PROCESS**

- **Sourcing of materials:** The sourcing of materials were directly related to the type of structures that were built, i.e. temporary structures required the acquisition of materials from within Mamelodi, whilst materials were sought external to Mamelodi for the construction of permanent materials.
- **Cost:** On average costs ranged between R650 and R2 400. Resources were minimal and affordability within this typology is low, therefore not much could be afforded.
- **Funding:** Savings was the main source of funding.
- **Builders:** Three types of builders were involved. The most used was private contractors, and in some cases, material suppliers were employed. In some cases, owners had built their own additions.
- **Time:** The time lapse between additions ranged from one to four years. One household took four years to build another addition. The others had taken between one and two years to make additions. This indicates in general that people had saved for a little while and had built small additions.

**USE OF SPACE****Within structures**

- Households A, D and E display characteristics of households that could only afford the necessary uses (Bedrooms, kitchens, and outdoor toilets).
- Household B and C have added on a few more uses (luxuries). Household B displays only one additional use (dining room). Household C has a dining room, a lounge, a spaza shop, and an indoor bathroom and toilet. Household C is the household with the permanent structure.
- As was indicated earlier households B and C appear to be the two most successful households. As such, the uses within their structures also differ from the others. With a movement toward consolidation, the uses become more complex.

**Within erven**

- **Gardens:** Only three households have gardens, which were placed at the front. These were flower gardens.
- **Parking:** Two households make provision for the parking of cars. The car parked in household C belongs to the owner of the house and is therefore a luxury.

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.



- **Tenants:** One of the survival strategies employed in this typology is rental activity. Two households rent out structures as a source of income. Such activities are found at the back and along the side boundary. On average each household makes use of 15% of the erven for income generating activities.
- **Other:** Another survival strategy is commercial activity. Household C runs a spaza shop from the one room provided under the roof structure and household E sell vegetables from a vegetable stall built along the street. Such activity generally occurs at the front of the property.

#### PUBLIC/PRIVATE INTERFACE

- **Street boundary:** The lack of street boundary definition in most households indicates the openness for interaction with the street. Only two households had attempted to fence the front boundary. Transparent wire fencing was used with the planting of trees and plants.
- **Side and back boundaries:** The transparent wire fencing used does not assist in creating private space. Privacy has only been created in household C with the assistance of the planting of trees.
- **Placing of units:** The roof structures have been placed close to the temporary structures, thereby creating semi-private space between these structures. These households have privacy from the public but not from the neighbours.
- **Placing of the front door:** Most temporary structures have placed their doors to face the roof structures, which in their absence would mean that the doors of the temporary structures faced the street. This could either be the result of wanting interaction with the public or an attempt to keep space for the construction of the future house.
- The roof structure acts as a buffer from the public. Some structures have been placed along the side and back boundaries to create some privacy.

#### Patterns:

1. Shacks are placed at the back with roof structures centrally placed (longer side parallel to the street). No fence exists at the front.

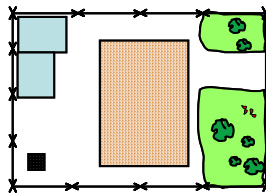


FIGURE 39: Pattern 1

2. Structures are used to block off one road frontage (in the case with two road frontages) and the roof structures have been placed at the back (where one road frontage is chosen as the entrance point) with gardens at the front. One roof structures has been placed along the side boundary (dependent on the placing of temporary structures).

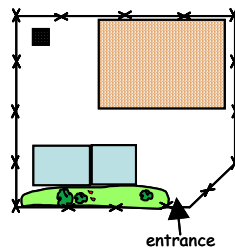


FIGURE 40: Pattern 2

#### \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area ( $1.2m^2$ ), dimensions ( $1m \times 1.2m$ ) and shape (rectangle). Roof structure - area ( $54m^2$ ), dimensions ( $6m \times 9m$ ) and shape (rectangle). Room under roof structure - area ( $12m^2$ ), dimensions ( $4m \times 3m$ ) and shape (rectangle).
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5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.



CHAPTER 5: CONSOLIDATION - 2.2.1. SOCIO-ECONOMIC INTRODUCTION

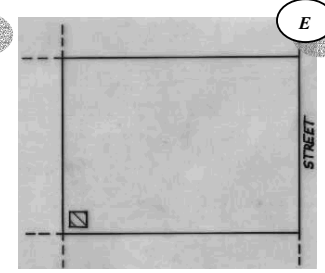
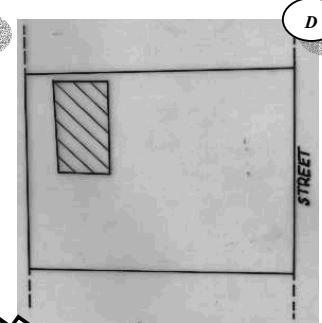
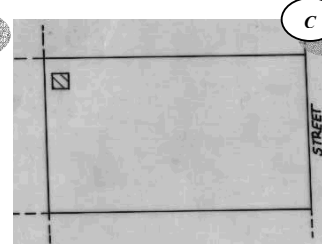
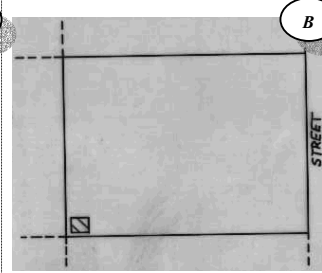
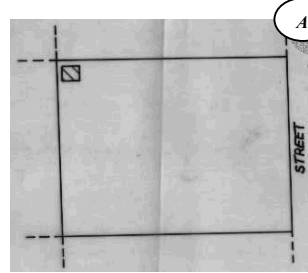
EXT. 10: TYPOLOGY 2

THE HOUSEHOLD	A	B	C	D	E
HOUSEHOLD PROFILE	<p>Family type: <i>Single nuclear family</i> Family size: 7</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 7</p>	<p>Family type: <i>Single woman-headed family + extended</i> Family size: 4</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 4</p>	<p>Family type: <i>Single nuclear family</i> Family size: 9</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 9</p>	<p>Family type: <i>Single nuclear family</i> Family size: 6</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 6</p>	<p>Family type: <i>Single nuclear family + extended</i> Family size: 7</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 7</p>
EMPLOYMENT AND INCOME	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Part time</i> Location: <i>Pretoria North.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Grandmother</i> Employment: <i>Pension</i> Location: <i>NA.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Mother</i> Employment: <i>Part time</i> Location: <i>Factory in Deneboom.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Occasional part time</i> Location: <i>Unknown</i></p>	<p>No. of sources of income: 4 Sources of income: <i>Father, mother, and two daughters.</i> Employment: <i>Full-time (parents) and both daughters work part time.</i> Location: <i>Airax in town, Multi-cleaners, Multi-cleaners, and pamphlet distribution.</i></p>
EXPENDITURE	<p>The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also a common expense.</p>				
WATER	x	x	x	x	x
ELECTRICITY	x	x	x	x	x
TRANSPORT		x	x		x
TELEPHONE				x	
EDUCATION	x		x	x	x
	x	x	x	x	x
CLOTHING				x	x
ACCOUNTS					x
SAVINGS					
TAXES	x	x	x	x	x
SANITATION	x	x	x	x	x
WASTE	x	x	x	x	x
OTHER					x

CHAPTER 5: CONSOLIDATION - 2.2.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 2

INITIAL  
STRUCTURE



**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

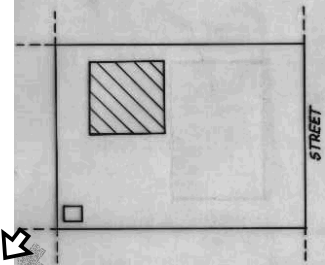
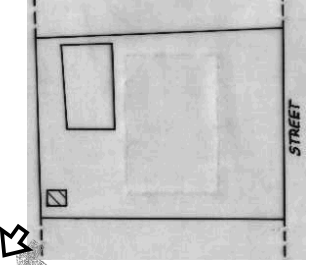
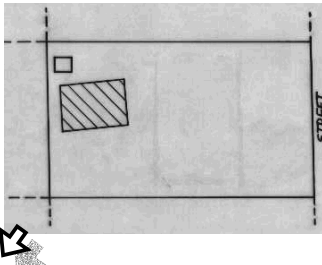
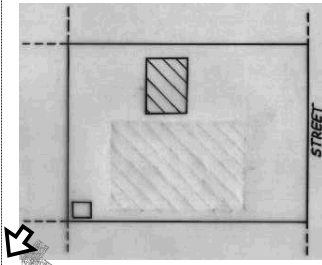
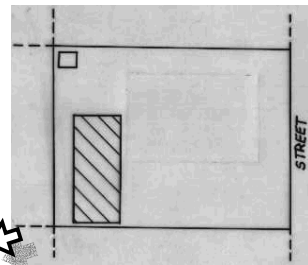
**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Wooden boards (temporary materials).  
**Material supplier:** Down the street  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1996  
**Problems:** None.

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
1



**Description:** Temporary structure  
**Materials used:** Corrugated iron and wood (temporary materials)  
**Material supplier:** Samca Chamberlaines  
**Cost:** R1 000  
**Funding:** Retirement money  
**Builder:** Owner  
**Date of Constr.:** December 1996  
**Problems:** Funding and unemployment

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** R600  
**Funding:** Savings  
**Builder:** Son  
**Date of Constr.:** 1992  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Wooden planks and asbestos (temporary materials)  
**Material supplier:** Block 1  
**Cost:** R330  
**Funding:** Savings  
**Builder:** Owner  
**Date of Constr.:** 1995  
**Problems:** Funding

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials).  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** R400  
**Funding:** Savings  
**Builder:** Assisted private contractors  
**Date of Constr.:** Unknown  
**Problems:** Funding and transport of materials

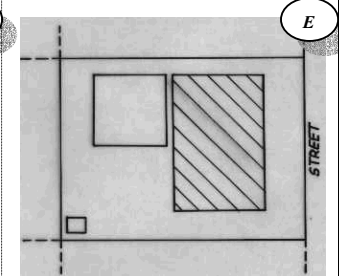
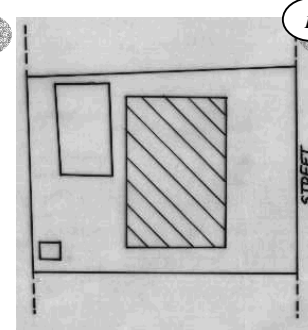
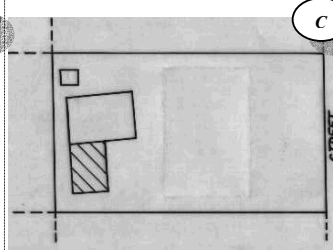
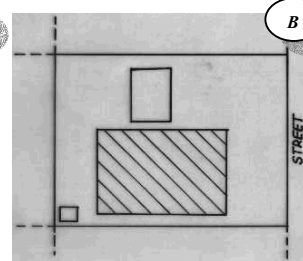
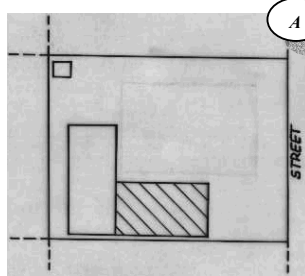
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.2.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 2

ADDITION 2



**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Unknown  
**Cost:** R2 000  
**Funding:** Retirement money  
**Builder:** Owner  
**Date of Constr.:** 1997  
**Problems:** Funding and unemployment

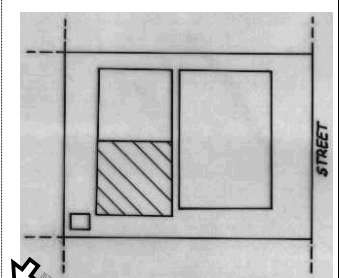
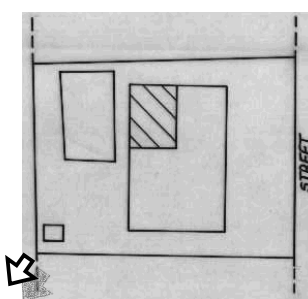
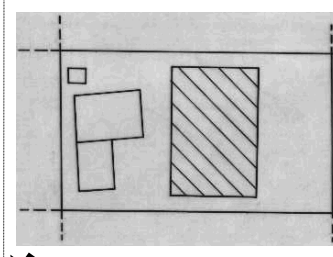
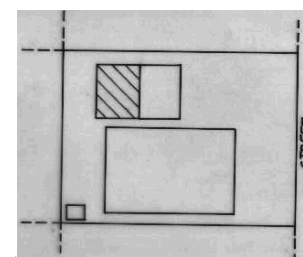
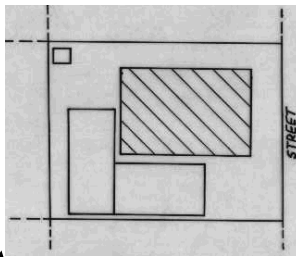
**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Block 1  
**Cost:** R600  
**Funding:** Savings  
**Builder:** Owner  
**Date of Constr.:** 1995  
**Problems:** Funding

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Owner  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION 3



**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** R600  
**Funding:** Savings  
**Builder:** Son  
**Date of Constr.:** 1996  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** One room under roof structure.  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron and metal sheets (temporary materials)  
**Material supplier:** Unknown  
**Cost:** R400  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** Unnown  
**Problems:** Funding and transport of materials.

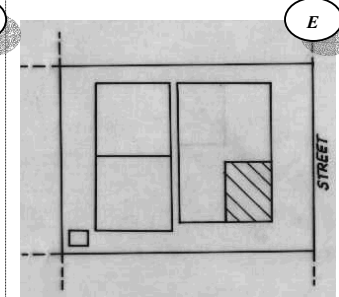
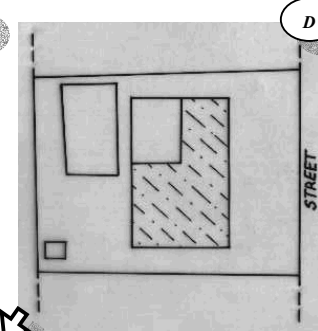
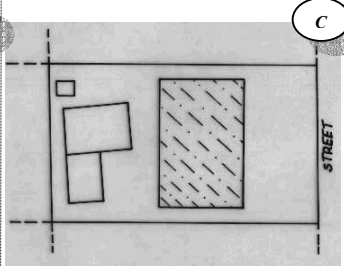
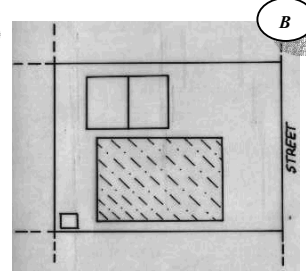
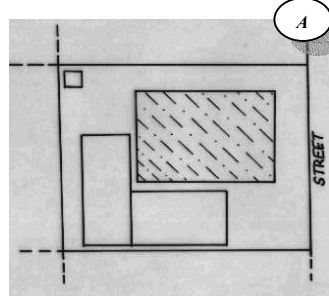
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.2.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 2

ADDITION  
4



**Description:** House construction  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Retirement money  
**Builder:** Owner  
**Date of Constr.:** Started in 2000  
**Problems:** Funding and unemployment

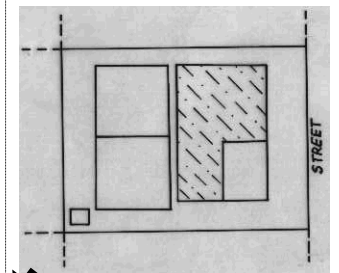
**Description:** House construction  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Waltloo  
**Cost:** R3 040 (bricks), R3 000 (construction)  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1999  
**Problems:** Storage of building materials

**Description:** House construction  
**Materials used:** Bricks (home made - permanent materials)  
**Material supplier:** Mamelodi East  
**Cost:** R1 000  
**Funding:** Savings  
**Builder:** Eldest son  
**Date of Constr.:** Started Oct 2002  
**Problems:** Funding

**Description:** Additional room  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Waltloo  
**Cost:** R1 500  
**Funding:** Savings  
**Builder:** Assisted by government (bricks were bought by owners)  
**Date of Constr.:** 1998  
**Problems:** Finance

**Description:** One room under roof structure.  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
5



**Description:** House construction  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Phase 3  
**Cost:** R1 500  
**Funding:** Savings  
**Builder:** Private  
**Date of Constr.:** 2002  
**Problems:** Funding and transport of materials.

\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.2.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 2

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

A	B	C	D	E
<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions have been made. Two extensions were shacks constructed out of temporary materials and the third was the construction of an incomplete house (permanent materials).</p> <p><b>SIZE</b> The size of the first extension is approximately 23m<sup>2</sup> and the second is approximately 22m<sup>2</sup>. The incomplete house remains within the frame of the roof structure (54m<sup>2</sup>).</p> <p>Erf size: 192m<sup>2</sup> Total area-temporary structures: 45 m<sup>2</sup> Total area-permanent structures: 54m<sup>2</sup> Total area: 99m<sup>2</sup> Coverage - temporary structures: 23% Coverage - permanent structures: 28% Coverage: 51% Occupational density: 14m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> Both shacks are rectangular with the first being 7.4m x 3.2m. The second extension has dimensions of 3.6m x 6.2m.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> There are three extensions built by the dwellers, the first two being shacks (temporary materials). The third was the construction of the house (incomplete) with the use of permanent materials.</p> <p><b>SIZE</b> Roughly, both of the temporary material extensions were 10m<sup>2</sup>. The house is being built within the roof structure provided.</p> <p>Erf size: 192m<sup>2</sup> Total area-temporary structures: 20m<sup>2</sup> Total area-permanent structures: 54m<sup>2</sup> Total area: 74m<sup>2</sup> Coverage - temporary structures: 11% Coverage - permanent structures: 28% Coverage: 39% Occupational density: 19m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> All structures are rectangles. Both have the same dimensions of 3m x 3.8m.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions were made, i.e. two shacks and the construction of the incomplete house (permanent materials). The two shacks were constructed of temporary.</p> <p><b>SIZE</b> The first shack is estimated at 16m<sup>2</sup> and the second at 9m<sup>2</sup>. The incomplete house is approximately 54m<sup>2</sup>.</p> <p>Erf size: 209m<sup>2</sup> Total area-temporary structures: 25m<sup>2</sup> Total area-permanent structures: 54m<sup>2</sup> Total area: 79m<sup>2</sup> Coverage - temporary structures: 12% Coverage - permanent structures: 26% Coverage: 38% Occupational density: 9m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The two shacks are joined together to form an 'L' shape (3.4m x 4.7m + 3.5m x 2.5m). All structures are rectangular in shape.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Two extensions were made: one shack has been constructed from temporary materials and other extension was a room under the roof structure made from permanent materials.</p> <p><b>SIZE</b> The shack covers a small area of approximately 17m<sup>2</sup>. The single room being constructed covers almost the same area as that of the room provided by government (12m<sup>2</sup>).</p> <p>Erf size: 192m<sup>2</sup> Total area-temporary structures: 17m<sup>2</sup> Total area-permanent structures: 12m<sup>2</sup> Total area: 29m<sup>2</sup> Coverage - temporary structures: 9% Coverage - permanent structures: 6% Coverage: 15% Occupational density: 3m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The shack takes the form of a rectangle (5.5m x 3.2m) and so too does the additional room (3m x 4m).</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b> Three extensions have been made, two of which were shacks (temporary materials). The other extension was made from permanent materials (the house, which is incomplete).</p> <p><b>SIZE</b> The two shacks covered an area of 24m<sup>2</sup> whilst the house construction occupies the same area as that of the roof structure (54m<sup>2</sup>).</p> <p>Erf size: 192m<sup>2</sup> Total area-temporary structures: 48m<sup>2</sup> Total area-permanent structures: 54m<sup>2</sup> Total area: 102m<sup>2</sup> Coverage - temporary structures: 25% Coverage - permanent structures: 28% Coverage: 53% Occupational density: 15m<sup>2</sup>/person</p> <p><b>SHAPE AND CONFIGURATION</b> The shacks and incomplete house are rectangular in shape. The dimensions of the shacks are identical (4.8m x 5m).</p>

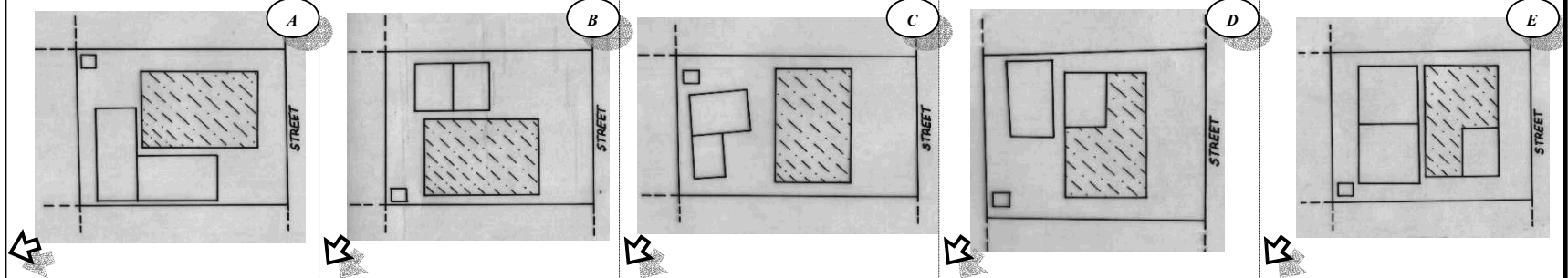
\*NOTE

- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
- Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.



CHAPTER 5: CONSOLIDATION - 2.2.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 2



HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

**PLACING OF BUILDINGS:** With the size of the erven being approximately 208m<sup>2</sup> and gross and nett densities estimated at 163p/ha and 266p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.

**PLACING OF BUILDINGS**  
 The shacks have been placed along the back and west boundary lines and form an 'L' shape. The roof structure appears toward the centre with the shorter side parallel to the road frontage. The toilet is placed at the opposite corner (east) of the shacks at the back.  
 The placing of the roof structure closely to the temporary structures has created a very narrow passage between them. Odd pockets of space are also created around the structures. The creation of such space makes it difficult to use the erven efficiently.  
 The shacks were placed in such a manner to enable the easy transition into their future house without disturbing their present accommodation.

**PLACING OF BUILDINGS**  
 The shacks are placed along the side (south) boundary with the toilet placed at the back of the erf. The roof structure was placed along the opposite side boundary to the temporary structures.  
 A small space between the temporary structures and the roof structure is created. A large open space is created at the front of the erven with little space at the back. The use of space in this case is mediocre.

**PLACING OF BUILDINGS**  
 The shacks are placed at the back of the erf. The house is placed in a central position. The longer side of the roof structure faces the road. The toilet appears at the back of the erf.  
 Privacy is created at the back of the erven behind the roof structure, but a large pocket of potential living space is wasted at the front of the erven, i.e. had the roof structure been placed closer to the front, greater space could have been used for living space and less for the garden area in the front. The use of space in this case is mediocre.

**PLACING OF BUILDINGS**  
 The temporary structure is placed at the back of the erf along the side (south) boundary. The roof structure is placed in a central position on the erf. The longer side faces the road. The toilet is placed at the back opposite to the temporary structure.  
 Although privacy is created at the back of the erf with the placing of the roof structure, only a narrow space exists between the roof structure and the temporary structure. There are large pockets of space created at the back and in front but they are separated by the roof structure. The space at the front is too large. It could have been used better, i.e. more space could have used at the back. The erf has not been used efficiently.

**PLACING OF BUILDINGS**  
 The shacks are built close to back of the erf, parallel to the back boundary line. The roof structure was placed in front being equidistant from the side boundaries. The longer sides lie parallel to the road frontage and the toilet in the northern corner.  
 Almost equal space is created at the back and front of the erf with a small space between the structures, i.e. the roof structure has been placed too close to the temporary structures built. The erf has not been used efficiently.

**\*NOTE**

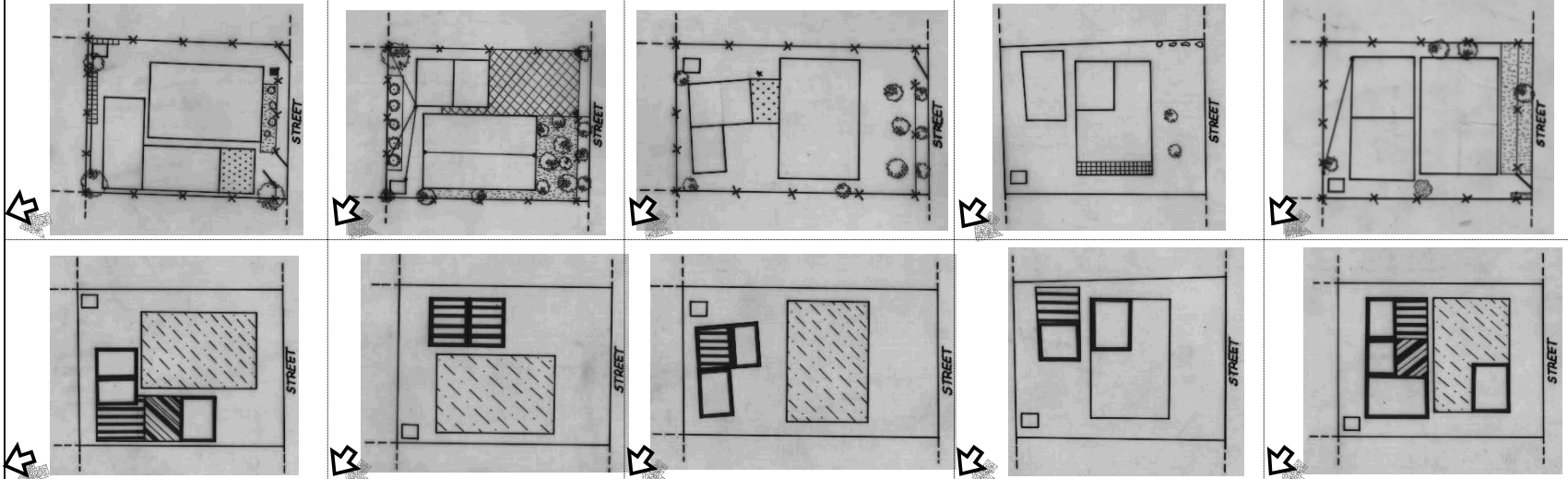
- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
- Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.



CHAPTER 5: CONSOLIDATION - 2.2.3. LAND USE AND THE USE OF SPACE

EXT. 10: *TYPOLOGY 2*

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- Three bedrooms.
- Two bedrooms.
- Three bedrooms.
- Two bedrooms.
- Three bedrooms.

KITCHEN

- One kitchen.
- Two kitchens.
- One kitchen.
- One kitchen.
- One kitchen.

DINING ROOM

- One dining room.
- Shared dining room and lounge.

LOUNGE

- Shared dining room and lounge.

TOILET

- One toilet - government provision.
- One toilet - government provision.
- One toilet - government provision.
- One toilet - government provision.
- One toilet - government provision.

BATHROOM

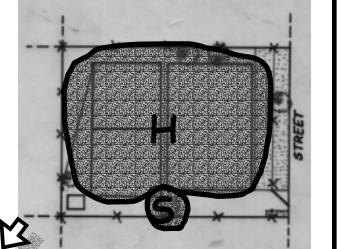
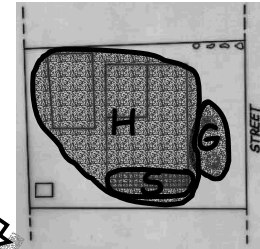
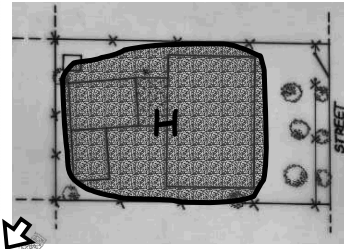
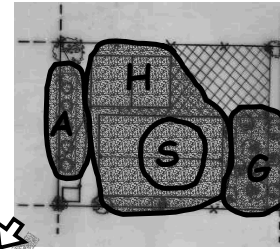
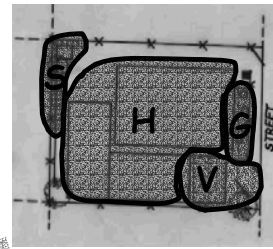
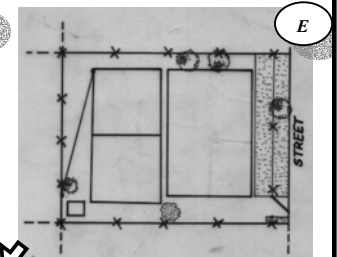
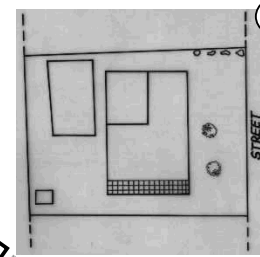
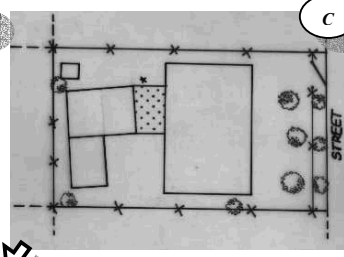
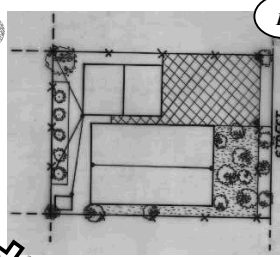
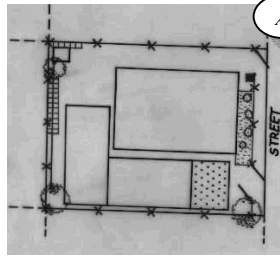
WHY IS IT USED IN THIS WAY?

\*NOTE  
1. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 2.2.3. LAND USE AND THE USE OF SPACE

EXT. 10: TYPOLOGY 2

HOW IS THE PROPERTY BEING USED IN TERMS OF:



GARDENING

There is a bit of a garden in front of the house and a few trees at the back of the house.

A flower garden exists in the front.

There is a small garden in front of the house that is not taken care of.

RENTAL HSG

COMMERCIAL

SERVICE

AGRICULTURE

A little vegetable garden is grown at the back of the property.

PARKING

Vehicles are parked in front of the shack under a shaded cloth.

OTHER

Bricks for the completion of the house are stored at the back of the erf. There is also a clothesline at the back.

Clotheslines run from the roof structure to the back ends of the property and the toilet. The roof structure also houses a clothesline and building materials.

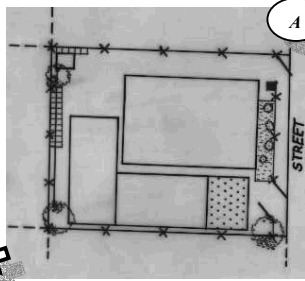
Building materials are housed on the property.

Building sand is stored on the erf and a clothesline exists at the back of the erf.

CHAPTER 5: CONSOLIDATION - 2.2.4. PUBLIC / PRIVATE INTERFACE

EXT. 10: TYPOLOGY 2

PUBLIC/  
PRIVATE  
INTERFACE

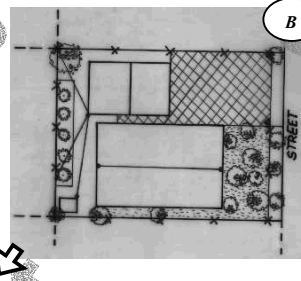


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
The wire fence in front of the house is tall (2m) and strong, but it is transparent. It does not succeed in creating privacy.

**PRIVACY:**  
*Side and Back Boundaries*  
The other boundaries are fenced off with the same fencing, but trees assist to create some level of privacy. The fencing at the back of the property are lined with the storage of bricks and trees, which do create some privacy.

*Placing of units*  
The positioning of the shacks also contributes to the privacy created. They have been arranged in the form of an 'L'. Private space is created between the shacks and the roof structure as well as behind the shacks at the back of the erf.

*Placing of the front door*  
The entrance to the house faces the shack and vice versa. Semi-private to private space is created in this manner.

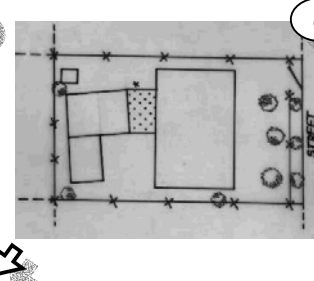


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
A type of fencing exists at the front (two threads of wire tied onto two poles - 0.75m). It appears much more open and transparent in nature than the normal wire fencing commonly used by the numerous other households. The erf is therefore open to public space.

**PRIVACY:**  
*Side and Back Boundaries*  
Fences and trees appear on all other sides. The fences are transparent and weak. It, therefore, does not assist in creating privacy.

*Placing of units*  
The shacks have been placed next to another in very close proximity to the roof structure. This creates some semi-private space between the structures.

*Placing of the front door*  
The entrances are at the side of the house between the shacks and the house. Each structure therefore opens out into each other. Security and a bit of semi-private space are achieved in this way.

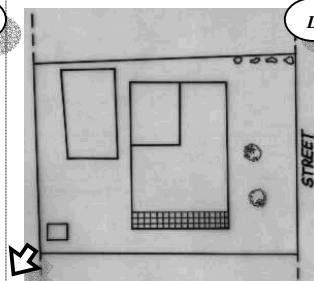


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
There is a weak, dilapidated fence (1.5m) at the front that defines the boundary. No privacy is created.

**PRIVACY:**  
*Side and Back Boundaries*  
Transparent wire fencing is also used around the entire erf. No private space is created.

*Placing of units*  
The shacks were placed in an 'L' shape and have been linked up to the roof structure via a tent. The shacks are buffered from the street via the structure. No privacy exists from the neighbours but there is privacy from the public.

*Placing of the front door*  
The entrance to this incomplete house is in front, but lacks any stoep or veranda. The shacks have entrances that face the roof structure and the neighbour to the side.

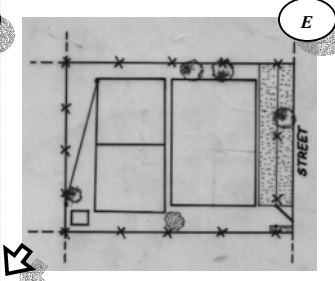


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
This erf is very open to the public. There is no fencing at all. A few trees are planted at the front accompanied by the placing of rocks.

**PRIVACY:**  
*Side and Back Boundaries*  
The lack of any fencing or tree planting prevents any form of privacy from being created here.

*Placing of units*  
The shack is placed very close behind the roof structure. This creates a little bit of semi-private space. The roof structure creates a buffer between the street and the temporary structure and blocks out public disturbances. Neighbours can however, intrude.

*Placing of the front door*  
The doors of the shack face the roof structure. The room under the roof structure faces the side.



**RELATION TO THE STREET:**  
*Street Boundary Definition*  
A tall wire fence (2m) is present at the front of the erf. Its transparent nature prevents any privacy from being created.

**PRIVACY:**  
*Side and Back Boundaries*  
The remaining sides of the erf are fenced off with the same type of wire fencing. No privacy is created in this way.

*Placing of units*  
The temporary structure is sheltered by the roof structure by being placed behind it. The only private space is between the structures. This is a small space.

*Placing of the front door*  
The closed off roof structure is entered at the front but also lacks a stoep or a veranda. It lends itself to the public. The entrance to the temporary structures at the back faces the roof structure, thereby creating some privacy and security.

1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>• Three single nuclear families exist here with one single nuclear family with extended family members and one woman-headed family with extended family members.</li> <li>• Family sizes range between 4 and 9 with an average of 7.</li> <li>• Household size also ranges between 4 and 9 with an average of 7.</li> <li>• None of the households has tenants.</li> <li>• Income sources range from 1 to 4. The average household income is 2.</li> <li>• Part time employment seem to dominate the typology (5 cases). The other sources are through full-time employment and pension.</li> <li>• On average this typology displays an average of 8 expense items.</li> <li>• None of the households are able to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>• Four of five initial structures were toilets. One household constructed a shack.</li> <li>• Roof structures and one room under the roof structure were provided after the toilets were provided.</li> <li>• 14 additions have been made in total: four were houses in construction, nine were shacks, and one was an additional room.</li> <li>• All shacks were made of temporary materials, the rest were made of permanent materials.</li> <li>• Where information was available, the following was noted: <ul style="list-style-type: none"> <li>○ In most cases permanent materials were sought outside Mamelodi and temporary materials within Mamelodi. A few cases go against this trend, i.e. permanent materials were sought within and temporary materials were sought outside.</li> <li>○ Costs range between R330 - R3 040. The cost of temporary structures ranges between R330 to R2 000. Permanent structures cost between R1 000 and R3 040.</li> <li>○ Savings was mostly the source of income. Retirement money was also used in one particular household.</li> <li>○ Owners used their own skills in the construction 95% of the time whilst private contractors were appointed 5% of the time.</li> <li>○ The time lapse between additions range between a few months to seven years.</li> </ul> </li> </ul>
3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>• An average of approximately three shacks per household.</li> <li>• All shacks were constructed of temporary materials and houses (incomplete) were constructed from permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>• Temporary structures total area: 155m<sup>2</sup></li> <li>• Temporary structures average area: 31m<sup>2</sup></li> <li>• Temporary structures average size: 17m<sup>2</sup></li> <li>• Temporary structures average coverage: 16%</li> <li>• Permanent structures total area: 228m<sup>2</sup></li> <li>• Permanent structures average area: 46m<sup>2</sup></li> <li>• Permanent structures average size: 46m<sup>2</sup></li> <li>• Permanent structures average coverage: 23%</li> <li>• Combined average extension size: 27m<sup>2</sup></li> <li>• Combined average area: 77m<sup>2</sup></li> <li>• Combined average coverage: 38%</li> <li>• Combined average occupational density: 12m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>• Shape: Rectangular shapes dominate the additions made. Some have been arranged along side one another whilst others have been arranged in and 'L' shape.</li> <li>• Average dimensions: 4m x 6m. Average dimensions of temporary structures: 3.5m x 5m. Average dimensions of permanent structures: 5.4m x 8m.</li> </ul>
*NOTE	<ol style="list-style-type: none"> <li>1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).</i></li> <li>2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>3. The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>8. No reasons for the use of space within the structures could be obtained.</li> </ol>

## University of Pretoria etd, Velayutham P (2006)

3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>Shacks have been placed at the back of the erven. In two cases, the shacks border the side boundary as well.</li> </ul> <p>The incomplete houses (roof structures) have mostly been placed in a central position on the erven where the longer side lies parallel to the road frontage. The other two roof structures have been placed with the shorter side parallel to the road frontage. These structures have been placed toward the sides of the erven.</p> <ul style="list-style-type: none"> <li>The placing of the roof structure has allowed one erven to use space in a somewhat efficient manner (C) whilst the other households experience roof structures placed too close to the temporary structures. Some have small pockets of space created on the erven which prevents the optimal use of space.</li> <li>Household (A) had reasoned that the placing of the shacks along the boundary of the erf was to ensure an easy transition into the future house without disrupting or destroying the present accommodation.</li> </ul>
4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>There is an average of 2.5 bedrooms per household and a total of 13.</li> <li>Each household has a kitchen and make use of the toilet provided by government.</li> <li>Two households have dining rooms and one has a lounge.</li> <li>Most reason that space is needed for their children or family and this stimulates extensions. The affordability of others limited the additions made.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>Three households have gardens in front of their homes.</li> <li>One household has a vegetable garden at the back of the erf and household A makes provision for the parking of a vehicle at the front.</li> <li>Three households have clotheslines that connected temporary structures together. These clotheslines are found at the back of the erven.</li> <li>Tents are also erected either for shelter or as a carport.</li> </ul>
6. PUBLIC/PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>An attempt is made by four households to fence off their yards from the public with the use of wire fencing. This does not assist in creating private space.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>Transparent wire fencing has been used around all erven except household D (no fencing).</li> <li>This doesn't help in the creation of privacy. In some cases, trees have been used to strengthen the element of a border and the need for privacy. It hasn't been very successful in the creation of privacy.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>The placing of the roof structures close to the temporary structures have enabled some degree of privacy to transpire.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>All temporary structures have placed their doors to face the roof structures. In the absence of the roof structures, the need for privacy is still evident, i.e. doors are placed to the side in most cases.</li> <li>An element of security is evident.</li> </ul>
<p><b>*NOTE</b></p> <ol style="list-style-type: none"> <li>The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <u>Toilet</u> - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). <u>Roof structure</u> - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). <u>Room under roof structure</u> - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).</li> <li>Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>No reasons for the use of space within the structures could be obtained.</li> </ol>	



**AFFORDABILITY**

- **Family structure:** All families are single and nuclear. Just one has extended family members living with as well.
- **Family sizes:** Tend to range between 4 and 9 with an average of 7.
- **Sources of income:** Each household has an average income source of two, ranging from 1 to 4. One household survives on the pension received and another on occasional part-time employment.
- **Expenses:** On average each household has 8 expenses. They range between 7 and 11 expenses.
- **Savings:** None of the households are able to save.

**Conclusion**

The affordability of these households is therefore low. The income sources are few, family sizes are large in comparison to the number of income sources available and expenses are high.

The commonalities between the households that can allow other factors to be isolated for comparison are the expenses made, i.e. they are more or less similar. Income sources are also similar throughout except for household E (4 sources). This places household E in a better position to make additions irrespective of the large family of seven. This allows for the evaluation of the type of employment and the family size in order to determine the affordability and ability of households to make additions.

Household E seems the most likely to make additions (many income sources) followed by household A (has part-time employment). Household C also has one part-time income source but the family size is larger than household A. This would require the income to be spread over a larger number of people. The affordability to make extensions would therefore be lower.

Households B and D have income sources from pension and occasional part-time employment. They are therefore similar on that basis, but family sizes differ. Household B would therefore be able to extend to a greater extent than household D.

**PRODUCT**

- **Number of additions:** In total 14 additions have been made (average of 3 each). Households A, B, C, and E had made three additions each and household D had made two.
- **Time:** Households had arrived between 1992 and 1996. One household couldn't provide the information necessary to determine the time of arrival, but the others arrived around the same time except for household B (1992). The time of arrival has had an effect on the quality of house produced, i.e. arriving in 1992 has allowed this household to build up the roof structure with face bricks. In comparison to the other households structures, this structure is of a higher quality. All the other households have built up the roof structure as well. The quality of structures appears to be similar.
- **Type of structures:** Temporary and permanent structures have been built. On average, each household has managed to build two initial temporary structures and one final permanent structure.
- **Level of formalisation:** Each household has built a permanent structure. The level of formalisation is therefore high. The households have the ability to extend.
- **Size of additions:** The average size of additions (temporary and permanent combined) is 27m<sup>2</sup>. Temporary structures range from 9m<sup>2</sup> to 24m<sup>2</sup> with an average of 17m<sup>2</sup>, whilst permanent structures average 46m<sup>2</sup> (range between 12m<sup>2</sup> and 54m<sup>2</sup>). The size of the additions appear to be insufficient for the large family sizes.
- **Configuration:** Permanent structures generally have dimensions of 5.4m x 8m. Temporary structures have dimensions of 3.5m x 5m.
- **Area of additions:** Temporary structures have an average area of 31m<sup>2</sup> (ranging from 17m<sup>2</sup> to 48m<sup>2</sup>), whilst permanent structures have an average of 46m<sup>2</sup> (ranging from 12m<sup>2</sup> to 54m<sup>2</sup>). One household is using space efficiently to a degree. The other households have not managed the efficient use of space.
- **Occupational density:** In general each person has 12m<sup>2</sup> to himself or herself, ranging from 3m<sup>2</sup> to 19m<sup>2</sup>.
- **Coverage:** On average, the temporary structures cover approximately 16% (ranging from 9% to 25%). and permanent structures cover 23% (ranging from 6% to 28%) leading to a total average coverage of 38%. This leaves space open for other activities. The placing of the roof structures, however, have reduced the efficient use of this space.
- **Shape:** All structures appear rectangular.
- **Arrangement of structures:** Temporary structures have been placed at the back of the erven with the roof structures either centrally positioned or placed along the side boundary. The temporary structures have been placed next to one another to form long rectangles and others have been placed in 'L' shapes. The roof structures have been oriented in two ways, i.e. one with the longer side parallel to the street and the other with the shorter side parallel to the street.
- **Type of employment:** The type of employment in combination with other factors have an influence on the ability of these households to consolidate, e.g. household B receives a pension but has four family members to feed and has produced the highest quality house. Household A has a part-time employment as the income source but has seven family members. The quality of the house is below that of household A.

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
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6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.



**Conclusion**

*Household B* has produced the best quality house with assistance from time (arrived in 1992), the smallest family size (4), and a few expenses. The only inhibiting factor is the number and type of income sources.

*Household A* has managed to produce the same number of additions but experienced restrictions of the large family size and the *limited* income source. Expenses were minimal.

*Household E* has four income sources of part-time and full-time employment, a large family size of seven, and the most number of expenses. This family has been able to close the roof structure and make the same amount of additions.

*Household C* is supported by one part-time job and has the largest family (9). Expenses are kept low. The roof structure was also enclosed.

*Household D* has a family of six and one income source (occasional part-time employment). Expenses are a bit higher than the rest (9). This household has made the least amount of additions. The household is now in the process of building another room under the roof structure.

Thus the factors that have inhibited consolidation in this case have been the limited income sources, time (arriving earlier), large family sizes and in one case, many expenses and the type of employment (example, pension as opposed to a full-time job). Factors that have assisted in consolidation were small family sizes, few expenses, many income sources and the type of income sources. However, these factors cannot be looked at in isolation. The interplay between the factors creates suitable and unsuitable environments for consolidation.

**PROCESS**

- **Sourcing of materials:** In most cases, permanent materials were sought from outside Mamelodi and temporary structures were acquired from within. There are, however, a few people (approximately two or three households) that have sourced temporary materials outside of Mamelodi and permanent materials were sought from within.
- **Cost:** The cost of temporary structures range between R1 000 to R3 040. The cost of temporary structures range between R330 and R2 000. There is not a big difference between the money spent on additions of temporary and permanent nature. The lack of accurate information has distorted the results.
- **Funding:** Savings was the most common used source of funding. In one particular case, retirement money was used.
- **Builders:** 95% of the time owners used their skills to build their additions. The rest of the time, private contractors were hired.
- **Time:** The time between additions ranged from a few months to seven years. On average, each household took between a few months to three years to make additions. One household took seven years. This implies that time was spent saving sufficient money to build the quality permanent structure required.

**USE OF SPACE***Within structures*

- The uses extend beyond the basics of a toilet, bedrooms and kitchens. Some households have the luxury of dining rooms and lounges.

*Within erven*

- **Gardens:** Three households have gardens at the front of their erven. One household has a vegetable garden at the back of the erven. This is one of the survival strategies employed in this typology.
- **Parking:** Only one household makes provision for the parking of a vehicle owned by the household (luxury).
- **Tenants:** None of the households has tenants.
- **Other:** Households have clotheslines erected on the erven, sometimes attached from one structure to the next. Tents have also been erected to create a social space and a shelter/carport. Storage of building materials takes place on these erven wherever space would allow it.

**PUBLIC/PRIVATE INTERFACE**

- **Street boundary:** The transparent wire fencing used prevents any private space from being created. The street boundaries are often accompanied by gardens and trees.
- **Side and back boundaries:** The transparent wire fencing does not help in creating privacy.
- **Placing of units:** The roof structures have been placed very close to the temporary structures. This creates privacy from the public but neighbours can still intrude on this space created.
- **Placing of the front door:** All temporary structures have the doors facing the roof structures. In the absence of the roof structures some doors face the side whilst others face the street

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet* - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). *Roof structure* - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). *Room under roof structure* - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

*Patterns: 1. Temporary structures have been placed at the back with roof structures in the centre of the erf. Gardens are placed at the entrance.*

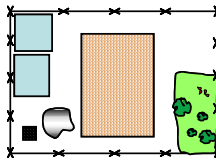


FIGURE 41: Pattern 1

*2. Temporary structures are placed along the side and back with roof structures along the other side boundary. Gardens are present at the front and materials are stored on the erf.*

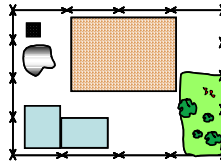


FIGURE 42: Pattern 2

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area ( $1.2m^2$ ), dimensions ( $1m \times 1.2m$ ) and shape (rectangle). Roof structure - area ( $54m^2$ ), dimensions ( $6m \times 9m$ ) and shape (rectangle). Room under roof structure - area ( $12m^2$ ), dimensions ( $4m \times 3m$ ) and shape (rectangle).
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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 2.3.1. SOCIO-ECONOMIC INTRODUCTION

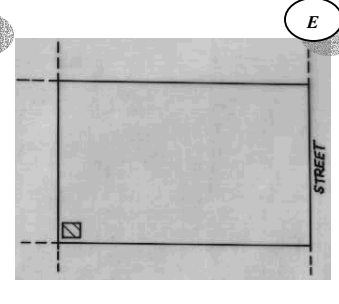
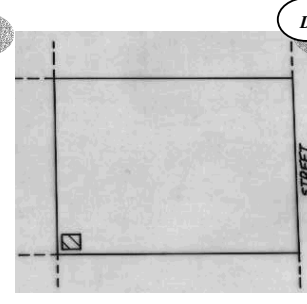
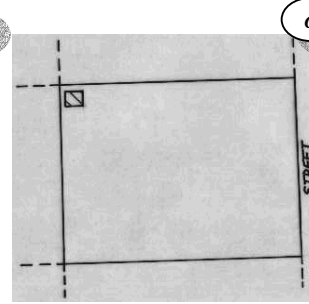
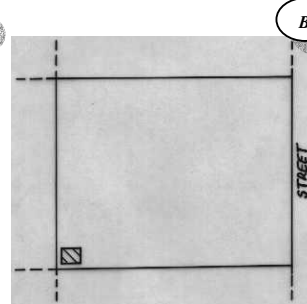
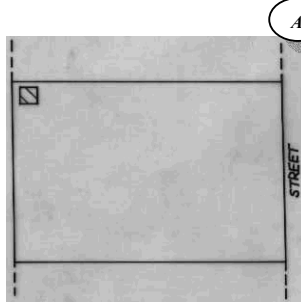
EXT. 10: TYPOLOGY 3

THE HOUSEHOLD	A	B	C	D	E
HOUSEHOLD PROFILE	<p>Family type: <i>Single woman-headed family</i> Family size: 3</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 3</p>	<p>Family type: <i>Single nuclear family</i> Family size: 4</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 4</p>	<p>Family type: <i>Single nuclear family</i> Family size: 3</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 3</p>	<p>Family type: <i>Single nuclear family</i> Family size: 4</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 4</p>	<p>Family type: <i>Single nuclear family</i> Family size: 6</p> <p>Tenants: <i>No</i> No. of tenants: <i>NA</i> Household size: 6</p>
EMPLOYMENT AND INCOME	<p>No. of sources of income: 1 Sources of income: <i>Mother</i> Employment: <i>Entrepreneurial/informal (traditional doctor)</i> Location: <i>From home.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Full time</i> Location: <i>ADT in Brooklyn.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Entrepreneurial/informal</i> Location: <i>Spaza shop run from home.</i></p>	<p>No. of sources of income: 2 Sources of income: <i>Father</i> Employment: <i>Part time and grant</i> Location: <i>At the council in Pretoria central.</i></p>	<p>No. of sources of income: 1 Sources of income: <i>Father</i> Employment: <i>Part time</i> Location: <i>Furniture shop in town (Russels).</i></p>
EXPENDITURE	<p>The expense that is indicated as 'other' refers to other expenses not covered by the expenditure items listed below. All households pay taxes, sanitation, and waste removal as well as for food and education. Water and electricity are also a common expense.</p>				
WATER	X	X	X	X	X
ELECTRICITY	X	X	X	X	X
TRANSPORT	X	X	X	X	X
TELEPHONE	X	X	X	X	X
EDUCATION	X	X	X	X	X
FOOD	X	X	X	X	X
CLOTHING	X	X	X	X	X
ACCOUNTS		X			X
SAVINGS	X		X	X	
TAXES	X	X	X	X	X
SANITATION	X	X	X	X	X
WASTE	X	X	X	X	X
OTHER					

CHAPTER 5: CONSOLIDATION - 2.3.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 3

INITIAL  
STRUCTURE



**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

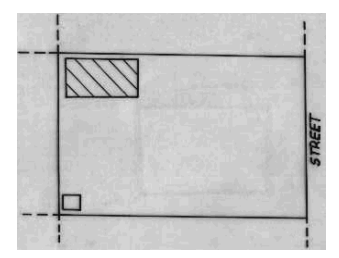
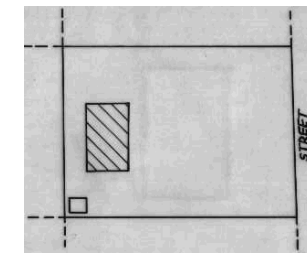
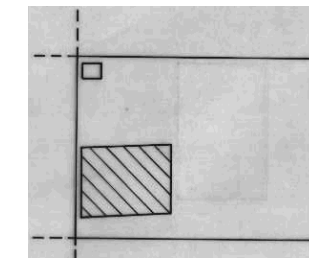
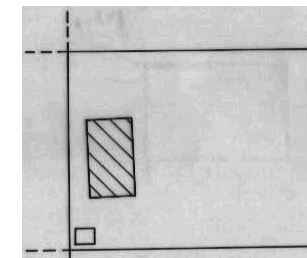
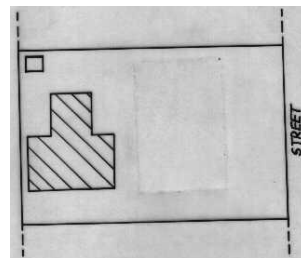
**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Water Closet  
**Materials used:** Precast concrete  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION  
1



**Description:** Temporary structure  
**Materials used:** Corrugated iron and wooden boards (temporary materials)  
**Material supplier:** Phase 3 (moved from previous home)  
**Cost:** Unknown  
**Funding:** Unknown  
**Builder:** Unknown  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Unknown  
**Cost:** R900  
**Funding:** Savings  
**Builder:** Material supplier  
**Date of Constr.:** 1996  
**Problems:** Water gets in on rainy days.

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Bought in the neighbourhood  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Owner  
**Date of Constr.:** 1996  
**Problems:** None

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Unknown  
**Cost:** R600  
**Funding:** Savings  
**Builder:** Material supplier  
**Date of Constr.:** 1997  
**Problems:** Leakage, wind, heat, cold.

**Description:** Temporary structure  
**Materials used:** Corrugated iron (temporary materials)  
**Material supplier:** Bought in the neighbourhood.  
**Cost:** R500  
**Funding:** Savings  
**Builder:** Material supplier  
**Date of Constr.:** 1997  
**Problems:** None

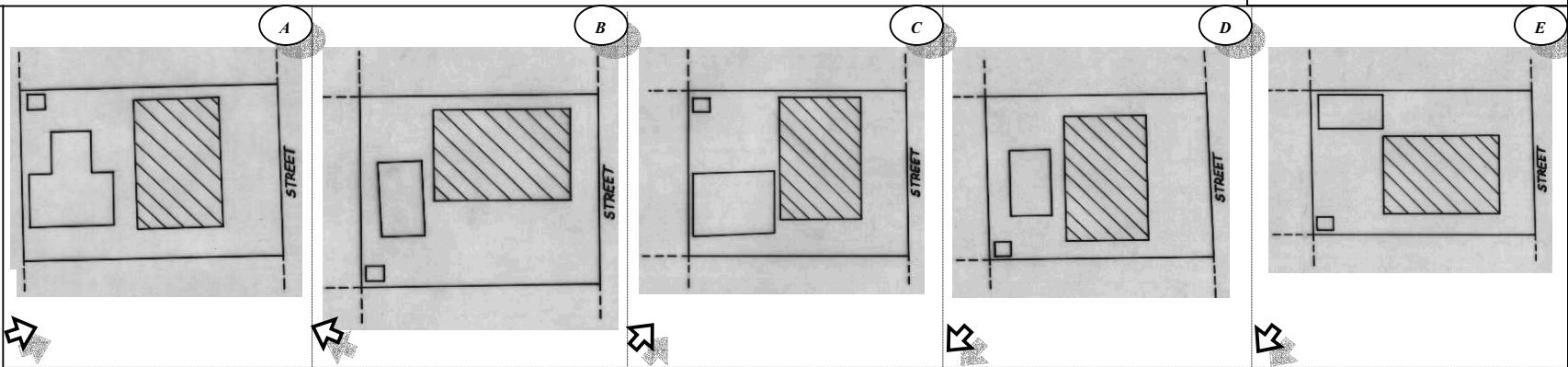
\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.3.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 3

ADDITION 2



**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

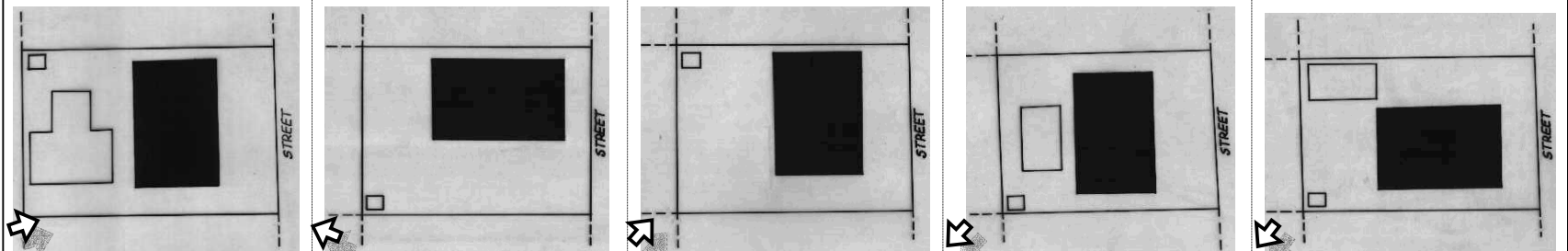
**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

**Description:** Roof structure  
**Materials used:** Steel and corrugated iron structure.  
**Material supplier:** Government  
**Cost:** Subsidy  
**Funding:** Government  
**Builder:** Government  
**Date of Constr.:** Unknown  
**Problems:** None

ADDITION 3



**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Erastene  
**Cost:** R2 000  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1998  
**Problems:** None

**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Unknown  
**Cost:** Unknown  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 1998  
**Problems:** Funding. Relied on not paying accounts, so that they could finish their home.

**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Cullinan  
**Cost:** R1 500  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 2000  
**Problems:** None

**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Bronkhorspruit  
**Cost:** Unknown  
**Funding:** Loan at work (interest charged)  
**Builder:** Private contractor  
**Date of Constr.:** 2000  
**Problems:** Materials are expensive. Financing is difficult.

**Description:** Completed house  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Reiten  
**Cost:** R3 000  
**Funding:** Husbands retrenchment money  
**Builder:** Private contractor  
**Date of Constr.:** 1999  
**Problems:** None

\*NOTE

1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.

CHAPTER 5: CONSOLIDATION - 2.2.3. PHYSICAL CHANGES

EXT. 10: *TPOLOGY 3*

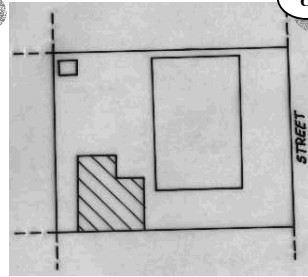
A

B

C

D

E



**Description:** Garage  
**Materials used:** Bricks (permanent materials)  
**Material supplier:** Cullinan  
**Cost:** R1 000  
**Funding:** Savings  
**Builder:** Private contractor  
**Date of Constr.:** 2001  
**Problems:** None

**\*NOTE**

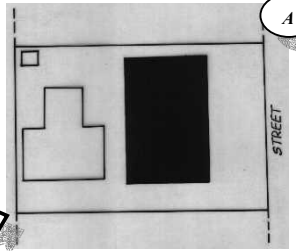
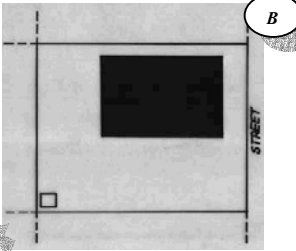
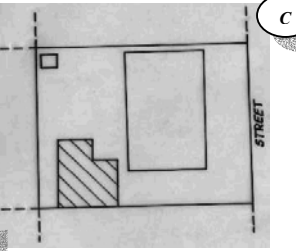
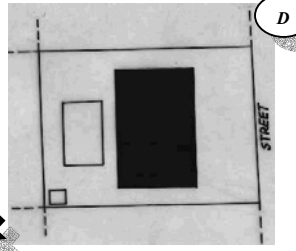
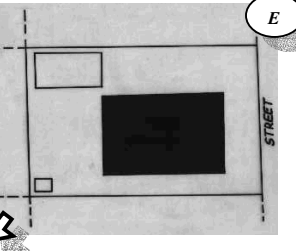
1. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories.



CHAPTER 5: CONSOLIDATION - 2.3.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 3

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

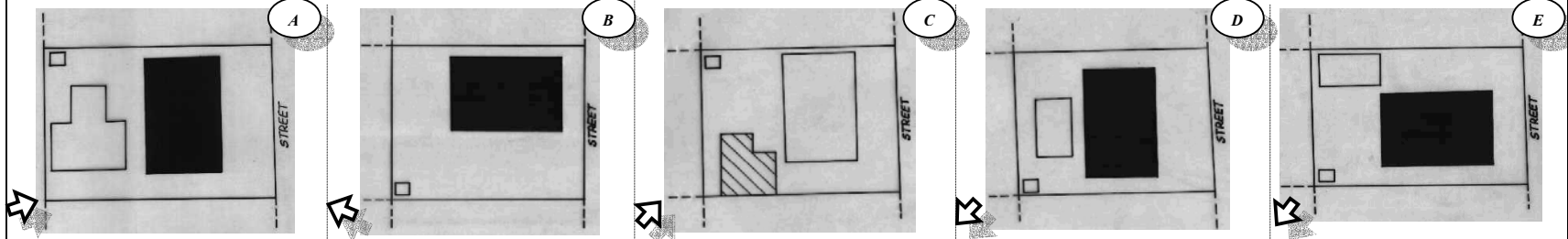
	A	B	C	D	E
					
<b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b>	There have been two extensions, one done with the use of temporary materials (temporary structure) and the other with permanent materials (house).	Two extensions have been made. The first was a shack (temporary materials) that was demolished before the construction of the house. The second was a house (permanent materials).	Three extensions were undertaken here. The first of which was a shack (temporary materials). It was destroyed in order to construct their actual home (permanent materials) and the third was the construction of the garage.	There is one shack and one completed house on this erf, which totals two structures. The shack was constructed with the use of temporary materials and the house, with permanent materials.	Two extensions were made. The first was a shack made of temporary materials. The second was a house constructed of permanent materials.
<b>SIZE</b>	The size of the temporary structure is approximately 30m <sup>2</sup> and the house is 54m <sup>2</sup> .  Erf size: 216m <sup>2</sup> Total area-temporary structures: 30m <sup>2</sup> Total area-permanent structures: 54m <sup>2</sup> Total area: 84m <sup>2</sup> Coverage - temporary structures: 14% Coverage - permanent structures: 25% Coverage: 39% Occupational density: 28m <sup>2</sup> /person	The size of the shack is unknown since it was destroyed to build the house 54m <sup>2</sup> .  Erf size: 200m <sup>2</sup> Total area-permanent structures: 54m <sup>2</sup> Total area: 54m <sup>2</sup> Coverage - permanent structures: 27% Coverage: 27% Occupational density: 14m <sup>2</sup> /person	The size of the shack is unknown, but the house is approximately 54m <sup>2</sup> and the garage appears to be around 20m <sup>2</sup> .  Erf size: 192m <sup>2</sup> Total area-permanent structures: 74m <sup>2</sup> Total area: 74m <sup>2</sup> Coverage - permanent structures: 39% Coverage: 39% Occupational density: 25m <sup>2</sup> /person	The shack covers an area of approximately 15m <sup>2</sup> . The house covers an area of 54m <sup>2</sup> .  Erf size: 192m <sup>2</sup> Total area-temporary structures: 15m <sup>2</sup> Total area-permanent structures: 54m <sup>2</sup> Total area: 69m <sup>2</sup> Coverage - temporary structures: 8% Coverage - permanent structures: 28% Coverage: 36% Occupational density: 17m <sup>2</sup> /person	The shack is approximately 13m <sup>2</sup> in total and the house is 54m <sup>2</sup> .  Erf size: 187m <sup>2</sup> Total area-temporary structures: 13m <sup>2</sup> Total area-permanent structures: 54m <sup>2</sup> Total area: 67m <sup>2</sup> Coverage - temporary structures: 7% Coverage - permanent structures: 29% Coverage: 36% Occupational density: 11m <sup>2</sup> /person
<b>SHAPE AND CONFIGURATION</b>	The shack takes a 'T' shape (4.4m x 6.7m) whilst the house is a rectangle.	The house has a rectangular shape with dimensions of 6m x 9m.	The shape of the shack is unknown, but the garage takes an 'L' shape (4.4m x 4.6m) and the house a rectangle (6m x 9m).	The shack (5m x 3m) takes the form of a rectangle just like the house (6m x 9m).	This shack (2.6m x 5m) takes a rectangular shape just like the house (6m x 9m).

\*NOTE

- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. *Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).*
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
- Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.

CHAPTER 5: CONSOLIDATION - 2.3.2. PHYSICAL CHANGES

EXT. 10: TYPOLOGY 3



**PLACING OF BUILDINGS:** With the size of the erven being approximately 208m<sup>2</sup> and gross and nett densities estimated at 163p/ha and 266p/ha respectively, space is limited. The amount of space available should, therefore, be optimised for living space of the occupants. As such privacy also becomes an issue for the households.

HOW HAS THE UNIT CHANGED OVER TIME IN TERMS OF:

**PLACING OF BUILDINGS**

The shack is placed at the back of the erf. The roof structure is placed in a central position on the erf with the longer side of the structure parallel to the road frontage. The toilet is also placed at the back of the erf (west).

A large space is created at the front of the erf. Instead of being capitalised as living space, it is used as garden space. This is due to the placing of the roof structure. The amount of space at the back appears reasonable, but odd spaces are created around the structures. Space is not used efficiently.

**PLACING OF BUILDINGS**

It is unknown where the shack was placed. The roof structure (now known as the completed house) was placed close to the road frontage and the eastern boundary, with the short end of the house parallel to the street frontage. The toilet is placed at the back (east).

The roof structure is surrounded by a large space. Space has been used efficiently.

**PLACING OF BUILDINGS**

The house (roof structure) is placed centrally with the longer side facing the road frontage. The garage is placed toward the back of the erf, along the boundary line. The toilet is placed at the back at the opposite corner to the temporary structure. Sufficient space is created at the back of the erf, where privacy has been achieved, but space could have been optimally used (increase living space) if the garden space had been reduced with the shifting of the roof structure closer to the street. Space use is rated mediocre.

**PLACING OF BUILDINGS**

The house is placed centrally on the erf with the longer side parallel to the road frontage. The shack is placed at the extreme back yard in a central position relative to the side boundary lines. The toilet was placed at the back. Whilst a large space exists at the front of the erf, there is little space between the roof structure and the temporary structure. Odd spaces are also created on either side of the temporary structure. Space has not been optimally used for living space.

**PLACING OF BUILDINGS**

The shack is built along the eastern boundary line. The house is placed toward the front of the erf with the shorter end facing the street. The toilet is placed at the back on the opposite corner of the temporary structure.

Sufficient spaces exist at the front for a garden. The placing of the structures creates privacy at the back of the erf with a large functional space (large enough to be flexible as opposed to smaller spaces). Space has been used efficiently.

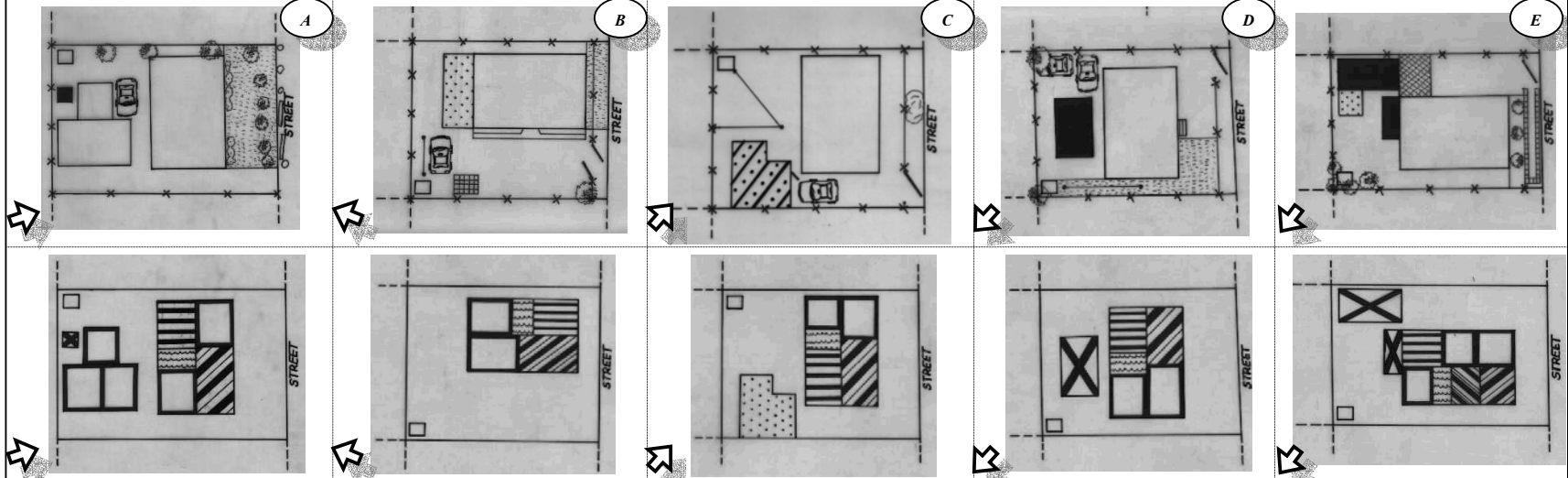
**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.

CHAPTER 5: CONSOLIDATION - 2.3.3. LAND USE AND THE USE OF SPACE

EXT. 10: *TPOLOGY 3*

HOW IS THE SPACE WITHIN THE HOME BEING USED?



BEDROOMS

- Five bedrooms: House - 2, shack - 3

- Two bedrooms.

- Two bedrooms.

- Two bedrooms.

- Three bedrooms.

KITCHEN

- One kitchen.

- One kitchen.

- One kitchen.

- One kitchen.

- One kitchen.

DINING ROOM

- One dining room.

LOUNGE

- One lounge.

- One lounge.

- One lounge.

- One lounge.

- One lounge.

TOILET

- One toilet - government provision.

- Two toilets - government provision - 1, indoors - 1.

- Two toilets - government provision - 1, indoors - 1.

- Two toilets - government provision - 1, indoors - 1.

- Two toilets - government provision - 1, indoors - 1.

BATHROOM

- One bathroom.

- One bathroom.

- One bathroom.

- One bathroom.

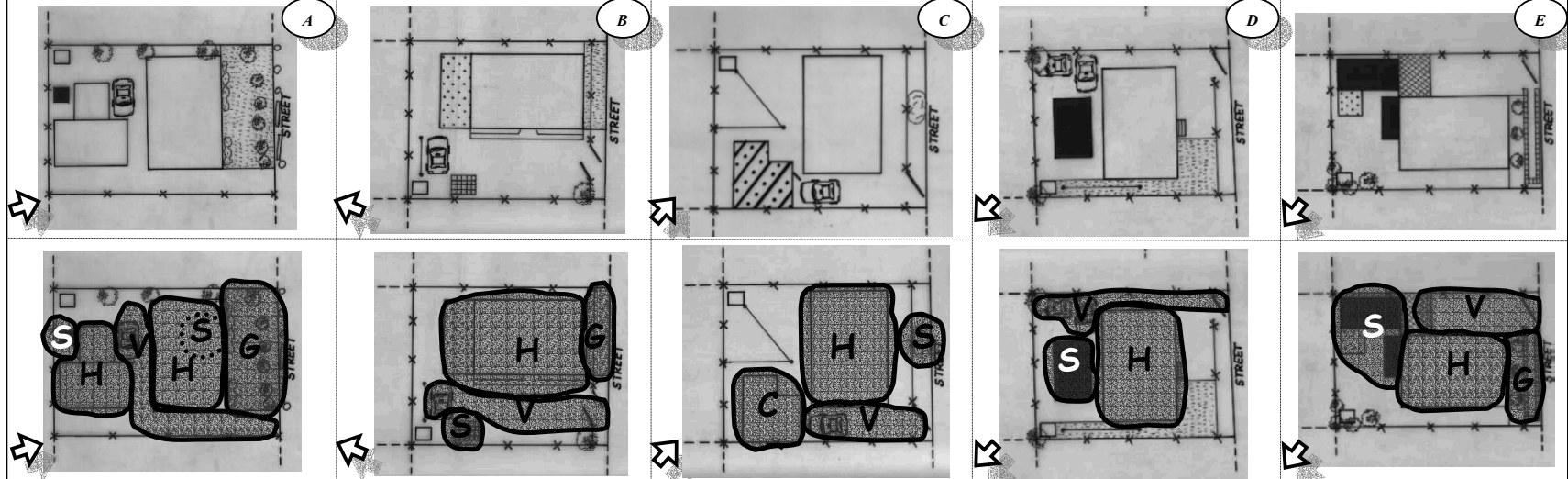
WHY IS IT USED IN THIS WAY?

- \*NOTE  
1. No reasons for the use of space within the structures could be obtained.

CHAPTER 5: CONSOLIDATION - 2.3.3. LAND USE AND THE USE OF SPACE

EXT. 10: TYPOLOGY 3

HOW IS THE PROPERTY BEING USED IN TERMS OF:

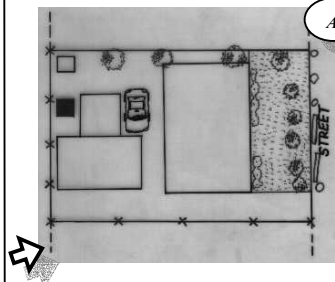


<b>GARDENING</b>	There is a well-maintained garden in front of the house.	There is a bit of a garden in front of the house.			There is a well-maintained garden in front of the house.
<b>RENTAL HSG</b>					
<b>COMMERCIAL</b>			This household has a tuck shop that is managed out of their garage.		
<b>SERVICE</b>	The head of this household provides a service as a traditional doctor from her home.				
<b>AGRICULTURE</b>					
<b>PARKING</b>	Space for the parking of vehicles is made possible at the back of the house.	The west side of the property holds the parking space for the vehicles.	Cars can be parked in front of the garage.	Cars are parked on the southern side of the erf.	Cars can be accommodated on the southern side of the erf.
<b>OTHER</b>	There is a small storage facility built at the back.	The clothesline is housed at the back of the erf and bricks are also stored here. The house is extended by use of a tent. It is a temporary structure that will be removed when the plans to build the intended braai area are complete.	Clotheslines appear in the backyard. Building materials are housed on the erf.	Clotheslines are on the left-hand side of the property. A storage facility is at the back of the yard.	A little storage facility is also built in the back yard. A tent has been added to the existing shack to add more sheltered space.

CHAPTER 5: CONSOLIDATION - 2.3.4. PUBLIC / PRIVATE INTERFACE

EXT. 10: TYPOLOGY 3

PUBLIC/  
PRIVATE  
INTERFACE

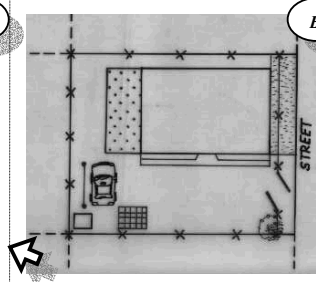


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
Instead of a fence, boulders have been placed on the road side as some sort of border, which leaves the erf quite open to the public, i.e. no privacy is created.

**PRIVACY:**  
*Side and Back Boundaries*  
Two sides of the erf are fenced off with transparent wire fencing, i.e. the back and the eastern boundary. The type of fencing used prevents the creation of private space. The side with no fence has trees planted along the boundary, which defines the space but creates no privacy.

**Placing of units**  
The temporary structure is placed along the back boundary and behind the house. Some semi-private space is created between these structures - the space is private from the public but semi-private from the neighbours.

**Placing of the front door**  
The front door faces the street. The placing of the boulders in combination with the door indicates a desire to interact with the public. In this case it would also be good in attracting business. The back door faces the temporary structure.

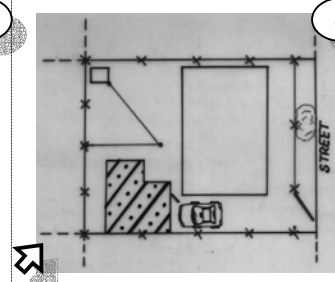


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
The fencing used at the front is transparent wire (1.5m). There is also a gate present. No privacy is created.

**PRIVACY:**  
*Side and Back Boundaries*  
The remaining sides of the erf are fenced off with wire fencing. It does very little to create privacy.

**Placing of units**  
The unit has been placed along the east boundary line and a bit closer to the road frontage. This allows for other activities to take place at the back - a tent at the back of the erf is used to create some semi-private space - a social area.

**Placing of the front door**  
The door of the house is at the side with a back door that faces the other side. Privacy was sought.

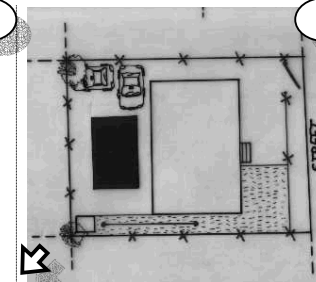


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
There is a presence of a very presentable, tall gate (palisade fencing) at the front. The fencing used is transparent wire. Privacy is not created.

**PRIVACY:**  
*Side and Back Boundaries*  
The same type of fencing surrounds the erf. No privacy is created.

**Placing of units**  
Some semi-private space is created at the back of the erf surrounding the outside toilet, i.e. it is private from the public and one neighbour, but two neighbours can intrude. The placing of the structures enabled this.

**Placing of the front door**  
The house can be entered at the front. The door faces the street enabling interaction to take place. This would be beneficial for the spaza shop that is run from the garage. The back entrance of the house faces the semi-private space created.

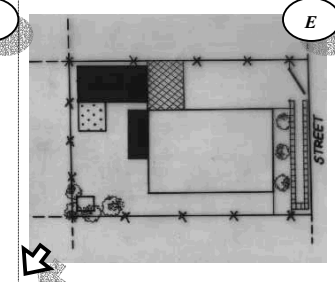


**RELATION TO THE STREET:**  
*Street Boundary Definition*  
The fencing at the front of the house is quite weak and transparent. This prevents private space from being created.

**PRIVACY:**  
*Side and Back Boundaries*  
All the other sides are fenced off utilising the same type of fencing. Privacy is not created.

**Placing of units**  
The only form of privacy is created at the back between the 'now' storage facility and the house, which lie parallel to one another. Neighbours can however intrude. The space is therefore private from the public but not the neighbours.

**Placing of the front door**  
The front door faces the street leaving the house open to interaction with the public. The back entrance faces the temporary structure.



**RELATION TO THE STREET:**  
*Street Boundary Definition*  
There is a gate at the front, but no fence. No privacy is created.

**PRIVACY:**  
*Side and Back Boundaries*  
Transparent fencing is used to fence off the rest of the erf. At the back, one boundary is re-enforced with the placing of a storage facility and the other side with trees.

**Placing of units**  
The structures have been arranged around the toilet area. The house has been placed toward the front of the property. Privacy from the public and one neighbour is created at the back of the erf with the assistance of the placing of a storage facility, the house, and trees as well as fencing.

**Placing of the front door**  
The entrance to the house is at the side. Interaction with the street was not wanted.



1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>• Four families are single nuclear and one woman-headed.</li> <li>• Family size ranges from 3 to 6 with an average of 4.</li> <li>• None of the families have tenants.</li> <li>• Household size also ranges from 3 to 6 with an average of 4.</li> <li>• Each family has one source of income except for household D that has two sources. On average each household has one source.</li> <li>• The income sources tend to be accounted for by two part-time jobs, two entrepreneurial/informal jobs, one full-time employment and one grant.</li> <li>• On average families have eleven expenses.</li> <li>• Three households are able to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>• All initial structures were toilets provided by government and placed at the back of the erven in either the left or right corners.</li> <li>• Roof structures were provided progressively after all erven had toilets. In this case, the roof structures were provided after all households had constructed one shack.</li> <li>• Eleven additions had been made in total. Of these 11, five were shacks, five were completed houses, and one was a garage.</li> <li>• All households made two additions except for household C (three additions).</li> <li>• Where information was available, the following was noted: <ul style="list-style-type: none"> <li>○ All shacks were constructed of temporary materials and houses of permanent materials.</li> <li>○ Temporary materials were purchased from within Mamelodi and permanent materials from outside Mamelodi.</li> <li>○ Costs for temporary structures range from R500 to R900. Permanent structures cost between R1 000 to R3 000.</li> <li>○ Majority of savings money was used. One loan had been acquired.</li> <li>○ Builders of shacks were either owners or material suppliers.</li> <li>○ Builders of houses were private contractors.</li> <li>○ The time lapse between additions was between one and four years.</li> </ul> </li> </ul>
3. HOW HAS THE UNIT CHANGED OVER TIME?	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>• An average of two additions per household was noted.</li> <li>• All shacks were constructed of temporary materials and houses of permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>• Temporary structures total area: 58m<sup>2</sup></li> <li>• Temporary structures average area: 19m<sup>2</sup></li> <li>• Temporary structures average size: 19m<sup>2</sup></li> <li>• Temporary structures average coverage: 10%</li> <li>• Permanent structures total area: 290m<sup>2</sup></li> <li>• Permanent structures average area: 58m<sup>2</sup></li> <li>• Permanent structures average size: 48m<sup>2</sup></li> <li>• Permanent structures average coverage: 30%</li> <li>• Combined average extension size: 39m<sup>2</sup></li> <li>• Combined average area: 70m<sup>2</sup></li> <li>• Combined average coverage: 35%</li> <li>• Combined average occupational density: 19m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>• Shape: Shacks built take a rectangular shape. In household A the shacks have been arranged to form an 'L' shape. Houses are rectangular in shape with an 'L' shaped garage.</li> <li>• Average dimensions of temporary structures: 3.3m x 5.6m. Average dimensions of permanent structures: 5.7m x 8m.</li> </ul>
<p><b>*NOTE</b></p> <ol style="list-style-type: none"> <li>1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).</i></li> <li>2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>3. The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>8. No reasons for the use of space within the structures could be obtained.</li> </ol>	



3. HOW HAS THE UNIT CHANGED OVER TIME?	<p>PLACING OF BUILDINGS</p> <ul style="list-style-type: none"> <li>All shacks have been placed at the back of the erven and the houses in a central position with the longer side lying parallel to the road frontage.</li> <li>Where houses have been placed with the shorter side parallel to the road frontage, they have been placed along the side boundaries and closer to the road frontage.</li> <li>In terms of the efficiency in the use of space for living, three households have partially satisfied this (gardening space was still too large). In two cases, roof structures have been placed to far back and close to the temporary structures.</li> </ul>
4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>In total, there are 14 bedrooms across all households. An average of three per household.</li> <li>Each household has a kitchen and a lounge.</li> <li>One household has a dining room.</li> <li>All households have indoor toilets in combination with the toilet provided by government except for household A.</li> <li>At least one bathroom is present in each household.</li> <li>The use of space in each case was suited to the needs of the families.</li> </ul>
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>Three households have gardens placed at the front of the yard.</li> <li>Each household makes provision for the parking of cars. This is mostly accommodated at the side.</li> <li>Services and commercial activity is conducted within two separate households (an average of 20%).</li> <li>Tents have been erected for socialising space.</li> <li>Many storage facilities are present (three households)</li> <li>Clotheslines have been erected in three erven.</li> </ul>
6. PUBLIC/PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b></p> <p><i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>Three households have attempted to fence of their properties and have used transparent wire fencing. It does not contribute to privacy.</li> <li>The other two households have decorated the entrances with bricks and stones.</li> </ul> <p><b>PRIVACY:</b></p> <p><i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>Transparent wire fencing has been used again in all cases except household C. It does not successfully help to create privacy.</li> <li>The households here present an interesting dynamic, i.e. although privacy is created at the back of the erf, from the public on the street and some neighbours, it is semi-private from other neighbours.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>The houses have been placed close to the shacks. The arrangement of the roof structure and shack in household A helps to facilitate privacy between the units.</li> <li>In most cases some form of privacy is created between the temporary structures and the houses.</li> <li>In most cases, the placing of the structures, trees and fencing have assisted in keeping the public out of the back of the erven while keeping the front part of the erven open. Privacy was sought at the back.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>Three out of five households have their doors facing the street, whilst the others have their doors at the sides. However, each household has back door. Therefore, interaction with the public is sought as well as privacy.</li> <li>However, two out of the three households could find this beneficial because of the service and commercial activity that transpires within the households. Interaction with the public would lure more business to their establishments.</li> </ul>
*NOTE	<ol style="list-style-type: none"> <li>The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. <i>Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).</i></li> <li>Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.</li> <li>The measurements given are <b>approximated</b> from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.</li> <li>Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.</li> <li>All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.</li> <li>When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.</li> <li>Reasons for the placing of structures by respondents are mentioned only where reasons were given.</li> <li>No reasons for the use of space within the structures could be obtained.</li> </ol>

**AFFORDABILITY**

- **Family structure:** All families are single and nuclear except for one woman-headed family.
- **Family sizes:** tend to be small (average size of 4), ranging from 3 to 6.
- **Sources of income:** Each family has one source of income excluding household D (2 sources).
- **Expenses:** On average each household has eleven expenses. There are many expenses made.
- **Savings:** Three households are able to save.

**Conclusion**

The affordability of households to expand is reasonable considering that family sizes are average and are supported by one source of income.

Households A to D have the same number of expenses and similar family sizes (between 3 and 4). Household E has 6 family members. Households A, B, C, and E have a single source of income (either entrepreneurial/informal, full-time employment or part-time employment), whilst household D has two sources of income (one formal and one grant). Therefore, households A to C would have the same advantages and disadvantages and would therefore produce similar products. Household D would appear to be at the greatest advantage, with a small family size and two sources of income. Household E seems to be the one to produce the least amount of addition or of poorer quality because of the larger family size.

**PRODUCT**

- **Number of additions:** In total eleven additions have been made. Households A, B, D and E have produced two additions (one temporary structure and one permanent structure). Household C, however, managed to produce one temporary structure and two permanent structures.
- **Time:** All households had arrived around the same time (between 1996 and 1997). It is unknown when household A had arrived, but it is also estimated to have arrived around the same time. The level of consolidation in each household is more or less the same except for household C that managed to construct an addition permanent structure. However, household C had arrived the same year as household B. Therefore, time of arrival does not prove to be a factor affecting the level of consolidation on its own. Time with additional factors has played a role.
- **Type of structures:** Both temporary and permanent structures have been built.
- **Level of formalisation:** Each household had initially built a temporary structure followed by a permanent structure. Household C continued to build another permanent structure. There are therefore, five temporary structures and six permanent structures built. 55% of the structures produced were permanent structures. Households have managed to mobilise money to enable consolidation. The level of consolidation is therefore high.
- **Size of additions:** The average size of additions (temporary and permanent combined) is  $39\text{m}^2$ , whereas the average size of temporary and permanent structures is  $19\text{m}^2$  (ranging from  $13\text{m}^2$  to  $30\text{m}^2$ ) and  $48\text{m}^2$  (ranging from  $20\text{m}^2$  -  $54\text{m}^2$ ) respectively. In relation to family size, the size of additions appears sufficient.
- **Configuration:** The average dimensions of temporary structures are  $3.3\text{m} \times 5.6\text{m}$ . The average dimensions of permanent structures are  $5.7\text{m} \times 8\text{m}$ . The vast difference in dimensions between the two can be noted.
- **Area of additions:** The area of temporary structures range from  $13\text{m}^2$  -  $30\text{m}^2$  (average of  $19\text{m}^2$ ), whereas the average area of permanent structures is  $58\text{m}^2$  (ranging from  $54\text{m}^2$  -  $74\text{m}^2$ ).
- **Occupational density:** Each person has an average area of  $19\text{m}^2$  (ranging from  $11\text{m}^2$  to  $28\text{m}^2$ ) to himself or herself.
- **Coverage:** temporary structures amount for 10% (ranging from 7% to 14%) and permanent structures for 30% (ranging from 25% to 39%). In total, they still don't cover more than 50% of the erven. The placing of the roof structures have taken advantage of this fact in three households.
- **Shape:** All structures appear rectangular. Some have been arranged to form 'L' shapes.  
**Arrangement of structures:** All temporary structures have been placed at the back of the erven. Roof structures have been placed in front of them either with the shorter or longer side parallel to the street. Where the roof structures have been placed with the shorter side parallel to the street, they have been placed along the side boundary and closer to the street. Space has been used efficiently to a certain degree on three erven.
- **Type of employment:** The type of employment seems not to have an effect on the abilities of families to consolidate.

**Conclusion**

Household C and A Produced the most additions and seem to have consolidated to a greater degree than the others. The small family size was beneficial. However, the circumstances of household C are identical to household A, i.e. expenses, type and number of income sources and family sizes are the same. The only distinguishing factor would possibly be time. It is unknown when household A had arrived. The amount of income brought in by the entrepreneurial activity could be more in household C.

**\*NOTE**

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area ( $1.2\text{m}^2$ ), dimensions ( $1\text{m} \times 1.2\text{m}$ ) and shape (rectangle). Roof structure - area ( $54\text{m}^2$ ), dimensions ( $6\text{m} \times 9\text{m}$ ) and shape (rectangle). Room under roof structure - area ( $12\text{m}^2$ ), dimensions ( $4\text{m} \times 3\text{m}$ ) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
4. Information about the structures is limited, e.g. costs, date of construction, etc. Respondents were reluctant to provide all the information either because of a lack of trust or poor memories. As a result, issues of cost and date of construction of extensions have been omitted from this analysis. However, assumptions based on available information have been made.
5. All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
6. When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

Household B and D These two households are the same except for the type and number of income sources. Household D seems to have two sources of income (part-time and a grant). Household B is supported by a full-time job. Household D would therefore have the advantage of twice the income source compared to household B. The level of consolidation is however, the same.

Household D Has the advantage of fewer expenses than the rest of the households but has the disadvantage of a larger family size.

The factors that influence consolidation positively are the small family sizes and many income sources. In other cases, the large family sizes played a negative role in the consolidation process.

### PROCESS

- **Sourcing of materials:** The purchasing of temporary materials was done from within Mamelodi and permanent structures from outside Mamelodi.
- **Cost:** The cost of permanent structures ranged from R1 000 to R3 000 whilst temporary structures cost between R500 and R900.
- **Funding:** Majority of the time, savings had been used. Only one case involved the use of a loan.
- **Builders:** The builders of the permanent structures involved private contractors. Temporary structures were built by either the material suppliers or the owners.
- **Time:** The time lapse between additions had been between one and four years. One or two households had taken three to four years to build the permanent structures. Others had taken two years. Time was spent saving for the construction of the permanent structures.

### USE OF SPACE

#### *Within structures*

- The uses within these households go beyond the basic kitchen, bedroom and outside toilet situation. These households have the luxuries of lounges, indoor bathrooms and toilets, and dining rooms. The increase in space for the household has also resulted in the increased diversity in the use of space.

#### *Within erven*

- **Gardens:** Three households have flower gardens at the front of the erven.
- **Parking:** Vehicular parking is generally accommodated at the side of the erven by all households.
- **Tenants:** None of the households has tenants.
- **Commercial:** Two households accommodate commercial activity and provide a service from within their houses.
- **Other:** Tents have been erected for social space. The storage of materials takes place on the erven wherever space would allow for it. Clotheslines have been erected on many erven.

### PUBLIC/PRIVATE INTERFACE

- **Street boundary:** The households that have attempted fencing off their properties have used transparent wire fencing, which does not assist in creating privacy. Other households have decorated the front of their erven with stones and boulders.
- **Side and back boundaries:** Transparent wire fencing has been used. This has not assisted in creating private space, but the strategic placing of trees and plants has helped to a certain degree.
- **Placing of units:** The placing of the structures has helped in cutting off the public from space created at the back of the erven. This space, however, is not very private from the neighbours. The roof structures have been placed close to the temporary structures, which have assisted in the creation of semi-private space.
- **Placing of the front door:** Each household has a back and front door, so whilst interaction is encouraged to a small degree at the front, privacy is also required at the back.

#### \*NOTE

1. The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
2. Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
3. The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
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7. Reasons for the placing of structures by respondents are mentioned only where reasons were given.
8. No reasons for the use of space within the structures could be obtained.

**Pattern:**

1. Temporary structures have been placed at the back and sides of the erven. Three sides of the erven are fenced off with the frontage either fenced or decorated with boulders and bricks. Roof structures with the shorter end parallel to the road frontage have been placed along the side boundary. Vehicular parking has been accommodated on all erven, usually at the back. Storage also takes place at the back of property.

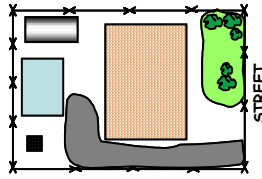


FIGURE 43: Pattern 1

2. Temporary structures have been placed at the back and sides of the erven. Three sides of the erven are fenced off with the frontage either fenced or decorated with boulders and bricks. Roof structures with longer side parallel to the road frontage have been placed centrally on the erven. Vehicular parking has been accommodated on all erven, usually at the back. Storage also takes place at the back of every property.

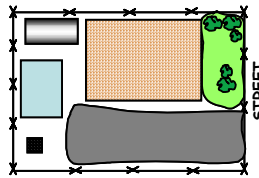


FIGURE 44: Pattern 2

**\*NOTE**

- The toilet, roof structure and room under the roof structure have fixed values in terms of area, dimensions and shape. Instead of repeating these values throughout the document, it will be noted here. Toilet - area (1.2m<sup>2</sup>), dimensions (1m x 1.2m) and shape (rectangle). Roof structure - area (54m<sup>2</sup>), dimensions (6m x 9m) and shape (rectangle). Room under roof structure - area (12m<sup>2</sup>), dimensions (4m x 3m) and shape (rectangle).
- Also important to note, when reference is made to extensions, it refers to those made by the dwellers and not by government. This excludes the water closets and roof structures.
- The measurements given are **approximated** from the diagrams representing the situation of the erven and aerial photographs as a cross check. A measuring exercise was not carried out during the interviewing sessions. The measurements are therefore not true representations.
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- All calculations within this section include enclosed structures only, e.g. incomplete roof structures that have been added to the calculation are those that are enclosed but lack internal divisions.
- When discussing privacy, there are two categories, i.e. from the public on the street and from neighbours. In this section, it refers to privacy from the public.
- Reasons for the placing of structures by respondents are mentioned only where reasons were given.
- No reasons for the use of space within the structures could be obtained.

## 1. INTRODUCTION

It has already been thoroughly discussed how the typologies were formulated. For purposes of this comparative exercise, it would be imperative to firstly recap on the typologies:

## EXTENSION 10

**Typology 1** a roof structure with no permanent additions,

**Typology 2** a roof structure with permanent additions, but is an incomplete structure, and

**Typology 3** a completely enclosed roof structure.

## EXTENSION 6

**Typology 1** represents structures that have been positioned at the back of the erf.

**Typology 2** is representative of structures placed at the side of the erf and

**Typology 3** is characterised by structures placed at the front of the erf.

The final, **typology (4)**, reflects complete houses.

The typologies within extension 10 were developed with gradual progression of consolidation in mind by analysing the state of the roof structures, whilst the typologies within extension 6 were developed with the placing of the structures in mind since the area was provided with no top structure, just a water closet and services. However, although the placing of the structures was the focus, a developmental progression could also be observed. This can be viewed within the trends between these four typologies observed, which inevitably highlight the characteristics of each typology.

The aim of this chapter, hence, is to arrive at factors that affect consolidation. This would require the extraction of trends (which will reveal differences between the typologies), an analysis of the use of space, an overall picture of the two case study areas. The analysis of the use of space is specifically focused whether space has been used efficiently. A similar analysis was done in chapter 4. The difference with doing this analysis at this point is to analyse the typical patterns that have been derived from the typologies.

However, another two components will also be added to this section, i.e. hypotheses will be tested and perceptions and preferences of residents are presented.

In an attempt to add to previous studies done hypotheses have been developed (below). It is a combination that has been drawn from previous studies (refer to Chapter 3, sections 5 and 6) and general assumptions made of the process of consolidation in relation to this study.

1. Larger families imply less consolidation
2. Less income implies less consolidation
3. More time implies greater consolidation
4. More expenses imply less consolidation
5. More savings implies more consolidation
6. Rental activity is prominent in the initial stages of consolidation
  
7. Lack of building skills implies less consolidation
8. High cost of building materials implies less consolidation
9. Uses within the structures increase with formality
10. Complexity in the use of the erven increases with formality
11. The area occupied by the houses / structures increases with formality

This type of analysis will be done at different levels, i.e. typology level and extension level. Firstly, trends are developed from the characteristics of the typologies, which give a clear representation of the differences between typologies. Graphs have been added to assist visually. Secondly, an overall picture of the two case study areas is presented in the various categories (refer below). The final section draws on these two sections (trends and overall picture) and chapter 5 to identify factors affecting consolidation. The factors derived from the trends, the analysis of the use of space and chapter 5 are analysed and presented within the framework of profiles of non-consolidators and consolidators, whereas the factors identified via the overall picture are presented immediately after the **Consolidators**, the reason being that some factors are better seen at a higher level than an in-depth level. The hypotheses presented above will then be tested, where the first six will apply to the profiles of consolidators and non-consolidators and the last five, will be done at a higher level (case study areas as a whole). The final section about the perceptions and preferences of residents will reveal how the residents feel about housing in general and about the housing that has been provided.

The structure of this section is as follows (refer to figure 50):

- Trends are exposed and discussed in comparison to each typology;
- The analysis of the use of space is done;
- An overall picture of the study areas are presented and consists of:
  - The Socio-economic Profile
  - The Building Activity Profile
  - The Use of Space
- Factors affecting consolidation are then extracted with the use of profiles of consolidators and non-consolidators and an overall picture;
- The hypotheses set up at the beginning of the chapter, will be tested;

- The perceptions and preferences of households serve as the conclusion to this chapter.

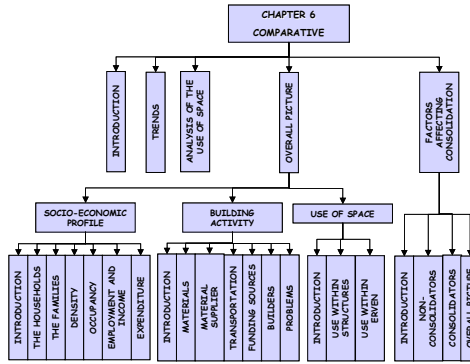


FIGURE 50: Structure of chapter

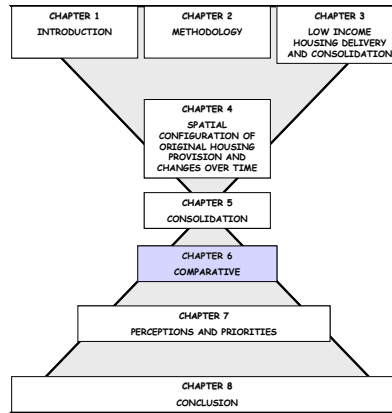


FIGURE 51: Position of chapter within dissertation

The figure above indicates the position of this chapter within the framework of the dissertation.

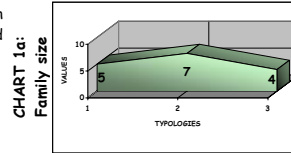


CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

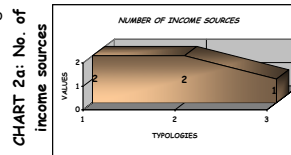
EXTENSION 10

2. TRENDS

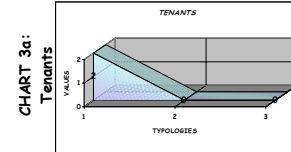
2.1. **Family size:** In general family sizes tend to lessen. Typology 1 had an average family size of 5, typology 2 had an average size of 7 and typology 3 an average of 4.



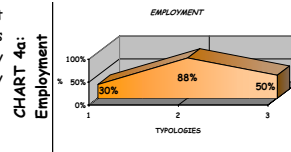
2.2. **Number of sources of income:** The sources of income tend to decrease as well from 2 sources to 1.



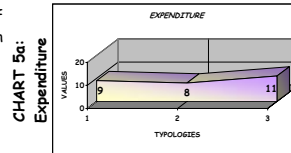
2.3. **Tenants:** The only typology that has renters are in typology 1.



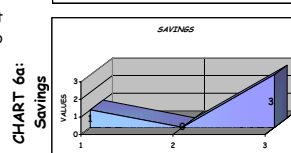
2.4. **Employment:** In terms of formal employment, typology 2 has the most significant percentage (88%) compared to the others. Typology 1 has the least (30%) and typology 3 stands at (50%). Just like in family size, there is a rise from typology 1 to 2 and then a decline to typology 3.



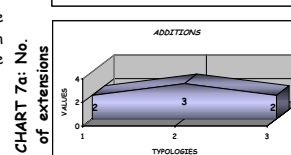
2.5. **Expenditure:** Typology 3 has the most expenses (11). The number of expenses decreases to eight in typology 2 and then rises to nine in typology 1.



2.6. **Savings:** The ability of households to save increases with movement from typology 1 through to typology 3. Only one household is able to save in typology 1 and three are able to save in typology 3.

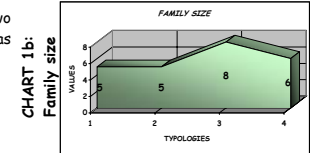


2.7. **Number of extensions:** Once again there is an increase in the amount of additions built from typology 1 to 2 and then a decrease in typology 3. The reasons for such a pattern could be explained by the socio-economic issues:

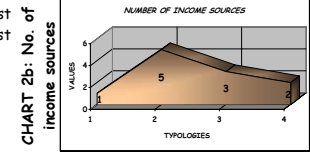


EXTENSION 6

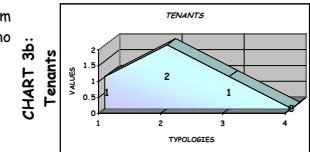
2.1. **Family size:** Family size generally starts small in the first two typologies and increase in typologies 3 and 4. However, typology 3 has the largest family size (8).



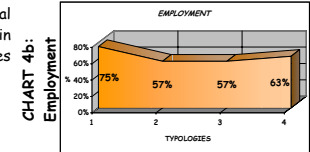
2.2. **Number of sources of income:** Sources of income appear almost regular in typologies 3 and 4 (2, 3). Typology 1 has the smallest number of income sources (1) and typology 2, the most (5).



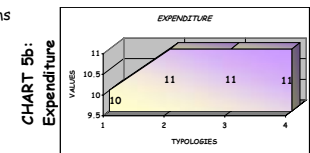
2.3. **Tenants:** The numbers of households that have tenants increase from 1 to 2 then back to 1 when moving from typology 1 to 3. There are no tenants in typology 4.



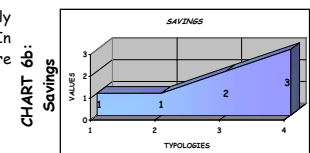
2.4. **Employment:** In terms of formal employment versus informal employment, the percentage of formal employment is the most in typology 1. It decreases in typologies 2 and 3 (57%) and increases again in typology 4.



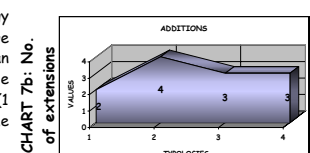
2.5. **Expenditure:** On average typology 2 to 4 have 11 expenditure items and typology 1, 10.



2.6. **Savings:** The ability of households to save reveals that it increasingly becomes possible with movement from typology 1 through to 4. In typology one, one household is able to save, whilst in typology 4, all are able to save.



2.7. **Number of extensions:** Tend to be few in typology 1 and 4. Typology 2 hosts many more extensions, on average 4 were made. On average though, typologies 3 and 4 have made 3 extensions and typology 1, an average of 2. However, the household with the most additions made were noted in typology 2 (6 additions) and the least in typology 1 (1 addition). The reasons for such a pattern could be explained by the socio-economic issues:



CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

EXTENSION 10

- a. Typology 2 has made more additions largely as a result of the percentage of formal employment in comparison to the other typologies. The other socio-economic aspects appear similar to the other typologies. The family sizes in this typology are larger, and the number of expenses appears the least here, but the number of sources of income is the same as those in typology 1.
- b. Typology 1 reflects households with medium sized families (smaller than those of typology 2), on average two sources of income each and many expenses (one more than typology 2). This typology however has produced on average, two additions. This can be accounted for by the type of employment, i.e. only 30% is formal employment as opposed to 88% in typology 2.
- c. Typology 3 displays a much smaller family size on average compared to that of typology 2. The number of expenses is much more and the income sources are fewer in comparison to typology 2. This typology was however able to save much more than that of typology 2, but has still managed to produce two additions on average. This can also be accounted for by the type of employment. Typology 3 has 50% of formal employment compared to the 88% in typology 2.

In this case, where comparisons are made at a higher level, the type of employment comes into play as a major role player.

2.8. Characteristics of additions:

- a) In terms of the *size* of additions, it tends to increase from typology 1 to 3. The average addition size from typology 1 through to 3 is as follows: 21m<sup>2</sup>, 27m<sup>2</sup>, and 39m<sup>2</sup>. Within typology 2 and 3 however, it is possible to distinguish between permanent structures and temporary ones. When looking at the temporary structures, the increase in size is visible: typology 2 has an average size of 17m<sup>2</sup> whilst typology 3 has an average of 19m<sup>2</sup>. The same applies for permanent structures: typology 2 has an average size of 46m<sup>2</sup> and typology 3 has an average of 48m<sup>2</sup>. The difference may not be substantial but an increase is noted.

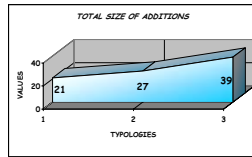


CHART 8a: Total addition size

- b) The *coverage* depicts a different picture. Typology 1 is still the smallest but typology 2 is the largest. The figures appear as follows: 17%, 38%, 35%. The larger percentage in typology 2 can be accounted for by the average area of the temporary structures. This value is far greater than in typology 3 as a result of typology 2 having more temporary structures. Therefore, the coverage of temporary structures in typology 2 is 16% whilst in typology 3 it is 10%. The average coverage of permanent structures in typology 2 is 23% and in typology 3 it is 30%. This is indicative of more permanent structures within typology 3.

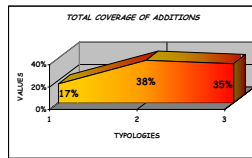


CHART 11a: Total coverage

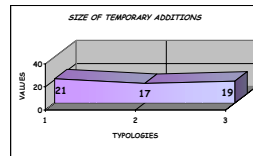


CHART 9a: Temporary addition size

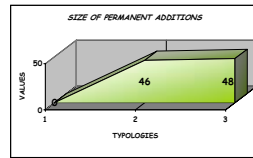


CHART 10a: Permanent addition size

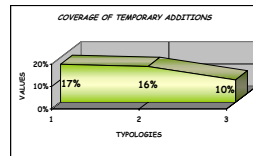


CHART 12a: Temporary addition coverage

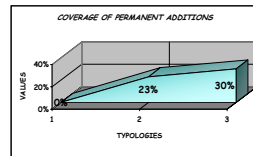


CHART 13a: Permanent addition coverage

EXTENSION 6

- a. The limited amount of extensions could be accounted for by the average family size of 5, minimal source of income (1), numerous expenses, and the inability of families to save even though the type of employment inherent in this typology is formal. This displays the irrelevance of the type of employment with regards to consolidation.
- b. Typology 2 displays more additions due to the same family size, a larger number of income sources (5), numerous expenses, and the inability of households to save. In this case formal employment is almost 20 percent less, but this typology was most successful in the number of additions produced. Type of employment is still not a factor at play in the process of formalisation. In the comparison between typology 1 and 2, 2 displayed similar and exact figures of typology 1 in relation to family size, the number of households able to save, and the number of expenses. The only distinguishing differing factors is the amount of income sources and the type of employment. The lack of relevance of the type of employment therefore exposes the number of income sources as the beneficial factor in typology 2.
- c. Typology 3 displays a large family size on average (8) with three sources of income, 11 expenditure items where two households are able to save. Therefore, in comparison to typology 2, typology 3 has a larger family size, less income sources, one more expense, and one more household that is able to save. Although it has an advantage of two households being able to save, the other factors limit the ability to make more additions. There are other factors, however, that come into play, i.e. the type of additions made (refer to type of extensions).
- d. Typology 4 is quite similar to typology 3 except the average family size is lower, income sources amount to 2, all households save and the formal employment percentage is greater. Typology 4 has more money to spare than typology 3 although the number of additions produced in both typologies is similar. In comparison to typology 2, family sizes are similar, number of income sources is fewer, the number of expenses is identical, all households are able to save and the formal employment percentage is greater. Typology 4 has an advantage of all households being able to save, but typology 2 has a smaller family size and more income sources. In this case, the type of additions made also affect the number of additions produced (refer to type of extensions).

2.8. Characteristics of additions:

- a. The *size* of additions generally reflects an increase from 14m<sup>2</sup> in typology 1 to 31m<sup>2</sup> in typology 4 with a gradual change between them.

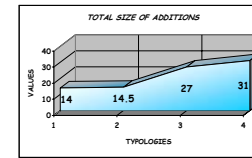


CHART 8b: Total addition size

- b. The same applies for the *coverage*, i.e. from typology 1 to 4, it appears as follows: 19%, 28%, 35%, and 40%.

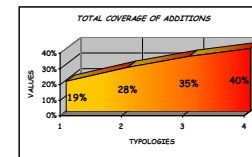
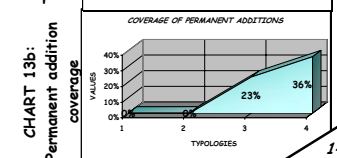
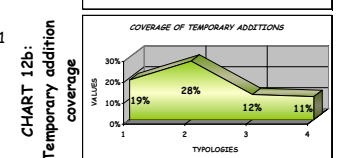
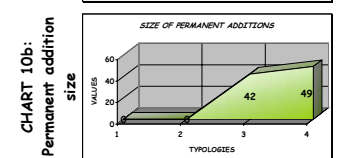
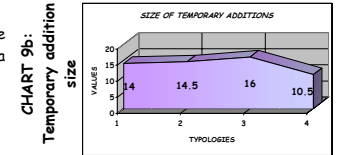


CHART 11b: Total coverage



CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

EXTENSION 10

c) The *occupational densities* paint a picture of a gradual increase from 6m<sup>2</sup>/person, to 12m<sup>2</sup>/person, and finally to 19m<sup>2</sup>/person. The amount of space occupied by the structures increase from typology 1 to 3. Family size also tends to decrease in size with movement from typology 1 to 3.

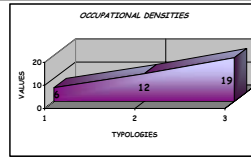


CHART 14a: Occupational density

2.9. **Type of extensions:** When looking at the type of additions made a trend can be extracted. The trend displays a progression from initially building temporary structures in typology 1 to the construction of more permanent structures in typology 3. Typology 1 is characteristic of temporary structures (90% had been built). Typology 2 reveals a smaller percentage of temporary structures and more permanent structures (64% temporary and 36% permanent). In typology 3, 55% of structures built were permanent structures. The remainder were temporary structures. Therefore, with progression from typology 1 through to typology 3 the ability of households to consolidate increases.

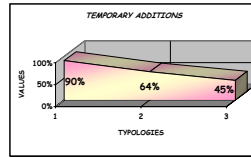


CHART 15a: Temporary additions

1.10. **Level of consolidation:** The type of structures produced reveals that typology 3 produced the most permanent structures. Hence, typology 3 is the most consolidated and typology 1 is the least. This can be attributed to the fact that typology 3 has the smallest family size and most households have the ability to save. 50% of the employment is also formal. Typology 2 reflects larger family sizes with no one able to save, but has 88% formal employment. Typology 1 has medium sized families with one or two households that are able to save, but only 30% formal employment.

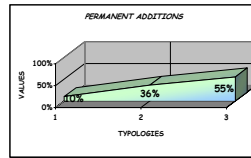


CHART 16a: Permanent additions

2.11. **Time of arrival:** People within typology 1 arrived between 1995 and 1997. Within typology 2, people had arrived around 1995/6. One household had arrived in 1992. Residents of typology 3 arrived between 1996 and 1997. Each typology reflects a stage in the process of consolidation and all had arrived within the same time frame. Considering that all households had arrived around the same time, this eliminates time as a factor.

2.12. **Time taken between extensions:** The time taken between additions reveals the priorities and needs of people. People had taken between one and two years to make additions within typology 1. Only one household had taken four years between additions. This reflects minimal time taken to save and make additions as quickly as possible. Within typology 2 residents had taken a bit more time, i.e. between a few months and three years. Typology 3 reflects a bit more time taken, i.e. between a year and four years. Therefore, when constructing the permanent structure, time was taken in saving and preparing for the construction as opposed to the construction of temporary structures, which was rapid in comparison. With movement from typology 1 to typology 3, more time was spent in the construction of structures.

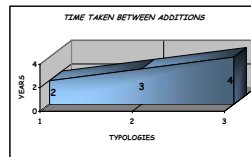


CHART 17a: Time taken between additions

2.13. **Use of space within the structures:** In general, the average uses within typology one reflect that of bedroom, kitchens and toilets (outdoors). With the introduction of the one permanent structure in household C, this has changed to include luxuries such as lounges, dining rooms, spaza shops, bathrooms and indoor toilets. But the typical picture presented is that of the basic needs. Typology 2 reflects households that gradually have included luxuries such as lounges and dining rooms. Typology 3 reveals a picture where all

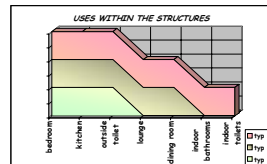


CHART 18a: Use of space within structures

EXTENSION 6

c. With such an increase in coverage, the *occupational density* also increases from 8m<sup>2</sup>/person to 13m<sup>2</sup>/person. Therefore, as families gradually approach and enter the consolidation phase, they are able to construct larger additions.

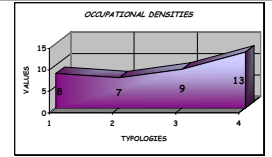


CHART 14b: Occupational density

2.9. **Type of extensions:** In terms of the type of additions made, typologies 1 and 2 are characteristic of temporary structures whilst typologies 3 and 4 are characteristic of a combination of temporary and permanent structures. In typology 1, 86% of the structures are temporary and 14% temporary, whereas typology 2 has 100% temporary structures. Typology 3 displays a split of 33% permanent structures and 67% temporary and typology 4 a greater percentage of permanent structures to temporary ones (63% v.s. 37%). The gradual progression from purely temporary structures through to majority permanent structures can be seen.

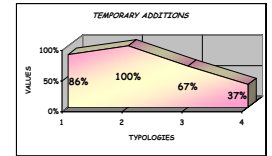


CHART 15b: Temporary additions

2.10. **The level of consolidation** gradually increases when moving from typology 1 through to 4. The type of structures produced in typologies 3 and 4 can also compensate for the lack of numerous additions being made, i.e. money was saved in order to build a solid permanent structure instead of building numerous smaller temporary structures.

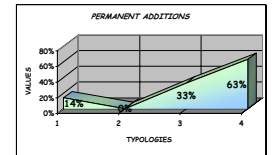


CHART 16b: Permanent additions

Also quite evident is the transition from temporary to permanent structures increases from typology 1 through to typology 4, i.e. the first two typologies are typical of temporary structures whilst typology 3 displays the construction of one or two temporary structures before building the permanent structure. Typology 4 reveals the construction of one temporary structure before building the completed house. The gradual progression can therefore be seen.

2.11. **Time of arrival:** Time of arrival in typology 1 ranged between 1997 and 2001 and people in typology 2, around 1997. Residents of typology 3 arrived between 1998 and 2000 whilst in typology 4 people arrived between 1997 and 1998. Everyone had arrived around more or less the same time except for one or two households that arrived between 2000 and 2001, thereby eliminating time of arrival as a factor of encouraging consolidation. However, the level of consolidation differs between all of the typologies. It has been shown that typology 2 was in the best position to build additions as a result of the analysis of the socio-economic indicators, but these factors did not assist in the process of consolidation, only in the number of additions produced. Instead, typology 4 was able to consolidate at a larger rate than all other typologies. This can be explained only by the investment decisions made within the households, i.e. households within typology 4 decided to save and build the permanent structure instead of building numerous temporary ones. Prioritisation also plays a role where families need to take into consideration the comfort of their family members. It either becomes an immediate need where family sizes are too large, which would require immediate action; or households save, as in the case of people within typology 4, in order to build a more formal structure.

2.12. **Time taken between extensions:** The range of years between additions in each typology is indicative of the specific needs and priorities within. The ability to save is poor within typology 1 and income sources are limited, therefore money was saved over a short time period (1 - 2 years) in order to meet the shelter needs of the families. Many more additions were made within typology 2, which would explain the longer time spent between additions. The time lapse within typology 3 (few months to a year) reveals that the ability to save has enabled such short spaces of time between additions and instead of saving for a longer period in order to build more permanent structures, temporary structures were built. Typology 4 reflects the longest time spent between additions (1 to 5 years). More time was spent between additions in order to build permanent structures of good quality.

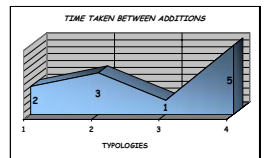


CHART 17b: Time taken between additions

CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

EXTENSION 10

households have indoor toilets, bathrooms, lounges and one household has a dining room. The gradual increase in 'luxury' uses can be seen with movement from typology 1 through to typology 3. With the increased mobility of money and the ability to consolidate, people expand their houses to include uses that are considered luxuries in the face of residents within typology 1. The initial concern for households when initiating the construction of the first few structures is that of shelter and catering for the needs of the family members. With gradual progression, priorities are being satisfied and hence change along the way, which allows for the filtering of and focus on other uses other than the essentials (bedrooms, kitchens, toilets).

**2.14. Use of space of the erven:** The commonality across all three typologies is uses that include gardens and parking areas for vehicles. Besides the commonalities, the focus in typology 1 is on commercial activities and renters. The survival strategies employed involve selling vegetables and goods, and renting out temporary structures. Typology 2 includes other uses such as vegetable gardens, clotheslines and the erection of tents for a bit of shelter or a carport. Typology 3 is typical of the provision of services and the conduction of commercial activity. Tents have also been erected but have been used as socialising space. Clotheslines have also been erected and storage facilities set up. Often old temporary structures become the storage facilities once the permanent structure (house) has been built. The uses from typology 1 to 3 therefore change and include more uses. The size of the housing area also changes in size, i.e. structures increase in size from typology 1 through to typology 3.

**2.15. Interface:** A poor attempt has been made across all households in all typologies to fence off their yards. The use of transparent wire fencing hasn't assisted in creating privacy. The households that haven't fenced off their yards have trees and plants to border the front edge. With movement from typology 1 to 3 there is an increase in complexity. Typology 1 has very little complexity in the use of space. Typology 2 makes use of tents to break the transition from public to private space. Typology 3 makes use of tents and stairs, etc. Transparent wire fencing has been used for the side and back boundaries. This prevents privacy from being created. In some cases, trees and plants have been used to reinforce the fence. Roof structures have been placed close to the temporary structures. Some semi-private space is created between them. In most cases, semi-private space is created at the back of the erf behind the roof structures where they are private from the public but not from the neighbours. Typology 3 has a door at the front and one at the back, which allows interaction with the public at the front of the erf to a certain extent whilst accommodating privacy at the back. The need for privacy becomes more evident with movement from typology 1 through to 3.

**2.16. The process of development** of the typologies reflects a progressive change from initial stages of settlement through to final stages of formalisation. As such, typology 3 represents the stage reached when progress is taken further from typology 2. The same would apply for typology 2 and 1, where typology 1 is the beginning of the entire process of development. With this in mind, the following diagrams below represent the change in development: Households within **typology 1** have built temporary structures at the back of the erven in anticipation of the construction of the permanent structure in a few years. With the maximisation of space made for the future house, government provided roof structures and water closets for the residents. Two types of development can be observed based on the placing of the roof structures:

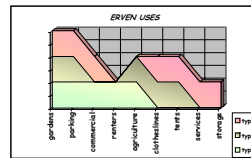


CHART 19a: Use of space of the erven

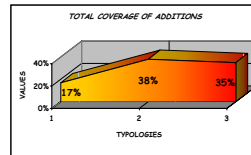


CHART 20a: Coverage of additions

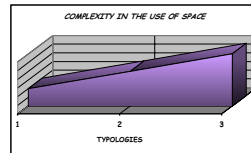


CHART 21a: Complexity in the use of space

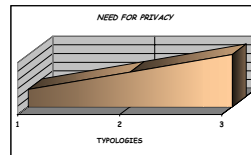


CHART 22a: Need for privacy

EXTENSION 6

**2.13. Use of space within the structures:** Typology 1 reflects a very simplistic way of using space, i.e. the basic needs are catered for. Only kitchens and bedrooms are used. As one moves to the next typology, one notices a bit more complexity. Additional uses such as lounges and tents are present with the noticeable double usage of other space. In all cases, kitchens have been combined with bedrooms. This typology also houses the most tenants. Typology 3 sees various other uses added on, such as storage, bathrooms, and lounges. Finally, typology four introduces all other uses. This is where all households have the luxury of almost every usage allocated within their homes. The gradual complexity with the introduction of various uses can therefore be seen with movement from the initial typology through to the last. The amount of space used for housing increases.

**2.14. Use of space of the erven:** Immediately from the observation of the four typologies some differences emerge. Firstly, the use of space for housing seems to increase as one moves from typology 1 through to typology 4. The prominent housing use within the last typology is directly related to the fact that this is the final phase where people have constructed their permanent homes. The importance of the house is therefore most important. Secondly, every household within typologies 1 to 3 have diverse usage of space, but typology 4 has fewer uses. This can also be attributed to the emphasis on the house. With more inspection with regards to each usage, gardening occurs across all typologies. In most cases, they are located at the front of the house, but in some cases, they are positioned at the side or at the back.

Another use that cuts across all the typologies is that of parking areas for vehicles. In each typology, interestingly, the positioning is different, except for two cases, i.e. in typology 1 it is placed at the side, typology 2 and 3 in the middle, and typology 4 in front. It is pertinent to note that space allocated for parking is not the first priority in most households. The house or structure is. All other uses are worked around the house. This can attribute to the variances. Three out of four typologies encourage commercial activities that take place either within the house/structure. Rental activity occurs often as well - two typologies are host to this. However, the positioning differs. In some cases, they are to the side and in other cases at the back.

Agriculture is practiced by a few families usually at the back or side of the erven and storage at the side as well. Other uses entail the erection of tents for carport or covering for verandas (social space) and clotheslines.

**2.15. Interface:** Most households make use of transparent wire fencing to fence off their boundaries. In very few cases are walls used. The transitions from public to private space appear to be somewhat complex in typologies 1, 2, and 3 but less apparent in typology 4. In terms of the placing of the units, a trend was also noted. Typology 1 placed their structures at the back of the erven. Typology 2 reflects that of structures placed along the back and side boundaries. Even though throughout typologies 1 and 2 the units were placed in such a manner, a desire was expressed to build the permanent structures in the centre of the erven. This desire becomes reality in typology 3 and 4 where the permanent structures are placed in the centre of the erven and evidence of maintained temporary structure reveal that these households had also planned the placing of the structures, i.e. temporary structures were placed at the back of the erven.

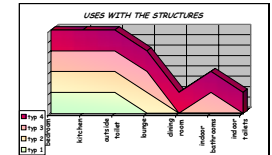


CHART 18b: Use of space within structures

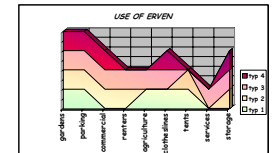


CHART 19b: Use of space of the erven

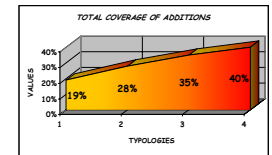


CHART 20b: Coverage of additions

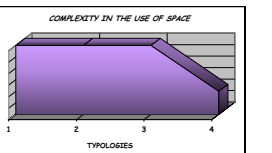


CHART 21b: Complexity in the use of space



CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

EXTENSION 10

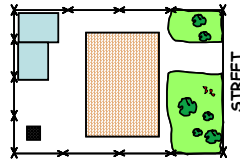


FIGURE 52: Typology 1, pattern 1

**Pattern 1:** Shacks are placed at the back with roof structures centrally placed (longer side parallel to the street). No fence exists at the front.

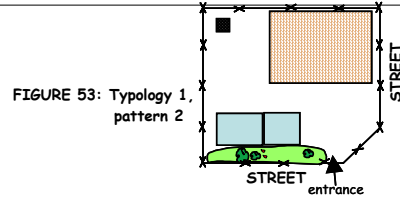


FIGURE 53: Typology 1, pattern 2

**Pattern 2:** Structures are used to block off one road frontage (in the case with two road frontages) and the roof structures have been placed at the back (where one road frontage is chosen as the entrance point) with gardens at the front. One-roof structures have been placed along the side boundary (dependent on the placing of temporary structures).

The roof structures have not been added to at all, they remain in the same condition as when it was provided. Gardening tends to occur mostly at the front.

**Typology 2** reflects some changes to the roof structure but these are not visible via the diagrams. The other changes (not specific to the roof structure) is the additional use on the erven. Building materials tend to be stored at the back of the erven and although gardens still exist, the emphasis is not as strongly as in typology 1.

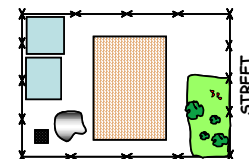


FIGURE 54: Typology 2, pattern 1

**Pattern 1:** Temporary structures have been placed at the back with roof structures in the centre of the erf. Gardens are placed at the entrance. Storage of building materials is done at the back of the erven.

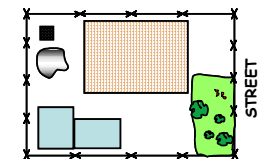


FIGURE 55: Typology 2, pattern 2

**Pattern 2:** Temporary structures are placed along the side and back with roof structures along the other side boundary. Gardens are present at the front and materials are stored on the erf.

Additional uses are also prevalent in typology 3, i.e. parking areas for cars are defined and previously occupied temporary structures are converted into storage facilities. In some cases, the temporary structures are kept because the transition into the new house is not complete yet or it is used to house extended family members. In this typology, the roof structure has been completely built up and people occupy the structures.

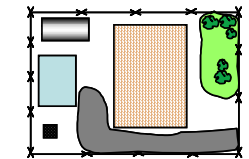


FIGURE 56: Typology 3, pattern 1

**Pattern 1:** Temporary structures have been placed at the back and sides of the erven. Three sides of the erven are fenced off with the frontage either fenced or decorated with boulders and bricks. Roof structures with the shorter end parallel to the road frontage have been placed along the side boundary. Vehicular parking has been accommodated on all erven, usually at the back. Storage also takes place at the back of property.

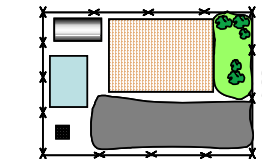


FIGURE 57: Typology 3, pattern 2

**Pattern 2:** Temporary structures have been placed at the back and sides of the erven. Three sides of the erven are fenced off with the frontage either fenced or decorated with boulders and bricks. Roof structures with longer side parallel to the road frontage have been placed centrally on the erf. Vehicular parking has been accommodated on all erven, usually at the back. Storage also takes place at the back.

EXTENSION 6

When looking at the placing of the front doors, it is evident that privacy was required in typology 4 and to a certain extent in typology 3. However, typologies 1 and 2 reflect the placing of structures and doors in a manner that opens out into a central open space where social interaction takes place. Social space is also created in typology 3 but the arrangement of structures appears different to that of the first two typologies. Doors in typology 3 do however open out into these social spaces as well.

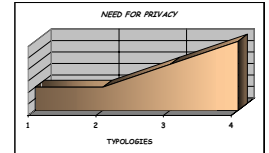


CHART 22b: Need for privacy

- 2.16. **The process of development** reflects a movement from the initial stages of moving in to the final stages of living in a permanent structure. In this case, four typologies will depict the process. The diagrams below will assist in the description of the process and the different typologies:

**Typology 1** is characteristic of temporary structures built at the back of the erven leaving maximum space open at the front for the construction of the permanent structure in the future. This was the pattern observed:

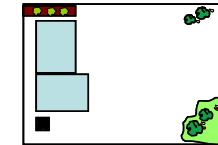


FIGURE 58: Typology 1, pattern 1

**Pattern:** All structures have been placed at the back of the erven leaving maximum space open in front. Gardens and trees exist at the entrance with vegetable gardens at the back.

Although typology 1 and **typology 2** are quite similar, differences are observed in the placing of the structures (along the side and back to create 'U' and 'L' shapes), which highlight another difference, i.e. the creation of the central socialising space. In terms of the developmental process, though, these two typologies can represent a single stage of development (the initial stage) since no significant changes can be observed from a developmental point of view.

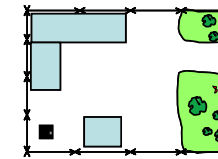


FIGURE 59: Typology 2, pattern 1

**Pattern:** All structures have been placed along the side and back boundaries either in 'L' or 'U' shapes creating a central space for socialising. The entire erf is fenced with a garden or trees planted at the entrance. All structures focus on the central area.

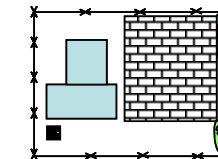


FIGURE 60: Typology 3, pattern 1

**Pattern:** All temporary structures were initially placed at the back with the permanent structures in front leaving space at the back which is private from the public but not from the neighbours. All erven are fenced with gardens at the entrances. Tents are used at entrances to structures to create a break from public to private space and to create some socialising space.

## CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

## EXTENSION 10

## EXTENSION 6

**Typology 3** (below on opposite page) represents the transition from temporary structures to permanent structures (consolidation). Temporary structures still appear at the back and the permanent structure at the front. Less attention is placed on the garden. This typology is also distinguishable by the placing of the structures on the erven and in some cases do not have permanent structures built yet.

**Typology 4** is the final stage where permanent structures are built. The diagrams below depict the progression where one or two temporary structures had to be demolished to enable the construction of the house. Little or no attention is paid to the use on the erven. The focus is on the house.

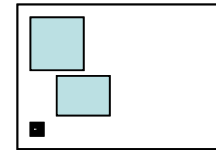


FIGURE 61: Typology 4, pattern 1, phase 1

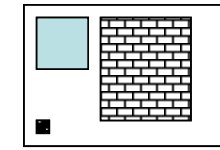


FIGURE 62: Typology 4, pattern 1, phase 2

*Pattern:* Initially temporary structures were placed at the back of the erven with permanent structures placed in front of them. Some temporary structures were removed in order to construct the house. Differing levels of boundary definition can be observed with little diversity in the use of space.

The progression may not be distinct but appears very subtly.



CHAPTER 6: COMPARATIVE ANALYSIS OF TYPOLOGIES

EXTENSION 10

3. ANALYSIS OF THE USE OF SPACE

As mentioned previously in chapter 4 and 5, the limited size of the erven coupled with the large family sizes requires the optimal use of the erven for living space. The type of housing provided, in this case, did not consider this, i.e. the placing of the roof structures have resulted in the inefficient use of space. From the basic diagrams above, (representatives of each typology), it is noticeable how obstructive the structure is to optimally using the erven (this analysis correlates with the analysis done in chapter 4):

**Typology 1**

In pattern 1 of typology 1, a large space is created for gardening by placing the structure in centre of the erven. Less living space is created with less privacy. Garden space should have been minimised by possibly placing the roof structure closer to the street, thereby increasing the amount of space behind the roof structure, which capitalises on privacy and living space.

Pattern 2 of typology 1 reflects a household with an corner property, i.e. two street frontages. The general response made to such situations is to attempt to close off one street frontage in an attempt to create privacy. The rest of the erven is left open for the construction of the future house. Roof structures were placed in odd positions in response to this. In some cases the roof structures were placed very close to the temporary structures, which created odd dysfunctional spaces. In the case of pattern 2, the space appears to be used efficiently.

**Typology 2**

Pattern 1 of typology 2 presents the same situation where large spaces are wasted at the front of the erven. In some cases the roof structures were placed too close to the temporary structures. Only very narrow passages existed between the two. Odd spaces are created again.

Pattern 2 could have been avoided if the roof structure were rotated 90° and placed closer to the street. Living space and privacy would have been optimised. In the diagram odd spaces are created that could have been avoided. Garden space occupies too much of the erven, considering that the need is for living space.

**Typology 3**

The same picture is presented within the two patterns in typology 3 as in typology 2. Too much space is created at the front. Space has not been optimised.

EXTENSION 6

3. ANALYSIS OF THE USE OF SPACE

Space appears to be optimally used in these cases. The placing of the water closets doesn't seem to affect the process of consolidation or the optimisation of the use of space.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

4.2. BUILDING ACTIVITY PROFILE

4.2.1 INTRODUCTION

This section is meant to provide an overview of the building activities taken place in the two case study areas. Various activities within the construction process is analysed, e.g. the type of building materials used to construct temporary structures, the builders used, transport of building materials, the cost of building materials, etc.

EXTENSION 10

EXTENSION 6

4.2.2. MATERIALS

- 52% of temporary structures were constructed from corrugated iron and 25% from metal sheets. This is quite an abundant usage of metal.
- The remaining categories of wooden boards, pre-cast slabs, and asbestos contributed to 17%, 3% and 3% of usage respectively.
- Quite interestingly to note though, is that none of the shacks made use of bricks or any materials classified as permanent. Only temporary materials were made use of.

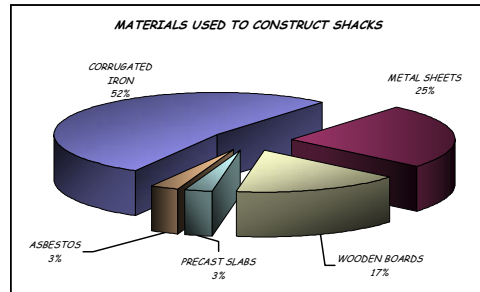


CHART 32a: Materials used to construct shacks

- On further analysis, it was found that the houses constructed did indeed make use of only permanent materials (bricks) only.

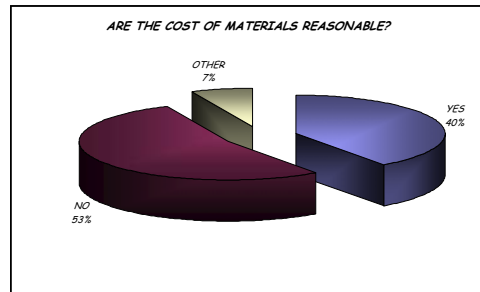


CHART 33a: Cost of materials

- Of the temporal structures built, 52% was constructed from corrugated iron and 21% from metal sheets.
- The remaining categories of wooden boards and pre-cast slabs contributed to 21% and 6% of usage respectively.
- As in the case of extension 10, all shacks seem to have been constructed from materials classified as temporary.
- All houses made use of bricks and other permanent materials. In the case of the shacks, the use of materials is directly reflective of the pie chart below.

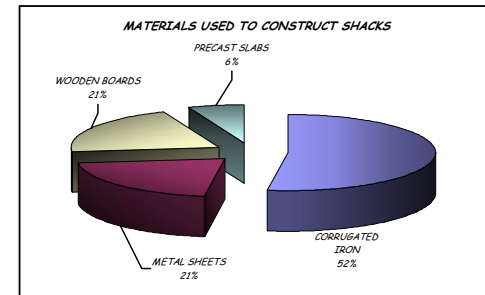


CHART 32b: Materials used to construct shacks

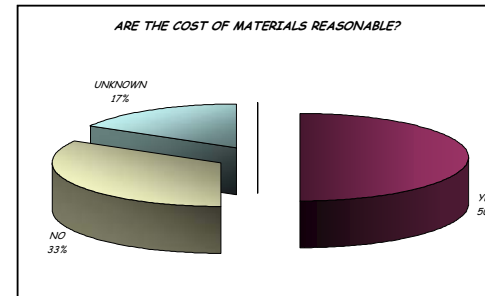


CHART 33b: Cost of materials

CHAPTER 6: COMPARATIVE ANALYSIS – 4. OVERALL PICTURE

EXTENSION 10

- More than half of these residents think that the cost of materials is quite unreasonable. The remainder reflected the opposite opinion with one or two unsure.
- These results are however related directly to being knowledgeable about where to get a bargain. Some people had purchased materials during a discounted period and upon returning for a second purchase, the materials had become expensive again.
- In other cases, certain materials were expensive whilst others were a bit more out of range. This reference is made to one of the worst off families within this extension. The family has a single source of income, i.e. the father has occasional part-time employment. The flow of income into this family is therefore not consistent since it is very rarely that the father of this family is able to secure work. It is a family of nine that are more or less totally reliant on handouts. The creativity and skills inherent within this family has however enabled the completion of covering the roof structure provided by making their own bricks and purchasing some as well with the necessary window frames. This family considered the cost of materials to be reasonable. However, such creativity is not in abundance in the area and their situation and success in this regard is specific to their resources, standards, and needs. Others may have thought of this alternative but chose not to because they differ in opinions, resources, etc.

EXTENSION 6

- Observing the response to the cost of materials produced results that imply reasonable prices. 50% of residents found the cost of materials to be reasonable, whereas 33% were dissatisfied with the price paid. There were however a few that were uncertain (17%). Such statistics point out that the cost of materials is 33% of the time an inhibiting factor in terms of consolidation.

4.2.3. MATERIAL SUPPLIER

- 20% of people were unaware of material suppliers' existence or location, whether within the confines of Mamelodi or outside it.
- Materials were sought within the neighbourhood, within Mamelodi, and outside Mamelodi. All three categories were almost equally valued, i.e. 28%, 23% and 29% respectively.
- From observation of the types of extensions that were made and the suppliers sought, it can be concluded that the suppliers sought outside were for the construction of houses with the use of permanent materials and those sought within Mamelodi and the neighbourhood were for the construction of temporary structures.

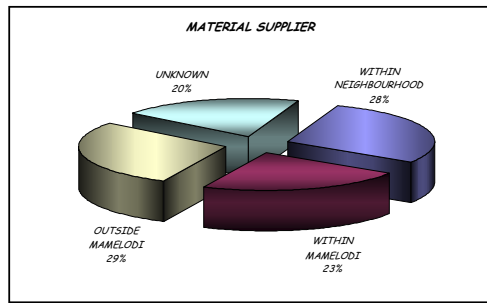


CHART 34a: Material supplier

- Within Mamelodi (inclusive of neighbourhood) we find more informal entrepreneurial activity in relation to material suppliers and externally more formal businesses are found.
- There the fact that 29% had purchased externally and 51% internally also reflects that a greater percentage of temporary structures had been constructed as opposed to houses.

- Quite a large percentage of people were unaware (56%) of material suppliers' existence or location, whether within the confines of Mamelodi or outside it. This lack of awareness amounts to more than half of the people interviewed.
- Materials were sought within the neighbourhood, within Mamelodi, and outside Mamelodi.
- 59% of the cases were unknown. Residents could not recall the suppliers of the materials used.
- Very few (4%) suppliers were sought in the neighbourhood, whereas 19% was purchased from within Mamelodi and 11% from external sources. Other sources were cases where materials were given to them by either family members or employers.

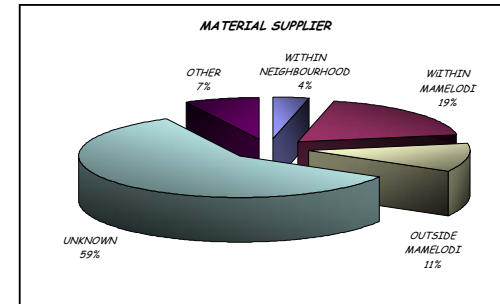


CHART 34b: Material supplier

- In Extension Six the suppliers sought outside were for the construction of houses with the use of permanent materials and those sought within Mamelodi and the neighbourhood were for the construction of shacks. The fact that 11% had purchased externally and 19% internally also reflects that a greater percentage of temporary structures had been constructed as opposed to houses. The type of housing provided in this area was merely a site and service effort. The effort to build up to the completed house would therefore take a little longer as opposed to and area provided with roof structures (extension 10).

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

EXTENSION 6

4.2.4. TRANSPORTATION

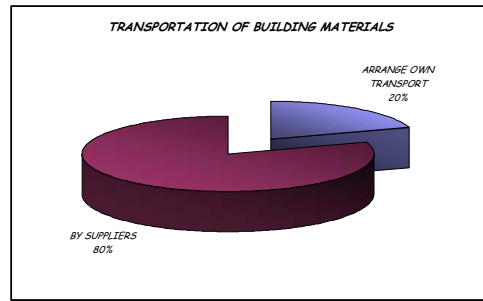


CHART 35a: Transportation of building materials

- 80% of the residents made use of the transport provided by the suppliers with a fee attached to this service and a mere 20% of the people find their own transport.
- In some instances, people prefer to carry the supplies home, depending on the size of the load. In other instances, (majority) the load proves to be too large to even consider an alternative to being delivered by the supplier. The distance of transportation is also an important consideration.

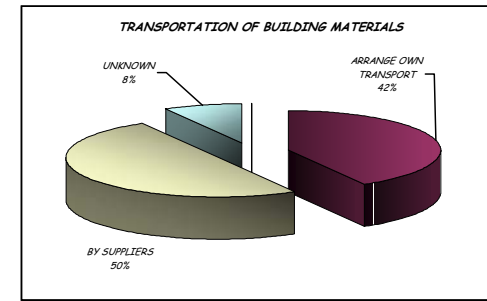


CHART 35b: Transportation of building materials

- Looking at the transportation of the building materials purchased, one can see that 50% of the residents had used the transport provided by the suppliers at a price and 42% seek out transport. 8% of people were unsure of the past activities. If the loads are manageable to carry, then residents simply do so.

4.2.5. FUNDING SOURCES

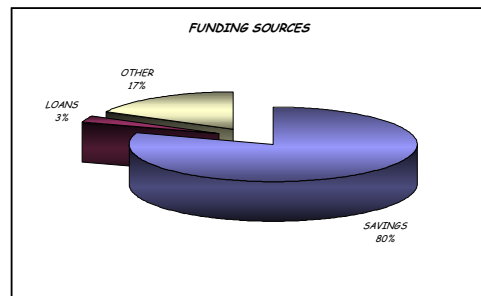


CHART 36a: Funding sources

- A large number of the structures were paid for via savings (80%).
- Means of payment also seems to originate from loans (from work - 3%), and other (retirement money, given to them by family or employees - 6%).

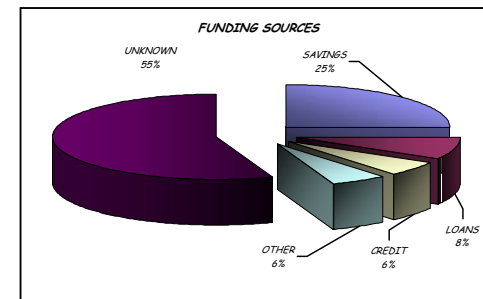


CHART 36b: Funding sources

- Information on a large number of the additions built was unknown (55%).
- However, their means of payment seems to originate from their savings (25%), loans (from work - 8%), and credit (with the supplier - 6%).
- Other means reflect being given materials by either family members or an employer. No payment was required in those cases.
- Those that have entered into agreements as far as loans are concerned seem to have arrangements with employers.
- Credit facilities are created where building materials are purchased on credit.
- Residents within this area have therefore sought other methods of funding apart from savings to be able to construct their homes.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

EXTENSION 6

4.2.6. BUILDERS

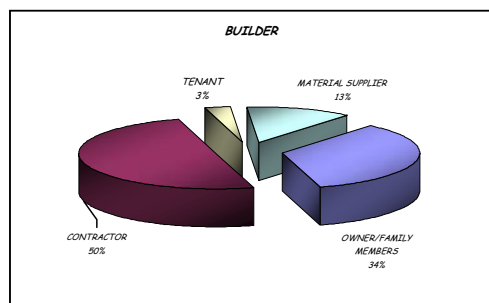


CHART 37a: The builder

- Most households employed a contractor to build the homes (50%). This is not representative of the lack of skills within the area since 34% of the extensions were made by the owners and some were assisted by family members. Construction skills are prevalent here.
- In most cases the contractors were hired to build the actual house (permanent materials) and the construction of shacks mainly entailed the owners, family members, tenants and material suppliers.
- Tenants were involved in erecting shacks when they moved in and material suppliers were requested in some instances where skills were lacking within that family. There are however a few cases where the owner is in the process of constructing his own home.

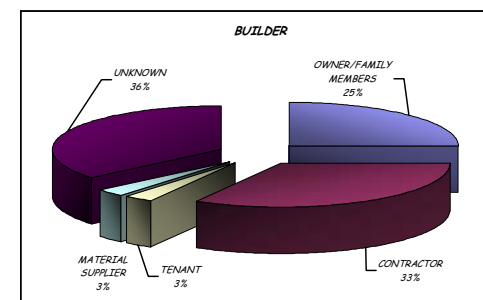


CHART 37b: The builder

- Most households employed a contractor to build homes (33%). This is not representative of the lack of skills within the area. 25% of the extensions were made by the owners and some were assisted by family members.
- Quite interestingly to note is that most of the private contractors employed were for the purposes of constructing the homes (permanent structures).
- Some permanent structures however, are in the process of being constructed by the owners, indicating that there are skills prevalent in this area.
- In other cases materials suppliers were used to erect the shacks purchased from them and tenants that moved onto the erf had constructed their own shacks. Quite a large number of these residents could not recall the builders of their structures.

4.2.7. PROBLEMS

- Amongst the numerous problems mentioned by the residents, the more glaring issues seem to be that of financing and unemployment.
- Many are either unemployed or do not earn enough to be able to enclose the structure provided.
- The cost of building materials also tends to be beyond the reach of many.
- Other problems include issues of construction conducted by government, where there are gaps between walls and prepaid meters are registered under incorrect names.

- The most glaring issues that were made apparent within this extension were that of the dire need for funding. Construction of the homes becomes very difficult when families need to be sought after first before considering extending homes. Income sources within families can only spread so far.
- Amongst the other problems mentioned were leakages within shacks, the process of constructing the homes was slow and the storage of materials becomes quite problematic.
- A more serious issue was that of water. Two households had been living in the area without water for quite a while. One particular household had occupied the area for 8 months before water was made available or the functioning of the toilet was initiated. The other household didn't have to wait that long.

## CHAPTER 6: COMPARATIVE ANALYSIS

## EXTENSION 10

## EXTENSION 6

## 5. FACTORS AFFECTING CONSOLIDATION

## 5.1. INTRODUCTION

This section will identify the factors affecting consolidation based on the issues that have been exposed by the trends. However, the factors to be identified will be analysed in terms of consolidators and non-consolidators. It is safe to say at this point that residents within typology 1 are non-consolidators (little or no permanent structures were produced) and residents within typologies 2 and 3 are consolidators.

The structure will be as follows:

**Firstly**, the profiles of non-consolidators will be developed and factors affecting consolidation will be identified.

**Secondly**, the same process will be conducted for the consolidators, i.e. profile development and identification of factors affecting consolidation.

**Thirdly**, an overall profile will be developed of issues that have not been covered in the first two sections, where other factors will be identified. The issues will specifically relate to the hypothesis developed.

**Fourthly**, after each of the above sections, the hypotheses developed at the beginning of the chapter will be tested.

It is at this point, that a recap of the hypotheses would be needed:

1. Larger families imply less consolidation
2. Less income implies less consolidation
3. More time implies greater consolidation
4. More expenses imply less consolidation
5. More savings implies more consolidation
6. Rental activity is prominent in the initial stages of consolidation
7. Lack of use of building skills implies less consolidation
8. High cost of building materials implies less consolidation
9. High cost of contractors (builders) implies less consolidation
10. Uses within the structures increase with formality
11. Complexity in the use of the erven increases with formality
12. The area occupied by the houses / structures increases with formality

Considering the structure of identifying the factors that affect consolidation and the manner in which the hypotheses are being answered, only the first six will apply to non-consolidators and consolidators. The last five will be overall hypotheses involving both consolidators and non-consolidators together, not separately.

**NOTE:** none of these factors can be looked at individually and be stated to be 'THE' factor that has influenced consolidation. It is the interaction between the factors that either creates a suitable environment for consolidation or not. Examples will be given where possible to illustrate this.

## 5.2. Non-consolidators

Even within the non-consolidators, there are successful households and less successful households, i.e. some are able to build more or larger additions than other households. Characteristic of the unsuccessful households are **financial constraints**. The percentage of formal employment appears to be low, implying that a stable, reliable and regular supply of income does not exist to such a great degree. As such, residents tend to allow the occupancy of tenants on their property for an extra source of income. On average, each family is **limited to an average at least two sources of income**, which is not always regular and stable, i.e. the type of employment within every household does not always consist of formal employment. Rental activity, grants, and entrepreneurial activity make up the component of income sources. The **type of income sources** therefore inhibits consolidation. **Expenses** made by households also tend to be large, rendering the ability of these households to save, difficult.

In comparison, households able to produce more structures benefited from a **greater supply of formal sources of income, a greater number of income sources, smaller family sizes, more time, and fewer expenses**. However, not all the positive influencers of consolidation exist in isolation of the negative factors. *Example, although one household had a small family size and arrived earlier, consolidation was restricted because of the limited number of income sources, the type of income sources (entrepreneurial/informal), and many expenses (refer to chapter 5, section A, typology 1, 2.1.6. conclusion).*

The level of consolidation attained is therefore minimal. Families have managed to produce at least two structures characterised as temporary (built of temporary materials). The structures produced, however, tend to be larger than the temporary structures produced by the consolidators (refer to 1.8.a.). Considering affordability levels were low and family sizes were large, these households could not afford to construct permanent structures, but the **immediate need** of housing the family had to be met. This is characteristic of the initial stages of consolidation as mentioned by Hart & Hardie (refer to chapter 3, 6.3.1., A.). A compromise between the quality of the structure and space was made to accommodate the household members. Considering the haste, minimal time was spent on saving and constructing additions (2years). Coverage of the housing units is approximately 17% (refer to 1.8.b.), which leaves the rest of the erven open for other activities.

## 5.2. Non-consolidators

Non-consolidators can also be broken down into those that are successful and those that are less successful. The households that were not so successful are characterised by **large family sizes (refer to 1.1.)** and **great expenditure levels (refer to 1.5.)**. As a result, **abilities to save are minimal (refer to chapter 5, section B, typologies 1 and 2, 3.1.6. conclusion, 3.2.6. conclusion)**. The number of income sources tends to average three (refer to 1.2.) with formal employment accounting for 66% (refer to 1.4.). A large component of the income sources is therefore regular.

Households that were more successful had greater income sources, less expenses, smaller family sizes and greater time to consolidate, *example the households most successful in the number of units produced had the benefit of numerous income sources and the ability to save. Inhibiting factors included large family sizes and numerous expenses (refer to chapter 5, section B, typology 2, 3.2.6. conclusion).*

On average 3 additions have been produced, majority of which were temporary structures averaging 14m<sup>2</sup> (refer to 1.8.). This is insufficient considering the number of family members to be accommodated. On average, each person has 7m<sup>2</sup> to himself or herself. Approximately 23% of the erven is covered by the structures (refer to 1.8.b.). This leaves a large amount of space open for the construction of the future house or other activities. On the erven, all activities listed tend to occur; therefore, the complexity in the use of the erven is evident, ranging from gardening to storage (refer to 1.14.). However, uses within the structures tend to reflect basic uses, i.e. bedrooms, kitchens and out-door toilets. Privacy needs tend to be minimal.



## CHAPTER 6: COMPARATIVE ANALYSIS

## EXTENSION 10

The uses on the erven appear minimal in comparison to the consolidators (refer to 1.14.), i.e. gardens, agriculture, rental, parking areas, some commercial activity, and a few clotheslines. Uses within the structures are also minimal compared to consolidators (refer to 1.13.).

Therefore, in terms of the hypotheses:

- Larger families imply less consolidation**  
This hypothesis was proved incorrect, i.e. the large family managed to be the most successful, but no permanent structure were produced. *Example, although one household had the largest family size, arrived later than all other households, and had many expenses, the type and number of income sources assisted this households to, in comparison to the others, be most successful (refer to chapter 5, section A, typology 1, 2.1.6. conclusion).*
- Less income implies less consolidation**  
In this case, this hypothesis was proven correct. Families were restricted by insufficient regular income sources, many expenses, and a lack of ability to save.
- More time implies greater consolidation**  
Since the time of arrival of the residents in all typologies was around the same time, time as a factor has been excluded.
- More expenses imply less consolidation**  
Households with many expenses had not constructed any permanent additions. This hypothesis is therefore, correct.
- More savings implies more consolidation**  
The total opposite of this hypothesis was proven correct, i.e. minimal or no savings was made. Therefore, consolidation has not been achieved.
- Rental activity is prominent in the initial stages of consolidation**  
Considering that the non-consolidators are representative of the initial stages of consolidation and rental activity occurs only here, this hypothesis is correct. As mentioned by Hart & Hardie (refer to Chapter 3, 6.3.1., A.), rental markets are used to stimulate extensions in self-help contexts.

## 5.3. Consolidators

Within consolidators, there were some that were more successful than others. Although the expenditure levels and family sizes on average amount to the same as non-consolidators, consolidators are able to consolidate for various reasons, the main one being financial 'security' compared to non-consolidators. Consolidators tend to have the same amount of income sources as non-consolidators but have a greater percentage of residents that are employed formally (refer to 1.2. and 1.4.), rendering these households supported by a regular source of income. This enables the residents to save (refer to 1.6.) and consequentially make additions, permanent or temporary. The lack of rental activity (refer to 1.3.) reveals the positive financial status quo of the households. Households that were not as successful were inhibited by financial constraints, i.e. many expenses, number and type of income sources. Arriving later than other households also prevented consolidation from reaching better standards. These households are also characteristic of larger families.

An example of

The number of additions built average 2,5 per households of which 54% are temporary structures and 46% are permanent structures (refer to 1.7, and 1.8.). The temporary structures built tend to be a bit smaller than the temporary structures produced by non-consolidators. The permanent structures on the other hand, average 47m<sup>2</sup>. This implies that the space occupied by these structures is much larger than that of non-consolidators, i.e. the coverage of structures of consolidators average 36%, twice the coverage of non-consolidators.

Within the structures built, uses tend to be greater, i.e. there are more uses compared to the uses within the structures of the non-consolidators). Luxury uses are included, such as indoor toilets and bathrooms, lounges and dining rooms. Uses of the erven also appear more diverse. There are additional uses to the situations of the non-consolidators, i.e. storage, tents, and the provision of services.

Interpretation of the hypotheses:

- Larger families imply less consolidation**  
In this case, this hypothesis is correct. The opposite was proven, i.e. smaller families, greater consolidation.
- Less income implies less consolidation**  
The number of income sources was less as in the case of non-consolidators, but the regular income from formal employment would mean a greater income than non-consolidators. This hypothesis is still true because the total opposite applies, i.e. greater income, greater consolidation.

## EXTENSION 6

Therefore, in terms of the hypotheses:

- Larger families imply less consolidation**  
In this case, this hypothesis is true. Less consolidation has taken place with families averaging five.
- Less income implies less consolidation**  
Although the households had more regular income sources and three income sources that included rental activity, the residents were not able to consolidate. The hypothesis is therefore incorrect.
- More time implies greater consolidation**  
As mentioned in extension 10, this aspect has been eliminated.
- More expenses imply less consolidation**  
This hypothesis is correct. Households had many expenses and consolidation was not taking place.
- More savings implies more consolidation**  
Households were able to save but not to a great extent. This hypothesis is therefore correct.
- Rental activity is prominent in the initial stages of consolidation**  
Rental activity takes place throughout non-consolidators and consolidators but appears more with non-consolidators. The hypothesis is correct.

## 5.3. Consolidators

Consolidators tend to show a slightly different picture. Income sources, the amount of expenses, and formal employment are similar to the financial situation of non-consolidators (refer to 1.4. and 1.5.). The only differences are that tenant activity is reduced considerably, family sizes are larger, averaging seven and the ability to save is much larger compared to non-consolidators.

Households that were more successful benefited from having limited expenses, a greater number of income sources, more formal employment and more time, *example, a household had the advantage of three income sources and a smaller family size, but had arrived a year later. Consolidation was still successful (refer to chapter 5, section B, typology 4, 3.4.6. conclusion).*

Households that were less successful displayed larger family sizes, many expenses and were disadvantaged in terms of time, i.e. arrived later than the other households. *An example of such a case is where a household had the ability to save, but only had two sources of income (one formal employment source) and was limited by large family size and many expenses (refer to chapter 5, section B, typology 3, 3.3.6. conclusion).*

An average of three additions has been built per households, 52% temporary structures and 48% permanent. The size of the structures average 13m<sup>2</sup> for temporary structures and 45m<sup>2</sup> for permanent structures and cover approximately 37% of the erven combined. This entitles each household member to 12m<sup>2</sup>. This is sufficient for the large family sizes.

The use of space within the structures includes more uses than non-consolidators structures (refer to 1.13.). The use of space on the erven tends to similar to non-consolidators but if viewed in typologies, the picture would be different, i.e. a distinct decrease in the complexity of the use of space would be observed.

Interpretation of the hypotheses:

- Larger families imply less consolidation**  
This hypothesis is incorrect. The larger families of the consolidators did not prevent consolidation to occur.
- Less income implies less consolidation**  
Households were supported with more than two sources of income, of which 60% was from formal employment and consolidation has taken place. The hypothesis is correct, i.e. the opposite has been proven.

## CHAPTER 6: COMPARATIVE ANALYSIS

## EXTENSION 10

3. **More time implies greater consolidation**  
As mentioned previously, time has been excluded as a factor.
4. **More expenses imply less consolidation**  
The hypothesis is incorrect. More expenses, in this case resulted in greater consolidation. Other factors have to be taken into consideration.
5. **More savings implies more consolidation**  
Households were able to save much more than non-consolidators, so this hypothesis is correct.
6. **Rental activity is prominent in the initial stages of consolidation**  
Rental activity only transpired with non-consolidators. No rental activity occurred here; therefore, the hypothesis is correct.

## 5.4. Overall picture (refer to section 3)

In relation to the **cost of building materials**, more than half (53%) of the residents agreed that it was expensive. Approximately one third of additions produced were permanent structures. The price of permanent structures could have affected the results.

Builders used tend to be contractors 50% of the time, whereas 34% of the time owners use their skills. Three observations were made from this in terms of the typologies, i.e. residents of typology 1 employed contractors majority of the time, residents of typology 2 built 95% of the structures, and typology 3 observed the construction of temporary structures by residents and permanent structures by contractors. **The cost of the contractors** has therefore affected the ability of residents of typology 1 to consolidate further, whilst the use of **building skills** in typology 2 have assisted consolidation. Within a study conducted by Napier, 1983 (refer to **chapter 3, section 7.2.2.**) a few of the factors affecting consolidation were:

- The varying levels of building skills
- The costs of formal and informal building by builders

By way of this study, these factors have been seconded.

It was also stated by Gilbert & Gugler that the cost of materials had hampered consolidation activities in other areas (refer to **Chapter 3, section 6.3.2., B.**). Findings of this study correlates with other findings.

## Overall hypotheses:

7. **Lack of use of building skills implies less consolidation**  
In this case, the lack of use of building skills of residents in typology 1 has proved this. The opposite was also proven by residents of typology 2 (refer to 2.3. above).
8. **High cost of building materials implies less consolidation**  
Although residents have complained about the cost of building materials, consolidation has taken place but only where income sources was greater. Others, with less income were not so successful. Maybe, consolidation would have been faster, had the price of materials been cheaper. This hypothesis is correct.
9. **High cost of contractors (builders) implies less consolidation**  
Non-consolidators seemed to have used contractors the most and have produced little or no permanent structures. The cost of the use of builders cannot be established due to the lack of information. This hypothesis cannot be proven.
10. **Uses within the structures increase with formality (refer to 1.13.)**  
This hypothesis is correct. The stages reflected within the movement from non-consolidators to consolidators depict exactly what is hypothesised.
11. **Complexity in the use of the erven increases with formality (refer to 1.15.)**  
The complexity in the use of space does increase with formality.
12. **The area occupied by the houses / structures increases with formality (refer to 1.14.)**  
Quite visible from the coverage of the structures, consolidators have produced larger additions and cover more space than the structures built by non-consolidators.

## EXTENSION 6

3. **More time implies greater consolidation**  
This factor has not been counted.
4. **More expenses imply less consolidation**  
This hypothesis is incorrect. Despite many expenses, some households were able to consolidate.
5. **More savings implies more consolidation**  
Families were able to save to a greater degree than non-consolidators, which proves the hypothesis is correct.
6. **Rental activity is prominent in the initial stages of consolidation**  
Rental activity is limited or nonexistent within the consolidators. This hypothesis is correct.

## 5.4. Overall picture (refer to section 3)

Thirty, three percent of residents felt that the **cost of building materials** is high, whilst fifty percent agreed that the materials were reasonable. It was found that residents within this area tend to find bargains and sales or make bricks instead of buying them. Majority of the structures within this area are also temporary structures, which would imply that the cost of temporary materials is reasonable.

A third of the time, building skills was used by the residents. Non-consolidators tend to use private contractors to a greater extent than consolidators. Whilst contractors were used to construct temporary structures where non-consolidators are concerned, contractors were used to construct only permanent structures when looking at consolidators. The greater use of contractors by non-consolidators could also be a contributor to less consolidation. This also implies that the **building skills** are not used by non-consolidators.

## Overall hypotheses:

7. **Lack of use of building skills implies less consolidation**  
The prevalent use of contractors to construct temporary structures indicates that this hypothesis is true in relation to non-consolidators.
8. **High cost of building materials implies less consolidation**  
In this case, the two do not correlate. Building materials were considered reasonable, but less consolidation has taken place. The hypothesis is incorrect.
9. **High cost of contractors (builders) implies less consolidation**  
Information related to costs was restricted due to the reluctance of residents. This hypothesis cannot be proven.
10. **Uses within the structures increase with formality (refer to 1.13.)**  
This is true, i.e. uses within structures increase with formality.
11. **Complexity in the use of the erven increases with formality (refer to 1.15.)**  
The total opposite is true if looked at in the context of typologies. However, within consolidators, the use of space equals the same degree of complexity as non-consolidators.
12. **The area occupied by the houses / structures increases with formality (refer to 1.8.b.)**  
Coverage of structures increases from non-consolidators to consolidators. This hypothesis is correct.

It is important to remember that throughout the exercise of identifying factors affecting consolidation, one single factor cannot be isolated without considering the impact of other factors. The factors affecting consolidation have to be seen within its context to be understood properly.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

4. INTRODUCTION

This section adds to the aim of deriving factors that influence consolidation by providing an overall picture (broader than typologies within areas) of the two areas. It is broken down into three sections, namely, the socio-economic profile, building activity profile and land use profile.

4.1. SOCIO-ECONOMIC PROFILE

4.1.1. INTRODUCTION

Before exploring the details of the households and families, it is important to note the subtle differentiations identified in order to avoid confusion when referred to throughout the document. In terms of households, two levels can be distinguished. Firstly, there are **households**, which are defined as *the composition of all people in a single erf*, example, on a single erf there are three shacks, one comprising of the original family/owners (single family of six) of that particular erven/house. The other two shacks house tenants (two in each shack). In this case the household would be the composition of all these people, i.e. household size is ten. This household structure can further be described as a single family (focus is on the owners' family) with tenants.

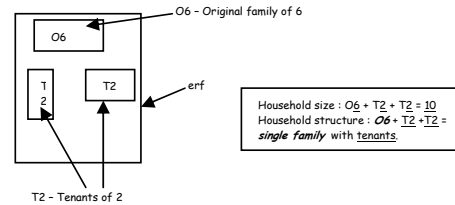


FIGURE 63: Distinction of households from families

However, as one delves further into this, a level below, one can break down the **family** structure in much the same way, i.e. with reference to the owners' family. The family structure would be defined as *the structure/composition of the original family on the erf*. The family size would be six, comprising of both parents and four children and would be categorised as having a nuclear family structure. It is important to note though, that in terms of family structure, only the owners'/dwellers family is analysed.

It is therefore important to note how the two levels of households will be distinguished from one another. With reference to the household that concerns all people on that particular erf, they will remain **households**. However families analysed within these households will be called **family(ies)**.

EXTENSION 10

4.1.2. THE HOUSEHOLDS

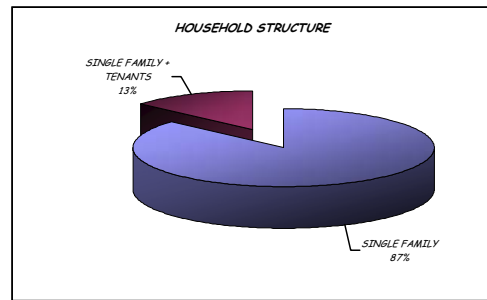


CHART 23a: Household structure

- The type of household structure that prevails in the area are categorised as follows: a. **single family** (consisting of family members including grandmothers, aunts, uncles, daughter-in-laws, etc., that function as a family unit), b. **single family with tenants** (the single family as described above inclusive of tenants).
- 87% are single families and 13% are single families with tenants. In total, 83 people reside within the 15 households interviewed.
- Household sizes vary quite dramatically between 3 and 9 people,
- The average number of people within each household amount to 5.53.
- Households of 7 people seem to occur most frequently in this area.
- Looking at this data one can ascertain that not much rental housing (2 out of 15 households) is occurring in this area.

EXTENSION 6

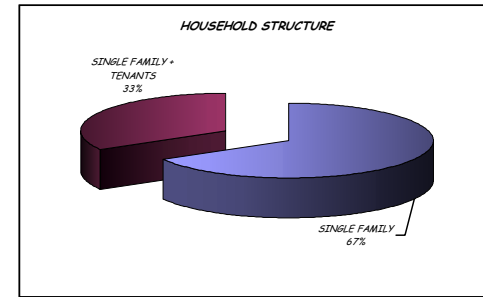


CHART 23b: Household structure

- The type of household structure prevalent within this area mirrors that of extension 10, i.e. there is a mix of the two categories - **single family and single family with tenants**.
- Single families comprise of 67% of the residents whilst single families with tenants make up the rest (33%).
- There are 77 people residing within the 12 households interviewed.
- Household size ranges between 3 and 12 people.
- Average of 6.4 people in each household.
- The most frequently occurring household size of 4.
- A third of the sample interviewees had tenants. This reflects a greater income into this area because of the amount of rental activity.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

EXTENSION 6

4.1.3. THE FAMILIES

With further analysis of the family structures, one can categorise these single families into *nuclear families* and *woman-headed families*. In this case there are also variations of the two types of families mentioned. They have been categorised as follows: a. **nuclear family** (is a single family that is composed of both mother and father, and children), b. **nuclear + extended** (a nuclear family as mentioned above with other relatives, e.g. aunt, uncle, etc.), c. **woman-headed** (a family that lacks a father and the household is run by a woman), d. **woman-headed + extended** (a family as described above with other relatives such as a grandmother, brother, cousin, etc.).

- All the categories of families mentioned above are applicable here: a. **nuclear**, b. **nuclear with extended**, c. **woman headed**, d. **woman headed with extended family**.
- There are many more nuclear families (73%) in comparison to the woman-headed families (13%).
- Woman-headed families with extended families claim just 7%, which amounts to a single household. This particular case is where a woman runs the household and houses her son and his family.
- The nuclear family that exists with an extended member (7%), on the other hand, can be accounted to a brother of the head of the household. Family structures are therefore quite regular within this area.

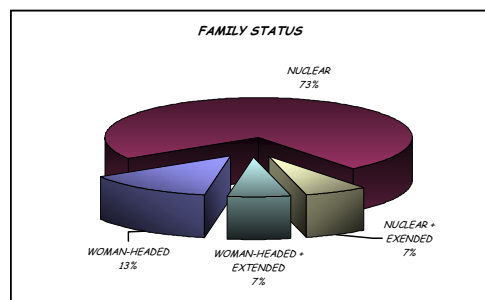


CHART 24a: Family status

- In the case of families studied the composition amounts to 77 people within 15 households interviewed
- An average of 5.13 family members in each household.
- The range of family members are also between 3 to 9 and
- The most frequently occurring family size is 5.

4.1.4. DENSITY

- The gross density is 163p/ha and the nett density is 266p/ha. Total number of stands is 655.

4.1.5. OCCUPANCY

- Residents within this extension are quite established in this area, having occupied for a period of between **6 to 10 years**.
- Majority (53%) have lived in extension 10 for the last seven years,
- 33% have lived here for six years and the
- The remainder (14%) have maintained residence for eight to ten years.
- Majority of the people (80%) had lived in phase 3 previously with a handful (the remainder) that originally occupied phase 2 and Mamelodi West.
- The structures occupied by the residents in these areas were mainly shacks with one exception - one resident lived in a house.

- The categorisations of family household structures within this area take the form of: a. **nuclear**, b. **nuclear with extended**, c. **woman headed with extended**.
- Majority of the family household structures reflect that of nuclear families (75%). Only two families have extended family members living with them (nuclear and extended - 17%). It is composed of seven family members and four tenants.
- One family household is run by a woman and also houses an extended family member (8%). In the case of the latter family, it houses a grandmother with her daughters and their children. It is the second largest family amongst those interviewed.

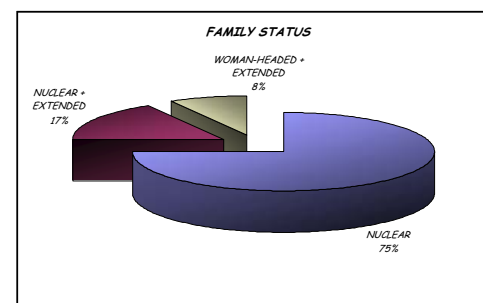


CHART 24b: Family status

- A total of 69 people within the 12 households interviewed.
- The average family size amounts to 5.75
- Family size ranges between 3 and 10.
- The most frequently occurring family size is 4. Family household structures seem to be quite regular with average family sizes.

- The gross density is 219p/ha and the nett density is 364p/ha with 1667 stands.

- Residents within this area seem to have occupied between **1 and 6 years**.
- Some are fairly newcomers to the area having moved in about a year or two ago (8%).
- Others (42%) have established themselves a bit longer (five to six years),
- Whilst 42% had occupied the area between 3 to 4 years.
- The largest composition seems to be that of residents living here for four years (34%), followed closely by those living here for five years (25%).
- One hundred percent of these residents had previously occupied phase 1.
- Eleven out of these twelve families had occupied shacks previously and one had lived in a rondavel.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

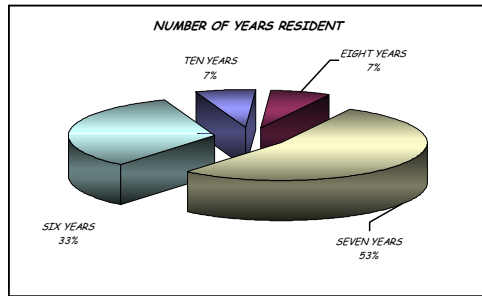


CHART 25a: Number of years resident

EXTENSION 6

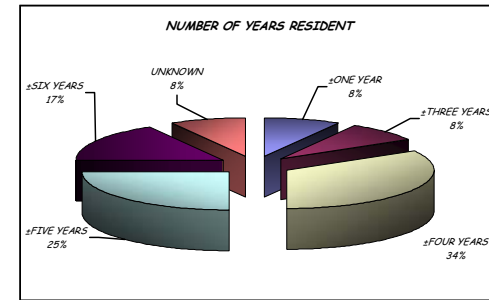


CHART 25b: Number of years resident

4.1.6. EMPLOYMENT AND INCOME

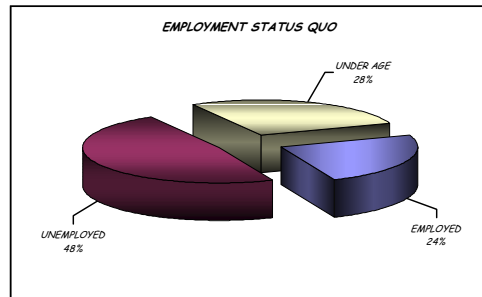


CHART 26a: Employment status quo

- The e.a.p. are deemed to be all the persons in a particular area/community/country, etc, between the ages of 15 - 64 years.
- Virtually half of the economically active population (e.a.p.) of residents interviewed are unemployed (48%).
- Just 24% of the residents are employed.
- The remaining percentage is accounted for as children ranging from 0 - 14 years of age. Hence emphasising the concern raised by the residents of unemployment and financial difficulties.

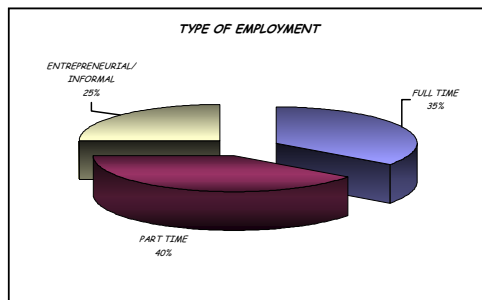


CHART 27a: Type of employment

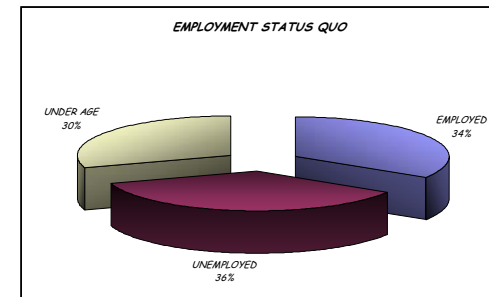


CHART 26b: Employment status quo

- With regard to the employment status quo within extension six, we find quite a large percentage of this sample to be unemployed (36%).
- A mere 34% of people are employed. The economically active population amounts to 70% and of this, approximately half are employed.
- 30% are underage.

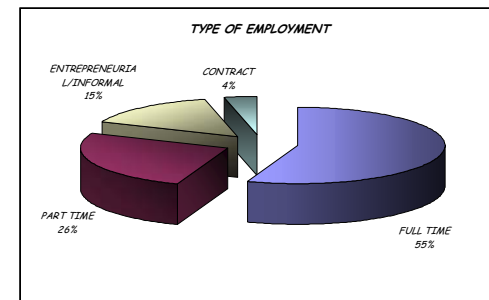


CHART 27b: Type of employment

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

- Of the employed category of people, 35% have full-time employment, 40% part-time, and 25% entrepreneurial/informal.
- Employment ranges from working as a waitress/waiter, sales person, to a taxi driver or selling vegetables from ones home or food at schools, etc.
- Not only is the percentage of those employed low, but the type of employment distribution (entrepreneurial/informal 25%, part-time 40%, and full-time 35%) is indicative of a lack of security and stability of employment and their source of income.
- Majority of the employed people are either working part-time or undertake entrepreneurial/informal activity (65% combined). This has a direct implication on one's ability, not only to survive the day to day demands (food, water, shelter), but also one's ability to eventually build up one's homes.

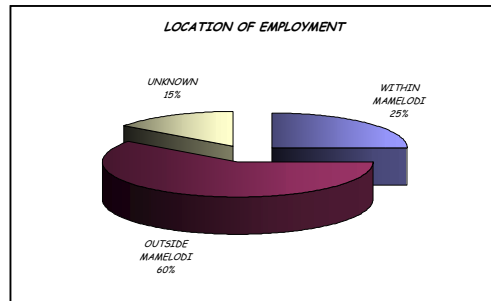


CHART 28a: Location of employment

- Adding on to this, we find that 60% of the employed residents work outside Mamelodi
- A meagre 25% work within the confines of Mamelodi.
- Travelling expenses for the working population ranges between R10 a day to R1 000 a month.

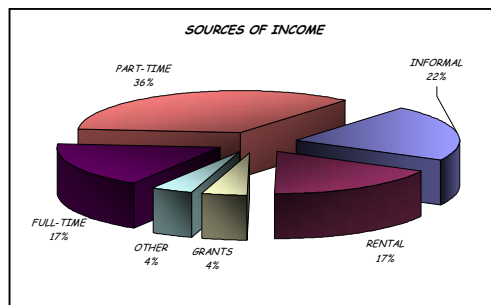


CHART 29a: Sources of income

- As far as the sources of income are concerned (refer to chart 29a), 4% are acquired from grants, 22% from informal employment and 17% from rental activity.
- The category labelled other is meant to cover any other sources not covered by the categories specified in the pie chart above. In this case it would be pension received by an elderly woman.
- Part-time employment out-weighs full-time employment by 19%.
- The combination of the two plus informal employment makes employment the major source of income (75%).
- Very few have access to, or qualify for grants. Just one or two households have grants, tenants or receive pension. Employment is therefore vital to these residents' livelihoods.

EXTENSION 6

- With further analysis of the employed population, we find that a percentage of two, more than half have full-time employment (55%). 26% work part-time, 4% on contract, and 15% through entrepreneurial/informal activity. This further emphasises the concern of employment and financial strain being experienced. As a result, families suffer and the structure provided by government remains as is.
- The type of employment ranges from running a spaza shop and working in the construction field, to working in the SAPS and in the European Embassy.
- Quite a large proportion of the type of employment can be accounted for in the full-time and part-time employment percentages (combined - 81%). The sources of income are therefore more reliant.

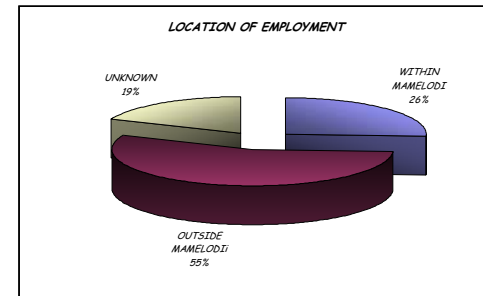


CHART 28b: Location of employment

- In terms of expenses related to employment, more than half of those interviewed, work outside Mamelodi
- 19% are unknown.
- Only 26% have employment within the area.
- Costs range from R20 to R360 on a monthly basis.

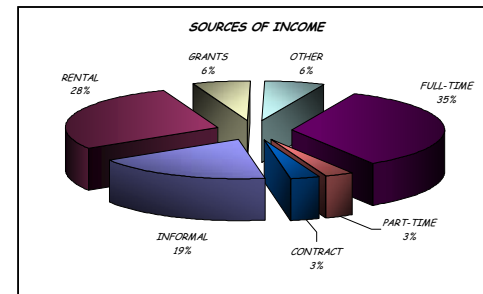


CHART 29b: Sources of income

- Looking at the sources of income implies that employment (whether full-time, part-time, informal, or contract) is the main source of income (60%).
- Quite a large percentage can be attributed to rental activity (28%) and, even less to grants and pensions (8% each).
- Rental activity, in comparison to the employment categories individually, plays a big role as a source of income. It almost equals the percentage of people employed on a full-time basis.



CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

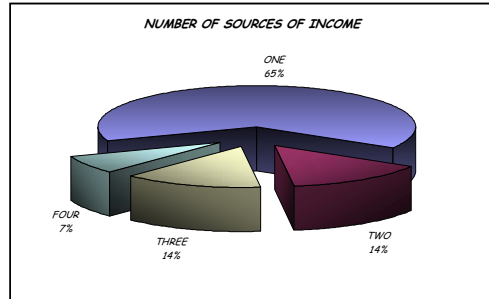


CHART 30a: Number of sources of income

- At a glance one can see that majority of the residents (65%) have a single source of income, be it part-time employment, full-time employment, or informal activity (refer to chart above).
- One family relies totally on the pension received by the head of the household and another family have absolutely no source of income. This family is totally reliant on clothes from the church and any handouts of food that they can get.
- Just a few people have more than one source of income as reflected below. 14% have two sources, 14% have three and 7% have four sources.

EXTENSION 6

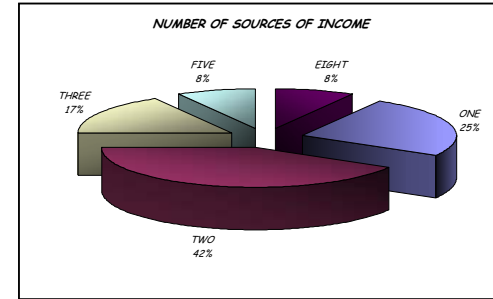


CHART 30b: Number of sources of income

- Further analysis revealed majority of families living off two sources of income (42%).
- 25% had a single source
- Two families (17%) had three sources.
- Two other families were fortunate enough to have more than three sources of income. In the case of the family with five sources, this can be attributed to the housing of tenants, a family bread winner and two grants. The family with eight sources of income can be accounted as follows: income from five tenants, one full-time employed family member, one entrepreneur and one person that receives pension. This is quite a large family and requires a lot of financial support.

4.1.7. EXPENDITURE

The figures below show how households within extension 10 spend their income. It should be noted that on acquisition of this data exact amounts of expenses were not given by the interviewees. Only the type of expenses that were made are reflected here. The information gathered is therefore better reflected as a bar chart below, where one can see the expenses that are accrued much more than the others.

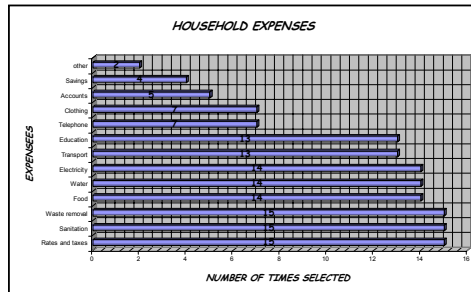


CHART 31a: Household expenses

- On further inspection one can see that all residents pay for waste removal, sanitation, and rates and taxes.
- The most common expense amongst all the residents' is electricity, water and food, which are the basics one needs to survive.
- Following closely is education and transport. Most can afford to send their children to school.
- Lower down we get expenses such as clothing, telephone usage, accounts (furniture, clothing, etc) and lastly are savings. Very few have an extra expense of hospital fees, funeral homes, etc.
- Savings is virtually the last item on their expense list. Not many can afford to put money away. What money is earned is put toward sustaining themselves and their families. Hence their immediate needs are dealt with first.

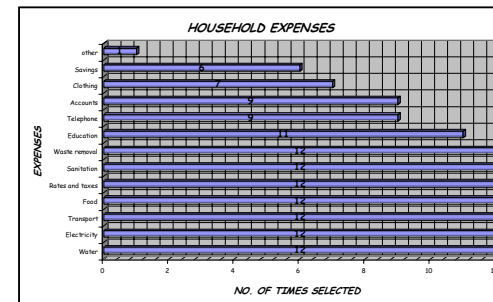


CHART 31b: Household expenses

- Expenses within households seem quite consistent in terms of waste removal, sanitation, rates and taxes, transport, electricity, water, and food. All households have these expenses in common.
- Not too far below is education (11 families) followed by the telephone usage and accounts (9 families).
- Further, along we find that half of the interviewees have the opportunity to save some money.
- Even though there are many expenses to be made, these families are still able to save, which implies that they are supported by a source of income large enough to cater for this.
- 'Other' expenses as reflected by the bar chart are reflective of medical expenses. This pattern is indicative of emphasis being placed on the basic needs first before indulging into luxuries and investments. These residents have indicated clearly by their expenditure that they have priorities. They would be reflective of sustaining and improving the quality of lives first before consideration of anything else. Also quite evident is the ability of all the households to secure all these expenses. The income levels must therefore be sufficient to enable this.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

EXTENSION 10

- Upon further analysis of the residents' decisions, the following was derived: First and foremost, the residents have to make sure that they will not be evicted by paying their rates and taxes. This ensures their security in their own homes. Secondly, residents have to purchase food to eat, pay for the use and consumption of water, and the use of electricity (to cook food, store food, etc). Thirdly education needs to be looked at for the children and transport to work. Some residents pay expenses so that they are not evicted, but cannot afford food or education or any of the other items mentioned. This reflects more or less a five tier decision structure:

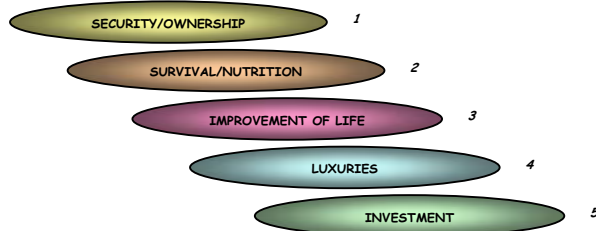


FIGURE 64: Hierarchy of needs and wants in extension 10

- This reflects their hierarchy of needs and wants.
- First they require security, which as previously highlighted is the most important to them. Linked to expenses this would reflect rates and taxes.
- Survival relates to food consumption and purchase, including water and electricity.
- Improvement of life refers to travelling to source of employment and education.
- Clothing, telephone accounts, etc. are indicative of luxuries.
- Lastly, investment comes in, which in essence is savings for the future.
- Whatever is left over is saved. This doesn't amount to much; therefore, very few (3 households) have the ability to do so.
- At this stage only three households managed to go through all phases of the illustration.
- Majority of residents lie between phases 3 and 4 with one or two households not even reaching phase 3.
- This structure reflects the path of life of majority of the residents. It's not always progressively followed from phase 1 to 2, to 3, etc. In some odd instances, some phases are skipped.

If employment were sought and secured closer to their homes, more money would be saved and the quality of life would better.

EXTENSION 6

- Expenses within households seem quite consistent in terms of waste removal, sanitation, rates and taxes, transport, electricity, water, and food. All households have these expenses in common.
- Not too far below is education (11 families) followed by the telephone usage and accounts (9 families).
- Further, along we find that half of the interviewees have the opportunity to save some money.
- Even though there are many expenses to be made, these families are still able to save, which implies that they are supported by a source of income large enough to cater for this.
- 'Other' expenses as reflected by the bar chart are reflective of medical expenses. This pattern is indicative of emphasis being placed on the basic needs first before indulging into luxuries and investments. These residents have indicated clearly by expenditure that they have priorities. This would be reflective of sustaining and improving the quality of lives first before consideration of anything else. Also quite evident is the ability of all the households to secure all these expenses. Income levels must therefore be sufficient to be enabling.

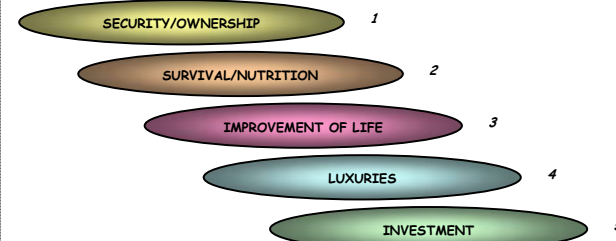


FIGURE 65: Hierarchy of needs and wants in extension 10 compared to extension 6

- In terms of the figure above, it is not clear where the boundaries between phase 1, 2 and 3 can be drawn, since all families impose the same level of emphasis on **security/ownership** (paying their rates and taxes, sanitation and waste removal), **survival/nutrition** (food, water and electricity), and the **improvement of life** (transport and education). It can therefore be surmised that all three phases can be combined to represent the situation within this area. The diagram would in this case be represented as the diagram below:

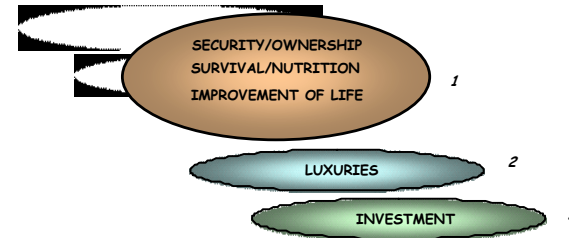


FIGURE 66: Hierarchy of needs and wants in extension 6

- Luxuries fall into line afterwards, followed by savings. The families within this extension nevertheless, have a hierarchy of needs and wants that involves satisfying the first three phases before indulging into luxuries or investments.

CHAPTER 6: COMPARATIVE ANALYSIS - 4. OVERALL PICTURE

4.3. USE OF SPACE

4.3.1. INTRODUCTION

This section provides an overview of the use of space within the structures built and of the erven.

EXTENSION 10

EXTENSION 6

4.3.2. USE WITHIN STRUCTURES

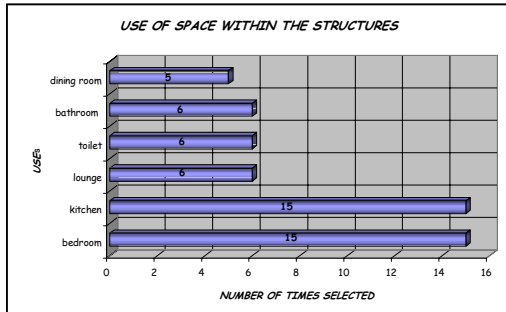


CHART 38a: Use of space within structures

- Every household has the basics (kitchens and bedrooms).
- Less than half of the number of people interviewed has luxuries such as lounges and bathrooms, dining rooms and toilets (indoors).

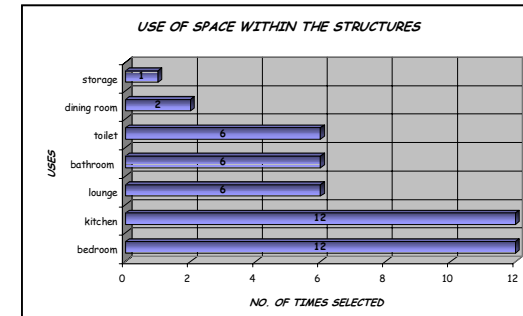


CHART 38b: Use of space within structures

- All households have kitchens and bathrooms.
- Half of those interviewed have luxuries such as indoor toilets, lounges, bathrooms.
- Very few have dining rooms and storage areas.

4.3.3. USE WITHIN ERVEN

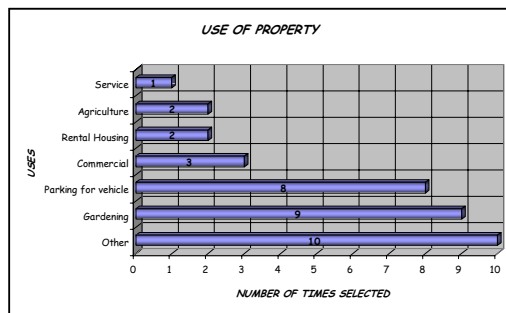


CHART 39a: Use of property

- Other uses (clotheslines, storage, etc) tend to occur the most across the households.
- Gardening tends to be the most popular use across most households, followed by parking for vehicles.
- 20% of people engage in commercial activity.
- Approximately 13% participate in rental activity and the planting of vegetable gardens.
- One household provides a service.
- The use of space is quite diverse.

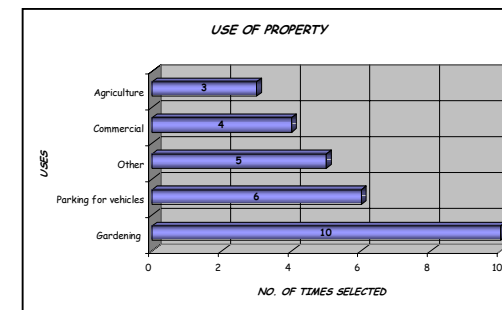


CHART 39b: Use of property

- Gardening occurs across ten households.
- Half of the people interviewed create space for the parking of vehicles.
- Other uses (clotheslines, storage areas) occur less than 50% of the time.
- 33% of people conduct commercial activity, whilst,
- 20% plant vegetables.

CHAPTER 7: QUALITY PROFILE OF RESIDENTS

1. INTRODUCTION

In the provision of housing it is important to get the perspective of the beneficiaries on what is important in a house. This section will attempt to answer this by looking at the internal and external aspects to housing. Coupled with this are the perceptions of the type of housing that has been provided by the residents, i.e. how do they feel about the housing provided, etc.

This section is structured (refer to figure 67) by first discussing the priorities of the residents (internal and external aspects) and then discussing the perceptions. A third column is added, to the extreme right, which compares the two areas. Figure 68 indicates the position of this chapter within the structure of the dissertation.

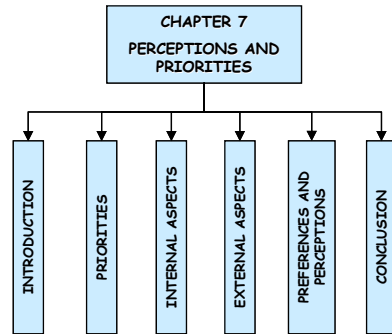


Figure 67: Structure of chapter

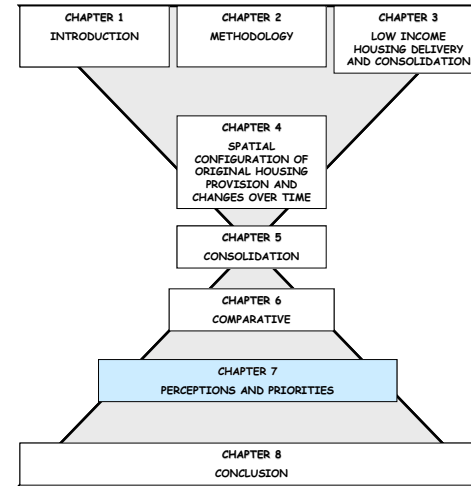


Figure 68: Position of chapter within dissertation

EXTENSION 10

EXTENSION 6

COMPARISON

2. PRIORITIES

In order to understand what people need to enable consolidation (formalisation), one would need to know what aspects of a house are important to them. Aspects of a house were therefore considered (listed in the accompanying columns), internally and externally.

2.1. INTERNAL ASPECTS

In terms of the important internal aspects of a home, the following aspects were listed (ventilation, roof, good house structure, sanitation, tap water, security, good lighting, spacious rooms, electricity).

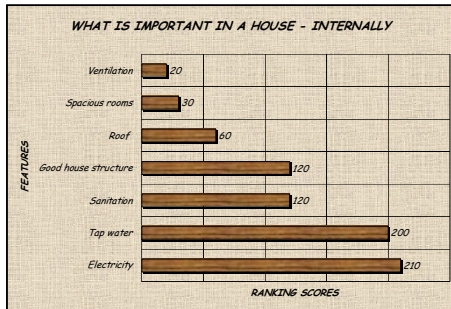


CHART 40a: What's important in a house - internally

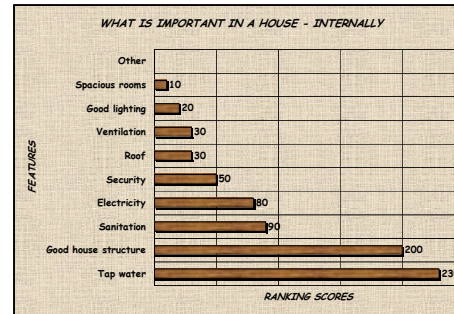


CHART 40b: What is important in a house - internally

- By comparing the two extensions one can see the difference in emphasis. In Extension Ten people have been provided a structure with which to work from in their quest to build their own homes. Their emphasis is therefore not so much on a good house structure. The opposite holds true for Extension Six. They have merely been provided with a site and services. Hence their emphasis on a good house structure.
- Tap water, however seems to be the leading factor in both areas. It is necessary for survival and easy access to it the 'collection of water' more convenient for the household, instead of having to travel great distances in order to acquire a few litres. It also speeds up the process of consumption - before consumption of river water it needs to be boiled and cleansed properly.

CHAPTER 7: QUALITY PROFILE OF RESIDENTS

EXTENSION 10	EXTENSION 6	COMPARISON
<ul style="list-style-type: none"> <li>The chart above shows how the residents ranked the importance of the various aspects where <i>tap water</i> and <i>electricity</i> seemed to be the two most important aspects out-weighting the other.</li> <li>Of less importance, in comparison is a <i>good house structure and sanitation</i>.</li> <li>Further down consolidation, the importance of the <i>roof</i> structure became apparent, which was followed by <i>spacious rooms, good lighting, ventilation and security</i>. The most basic items that one needs to survive have been ranked as important.</li> <li>Considering the lack of construction skills within the interviewed bracket, one can understand the importance of having a good, solid house structure.</li> <li>Tap water is essential in every household and it is stressed here as the most important.</li> <li>Electricity is just as essential as tap water and sanitation, yet we see that electricity is ranked the highest and sanitation is ranked much lower down. The residents are more dependent on electricity and tap water in comparison to the others. These services were not provided in their previous area of residence.</li> <li>Security is seen as the least important factor.</li> </ul>	<ul style="list-style-type: none"> <li>From observing the chart above one can see the most important aspects to these residents, i.e. tap water and a good house structure. These are the two most valued results in comparison to the other aspects.</li> <li>Looking at the type of housing provided to the households in this extension (site and service) one can see the rational choice for a solid house. It is something they lived without in their previous areas of residence and still do now. They therefore value a good house structure much more in comparison to other aspects.</li> <li>Easy access to tap water has also made living easier and is therefore a valued essential aspect.</li> <li>Further down sanitation and electricity come into play. Yet again these are essentials for daily living. However, their relation to the first two aspects is significantly distant in terms of ranking. Therefore much more emphasis is placed on tap water and a good house structure.</li> <li>Security is the next important issue, followed by ventilation, the roof, good lighting and spacious rooms.</li> <li>From this analysis, it is established that the essentials highlighted by the residents are; tap water, a good house structure, electricity and sanitation are the very basics that are stressed.</li> </ul>	<ul style="list-style-type: none"> <li>Ventilation seems to have an average value across both areas <b>but roofs seem to attract more attention in Extension Ten</b>. Two assumptions can be made from this observation. <b>Firstly, people in Extension Ten could have seen the value in having a roof since they have been provided with one. This could explain the value that is reflected in the graph as twice that of Extension Six.</b> Secondly, people could have assumed that the good house structure included the roof as well and therefore there was no need to consider roofs.</li> <li>In terms of sanitation, there is not much of a difference expressed. It is deemed an essential in both areas.</li> <li>Good lighting reflects identical low values across both areas indicative of the lack of importance.</li> <li>It is when the last three aspects are observed (security, spacious rooms, and electricity) that interesting contextual differences are noted. <b>The importance of electricity in Extension Ten appears two and a half times more than that of Extension Six. People in Extension Ten have been provided with roof structures, therefore they are able to improve on their homes thereby focussing their needs on other aspects. The demand for electricity, water, etc, therefore becomes more apparent. In comparison, Extension Six has not been provided with any structures except a toilet. The focus is therefore still on building their home. Electricity is seen as important but to a much lesser degree. The backgrounds of both areas therefore play a big role in terms of what stage they are in consolidation and their priorities (refer to section3).</b></li> <li><b>Spacious rooms are seen as three times more important than in extension 6. Majority of people in Extension Six live in shacks and are unable to build larger homes, i.e. they cannot afford to. Space is not seen as more important than having a good house structure. The first step is to get a reliable roof over their heads that won't leak. The later concern, much after other aspects, can then be space when the children get older and need more space or for other reasons.</b></li> <li><b>This is a luxury, which more people in Extension Ten have since they have such a solid roof. Once again, context plays an important role.</b></li> <li><b>The last aspect is security and the reasoning to follow is purely speculative. Security does not appear to be important in Extension Ten but is significantly important in Extension Six. This could be related to the environments in which they live. Such environments are created by the structures that are built and the pride that people have. Extension Six has more shacks and more poorly maintained gardens, etc, which lends itself to crime as opposed to more formal, neat structures, well maintained gardens and surrounding areas.</b></li> </ul>

CHAPTER 7: QUALITY PROFILE OF RESIDENTS

EXTENSION 10

EXTENSION 6

COMPARISON

2.2. EXTERNAL ASPECTS

This ranking exercise focused on external aspects, i.e. title deed, spacious erven to conduct other activities, access to services and facilities, and location.

- In Extension Ten this proved that the *Title Deed* is indeed the most important aspect. Ownership is, therefore, still quite an important issue to people (refer to literature).

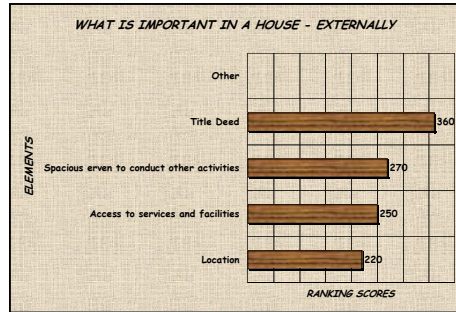


CHART 41a: What's important in a house - externally

- The following three aspects fall far below the ranking score of the *Title Deed*.
- Having a *Spacious erven* is more important than having *access to services and facilities* as well as *location*. People reflected the desire to grow vegetables but lacked space in order to do this.
- Upon reflection of the external aspects, ownership is by far the most important aspect. From literature, one learned that the lack of ownership brings about insecurities that prevent further consolidation to take place (refer to chapter 3, 6.3.), but in this case, it seems that it is not the root cause of the small amount of consolidation.
- With further investigation, it was found that people were satisfied with the size of the erven provided (with the exclusion of wanting to grow vegetables) because it was larger than the previous area of residence. In addition, in terms of being ranked in order of importance, the size of the erven is still very important, more important, in fact, than having access to services and facilities and being located in a good area.

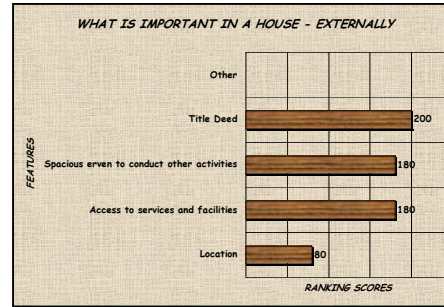


CHART 41b: What is important in a house - externally

- The pattern reflected here alerts one to the fact that ownership is still the most important aspect as reflected by literature (refer to chapter 3, 6.3.).
- Spacious erven and having access to services and facilities seemed to be the next important aspects.
- People have motivated that they would have enjoyed growing their own vegetables if they had a larger erven. It was not reflected as a concern or disappointment of any kind. It was instead mentioned as a desire. This could be considered in the future.
- Considerably lower was location.
- Residents didn't care much for being in the ideal location, but instead having access to the necessary services and facilities was more important.

- Literature revealed that the lack of ownership prevented people from consolidating out of fear of being evicted (refer to chapter 3, 6.3.).
- In this category of aspects ownership relates more to a sense of security that people need in order to feel at ease (considering the lack of ownership of property in their previous areas of residence), thereby providing that necessary enabling environment where consolidation would be possible. Once people are secure about their homes (refer to chapter 3, 6.3.), they will take the responsibility of owning their own homes seriously, which is reflected here to a certain degree
- Comparing the two areas reflects a similar pattern with title deeds being the most important and is followed by spacious erven to conduct other activities, access to services and facilities and location.



CHAPTER 7: QUALITY PROFILE OF RESIDENTS

EXTENSION 10

EXTENSION 6

COMPARISON

3. PREFERENCES AND PERCEPTIONS

During the interviewing sessions carried out with the residents, more qualitative questions were posed in relation to governments' efforts and the level of satisfaction.

- The response was one hundred percent positive. People did feel an improvement in their lives, environment and homes. The main reasons encompassing such positive feedback was that services such as water was now provided making the retrieval of water from rivers and dams unnecessary. Communal taps need not be shared anymore as was the case in their previous residency. Other problems with their shacks (leakages, negative reactions to the weather, etc.) are no longer such a major problem.

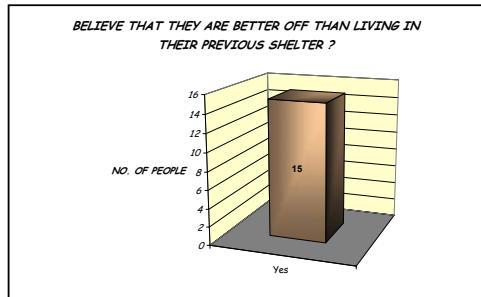


CHART 42a: Better off than previous shelter

- Compared to people living in a township, residents articulated that they were better off (53%). Some were unsure and others felt that their present situation was the same (40%) as living in a township.

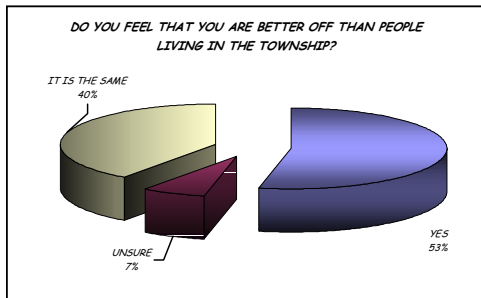


CHART 43a: Better off than people living in the township

- The question that crosses one's mind is: 'How different are the conditions of a township to that of their present accommodation?' An idea of this can be acquired from the responses received. The motivation for being better off stems from the opinion that life is rougher in townships with lots of crime.
- Rental is also viewed as much more higher compared to Extension Ten and the housing here is much bigger and better. Some people were also tenants in the township, but are now home owners in Extension Ten. A significant improvement has therefore been made.

- One hundred percent were in agreement that they were indeed better off. Their previous shelters had leakages and reacted negatively according to the weather. It was also a temporary situation. Their structures are now permanent and so are their living arrangements. The issue of ownership is highlighted again. The services available now were not in the past. The present situation is much better in this regard. This is a good reflection on the type of housing provided and improving the lives of the low-income community.

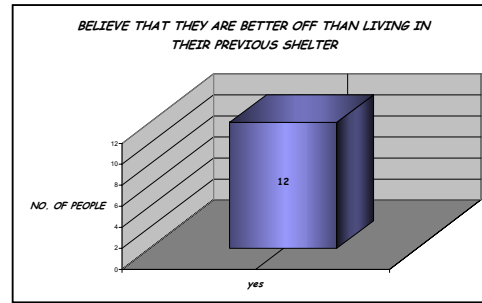


CHART 42b: Better off than previous shelter

- In comparison to people living in a township, these residents have opposing opinions. Whilst 41% felt that they were better off than people living in a township, 42% were strongly against this. 17% were unsure. The question remains: 'what characterises a township or distinguishes it from their present accommodation?'

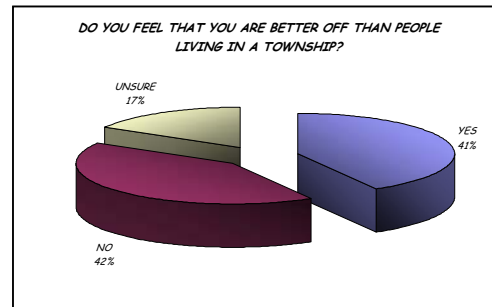


CHART 43b: Better off than people living in a township

- The negative aspects that seem to sway the argument toward the likeness of the present and past situations are comprised of the following reasons:
  - Firstly, problems with transport are experienced here as in the previous area.
  - Secondly, people felt that the townships were better because the toilets were inside the house.
  - Reasoning motivating that they are better off than persons living in the township stem from the services that are now provided here. They were non-

CHAPTER 7: QUALITY PROFILE OF RESIDENTS

EXTENSION 10

- Not many reasons validate the likeness between Extension Ten and the township except for the example illustrated by an interviewee: *'If you don't pay in the townships then they can reduce your water allowance as well.'* The picture presented is biased to a certain degree due to the ill representation of responses' motivating that living in the township is the same as their present situation. But one now gets an idea of how the respondents motivated for both sides. Whilst there are benefits at present, other circumstances are dealt with in much the same manner as in the township that likens it to the township.
- Taking into account the percentage of people that think they are better off living here, than in a township and the percentage that think they are living under the same conditions as that of a township, one should not automatically arrive at the assumption that the level of satisfaction is not so high. People are happy with their place of residence irrespective of the similarity to that of a township or lack thereof.

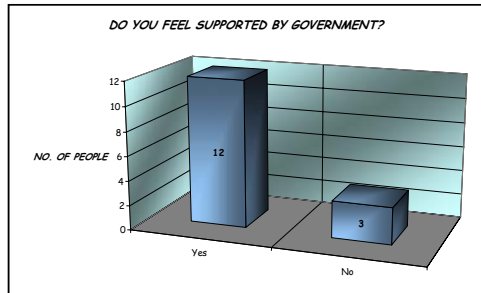


CHART 44a: Supportive government?

- One hundred percent of the interviewees were happy with the housing they had been provided with, which also reflected an 80% satisfaction rate with government in their efforts to provide housing for the residents. The lack of support felt by the residents stems from unfulfilled promises that were made by government to complete the provision of their homes (a misunderstanding that needs clarification).

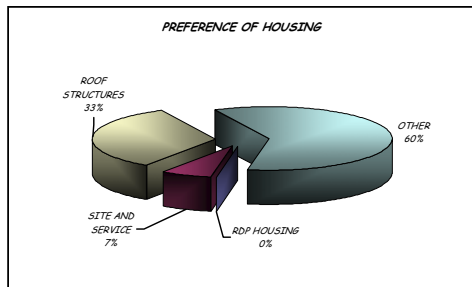


CHART 45a: Preference of housing

- On a more important note, residents were questioned about their housing

EXTENSION 6

existent in the townships. The availability of the prepaid system to acquire electricity also seemed to be prescribed to pensioners only in the township, whereas now it can be acquired by anyone, i.e. it is not prescriptive. Besides the services being better, residents have articulated that they don't pay as much as they used to. There are more positive aspects highlighted than negative. Although there are numerous motivation reasons for living in Extension Six, there are one or two misunderstandings that are misleading. The level of satisfaction within this area is nevertheless high considering that 100% of them are happy with the housing provided.

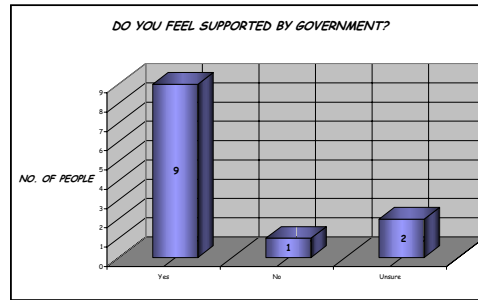


CHART 44b: Supportive government?

- In terms of feeling supported by government, 75% felt that they were. This mirrors the opinion of 9 people. Only one family felt unsupported (8%) and two families were unsure or not willing to make any comments in this regard (17%). By providing these residents with housing, they feel grateful and supported.

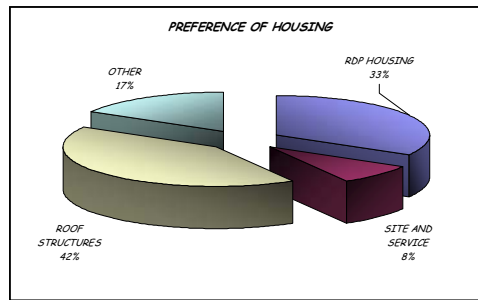


CHART 45b: Preference of housing

- Responses to the preference of housing reflected largely a desire for roof structures (42%) and RDP houses (33%). Such statistics are evident of the success factor present within the roof structures. People preferred this because of the larger space provided in comparison to RDP houses and the ease at which one can build up from this point. Residents articulated the importance of having a roof over their heads and that the roof is the most expensive part of the house. Being provided with the roof would therefore cut down the expense of building materials enabling them to advance to a better position where they will be able to afford other materials. The roof structures are viewed as strong solid structures.

COMPARISON

- The reasons for being likened to a township has been the same across the two areas and the motivations previously proved that there were better aspects to living in these areas as apposed to their previous homes. It was also motivated that the reasons that did become known were often ill founded.
- In both areas, people agreed that government was supporting them with a few disagreements from other people. More than 75% in each area were happy.

- The preference of housing implied that more people would prefer roof structures than RDP houses or site and service schemes. Residents were very happy with these structures and it did assist people to construct their own homes.

CHAPTER 7: QUALITY PROFILE OF RESIDENTS

EXTENSION 10	EXTENSION 6	COMPARISON
<p>preference, if circumstances were different and they were given a choice from a variety of options. Interesting results had come to the fore. The category of 'OTHER' reflects the combination of the lack of opinion held by some of the residents and suggestions made by others. Virtually half of the respondents had no comment in this regard.</p> <ul style="list-style-type: none"> <li>Those that did respond had their own suggestions (10%). It entailed having a house no smaller than their own. Space does play a role in the provision of housing. As far as the other alternatives (roof structures, site and service, RDP housing) are concerned, the prospect of having roof structures proved quite popular (33%).</li> <li>Site and service represented a mere 7% of residents whilst RDP housing reflected 0%.</li> <li>Roof structures seem to offer more space than RDP houses, and people can build up their own homes to the roof. It is viewed very positively by the residents. Although RDP houses are complete houses, people prefer the roof structure because of the space it accommodates. Residents also felt that the roof itself is the most costly in terms of actually constructing their homes. Therefore, providing the item that is the most expensive at the outset would make the construction of their home much easier.</li> </ul>	<p>This provides a bit of security and stability for the residents.</p> <ul style="list-style-type: none"> <li>The motivation for RDP houses on the other hand, can be attributed to financial constraints. People cannot afford to purchase materials and would therefore prefer to have the complete house provided for them. Others felt that money would be wasted on purchasing materials in comparison to having a house already provided for them. The other point was that the toilets were inside the house. This is an attractive feature for some residents.</li> <li>Site and service represented a mere 8%. The family that requested this had a good reason behind it. The father of this family has construction skills. The family felt that the father would do a better job of building a home for his family and they could design it exactly how they wanted it.</li> <li>Others were unsure about the type of housing they would prefer. Suggestions were made along the lines of something better than the roof structures and the RDP houses.</li> </ul>	

4. CONCLUSION

- The different types of housing provided have affected the responses to the section on priorities, i.e. services stand out as the major issues relevant to residents of Extension Ten, whereas in extension 6 services combined with a good house structure was relevant. As mentioned in the comparison, the lack of a top structure in extension has motivated for listing a good house structure as the second most important factor in a house. Context is therefore a defining factor of how people value the internal aspects of the houses.
- Overall, it is quite evident that the priorities of residents in terms of housing have been filtered through by means of aiming to satisfy the basic needs, i.e emphasis has been placed on the services.
- The priorities also indicate the level of formalisation each extension is at, i.e. residents in Extension Ten focussed on electricity as the biggest priority and tap water as the second. Residents of extension 6 had electricity as factor number four and tap water as number one. Tap water is still seen as an essential basic need in both areas but electricity is not in Extension Six. The greater level of consolidation in extension 10 warrants the greater usage of electricity, hence the emphasis on it. Residents within Extension Six have not consolidated to such a degree yet.
- This study has proven that security of tenure is very important to residents as was indicated by researchers previously (*refer to chapter 3, 5.3.*). However, in this case, ownership has not affected the ability or lack thereof to consolidate since residents already had ownership.
- Efforts made by government in providing housing appear to have been successful, i.e. 100% of residents feel that they are better off than the previous residency and more than 75% of residents in both areas feel supported by government, but efforts shouldn't end here. Residents require assistance in the consolidation process.
- Majority of residents from across both areas preferred to have the roof structures. It has benefited the residents of Extension Ten in housing themselves.

## 1. INTRODUCTION

The aim of this chapter is to answer the sub-problems set in chapter one.

The chapter (refer to figure 69) will begin by addressing issues that have implications for the design and provision of housing, difficulties and successes (experiential learning) within the process of the study; and finally looks at ideas for further research. Figure 70 indicates the final stage of the dissertation.

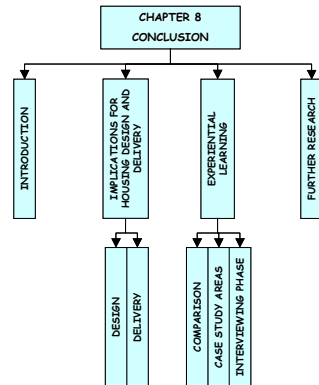


FIGURE 69: Structure of chapter

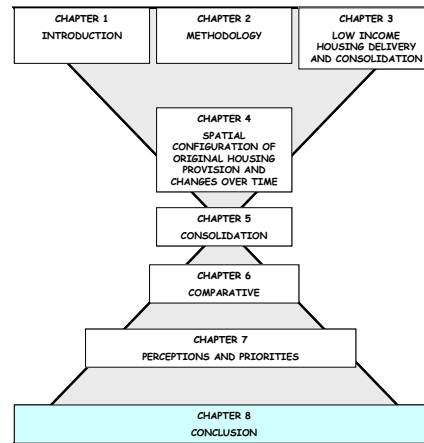


FIGURE 70: Position of chapter within dissertation

## 2. IMPLICATIONS FOR HOUSING DESIGN AND DELIVERY

WHEN DESIGNING LOW-INCOME HOUSING THE FOLLOWING SHOULD BE TAKEN INTO CONSIDERATION:

### 2.1. DESIGN

- From the research, it has been shown that, in the case of Extension Ten the placing of the roof structures has prevented the efficient use of space. The original configuration of housing provision followed engineering standards and costs. No thought was given to the actual placing of the structures. Limited erven sizes and large families imply that the amount of living space should be maximised. The placing of the roof structures tends to create small, odd, dysfunctional spaces between structures or too much of wasted space at the front of the erven, thereby minimising the amount of living space. In Extension Six, the placing of the water closets did not seem to affect the placing of the structures built. The pattern that appeared was of structures being placed toward the back and side boundaries, maximising the space of the rest of the erven, in anticipation of the placing of the permanent house in the centre of the erven. This was also the trend within Extension Ten. Residents indicated the desire to build houses in the centre of the erven. The recommendation is therefore to maximise the amount of living space by placing top structures at the front of the erf with a little space for a garden in front. More privacy and living space will be created at the back of the erven.

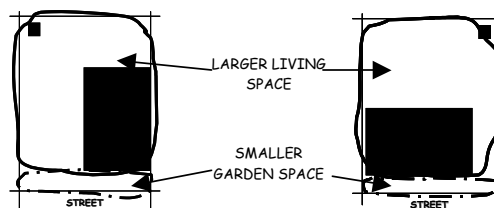


FIGURE 71: Alternatives for the use of space

Space within the structures is not seen as important by the residents of both case study areas (refer to chapter 6 - 4. Overall picture). However, space on the erven appears to be important:

- Today uses within structures include kitchens, bathrooms, bedrooms, lounges, dining rooms, and indoor toilets. The more formalised structures have luxury uses like lounges and dining rooms and the least formalised have bedrooms and kitchens. It appears, therefore, that households begin initially with the division of space into kitchens and bedrooms. These appear to be the basic essentials. This should be considered in the provision of top structures. However, if considered, the space within top structures should be of reasonable size according to the family sizes prevalent.
- Gardening tends to occur popularly at the front of the erf and vegetable gardening at the back. Flower gardens were more of a decorative part of the entrance to the erven, whilst vegetable gardens were part of the survival strategies employed.

As such, the value of the vegetables grown is great and security is needed. Placing the vegetable gardens at the back prevented passers access to the vegetables. Sufficient space should allow for this. Many residents desired space for vegetable gardens, but space is very restricted.

Space is most often made for vehicular parking as well. It is provided sometimes at the back, side and front depending on the arrangement of the structures. This should be incorporated in the design of the layout.

- In terms of what government has already provided, many residents preferred the roof structures in comparison to RDP and site and service schemes. Two factors motivated for this choice. The **first** was the cost of the roof itself. Residents felt that the roof was the most expensive material of a house and as such reduced the cost of building the actual house since the major component was already provided. The **second** motivating factor was the space that the roof structure offered, much more than the RDP houses.

## 2.2. DELIVERY

- Of the many problems in the area, the most glaring were financing and unemployment. Of the economically active population, in both areas (approximately 70%) less than 35% are employed in Extension Six and less than 25% are employed in Extension Ten. These are very low levels of employment. Of the employed population, formal full-time employment amounts to 55% and 35% in Extension Six and Ten respectively. Stable income sources are low.
- The ability of households to save is limited and expenses are high. A savings scheme should be introduced to support and educate the residents on budgeting.
- Residents do not consult anyone for advice when wanting to build additions as in the case of Khayelitsha and Inanda Newton (**refer to chapter 3, 7.**). There doesn't seem to be an authority or body within the community that they can consult and get advice from, in terms of loans (financing), builders to use, where to source building materials, etc. A community 'building advice' centre could be established where people can get advice on every possible aspect about constructing additions.
- The awareness and location of building material suppliers should be enhanced, i.e. many residents were not aware of local building suppliers (temporary building materials). Many others sourced permanent building materials from other areas outside of Mamelodi, a great distance away. Being located great distances from the place of residence increases the amount of money spent for the transportation of the materials. Many have no car or truck and pay for the building supplier to transport the materials. Others hire trucks from friends or other sources depending on the size of the load. The additional cost of transport reduces the amount of money for further additions to be built.
- In addition to the cost of transport, the cost of the building materials are increasing and many are affected. Majority of the time, savings and monthly salaries was used to pay for additions. Large numbers of people found the cost of building materials too expensive.
- The lack of building skills in the area resulted in the use of private contractors which tend to be expensive at times. An initiative to develop building skills of the residents would enable residents to build without being restricted by finances.
- A recommendation would be to assist in the establishment of **'permanent building material supplies** in the area. This would create *employment, improve on the economy within the area*, it would provide people with a *cheaper option*, and *save on transport costs*. From this, initiatives can be sparked to develop the *building skills* of the residents, by employing a person from within the building material supply business to assist in the construction of the additions. Skills transfer can take place between the employer and employee. Residents will be empowered.
- Security of tenure in the case of both case study areas and other cases (**refer to chapter 3, 7.**) appeared to be very important. The provision of security of tenure is the initial step toward motivating for consolidation. Security of tenure should be a non-negotiable.
- Communication between the providers of housing and the recipients seemed to be broken at some point. The residents of extension ten were under the impression the roof structures provided would be built up by government. As a result, there are some ill feelings reserved against government whilst some waited for government to fulfil the promise, instead of doing it themselves. There should be clear lines of communication between beneficiaries and those providing housing so that situations like this can be avoided.
- The definition of housing development within the National Housing Code is met partially. Security of tenure is awarded and in the case of Extension Ten a structure is provided for protection from the elements. However, privacy is not created and the environment created is a healthy one - layout design is monotonous.

## 3. EXPERIENTIAL LEARNING

### 3.1. COMPARISON

Although the intention was to compare the two case study areas in terms of the level of consolidation, many differences in the process of information gathering and the type of information gathered have made the task impossible, e.g.:

- The number of households selected in each area differs, i.e. fifteen were chosen in extension ten and twelve in Extension Six,

- The period of housing provision differs, i.e. residents of extension ten had been provided with housing between 1994 and 2000, whereas residents of Extension Six have been provided with housing between 1997 and 1999.
- Typologies developed within both areas also differ. The typologies within extension ten were concerned with the progression of housing development, whereas typologies of extension six were concerned with the placing of the structures on the erven.

Considering the many differences, comparison would not have been possible. There were too many variables.

### 3.2. CASE STUDY AREAS

It was the initial aim of the study to have three different types of RDP housing forms, i.e. site and service, inhabitable core units and core houses. However, the aim was also for quality research of a manageable size. It was decided upon to use two case study areas.

### 3.3. INTERVIEWING PHASE

The process of acquiring information directly from the source proved to be both a difficult task and a positive growth experience. It was difficult in the sense that residents were not always willing to allow the interviewers into their homes. There was a lot of scepticism in the air. As a result, the lack of information in certain areas could not be avoided.

Apart from this, the entire interviewing phase was an eye-opening experience. It was a privilege to be on the ground and to meet the kinds of people found in these areas. Whilst some appeared sceptical of the intrusion, others were very willing and welcoming to the entire process. Learning through experience is still the best way to gain knowledge. Being in the environment, the homes, the erven, and interacting with the residents informed and served as a back up to putting together this dissertation. There were intricacies of being in the area and speaking to people that cannot be replicated by reading books. The experience in itself holds value vital to the understanding of the lives of residents in these areas, their experiences, problems, and the process of housing provision.

## 4. FURTHER RESEARCH

- More studies of this nature should be done at a larger scale (in different areas across South Africa) to acquire a greater understanding of different environments and circumstances. Restrictions of two types of low-cost housing need not be adhered to. The analysis of all types can be done.
- Comparisons between the different types of low-cost housing can be investigated in terms of the level of consolidation achieved. This would indicate to government where to improve on providing housing in other cases.
- More efforts should be made toward the investigation of the use of space and how it can be optimised to satisfy the needs of the beneficiaries of low-cost housing and improve on the environment.
- The design of housing should be looked into, not only in relation to providing choice in the type of top structure provided but also in terms of the layouts, taking into consideration the daily activities and needs of the beneficiaries as in the case of the Cato Manor study conducted (**refer to chapter 3, 7.1.**).
- When considering choice of housing, it is quite evident that people are in different phases of transition from rural to urban, which implies that greater choice should be provided to cater for the various levels. Further research should be conducted in this area.



## 3. SECTION B










































# EXTENSION 6 - SITE AND SERVICE SCHEME

- **Typology 1:** a roof structure with no permanent additions, i.e. looks the same as when they were provided,
- **Typology 2:** a roof structure with permanent additions, but an incomplete structure, and
- **Typology 3:** a completely enclosed roof structure.

#### HOW WERE THE TYPOLOGIES IDENTIFIED?

Through site visits observations were made. Considering that extension 10 had a progressive developmental outlook in mind, the same was attempted for extension 6. But a different pattern appeared more strongly, i.e. that of the placing of the structures. It was decided to test the decisions made for the placing of the structure.

LEGEND

<p>1</p> <p>CHAPTER 4 - SPATIAL CONFIGURATION OF ORIGINAL PROVISION OF HOUSING AND CHANGES OVER TIME</p>	<p>2</p> <p>CHAPTER 5 - CONSOLIDATION</p>	<p>3</p> <p>CHAPTER 5 - CONSOLIDATION LAND USE AND THE USE OF SPACE How is the space within the home being used?</p>	<p>4</p> <p>CHAPTER 5 - CONSOLIDATION LAND USE AND THE USE OF SPACE How is the Property being used?</p>
<p>————— LIVING SPACE AND PRIVACY</p> <p>..... ODD SPACES</p> <p>— · — GARDEN / OTHER</p>	<p> COMPLETED HOUSE</p> <p> SHOP</p> <p> PAVING</p> <p> CONCRETE</p> <p> LAWN</p> <p> FLOWERS</p> <p> FENCE WITH PLANTS GROWING ON IT</p> <p> RUBBLE</p> <p> BUILDING MATERIALS</p> <p> CAR</p> <p> VEGETABLE STALL</p> <p> WALL</p> <p> BRICKS</p> <p> WIRE FENCING</p> <p> CLOTHES LINE</p> <p> GATE</p> <p> POSTBOX</p> <p> PILLARS</p> <p> DOG</p> <p> ROCKS</p>	<p> BEDROOM</p> <p> KITCHEN</p> <p> BEDROOM/KITCHEN</p> <p> DINING ROOM</p> <p> BEDROOM/DINING ROOM</p> <p> LOUNGE</p> <p> DINING ROOM/LOUNGE</p> <p> BATHROOM</p> <p> SHOP</p> <p> HOME UNDER CONSTRUCTION</p> <p> COMPLETED HOUSE</p> <p> STORAGE</p> <p> VERANDHA</p>	<p> HOUSING AREA</p> <p> VEHICULAR AREA</p> <p> COMMERCIAL AREA</p> <p> RENTAL AREA</p> <p> STORAGE AREA</p> <p> GARDENING AREA</p> <p> AGRICULTURAL AREA</p> <p> SERVICE AREA</p>

NOTE:  
The legends above apply specifically to certain sections or chapters of the dissertation. Headings have been put above them to indicate this. Legend 2 applies to the entire chapter of consolidation and legends 3 and 4 apply to sections within chapter 5.

<b>SECTION A: FAMILY ACTIVITY</b>					
<b>1. Household status</b>					
	<b>First name</b>	<b>Definition of head of household</b>	<b>Relationship to the head of the household</b>	<b>Sex M/F</b>	<b>Age</b>
<b>1</b>					
<b>2</b>					
<b>3</b>					
<b>4</b>					
<b>5</b>					
<b>6</b>					
<b>7</b>					
<b>8</b>					
<b>9</b>					
<b>10</b>					
<b>11</b>					
<b>12</b>					
<b>Relationship to the head of the Household: 2 – spouse, 3 – child, 4 – brother, 5 – sister, 6 – parent, 7 – grand parent, 8 – grandchild, 9 – other relative, 10 – tenant, 11 – friend, 12 – other non-relative.</b>					

<b>SECTION A: FAMILY ACTIVITY</b>	
<b>1. Household status</b>	
<b>Type of household structure</b>	
<b>Household size</b>	
<b>Family size</b>	
<b>Family status</b>	
<b>Type of Household structure: 1-</b> single family, <b>2</b> – single family with tenants, <b>3</b> – multiple families, <b>4</b> – multiple families with tenants, <b>5</b> - other	
<b>Household size</b> – inclusive of tenants	
<b>Family size</b> – exclusive of tenants.	
<b>Family status: 1</b> – Nuclear , <b>2</b> – Woman-headed, <b>3</b> – single parent, <b>4</b> - other	

<b>SECTION A: FAMILY ACTIVITY</b>			
<b>2. Employment and Income</b>			
	<b>Employment</b>	<b>Type of employment</b>	<b>Employment location</b>
<b>1</b>			
<b>2</b>			
<b>3</b>			
<b>4</b>			
<b>5</b>			
<b>6</b>			
<b>7</b>			
<b>8</b>			
<b>9</b>			
<b>10</b>			
<b>11</b>			
<b>12</b>			
<b>Employment – 1 – unemployed, 2 - employed</b>			
<b>Type of employment – 1 – part-time/contractor, 2 – Full-time, 3 – Entrepreneurial/informal, 4 – Entrepreneurial/formal, 5 - other</b>			

<b>SECTION A: FAMILY ACTIVITY</b>	
<b>2. Employment and Income</b>	
<b>Expenditure</b>	
<b>Water</b>	
<b>Electricity</b>	
<b>Transport</b>	Buses, taxis, etc
	Car
<b>Maintenance of car</b>	
<b>Telephone/Cell phone</b>	
<b>Education</b> ( <i>primary, secondary, tertiary</i> )	
<b>Food</b>	
<b>Clothing</b>	
<b>Accounts</b> ( <i>clothing, furniture, appliances, etc</i> )	
<b>Savings</b>	
<b>Rates and taxes</b>	
<b>Sanitation</b>	
<b>Waste Removal</b>	
<b>Other</b>	

<b>SECTION A: FAMILY ACTIVITY</b>	
<b>2. Employment and Income</b>	
<b>Sources of Income</b> ( <i>household income</i> )	
<b>No. of sources of income</b>	
<b>Informal activity</b>	
<b>Rental</b>	
<b>Grants</b>	
<b>Other</b>	



**3. RESIDENCY**

a. How long have you been living here in this house?

b. Where did you live previously?

c. What kind of house did you live in previously?

d. Do you think you are better off than living in your previous accommodation?

e. Do you think you are better off than a person living in a township?

f. What are your feelings on the type of housing that you have been provided with?

g. Do you feel supported by government by providing this structure? Do you feel supported by government in general?

h. What are the problems that you are experiencing or have been experienced in the past related to your house?

- i. Do you have ownership of your home or do you rent it?

--

- j. What is most important in a house?

INTERNALLY	
	Electricity
	Spacious rooms (space)
	Good lighting
	Security
	Tap water
	Sanitation
	A good house structure (solid)
	Roof
	Ventilation
	Other

EXTERNALLY	
	Location
	Access to services and facilities
	Spacious erf to conduct other activity
	Title Deed
	Other

- k. How do you feel about your neighbourhood? (what are the good and bad things about your neighbourhood)

--

## SECTION B: LAND USE AND USE OF SPACE

### 1. Use of property

- a. How is your property being used?

	Gardening		Service		Other
	Rental housing		Agriculture		
	Commercial		Parking for vehicle		

- b. Where are these uses located in relation to your house and your erf?  
(observe)

**2. Use of space within the home**

- a. How is the space within your home used? (refer to diagram and indicate)
- b. Why is the space used in this manner?

**SECTION C: BUILDING ACTIVITY**

**1. Extensions**

- a. Since moving into this home, have you made any improvements or extensions?

b. If not, why?

--

c. What is the extent of consolidation? (how much/many extensions/improvements have been made?)

<b>Ext.</b>	<b>Ext. 1</b>	<b>Ext. 2</b>	<b>Ext. 3</b>	<b>Ext. 4</b>
<b>Descript.</b>				
<b>Drawing</b>				
<b>Int./Ext.</b>				
<b>Materials used</b>				
<b>Material supplier</b>				
<b>Cost of materials</b>				
<b>Cost of construction</b>				
<b>Funding</b>				
<b>Builder</b>				
<b>Construction skills</b>				
<b>Dates</b>				
<b>Problems</b>				

- c. If your extensions were to be destroyed tomorrow, how much would it cost to rebuild?

**4. Building Materials**

- a. Are there many suppliers of materials close by?

- b. How close/far away are the suppliers?

- c. How are the supplies transported to your home?

- d. Is the cost of materials reasonable?

- e. If government were to start over and provide you with housing (giving you a choice in housing provided) what would you prefer? RDP housing, just services, etc?

- f. How can government assist further with your present housing situation?

**Observation**

- **public/private interface**
  - how the household relates to the street
  - fencing in front of the house
  - the use of the pavements
  - gardens – presentation
  - entrance to the house (stoep/façade)
  - symbolism (religious, other)
  - definition of boundaries (walls between erven)
  - How neighbours relate to one another
  
- **Neighbourhood**
  - Location of facilities/services (salons, shebeens, etc.)
  - Use of the streets
  - Use of open spaces
  - Observation of edges (how they relate to the edges – do they expand, build bigger walls, etc)



# 3.1. TYPOLOGY 1

Structures that have been positioned at the back of the erf.



## 3.2. TYPOLOGY 2

Structures placed at the side of the erf.



## 3.3. TYPOLOGY 3

Structures placed at the front of the erf.



# 3.4. TYPOLOGY 4

Completed houses.



<b>SECTION A: FAMILY ACTIVITY</b>					
<b>1. Household status</b>					
	<b>First name</b>	<b>Definition of head of household</b>	<b>Relationship to the head of the household</b>	<b>Sex M/F</b>	<b>Age</b>
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<b>10</b>					
<b>11</b>					
<b>12</b>					
<b>Relationship to the head of the Household: 2 – spouse, 3 – child, 4 – brother, 5 – sister, 6 – parent, 7 – grand parent, 8 – grandchild, 9 – other relative, 10 – tenant, 11 – friend, 12 – other non-relative.</b>					



<b>SECTION A: FAMILY ACTIVITY</b>	
<b>1. Household status</b>	
<b>Type of household structure</b>	
<b>Household size</b>	
<b>Family size</b>	
<b>Family status</b>	
<b>Type of Household structure:</b> 1- single family, 2 – single family with tenants, 3 – multiple families, 4 – multiple families with tenants, 5 - other	
<b>Household size</b> – inclusive of tenants	
<b>Family size</b> – exclusive of tenants.	
<b>Family status:</b> 1 – Nuclear , 2 – Woman-headed, 3 – single parent, 4 - other	



<b>SECTION A: FAMILY ACTIVITY</b>			
<b>2. Employment and Income</b>			
	<b>Employment</b>	<b>Type of employment</b>	<b>Employment location</b>
<b>1</b>			
<b>2</b>			
<b>3</b>			
<b>4</b>			
<b>5</b>			
<b>6</b>			
<b>7</b>			
<b>8</b>			
<b>9</b>			
<b>10</b>			
<b>11</b>			
<b>12</b>			
<b>Employment – 1 – unemployed, 2 - employed</b>			
<b>Type of employment – 1 – part-time/contractor, 2 – Full-time, 3 – Entrepreneurial/informal, 4 – Entrepreneurial/formal, 5 - other</b>			

<b>SECTION A: FAMILY ACTIVITY</b>	
<b>2. Employment and Income</b>	
<b>Expenditure</b>	
<b>Water</b>	
<b>Electricity</b>	
<b>Transport</b>	Buses, taxis, etc
	Car
<b>Maintenance of car</b>	
<b>Telephone/Cell phone</b>	
<b>Education</b> ( <i>primary, secondary, tertiary</i> )	
<b>Food</b>	
<b>Clothing</b>	
<b>Accounts</b> ( <i>clothing, furniture, appliances, etc</i> )	
<b>Savings</b>	
<b>Rates and taxes</b>	
<b>Sanitation</b>	
<b>Waste Removal</b>	
<b>Other</b>	

<b>SECTION A: FAMILY ACTIVITY</b>	
<b>2. Employment and Income</b>	
<b>Sources of Income</b> ( <i>household income</i> )	
<b>No. of sources of income</b>	
<b>Informal activity</b>	
<b>Rental</b>	
<b>Grants</b>	
<b>Other</b>	

**3. RESIDENCY**

a. How long have you been living here in this house?

b. Where did you live previously?

c. What kind of house did you live in previously?

d. Do you think you are better off than living in your previous accommodation?

e. Do you think you are better off than a person living in a township?

f. What are your feelings on the type of housing that you have been provided with?

g. Do you feel supported by government by providing this structure? Do you feel supported by government in general?

h. What are the problems that you are experiencing or have been experienced in the past related to your house?

- i. Do you have ownership of your home or do you rent it?

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- j. What is most important in a house?

INTERNALLY	
	Electricity
	Spacious rooms (space)
	Good lighting
	Security
	Tap water
	Sanitation
	A good house structure (solid)
	Roof
	Ventilation
	Other

EXTERNALLY	
	Location
	Access to services and facilities
	Spacious erf to conduct other activity
	Title Deed
	Other

- k. How do you feel about your neighbourhood? (what are the good and bad things about your neighbourhood)

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## SECTION B: LAND USE AND USE OF SPACE

### 1. Use of property

- a. How is your property being used?

	Gardening		Service		Other
	Rental housing		Agriculture		
	Commercial		Parking for vehicle		

- b. Where are these uses located in relation to your house and your erf?  
(observe)

- c. Why is your home positioned in this way?

**2. Use of space within the home**

- a. How is the space within your home used? (refer to diagram and indicate)
- b. Why is the space used in this manner?

**SECTION C: BUILDING ACTIVITY**

**1. Extensions**

- a. Since moving into this home, have you made any improvements or extensions?

b. If not, why?

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c. What is the extent of consolidation? (how much/many extensions/improvements have been made?)

<b>Ext.</b>	<b>Ext. 1</b>	<b>Ext. 2</b>	<b>Ext. 3</b>	<b>Ext. 4</b>
<b>Descript.</b>				
<b>Drawing</b>				
<b>Int./Ext.</b>				
<b>Materials used</b>				
<b>Material supplier</b>				
<b>Cost of materials</b>				
<b>Cost of construction</b>				
<b>Funding</b>				
<b>Builder</b>				
<b>Construction skills</b>				
<b>Dates</b>				
<b>Problems</b>				



- c. If your extensions were to be destroyed tomorrow, how much would it cost to rebuild?

**4. Building Materials**

- a. Are there many suppliers of materials close by?

- b. How close/far away are the suppliers?

- c. How are the supplies transported to your home?

- d. Is the cost of materials reasonable?

- e. If government were to start over and provide you with housing (giving you a choice in housing provided) what would you prefer? RDP housing, just services, etc?

- f. How can government assist further with your present housing situation?

**Observation**

- **public/private interface**
  - how the household relates to the street
  - fencing in front of the house
  - the use of the pavements
  - gardens – presentation
  - entrance to the house (stoep/façade)
  - symbolism (religious, other)
  - definition of boundaries (walls between erven)
  - How neighbours relate to one another
  
- **Neighbourhood**
  - Location of facilities/services (salons, shebeens, etc.)
  - Use of the streets
  - Use of open spaces
  - Observation of edges (how they relate to the edges – do they expand, build bigger walls, etc)



## 2.1. TYPOLOGY 1

**Roof structures with no permanent additions, i.e. looks the same as when provided by government.**



## 2.2.

## TYOLOGY 2

Roof structures with permanent additions, but are incomplete structures.







2.3.

## TYOLOGY 3

A completely enclosed roof structure.



COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3
<b>1. SOCIO-ECONOMIC STATUS</b>	<ul style="list-style-type: none"> <li>All families are single and nuclear except for one. There is one woman-headed family.</li> <li>Family sizes range from 5 to 6 and average of 6.</li> <li>Two households have tenants (A and B).</li> <li>The average household size is 7, ranging from 5 to 9.</li> <li>On average each household has two sources of income. It ranges from 1 to 3.</li> <li>The dominant employment source is through entrepreneurial/informal activity, follows by full time employment and then part-time employment.</li> <li>The average number of expenses within each household is 9.</li> <li>Only one household is able to save (E).</li> </ul>	<ul style="list-style-type: none"> <li>Three single nuclear families exist here with one single nuclear family with extended family members and one woman-headed family with extended family members.</li> <li>Family sizes range between 4 and 9 with an average of 7.</li> <li>Household size also ranges between 4 and 9 with an average of 7.</li> <li>None of the households has tenants.</li> <li>Income sources range from 1 to 4. The average household income is 2.</li> <li>Part time employment seem to dominate the typology (5 cases). The other sources are through full-time employment and pension.</li> <li>On average this typology displays an average of 8 expense items.</li> <li>None of the households are able to save.</li> </ul>	<ul style="list-style-type: none"> <li>Four families are single nuclear and one woman-headed.</li> <li>Family size ranges from 3 to 6 with an average of 4.</li> <li>None of the families have tenants.</li> <li>Household size also ranges from 3 to 6 with an average of 4.</li> <li>Each family has one source of income except for household D that has two sources. On average each household has one source.</li> <li>The income sources tend to be accounted for by two part-time jobs, two entrepreneurial/informal jobs, one full-time employment and one grant.</li> <li>On average families have eleven expenses.</li> <li>Three households are able to save.</li> </ul>
<b>2. ADDITIONS</b>	<ul style="list-style-type: none"> <li>Four out of five initial structures were toilets. One household had built a shack.</li> <li>Roof structures were provided by government after toilets were provided. This was followed by one room under the roof structure.</li> <li>Ten additions by residents had been made in total.</li> <li>Nine additions were shacks and one was a house.</li> <li>Three households had made two additions (households A, C and D), one household had made three additions, and household E had made one addition.</li> <li>All shacks were made of temporary materials and houses of permanent materials.</li> <li>Where information (however, minuscule) was available, the following was noted: <ul style="list-style-type: none"> <li>Materials for shacks were sought in Mamelodi and materials for houses were sought outside Mamelodi.</li> <li>Costs range from R650 to R2400.</li> <li>In most cases savings was the source of funding.</li> <li>Builders: a large number of private contractors were used. A few owners built their own additions and others employed the material suppliers.</li> <li>The time lapse between additions range from one to four years.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Four of five initial structures were toilets. One household constructed a shack.</li> <li>Roof structures and one room under the roof structure were provided after the toilets were provided.</li> <li>14 additions have been made in total: four were houses in construction, nine were shacks, and one was an additional room.</li> <li>All shacks were made of temporary materials, the rest were made of permanent materials.</li> <li>Where information (however, minuscule) was available, the following was noted: <ul style="list-style-type: none"> <li>In most cases permanent materials were sought outside Mamelodi and temporary materials within Mamelodi. A few cases go against this trend, i.e. permanent materials were sought within and temporary materials were sought outside.</li> <li>Costs range between R330 - R3 040. The cost of temporary structures ranges between R330 to R2 000. Permanent structures cost between R1 000 and R3 040.</li> <li>Savings was mostly the source of income. Retirement money was also used in one particular household.</li> <li>Owners used their own skills in the construction 95% of the time whilst private contractors were appointed 5% of the time.</li> <li>The time lapse between additions range between a few months to seven years.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>All initial structures were toilets provided by government and placed at the back of the erven in either the left or right corners.</li> <li>Roof structures were provided progressively after all erven had toilets. In this case, the roof structures were provided after all households had constructed one shack.</li> <li>Eleven additions had been made in total. Of these 11, five were shacks, five were completed houses, and one was a garage.</li> <li>All households made two additions except for household C (three additions).</li> <li>Where information (however, minuscule) was available, the following was noted: <ul style="list-style-type: none"> <li>All shacks were constructed of temporary materials and houses of permanent materials.</li> <li>Temporary materials were purchased from within Mamelodi and permanent materials from outside Mamelodi.</li> <li>Costs for temporary structures range from R500 to R900. Permanent structures cost between R1 000 to R3 000.</li> <li>Majority of savings money was used. One loan had been acquired.</li> <li>Builders of shacks were either owners or material suppliers.</li> <li>Builders of houses were private contractors.</li> <li>The time lapse between additions was between one and four years.</li> </ul> </li> </ul>



COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3
3. HOW HAS THE UNIT CHANGED OVER TIME	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of two extensions per household has been made.</li> <li>All shacks were constructed of temporary materials and formal structures from permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Average erf size: 215m<sup>2</sup></li> <li>Average extension size: 21m<sup>2</sup></li> <li>Average area: 39m<sup>2</sup></li> <li>Average coverage: 17%</li> <li>Average occupational density: 6m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>Shape: All shacks appear rectangular in shape. The houses constructed take irregular shapes: trellised and 'L' shaped.</li> <li>Average dimensions: 3.6m x 5.2m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>In most cases shacks were placed at the back of the erven and roof structures either centrally or squeezed in next to existing shacks.</li> <li>Most had no reasons for the placing of their shacks, but the owner that had constructed the house reflected that the location of his house was the ideal position.</li> </ul>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of approximately three shacks per household.</li> <li>All shacks were constructed of temporary materials and houses (incomplete) were constructed from permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Temporary structures total area: 155m<sup>2</sup></li> <li>Temporary structures average area: 31m<sup>2</sup></li> <li>Temporary structures average size: 17m<sup>2</sup></li> <li>Temporary structures average coverage: 16%</li> <li>Permanent structures total area: 228m<sup>2</sup></li> <li>Permanent structures average area: 46m<sup>2</sup></li> <li>Permanent structures average size: 46m<sup>2</sup></li> <li>Permanent structures average coverage: 23%</li> <li>Combined average extension size: 27m<sup>2</sup></li> <li>Combined average area: 77m<sup>2</sup></li> <li>Combined average coverage: 38%</li> <li>Combined average occupational density: 12m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>Shape: Rectangular shapes dominate the additions made. Some have been arranged along side one another whilst others have been arranged in and 'L' shape.</li> <li>Average dimensions: 4m x 6m. Average dimensions of temporary structures: 3.5m x 5m. Average dimensions of permanent structures: 5.4m x 8m.</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>Shacks have been placed at the back of the erven. In two cases, the shacks border the side boundary as well.</li> <li>The incomplete houses (roof structures) have mostly been placed in a central position on the erven where the longer side lies parallel to the road frontage. The other two roof structures have been placed with the shorter side parallel to the road frontage. These structures have been placed toward the sides of the erven.</li> <li>Most have no reason for the placing of their shacks except for one household (A). The reason behind placing the shacks along the boundary of the erf was to ensure an easy transition into the future house without disrupting or destroying the present accommodation.</li> </ul>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of two additions per household was noted.</li> <li>All shacks were constructed of temporary materials and houses of permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Temporary structures total area: 58m<sup>2</sup></li> <li>Temporary structures average area: 19m<sup>2</sup></li> <li>Temporary structures average size: 19m<sup>2</sup></li> <li>Temporary structures average coverage: 10%</li> <li>Permanent structures total area: 290m<sup>2</sup></li> <li>Permanent structures average area: 58m<sup>2</sup></li> <li>Permanent structures average size: 48m<sup>2</sup></li> <li>Permanent structures average coverage: 30%</li> <li>Combined average extension size: 39m<sup>2</sup></li> <li>Combined average area: 70m<sup>2</sup></li> <li>Combined average coverage: 35%</li> <li>Combined average occupational density: 19m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION</b></p> <ul style="list-style-type: none"> <li>Shape: Shacks built take a rectangular shape. In household A the shacks have been arranged to form an 'L' shape. Houses are rectangular in shape with an 'L' shaped garage.</li> <li>Average dimensions of temporary structures: 3.3m x 5.6m. Average dimensions of permanent structures: 5.7m x 8m.</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All shacks have been placed at the back of the erven and the houses in a central position with the longer side lying parallel to the road frontage.</li> <li>Where houses have been placed with the shorter side parallel to the road frontage, they have been placed along the side boundaries and closer to the road frontage.</li> <li>None of the household members had explanations for the positioning of their structures.</li> </ul>
4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>An average of three bedrooms per household and a total of 15.</li> <li>Each household has at least one kitchen.</li> <li>Two households have a dining room and one a lounge.</li> <li>One household has a spaza shop and the other a bathroom.</li> <li>Each household makes use of the toilet provided by government. One household also has an indoor toilet.</li> <li>In most cases the reason for expanding has been the need for more space for their children</li> </ul>	<ul style="list-style-type: none"> <li>There is an average of 2.5 bedrooms per household and a total of 13.</li> <li>Each household has a kitchen and make use of the toilet provided by government.</li> <li>Two households have dining rooms and one has a lounge.</li> <li>Most reason that space is needed for their children or family and this stimulates extensions. The affordability of others limited the additions made.</li> </ul>	<ul style="list-style-type: none"> <li>In total, there are 14 bedrooms across all households. An average of three per household.</li> <li>Each household has a kitchen and a lounge.</li> <li>One household has a dining room.</li> <li>Nine toilets exist. All households have indoor toilets in combination with the toilet provided by government except for household A.</li> <li>At least one bathroom is present in each household.</li> <li>The use of space in each case was suited to the needs of the families.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3
5. HOW IS THE PROPERTY	<ul style="list-style-type: none"> <li>• Three households have gardens.</li> <li>• Two households make provision for the parking of cars.</li> <li>• Commercial activity is conducted from within two households.</li> <li>• Renters reside within two erven.</li> </ul>	<ul style="list-style-type: none"> <li>• Three households have gardens in front of their homes.</li> <li>• One household has a vegetable garden at the back of the erf and household A makes provision for the parking of a vehicle at the front.</li> <li>• Three households have clotheslines that connected temporary structures together. These clotheslines are found at the back of the erven.</li> <li>• Tents are also erected either for shelter or as a carport.</li> </ul>	<ul style="list-style-type: none"> <li>• Three households have gardens placed at the front of the yard.</li> <li>• Each household makes provision for the parking of cars. This is mostly accommodated at the side.</li> <li>• Services and commercial activity is conducted within two separate households.</li> <li>• Tents have been erected for socialising space.</li> <li>• Many storage facilities are present (three households)</li> <li>• Clotheslines have been erected in three erven.</li> </ul>
6. PUBLIC/PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• Only two households have erected fences in front of their homes. Others have either placed stones defining the front boundary or not erected anything up front. This allows for public space to invade the space of the erven.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>• Transparent wire fencing has been used in all cases. This is a very poor attempt at creating private space.</li> <li>• In some cases trees have been used to re-inforce these boundaries.</li> <li>• There is only one case where privacy is created.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>• All roof structures have been placed very close to the shacks, thereby creating some semi-private space between the structures.</li> <li>• Some shacks have been placed along boundary lines to strengthen the boundaries.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>• All shacks have placed their doors to face the roof structure.</li> <li>• In some cases the roof structure acts as a buffer from the street.</li> <li>• Household C has a door facing the street and one facing the back yard.</li> </ul>	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• An attempt is made by four households to fence off their yards from the public with the use of wire fencing. This does not assist in creating private space.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>• All temporary structures have placed their doors to face the roof structures. In the absence of the roof structures, the need for privacy is still evident, i.e. doors are placed to the side in most cases.</li> <li>• An element of security is evident.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>• Transparent wire fencing has been used around all erven except household D (no fencing).</li> <li>• This doesn't help in the creation of privacy. In some cases, trees have been used to strengthen the element of a border and the need for privacy. It hasn't been very successful in the creation of privacy.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>• The placing of the roof structures close to the temporary structures have enabled some degree of privacy to transpire.</li> </ul>	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>• Three households have attempted to fence off their properties and have used transparent wire fencing. It does not help to create private space.</li> <li>• The other two households have decorated the entrances with bricks and stones.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>• Three out of five households have their doors facing the street, whilst the others have their doors at the sides. However, each household has back door. Therefore, interaction with the public is sought as well as privacy.</li> <li>• However, two out of the three households could find this beneficial because of the service and commercial activity that transpires within the households. Interaction with the public with lure more business to their establishments.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>• Transparent wire fencing has been used again in all cases except household C. It does not successfully help to create privacy.</li> <li>• The households here present an interesting dynamic, i.e. although privacy is created at the back of the erf, from the public on the street and some neighbours, it is semi-private from other neighbours.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>• The houses have been placed close to the shacks. The arrangement of the roof structure and shack in household A helps to facilitate privacy between the units.</li> <li>• In most cases some form of privacy is created between the temporary structures and the houses.</li> <li>• In most cases, the placing of the structures, trees and fencing have assisted in keeping the public out of the back of the erven while keeping the front part of the erven open. Privacy was sought at the back.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

	TYPOLOGY 1	TYPOLOGY 2	TYPOLOGY 3
CONCLUSION	<p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li><b>Family structure:</b> A single, nuclear family is typical within this area with just one woman-headed household.</li> <li><b>Family sizes:</b> Family sizes range between 5 and 6, which is quite consistent. Household sizes tend to be much larger because of the presence of tenants in some households (range between 5 and 9). Households A and B have tenants.</li> <li><b>Sources of income:</b> On average each household has two sources of income. These sources can be accounted for by entrepreneurial/informal activity (mostly), rent, part-time employment and full-time employment. The family within household A is completely supported by rental money. Affordability of this family will be restricted as a result. The ability of these families to make additions is limited to a certain degree considering the amount of people that have to be supported.</li> <li><b>Expenses:</b> These families have numerous expenses (9). Combined with the large family sizes and the limited income sources, the abilities of these families are further restricted.</li> <li><b>Savings:</b> The ability of households to save is evidence enough of their inability to make good quality additions. Only one household is able to save.</li> </ul> <p><b>Conclusion</b> Household B would appear to be in the most favourable situation with five family members, fewer expenses and three sources of income. The next household with greater potential for building additions would be a tie between households A and C. Household E seems to be in the worst position. This household's ability is restricted by many factors irrespective of its ability to save.</p>	<p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li><b>Family structure:</b> All families are single and nuclear. Just one has extended family members living with as well.</li> <li><b>Family sizes:</b> Tend to range between 4 and 9 with an average of 7. The range of family sizes is quite large.</li> <li><b>Sources of income:</b> Each household has an average income source of two, ranging from 1 to 4. One household survives on the pension received and another on occasional part-time employment.</li> <li><b>Expenses:</b> On average each household has 8 expenses. They range between 7 and 11 expenses.</li> <li><b>Savings:</b> None of the households are able to save.</li> </ul> <p><b>Conclusion</b> The affordability of these households is therefore low. The income sources are few, family sizes are large in comparison to the number of income sources available and expenses are high. The commonalities between the households that can allow other factors to be isolated for comparison are the expenses made, i.e. they are more or less similar. Income sources are also similar throughout except for household E (4 sources). This places household E in a better position to make additions irrespective of the large family of seven. This allows for the evaluation of the type of employment and the family size in order to determine the affordability and ability of households to make additions. Household E seems the most likely to make additions (many income sources) followed by household A (has part-time employment). Household C also has one part-time income source but the family size is larger than household A. This would require the income to be spread over a larger number of people. The affordability to make extensions would therefore be lower. Households B and D have income sources from pension and occasional part-time employment. They are therefore similar on that basis, but family sizes differ. Household B would therefore be able to extend to a greater extent than household D.</p>	<p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li><b>Family structure:</b> All families are single and nuclear except for one woman-headed family.</li> <li><b>Family sizes:</b> tend to be small (average size of 4), ranging from 3 to 6.</li> <li><b>Sources of income:</b> Each family has one source of income excluding household D (2 sources).</li> <li><b>Expenses:</b> On average each household has eleven expenses. There are many expenses made.</li> <li><b>Savings:</b> Three households are able to save.</li> </ul> <p><b>Conclusion</b> The affordability of households to expand is reasonable considering that family sizes are average and are supported by one source of income. Households A to D have the same number of expenses and similar family sizes (between 3 and 4). Household E has 6 family members. Households A, B, C, and E have a single source of income (either entrepreneurial/informal, full-time employment or part-time employment), whilst household D has two sources of income (one formal and one grant). Therefore, households A to C would have the same advantages and disadvantages and would therefore produce similar products. Household D would appear to be at the greatest advantage, with a small family size and two sources of income. Household E seems to be the one to produce the least amount of addition or of poorer quality because of the larger family size.</p>
	<p><b>PRODUCT</b></p> <ul style="list-style-type: none"> <li><b>Number of additions:</b> In total ten additions have been made. Household B had made three additions followed by households A, C and D with two additions each and household E with one addition. Household B had been the most successful in building many additions, which reinforces the statement made above.</li> <li><b>Time:</b> All households had arrived around the same time (1996) except for two households (C and E). Household C had arrived in 1997 and household E in 1995. This shows that time was not a factor in terms of consolidation in this typology, i.e. arriving in 1995 would imply that this household would have either made more additions or consolidated to a greater extent than the others considering being there for a longer period. The total opposite holds true. Household E is the least consolidated and has produced the least amount of additions. Household C had arrived in 1997 (more or less a year later than the majority), which would imply the least consolidated and the least amount of additions. Instead, this household is the most consolidated (permanent structure) with the average number of additions made.</li> <li><b>Type of structures:</b> All structures produced were temporary structures except for one produced by household C (a house made of bricks). 90% was therefore temporary structures.</li> <li><b>Level of formalisation:</b> The level of formalisation within this typology is low considering that only one household had managed to produce a permanent structure (10%).</li> </ul>	<p><b>PRODUCT</b></p> <ul style="list-style-type: none"> <li><b>Number of additions:</b> In total 14 additions have been made (average of 3 each). Households A, B, C, and E had made three additions each and household D had made two.</li> <li><b>Time:</b> Households had arrived between 1992 and 1996. One household couldn't provide the information necessary to determine the time of arrival, but the others arrived around the same time except for household B (1992). The time of arrival has had an effect on the quality of house produced, i.e. arriving in 1992 has allowed this household to build up the roof structure with face bricks. In comparison to the other households structures, this structure is of a higher quality. All the other households have built up the roof structure as well. The quality of structures appears to be similar.</li> <li><b>Type of structures:</b> Temporary and permanent structures have been built. On average, each household has managed to build two initial temporary structures and one final permanent structure.</li> <li><b>Level of formalisation:</b> Each household has built a permanent structure. The level of formalisation is therefore high. The households have the ability to extend.</li> <li><b>Size of additions:</b> The average size of additions (temporary and permanent combined) is 27m<sup>2</sup>. Temporary structures range from 9m<sup>2</sup> to 24m<sup>2</sup> with an average of 17m<sup>2</sup>, whilst permanent structures average 46m<sup>2</sup> (range between 12m<sup>2</sup> and 54m<sup>2</sup>). The difference between permanent and temporary structures is quite large.</li> <li><b>Configuration:</b> Permanent structures generally have dimensions of 5.4m x 8m. Temporary structures have dimensions of 3.5m x 5m, whilst the combined (permanent and temporary) average is 4m x 6m. Permanent</li> </ul>	<p><b>PRODUCT</b></p> <ul style="list-style-type: none"> <li><b>Number of additions:</b> In total eleven additions have been made. Households A, B, D and E have produced two additions (one temporary structure and one permanent structure). Household C, however, managed to produce one temporary structure and two permanent structures.</li> <li><b>Time:</b> All households had arrived around the same time (between 1996 and 1997). It is unknown when household A had arrived, but it is also estimated to have arrived around the same time. The level of consolidation in each household is more or less the same except for household C that managed to construct an addition permanent structure. However, household C had arrived the same year as household B. Therefore, time of arrival does not prove to be a factor affecting the level of consolidation on its own. Time with additional factors has played a role.</li> <li><b>Type of structures:</b> Both temporary and permanent structures have been built.</li> <li><b>Level of formalisation:</b> Each household had initially built a temporary structure followed by a permanent structure. Household C continued to build another permanent structure. There are therefore, five temporary structures and six permanent structures built. 55% of the structures produced were permanent structures. Households have managed to mobilise money to enable consolidation. The level of consolidation is therefore high.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

	<p><b>TYPOLOGY 1</b></p> <ul style="list-style-type: none"> <li><b>Size of additions:</b> Additions have an average size of 21m<sup>2</sup>, ranging from 11m<sup>2</sup> to 65m<sup>2</sup>. In the absence of including the permanent structure in the calculation, the average size of additions would be 16m<sup>2</sup>. The size of the additions has been influenced by the large family sizes, limited income sources, numerous expenses and the inability to save. The levels of affordability have had an impact on the size of structures produced.</li> <li><b>Configuration:</b> Average dimensions appear to be 3.6m x 5.2m.</li> <li><b>Area of additions:</b> On average the total area of additions within each erven is 39m<sup>2</sup> and ranges between 25m<sup>2</sup> and 65m<sup>2</sup>. Considering the number of people that live within this space, this is a small area.</li> <li><b>Occupational density:</b> On average each person has 6m<sup>2</sup> to himself or herself.</li> <li><b>Coverage:</b> The coverage of these structures on their erven range from 12% to 26% with an average of 17%. This leaves a large amount of space available for other activities.</li> <li><b>Shape:</b> All structures are rectangular except for the house built (appears 'trellised').</li> <li><b>Arrangement of structures:</b> In general temporary structures have been placed either at the back of the erven or along the side boundaries. In response to this, the roof structures have been either placed centrally on the erven with the longer side parallel to the street or along the side boundary with the shorter side parallel to the street. The placing of the roof structures was dependent on the placing of the temporary structures.</li> <li><b>Type of employment:</b> The household that has managed to build a house has been supported by three sources of income, which include a part-time job, full-time job and entrepreneurial/informal activity. All other households are supported by income from tenants, entrepreneurial/informal activity mostly with one part-time employment. The type of employment in this case appears to have influenced the ability of these households to consolidate.</li> </ul> <p><b>Conclusion</b>  <u>Household C</u> is the most successful household, managing to build a permanent structure. The factors that have assisted this household appear to be the type of employment and the number of income sources. This household arrived later than the others, has the second largest amount of expenses, and one of the largest family sizes (6), but has still managed to produce a permanent structure.  <u>Household B</u> managed to produce three temporary structures, which were assisted by the type of employment (part-time and rental income), the smaller family size, being one of the few to arrive earlier (1996), and the number of income sources. Expenses were also minimal. In comparison to household C, this household only differs by the type of employment, where household C is at the advantage, but household B has fewer expenses, the same number of income sources, a smaller family size and the advantage of arriving a year earlier. The type of income sources therefore plays an important role in this typology.  <u>Household A</u> managed two additions. The factors that played a role here are the smaller family size, fewer income sources, the type of income sources (rental income), the year of arrival (1996) and fewer expenses. In comparison to household C it has the advantage of fewer expenses, a smaller family size, and a year. It however lacks in terms of income sources and the type of income sources.</p>	<p><b>TYPOLOGY 2</b></p> <p>structures are larger than temporary structures.</p> <ul style="list-style-type: none"> <li><b>Area of additions:</b> Temporary structures have an average area of 31m<sup>2</sup> (ranging from 17m<sup>2</sup> to 48m<sup>2</sup>), whilst permanent structures have an average of 46m<sup>2</sup> (ranging from 12m<sup>2</sup> to 54m<sup>2</sup>).</li> <li><b>Occupational density:</b> In general each person has 12m<sup>2</sup> to himself or herself.</li> <li><b>Coverage:</b> On average, the temporary structures cover approximately 16% and permanent structures cover 23% leading to a total average coverage of 38%. This leaves space open for other activities.</li> <li><b>Shape:</b> All structures appear rectangular.</li> <li><b>Arrangement of structures:</b> Temporary structures have been placed at the back of the erven with the roof structures either centrally positioned or placed along the side boundary. The temporary structures have been placed next to one another to form long rectangles and others have been placed in 'L' shapes. The roof structures have been oriented in two ways, i.e. one with the longer side parallel to the street and the other with the shorter side parallel to the street.</li> <li><b>Type of employment:</b> The type of employment in combination with other factors have an influence on the ability of these households to consolidate, e.g. household B receives a pension but has four family members to feed and has produced the highest quality house. Household A has a part-time employment as the income source but has seven family members. The quality of the house is below that of household A.</li> </ul> <p><b>Conclusion</b>  <u>Household B</u> has produced the best quality house and has been assisted by time (arrived in 1992), the smallest family size (4), and a few expenses. The only inhibiting factor is the number and type of income sources.  <u>Household A</u> has managed to produce the same number of additions but has been restricted by the large family size and the limited income source. Expenses were minimal.  <u>Household E</u> has four income sources of part-time and full-time employment, a large family size of seven, and the most number of expenses. This family has been able to close the roof structure and make the same amount of additions.  <u>Household C</u> is supported by one part-time job and has the largest family (9). Expenses are kept low. The roof structure was also enclosed.  <u>Household D</u> has a family of six and one income source (occasional part-time employment) and a family of six. Expenses are a bit higher than the rest (9). This household has made the least amount of additions and is in the process of building another room under the roof structure.</p>	<p><b>TYPOLOGY 3</b></p> <ul style="list-style-type: none"> <li><b>Size of additions:</b> The average size of additions (temporary and permanent combined) is 39m<sup>2</sup>, whereas the average size of temporary and permanent structures is 19m<sup>2</sup> (ranging from 13m<sup>2</sup> to 30m<sup>2</sup>) and 48m<sup>2</sup> (ranging from 20m<sup>2</sup> - 54m<sup>2</sup>) respectively. Permanent structures are much larger.</li> <li><b>Configuration:</b> The average dimensions of temporary structures are 3.3m x 5.6m. The average dimensions of permanent structures are 5.7m x 8m. The vast difference in dimensions between the two can be noted.</li> <li><b>Area of additions:</b> The area of temporary structures range from 13m<sup>2</sup> - 30m<sup>2</sup> (average of 19m<sup>2</sup>), whereas the average area of permanent structures is 58m<sup>2</sup> (ranging from 54m<sup>2</sup> - 74m<sup>2</sup>).</li> <li><b>Occupational density:</b> Each person has an average area of 19m<sup>2</sup> to himself or herself.</li> <li><b>Coverage:</b> temporary structures amount for 10% and permanent structures for 30%. In total, they still don't cover more than 50% of the erven.</li> <li><b>Shape:</b> All structures appear rectangular. Some have been arranged to form 'L' shapes.</li> <li><b>Arrangement of structures:</b> All temporary structures have been placed at the back of the erven. Roof structures have been placed in front of them either with the shorter or longer side parallel to the street. Where the roof structures have been placed with the shorter side parallel to the street, they have been placed along the side boundary and closer to the street.</li> <li><b>Type of employment:</b> The type of employment seems not to have an effect on the abilities of families to consolidate.</li> </ul> <p><b>Conclusion</b>  <u>Household C and A</u> Produced the most additions and seem to have consolidated to a greater degree than the others. The small family size was beneficial. However, the circumstances of household C are identical to household A, i.e. expenses, type and number of income sources and family sizes are the same. The only distinguishing factor would possibly be time. It is unknown when household A had arrived. The amount of income brought in by the entrepreneurial activity could be more in household C.  <u>Household B and D</u> These two households are the same except for the type and number of income sources. Household D seems to have two sources of income (part-time and a grant). Household B is supported by a full-time job. Household D would therefore have the advantage of twice the income source compared to household B. The level of consolidation is however, the same.  <u>Household D</u> Has the advantage of fewer expenses than the rest of the households but has the disadvantage of a larger family size.</p>
<p>CONCLUSION</p>			

## COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3
CONCLUSION	<p><u>Household D</u> has constructed two additions. The factors that have been taken into consideration in comparison to household C, include a smaller family size, a single income source, the type of income source (entrepreneurial/informal), the time of arrival (1996) and fewer expenses. This household also lacks in the number and type of income sources.</p> <p><u>Household E</u> produced one temporary structure. It has the largest amount of expenses, the same type and number of income sources as in household D, the same family size as in household C and arrived in 1995).</p>		
	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li><b>Sourcing of materials:</b> The sourcing of materials were directly related to the type of structures that were built, i.e. temporary structures required the acquisition of materials from within Mamelodi, whilst materials were sought external to Mamelodi for the construction of permanent materials.</li> <li><b>Cost:</b> On average costs ranged between R650 and R2 400. Resources were minimal and affordability within this typology is low, therefore not much could be afforded.</li> <li><b>Funding:</b> Savings was the main source of funding.</li> <li><b>Builders:</b> Three types of builders were involved. The most used was private contractors, and in some cases, material suppliers were employed. In some cases, owners had built their own additions.</li> <li><b>Time:</b> The time lapse between additions ranged from one to four years. One household took four years to build another addition. The others had taken between one and two years to make additions. This indicates in general that people had saved for a little while and had built small additions.</li> </ul>	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li><b>Sourcing of materials:</b> In most cases, permanent materials were sought from outside Mamelodi and temporary structures were acquired from within. There are, however, a few people that have sourced temporary materials outside of Mamelodi and permanent materials were sought from within.</li> <li><b>Cost:</b> The cost of temporary structures range between R1 000 to R3 040. The cost of temporary structures range between R330 and R2 000. There is not a big difference between the money spent on additions of temporary and permanent nature.</li> <li><b>Funding:</b> Savings was the most common used source of funding. In one particular case, retirement money was used.</li> <li><b>Builders:</b> 95% of the time owners used their skills to build their additions. The rest of the time, private contractors were hired.</li> <li><b>Time:</b> The time between additions ranged from a few months to seven years. On average, each household took between a few months to three years to make additions. One household took seven years. This implies that time was spent saving sufficient money to build the quality permanent structure required.</li> </ul>	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li><b>Sourcing of materials:</b> The purchasing of temporary materials was done from within Mamelodi and permanent structures from outside Mamelodi.</li> <li><b>Cost:</b> The cost of permanent structures ranged from R1 000 to R3 000 whilst temporary structures cost between R500 and R900.</li> <li><b>Funding:</b> Majority of the time, savings had been used. Only one case involved the use of a loan.</li> <li><b>Builders:</b> The builders of the permanent structures involved private contractors. Temporary structures were built by either the material suppliers or the owners.</li> <li><b>Time:</b> The time lapse between additions had been between one and four years. One or two households had taken three to four years to build the permanent structures. Others had taken two years. Time was spent saving for the construction of the permanent structures.</li> </ul>
	<p><b>USE OF SPACE</b></p> <p><i>Within structures</i></p> <ul style="list-style-type: none"> <li>Households A, D and E display characteristics of households that could only afford the necessary uses (Bedrooms, kitchens, and outdoor toilets).</li> <li>Household B and C have added on a few more uses (luxuries). Household B displays only one additional use (dining room). Household C has a dining room, a lounge, a spaza shop, and an indoor bathroom and toilet. Household C is the household with the permanent structure.</li> <li>As was indicated earlier households B and C appear to be the two most successful households. As such, the uses within their structures also differ from the others. With a movement toward consolidation, the uses become more complex.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Gardens:</b> Only three households have gardens, which were placed at the front. These were flower gardens.</li> <li><b>Parking:</b> Two households make provision for the parking of cars. The car parked in household C belongs to the owner of the house and is therefore a luxury.</li> <li><b>Tenants:</b> One of the survival strategies employed in this typology is rental activity. Two households rent out structures as a source of income. Such activities are found at the back and along the side boundary.</li> <li><b>Other:</b> Another survival strategy is commercial activity. Household C runs a spaza shop from the one room provided under the roof structure and household E sell vegetables from a vegetable stall built along the street. Such activity generally occurs at the front of the property.</li> </ul>	<p><b>USE OF SPACE</b></p> <p><i>Within structures</i></p> <ul style="list-style-type: none"> <li>The uses extend beyond the basics of a toilet, bedrooms and kitchens. Some households have the luxury of dining rooms and lounges.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Gardens:</b> Three households have gardens at the front of their erven. One household has a vegetable garden at the back of the erven. This is one of the survival strategies employed in this typology.</li> <li><b>Parking:</b> Only one household makes provision for the parking of a vehicle owned by the household (luxury).</li> <li><b>Tenants:</b> None of the households has tenants.</li> <li><b>Other:</b> Households have clotheslines erected on the erven, sometimes attached from one structure to the next. Tents have also been erected to create a social space and a shelter/carport. Storage of building materials takes place on these erven wherever space would allow it.</li> </ul>	<p><b>USE OF SPACE</b></p> <p><i>Within structures</i></p> <ul style="list-style-type: none"> <li>The uses within these households go beyond the basic kitchen, bedroom and outside toilet situation. These households have the luxuries of lounges, indoor bathrooms and toilets, and dining rooms. The increase in space for the household has also resulted in the increased diversity in the use of space.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Gardens:</b> Three households have flower gardens at the front of the erven.</li> <li><b>Parking:</b> Vehicular parking is generally accommodated at the side of the erven by all households.</li> <li><b>Tenants:</b> None of the households has tenants.</li> <li><b>Commercial:</b> Two households accommodate commercial activity and provide a service from within their houses.</li> <li><b>Other:</b> Tents have been erected for social space. The storage of materials takes place on the erven wherever space would allow for it. Clotheslines have been erected on many erven.</li> </ul>



COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION TEN

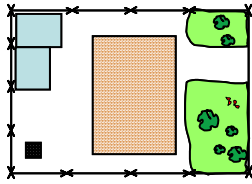
CONCLUSION

**TYPOLGY 1**

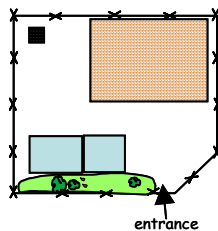
**PUBLIC/PRIVATE INTERFACE**

- **Street boundary:** The lack of street boundary definition in most households indicates the openness for interaction with the street. Only two households had attempted to fence the front boundary. Transparent wire fencing was used with the planting of trees and plants and the placing of rubble.
- **Side and back boundaries:** The transparent wire fencing used does not assist in creating private space. Privacy has only been created in household C with the assistance of the planting of trees.
- **Placing of units:** The roof structures have been placed close to the temporary structures, thereby creating semi-private space between these structures. These households have privacy from the public but not from the neighbours.
- **Placing of doors:** Most temporary structures have placed their doors to face the roof structures, which in their absence would mean that the doors of the temporary structures faced the street. This could either be the result of wanting interaction with the public or an attempt to keep space for the construction of the future house. None of the households had indicated any reason for the placing of the structures.
- The roof structure acts as a buffer from the public now. Some structures have been placed along the side and back boundaries for extra strength.

**Patterns:** 1. Shacks are placed at the back with roof structures centrally placed (longer side parallel to the street). No fence exists at the front.



2. Structures are used to block off one road frontage (in the case with two road frontages) and the roof structures have been placed at the back (where one road frontage is chosen as the entrance point) with gardens at the front. One roof structure has been placed along the side boundary (dependent on the placing of temporary structures).

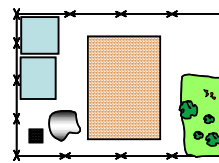


**TYPOLGY 2**

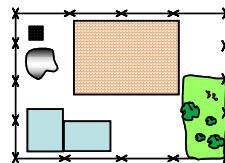
**PUBLIC/PRIVATE INTERFACE**

- **Street boundary:** The transparent wire fencing used prevents any private space from being created. The street boundaries are often accompanied by gardens and trees.
- **Placing of units:** The roof structures have been placed very close to the temporary structures. This creates privacy from the public but neighbours can still intrude on this space created.
- **Placing of doors:** All temporary structures have the doors facing the roof structures. In the absence of the roof structures, some doors face the side whilst others face the street. Privacy was required.
- **Side and back boundaries:** The transparent wire fencing does not help in creating privacy.

**Patterns:** 1. Temporary structures have been placed at the back with roof structures in the centre of the erf. Gardens are placed at the entrance.



2. Temporary structures are placed along the side and back with roof structures along the other side boundary. Gardens are present at the front and materials are stored on the erf.

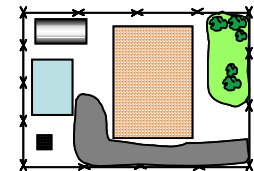


**TYPOLGY 3**

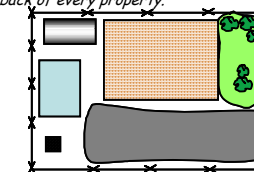
**PUBLIC/PRIVATE INTERFACE**

- **Street boundary:** The households that have attempted fencing off their properties have used transparent wire fencing, which does not assist in creating privacy. Other households have decorated the front of their erven with stones and boulders.
- **Placing of units:** The placing of the structures has helped in cutting off the public from space created at the back of the erven. This space, however, is not very private from the neighbours. The roof structures have been placed close to the temporary structures, which have assisted in the creation of semi-private space.
- **Placing of doors:** Each household has a back and front door, so whilst interaction is encouraged to a small degree at the front, privacy is also required at the back.
- **Side and back boundaries:** Transparent wire fencing has been used. This has not assisted in creating private space, but the strategic placing of trees and plants has helped to a certain degree.

**Pattern:** 1. Temporary structures have been placed at the back and sides of the erven. Three sides of the erven are fenced off with the frontage either fenced or decorated with boulders and bricks. Roof structures with the shorter end parallel to the road frontage have been placed along the side boundary. Vehicular parking has been accommodated on all erven, usually at the back. Storage also takes place at the back of property.



2. Temporary structures have been placed at the back and sides of the erven. Three sides of the erven are fenced off with the frontage either fenced or decorated with boulders and bricks. Roof structures with longer side parallel to the road frontage have been placed centrally on the erven. Vehicular parking has been accommodated on all erven, usually at the back. Storage also takes place at the back of every property.





COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3	TYPOLGY 4
1. SOCIO-ECONOMIC STATUS	<ul style="list-style-type: none"> <li>All single nuclear families reside here.</li> <li>Average family size is 4.5, ranging between 4 and 6.</li> <li>One household has one tenant.</li> <li>Average household size is 4, ranging from 3 to 6.</li> <li>The average source of income is one.</li> <li>Types of employment reflect an equal distribution between part-time and full-time employment.</li> <li>On average the number of expense amount to 10.</li> <li>Household A is the only one able to save.</li> </ul>	<ul style="list-style-type: none"> <li>The family types are divided between two single nuclear families and one single nuclear family with extended family members.</li> <li>The average family size is 5, ranging from 4 to 7.</li> <li>Households A and C have tenants.</li> <li>Total number of tenants is 8.</li> <li>The average household size is 8 ranging from 4 to 12.</li> <li>Average number of sources of income is 5, ranging from 1 to 8.</li> <li>The type of employment is characterised mainly by full-time and part-time employment with one entrepreneurial/informal activity.</li> <li>The average number of expenses is 11.</li> <li>Only one household managed to save.</li> </ul>	<ul style="list-style-type: none"> <li>There are three different family types: woman-headed and extended, single nuclear and extended, single nuclear family.</li> <li>The average family size is 8, ranging from 7 to 10.</li> <li>One household has one tenant.</li> <li>The average household size is 8, ranging from 5 to 10.</li> <li>The average number of sources of income is 3, ranging from 2 to 3.</li> <li>Full-time employment is in the majority with two cases for entrepreneurial/informal activity.</li> <li>The average number of expenses is 11.</li> <li>Only two households are able to save.</li> </ul>	<ul style="list-style-type: none"> <li>All families are single and nuclear.</li> <li>The average family size is 6, ranging from 4 to 8.</li> <li>No households have tenants.</li> <li>The average household size is 6, ranging from 4 to 8.</li> <li>The average number of sources of income is 2.</li> <li>There is an even mix of part-time, full-time and entrepreneurial/informal employment.</li> <li>The average number of expenses is 11.</li> <li>All households are able to save.</li> </ul>
2. ADDITIONS	<ul style="list-style-type: none"> <li>Initial structures were two thirds of the time a toilet that was placed at the back of the erven in either corner.</li> <li>Seven additions have been made.</li> <li>Of the seven additions, six were temporary structures and one was a formal structure.</li> <li>Household A made one addition whilst households B and C made three.</li> <li>All temporary structures were made of temporary materials and formal structures out of permanent materials.</li> <li>Where information (however, limited) was available, the following was noted:                             <ul style="list-style-type: none"> <li>Materials were sourced from within and outside Mamelodi.</li> <li>Materials that were sourced from within Mamelodi were for the construction of shacks (temporary structures). The construction of permanent structures required the acquisition of materials from outside Mamelodi.</li> <li>Costs range between R450 - R1300 with an average of R875.</li> <li>Savings was used in most cases to fund the additions.</li> <li>The use of private contractors and owner's skills in the construction of additions appear equally distributed between permanent and informal structures.</li> <li>The time lapse between additions appears to be between one and two years.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>All initial structures were toilets situated at the back of the erven on either left or right corners.</li> <li>A total of 11 additions have been made</li> <li>All additions were shacks constructed of temporary materials.</li> <li>Household A made three additions, household B made two and household C made six additions.</li> <li>Where information (however, minuscule) was available, the following was noted:                             <ul style="list-style-type: none"> <li>Materials were sourced from within Mamelodi.</li> <li>Costs range between R870 and R3300 with an average of R2085.</li> <li>Credit was used as funding.</li> <li>In most cases, private contractors were used. Owners either used their skills or were assisted in two cases.</li> <li>The time lapse between additions range from a few months to three years.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Initial structures were mostly toilets. One household had constructed a shack initially.</li> <li>9 additions have been made of which 5 are shacks (temporary materials), 1 is a rondavel, and 3 are completed homes (permanent materials)</li> <li>Household A constructed 3 additions, household B constructed 2 and household C, 4 additions.</li> <li>Where information (however, limited) was available, the following was noted:                             <ul style="list-style-type: none"> <li>Materials were acquired from a number of sources, i.e. some were given to a household, others purchased from within Mamelodi, and some purchased from outside Mamelodi.</li> <li>All temporary materials were purchased from within Mamelodi.</li> <li>Permanent materials were purchased mostly from outside Mamelodi.</li> <li>Costs of temporary structures are approximately R3 000.</li> <li>Costs of permanent structures range from R2000 to R100 000.</li> <li>Sources of funding include mostly, savings. One household had acquired a loan.</li> <li>Owners seem to dominate the actual construction with the employ of a few private contractors. The association of private contractors with the construction of permanent structures is not evident here. Private contractors and owners build both permanent structures as well as shacks.</li> <li>The time lapse between additions seems to range between a few months to a year.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>All initial structures were toilets. Two were placed at the back of the erf and one in front.</li> <li>Eight additions have been constructed in total.</li> <li>Three additions were shacks, three were completed houses, one was an incomplete house and one was a garage.</li> <li>Household A constructed two additions, household B constructed three additions and household C, three.</li> <li>Where information (however, minuscule) was available, the following was noted:                             <ul style="list-style-type: none"> <li>Material suppliers were sought in Mamelodi and outside Mamelodi.</li> <li>Temporary materials were purchased within Mamelodi and permanent materials, outside Mamelodi.</li> <li>Costs of permanent structures range from R17 000 to R20 000 (no costs of temporary structures were provided).</li> <li>Savings is used mostly. Two loans had been acquired as well for certain extensions.</li> <li>Owners had used their own building skills in the construction of shacks.</li> <li>Private contractors had been employed to construct the permanent structures (houses).</li> <li>The time lapse between additions appears to be between one to five years.</li> </ul> </li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3	TYPOLGY 4
3. HOW HAS THE UNIT CHANGED OVER TIME	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of two extensions was made.</li> <li>All shacks were constructed from temporary materials and formal structures from permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Average erf size: 180m<sup>2</sup></li> <li>Average extension size: 14m<sup>2</sup></li> <li>Average area : 34m<sup>2</sup></li> <li>Average coverage: 19% (ranged between 11% and 27%)</li> <li>Average occupational density: 8m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION*</b></p> <ul style="list-style-type: none"> <li>Shape: majority have a rectangular shape.</li> <li>Average dimensions: 3.2m x 4.5m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All extensions have been placed at the back end of the erf, next to the wet core.</li> <li>In two cases 'L' shapes are formed.</li> <li>Most reason that the units were placed in such a manner in order to keep place for the actual house to be built.</li> </ul>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of approximately 3.6 shacks had been constructed.</li> <li>They range between two and six.</li> <li>All shacks had been constructed of temporary materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Average erf size: 174m<sup>2</sup></li> <li>Average extension size: 14.5m<sup>2</sup></li> <li>Average area: 48m<sup>2</sup></li> <li>Average coverage: 28% (ranging between 24% and 35%)</li> <li>Average occupational density: 7m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION*</b></p> <ul style="list-style-type: none"> <li>Shape: Majority take a rectangular shape, except one (square).</li> <li>Average dimensions: 2.6m x 4.75m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All shacks occupy the space at the back of the erven.</li> <li>Two of them have placed shacks along the left boundary.</li> <li>All have placed shacks along the right boundary.</li> <li>Two households have shacks that have been arranged to form 'U' shapes, whilst the other takes an 'L' shape.</li> <li>Two households reason that space was reserved for the construction of the house.</li> <li>In household C space was kept for socialising and easy entrance to the spaza shop.</li> </ul>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>An average of three additions has been made.</li> <li>All formal structures were constructed of permanent materials. Temporary materials were used for the construction of the shacks.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Temporary structures total area: 64m<sup>2</sup></li> <li>Temporary structures average area: 21m<sup>2</sup></li> <li>Temporary structures average size: 16m<sup>2</sup></li> <li>Temporary structures average coverage: 12%</li> <li>Permanent structures total area: 125m<sup>2</sup></li> <li>Permanent structures average area: 42m<sup>2</sup></li> <li>Permanent structures average size: 42m<sup>2</sup></li> <li>Permanent structures average coverage: 23%</li> <li>Combined average extension size: 27m<sup>2</sup></li> <li>Combined average area : 63m<sup>2</sup></li> <li>Combined average coverage: 35%</li> <li>Combined average occupational density: 9m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION*</b></p> <ul style="list-style-type: none"> <li>Majority of extensions take on a rectangular shape except for the houses constructed.</li> <li>The houses take on odd shapes, i.e. one appears trellised and the other 'L' shaped to a certain degree.</li> <li>Average dimensions of temporary structure are 2.9m x 5.6m and houses are 5m x 8m.</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>Initial additions were placed at the back of the erven next to or in line with the toilets.</li> <li>Houses were placed either at the centre of the erven or at the side.</li> </ul> <p>The reasons for the placing of the structures differ in each case. Household A kept place for the construction of the house, household B couldn't build over sewer pipes, and household C had no reason.</p>	<p><b>NUMBER OF EXTENSIONS AND THE TREND IN USE OF MATERIALS</b></p> <ul style="list-style-type: none"> <li>Eight additions have been made, with an average of 2.5 extensions.</li> <li>All shacks were constructed of temporary materials and all houses were constructed of permanent materials.</li> </ul> <p><b>SIZE</b></p> <ul style="list-style-type: none"> <li>Temporary structures total area: 21m<sup>2</sup></li> <li>Temporary structures average area: 21m<sup>2</sup></li> <li>Temporary structures average size: 10.5m<sup>2</sup></li> <li>Temporary structures average coverage: 11%</li> <li>Permanent structures total area: 195m<sup>2</sup></li> <li>Permanent structures average area: 65m<sup>2</sup></li> <li>Permanent structures average size: 49m<sup>2</sup></li> <li>Permanent structures average coverage: 36%</li> <li>Combined average extension size: 31m<sup>2</sup></li> <li>Combined average area : 72m<sup>2</sup></li> <li>Combined average coverage: 40%</li> <li>Combined average occupational density: 13m<sup>2</sup>/person</li> </ul> <p><b>SHAPE AND CONFIGURATION*</b></p> <ul style="list-style-type: none"> <li>Shape: more or less rectangular</li> <li>Average dimensions of temporary structures: 2.4m x 4m</li> <li>Average dimensions of permanent structures: 5m x 9m</li> <li>Combined average dimensions: 7m x 4m</li> </ul> <p><b>PLACING OF BUILDINGS</b></p> <ul style="list-style-type: none"> <li>All temporary extensions began at the back of the erven.</li> <li>All houses have been placed centrally on the erven.</li> <li>All households claim that the placing of the houses were ideal (centre of the erven)</li> </ul>
4. HOW IS SPACE WITHIN THE HOME BEING USED?	<ul style="list-style-type: none"> <li>On average there are two bedrooms per household.</li> <li>Everyone has a kitchen.</li> <li>Only the outside toilet is available to all households.</li> <li>People require the essentials.</li> </ul>	<ul style="list-style-type: none"> <li>There are 16 bedrooms in total, an average of five bedrooms per household.</li> <li>There are 13 kitchens, an average of 4 kitchens per household</li> <li>There is a lounge in only one household</li> <li>Toilets provided by government are used in each household</li> <li>One household has a spaza shop</li> <li>The use of space is dictated by the essential needs of the residents.</li> </ul>	<ul style="list-style-type: none"> <li>12 bedrooms in total.</li> <li>An average of four bedrooms</li> <li>Four kitchens in total. Each household has one kitchen.</li> <li>All have a lounge.</li> <li>Everyone makes use of the government toilet and have an indoor toilet. Six toilets in total. Average of two.</li> <li>Two bathrooms.</li> <li>One house was designed by an architect and the other uses space in the way it does because it is sufficient for the use of the family.</li> </ul>	<ul style="list-style-type: none"> <li>Ten bedrooms in total.</li> <li>An average of 3 bedrooms.</li> <li>All households have one kitchen.</li> <li>Two households have one dining room.</li> <li>All have a lounge.</li> <li>Every household makes use of the toilet provided by government.</li> <li>Each household has at least on indoor toilet. Total of seven toilets.</li> <li>Each household has at least one bathroom (four bathrooms in total).</li> <li>The space was used in this way because it was sufficient for the needs of the family members.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3	TYPOLGY 4
5. HOW IS THE PROPERTY BEING USED?	<ul style="list-style-type: none"> <li>All households have gardens. Two have them in front and the other on the side.</li> <li>Two households have vegetable gardens, both at the back of the erven.</li> <li>Vehicular parking is facilitated in the front of the erven of two households.</li> <li>Tents have been erected on two erven as car ports (B and C). Household B also erected another tent attached to the informal structure that adds to the social space.</li> <li>Household A has a clothesline on the erf.</li> </ul>	<ul style="list-style-type: none"> <li>Just one household has a garden.</li> <li>Households A and C have renters on the properties. In both cases, the renters have been placed on the side boundaries of the erven.</li> <li>Space for vehicular entry and parking is facilitated by household B and C in the centre of the erf.</li> <li>All households have storage spaces for building materials and have erected clotheslines.</li> <li>Household C has a tent erected for the relaxation of the customers of the spaza shop.</li> </ul>	<ul style="list-style-type: none"> <li>All have gardens at the entrances to the erven.</li> <li>Rental housing occurs in household C.</li> <li>Household A conducts some commercial activity.</li> <li>A service is provided from within Household B.</li> <li>One vegetable garden.</li> <li>Vehicular parking is accommodated in two households.</li> <li>Building materials are stored on two erven.</li> <li>Household A has a clothesline.</li> </ul>	<ul style="list-style-type: none"> <li>Two households have gardens in front.</li> <li>Commercial activity takes place in two households.</li> <li>Cars are accommodated in Household B.</li> <li>Storage of building materials is possible on two erven.</li> <li>Clotheslines are also visible on the same two erven (household A and B).</li> </ul>
6. PUBLIC/PRIVATE INTERFACE	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>An attempt is made by all households to cordon off their properties from the street with the use of fences (transparent), gardens/trees and stones (landscaping). Two households have made more of an effort to define these boundaries (B and C).</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>Transparent fencing has been used in all households. This doesn't enable the creation of privacy.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>The units have been arranged in a manner that allows for some level of privacy and safety, except for the first household.</li> <li>All units have been placed at the back of the erven along the boundaries.</li> <li><i>Household A:</i> The lack of complexity in the use of space causes a lack of a positive interaction between the street and the erf. Poor fencing and placing of the unit prevents the creation of private space.</li> <li><i>Household B:</i> A little complexity has played in the favour of this erf. The strategic planting of trees and the placing of the structures has also played a big role in the creation of diverse usage of space. The presence of two street frontages has influenced that placing of the structures.</li> <li><i>Household C:</i> There is a little complexity inherent on this erf but sufficient to create a little semi-public space.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>All households have their doors facing the central space created by the placing of the structures. This is used in most cases as a socialising area. This compensates for the lack of space within the structures for lounges and other socialising spaces.</li> </ul>	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>In all households, fences were erected but the purpose of these fences differs. The first two households erected fences in order to define some private space and boundaries. The last household wanted interaction with the public in order to attract business. The attempt for privacy is much more evident in the first household where an attempt is made to cut the public off from the erf.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>All boundaries have been made with the use of wire fencing that is transparent in nature. In some cases walls have been erected to create privacy, which were successful to a degree.</li> <li>The boundaries (both sides and back) are however enforced by the arrangement of the structures and trees.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>The placing of the units has been done in a manner that facilitates the creation of social space as well as reinforcing the definition of the boundaries.</li> <li>The placing of the structures also facilitates the construction of the future houses by keeping space for the structure.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>All doors face inward toward the central space created. This facilitates security and a socialising space.</li> </ul>	<p><i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>The use of transparent fencing across all households did not create private space.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>Side and back boundaries are weak because of their transparent nature. It does not create privacy.</li> <li>Privacy from the public is created but not from neighbours except for household A. The wall in household A cuts off interaction with one neighbour.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>The placing of the units tends to create private space at the back of the erven in all households.</li> <li>Circumstances made the placing of these structures in household B appear side by side. Some privacy is created between the structures.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>Doors have been orientated differently.</li> <li>Household A creates interaction with the street by placing the door in a manner that faces the street.</li> <li>The other two households attempt to create privacy and security by focussing on a socialising space created by tents.</li> </ul>	<p><b>RELATION TO THE STREET:</b> <i>Street Boundary Definition</i></p> <ul style="list-style-type: none"> <li>There is an indication of different degrees of fencing that has been done.</li> <li>Household C displays the smallest attempt at fencing off the house. There is no fence.</li> <li>Household A attempts with transparent fencing.</li> <li>Household B goes all the way with the brick wall. Privacy and security is achieved.</li> </ul> <p><b>PRIVACY:</b> <i>Side and Back Boundaries</i></p> <ul style="list-style-type: none"> <li>Transparent fencing has been used in two households. This doesn't enable the creation of privacy.</li> <li>Household B has defined the boundaries with walls. This provides security and privacy.</li> </ul> <p><i>Placing of units</i></p> <ul style="list-style-type: none"> <li>All permanent units have been placed at the centre of the erven. This allows for the creation of private space at the back of the erven.</li> <li>In two cases the space behind the house is to small, i.e. a shack has been retained at the back in household A and Household C has very little space on the erf.</li> </ul> <p><i>Placing of the front door</i></p> <ul style="list-style-type: none"> <li>All doors have been placed in a manner that suggests the need for security and privacy.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

CONCLUSION	<p><b>TYPOLGY 1</b></p> <p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li>• <b>Family structure:</b> All families are single and nuclear.</li> <li>• <b>Family sizes:</b> range between 4 and 6.</li> <li>• <b>Sources of income:</b> All families are supported by one source of income (either part-time employment or full-time), except for household B that has another source of income acquired from the tenant. The ability of these families to save and make additions is therefore limited to a certain degree considering that this one income source has to support the families.</li> <li>• <b>Expenses:</b> Although household B receives two incomes, the expenditure made, accounts for less in comparison to the other two families. This would enable this family to either save or spend on building additions.</li> <li>• <b>Savings:</b> Households A and C have numerous expenses to account for but household A is the only one that is able to make savings.</li> </ul> <p><b>Conclusion</b> In this case, household B appears to be in a better position, in terms of affordability, to be able to make additions due to fewer expenses, more income sources and a family size of 4. Household C would seem to be less able to make additions due to the larger family size and many more expenses coupled with one source of income.</p>	<p><b>TYPOLGY 2</b></p> <p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li>• <b>Family structure:</b> All families are single and nuclear except for household C. This family has extended family members as well (single, nuclear + extended).</li> <li>• <b>Family size:</b> Family sizes within this typology range between 4 and 7, however two households have tenants which results in the household sizes ranging between 4 and 12. Family sizes appear regular except for the household with 7 family members. This particular household has extended family members, apart from the tenants, that accounts for such a large family size.</li> <li>• <b>Sources of income:</b> Household B has only one source, whilst household C has eight sources of income to support its family of seven. Household A is supported with five sources of income.</li> <li>• <b>Savings:</b> In terms of saving only household C is able to.</li> <li>• <b>Expenses:</b> Every household has numerous expenses but household B seems to have the most amounts of expenses. Combined with the limited income sources, this would reduce the ability of this household to extend.</li> </ul> <p><b>Conclusion</b> The affordability levels of households A and C seem to be higher than household B due to the numerous sources of income in relation to household and family sizes. In general though the affordability levels prevalent within this typology is low when considering the large family sizes and numerous expenses.</p>	<p><b>TYPOLGY 3</b></p> <p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li>• <b>Family structure:</b> Typology three is characteristic of single families but with variances in each. There is one single nuclear family, one single nuclear family with extended family members and one woman-headed family with extended members.</li> <li>• <b>Family size:</b> Family sizes range between 6 and 10. These are quite large families. Due to one child living elsewhere and the existence of tenants, household size ranges from 5 to 10. Household B has the smallest family size and household A the largest.</li> <li>• <b>Sources of income:</b> In relation to income sources, families are supported by two to three sources. For such large family and household sizes, these incomes sources could be insufficient to meet the needs of the family and enable the construction of additions.</li> <li>• <b>Type of employment:</b> The types of employment tend to be full-time across all households with additional entrepreneurial/informal activity.</li> <li>• <b>Expenses:</b> In terms of expenses made, household A has the most expenses. Coupled with such a large family size, this would be an inhibiting factor for consolidation. Household C has more or less the same amount of expenditure and household B has the least expenses. This should put household B in a better position to make additions than the other households, not only because of the minimal expenses but also because of the small family size.</li> <li>• <b>Savings:</b> Only two households have managed to save (A and C), despite their numerous expenses.</li> </ul> <p><b>Conclusion</b> Household B would appear to be at a greater advantage because of the smaller household size and fewer expenses. Households A and C seem to have similar affordability levels - expenses and family sizes are similar. However, households A and C have the ability to save.</p>	<p><b>TYPOLGY 4</b></p> <p><b>AFFORDABILITY</b></p> <ul style="list-style-type: none"> <li>• <b>Family structure:</b> The family structure prevalent in this typology is single nuclear families.</li> <li>• <b>Family size:</b> Family and household sizes range between four and eight (no tenants).</li> <li>• <b>Sources of income:</b> In relation to the sources of income, the largest and smallest household sizes have two sources of income whilst, household B, family of six, has three sources of income.</li> <li>• <b>Type of employment:</b> Household A has one full-time and one part-time income source, whilst household C has one full-time and one entrepreneurial income source. These households have at least one full-time income source compared to household B. Household B has income sources from two entrepreneurial/informal activity and one part-time employment source.</li> <li>• <b>Savings:</b> All households are able to save, thereby enabling additions to be built.</li> <li>• <b>Expenses:</b> Household C has the most expenses, followed by household B and then household A.</li> </ul> <p><b>Conclusion</b> There is no distinguishing factor that would imply one household would be more successful than the other in making additions. Each household has one beneficial factor and two inhibiting ones in comparison, i.e. where households A and B have large family sizes, household C has a small one. Where households A and C have fewer income sources, household B has one more. Where household B and C have more expenses, household A has the least.</p>
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## COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

	TYPOLOGY 1	TYPOLOGY 2	TYPOLOGY 3	TYPOLOGY 4
CONCLUSION	<b>PRODUCT</b>	<b>PRODUCT</b>	<b>PRODUCT</b>	<b>PRODUCT</b>
	<ul style="list-style-type: none"> <li><b>Number of additions:</b> In total seven additions had been made. Households B and C had made three and Household A, one.</li> <li><b>Time:</b> With reference to the affordability of the households, household A should have been able to make more than one extension since this is the only household that has the ability to save but seems to be having difficulties in extending. This can be accounted for by the dates of occupancy of each household. Households B and C arrived in this extension in 1997 and 1998 respectively and household A in 2001. This would have given households B and C the advantage, i.e. these households had more time to consolidate.</li> <li><b>Type of structures:</b> Household B should also be in a much better position to make more additions, because of the two sources of income and few expenses, but seems to be in line with household C, i.e. three additions each. In this case, although the numbers of extensions are the same, the type of extensions differs. Household B managed to build a permanent structure amongst the other two temporary structures, but household C had built only temporary structures. Household B is therefore still ahead of the other two households in terms of the level/quality of consolidation.</li> <li><b>Level of formalisation:</b> The affordability levels of the households become quite evident when one looks at the type of additions that have been made apart from the number of additions. Six temporary structures (made of temporary materials) and one formal structure (permanent materials) have been constructed. These households could not afford to build permanent structures.</li> <li><b>Size of additions:</b> Additions have been progressively made with an average size of 14m<sup>2</sup> and ranging from 8.5m<sup>2</sup> to 20m<sup>2</sup>. In most cases such a space would have to be divided into different uses, i.e. kitchen and bedroom. The affordability levels of these households have influenced the small size of the extensions made. Household A has made the largest additions and household B the smallest.</li> </ul>	<ul style="list-style-type: none"> <li><b>Number of additions:</b> A sum total of eleven additions had been made between the three households, which would give an average of 3.6 per household. A comparison between the households reveal how the numbers of extensions are representative of the income levels and family sizes, i.e. as mentioned before, it appeared that household B would not be able to make many additions and has managed two additions. Household A, although supplied by many sources of income, has managed to construct three additions in comparison to household C that constructed six additions. Households A and C have therefore been quite successful in making many additions. This can be accredited to the fact of many sources of income and the need for space in terms of family size - evident in household C.</li> <li><b>Time:</b> The initial structures on the erven were a toilet, which implies that the households had arrived after the provision of housing had taken place. In this case, the households had settled here a few months after provision in 1997, i.e. all households had arrived in the same year. The time of arrival on the erven is therefore not a factor that has affected the number and type of extensions produced.</li> <li><b>Type of structures:</b> All extensions were shacks constructed of temporary materials.</li> <li><b>Level of formalisation:</b> Considering that all structures were made of temporary materials, the level of formalisation is not advanced. None have progressed to building permanent structures.</li> <li><b>Size of additions:</b> On average extension sizes were 14.5m<sup>2</sup>, ranging from 7m<sup>2</sup> to 28m<sup>2</sup>. Household A had made the smallest extension and household B the largest. Low affordability levels have characterised the size of additions made.</li> <li><b>Configuration:</b> Average dimensions of these rectangular shape additions appear to be approximately 2.6m x 4.75m.</li> <li><b>Area of additions:</b> On average the areas of additions were 48m<sup>2</sup>, ranging between 42m<sup>2</sup> and 58m<sup>2</sup>. These areas are small in comparison to the number of people that have to live in these structures.</li> <li><b>Occupational density:</b> Each person living on these erven has approximately 7m<sup>2</sup> to him/herself).</li> </ul>	<ul style="list-style-type: none"> <li><b>Number of additions:</b> Nine additions have been made across all households. Five were shacks, one a rondavel and three were completed homes. In total six temporary structures and three permanent structures were built. Household A had constructed three additions, household B built two additions and household C managed to construct four additions.</li> <li><b>Time:</b> Two households had toilets as the initial structure whilst the other had constructed a shack. In this case this does not imply that household B had arrived before the others. Household B had not been provided with a toilet upon arrival. A toilet was connected later on. What had enabled the construction of three additions in household A and two in household B? This can be explained by the time of arrival. Household A had arrived in 1998 and household B in 2000. Household A therefore had more time to save, plan and build. Date of arrival of household C is unknown, but the appearance of the houses seems to be of better quality in household A than the others. The fundamental difference between household A and C is the amount of income sources, i.e. household A has three and household C has two. This could be the factor that has enabled household A to construct such an appealing house.</li> <li><b>Type of structures:</b> All households have constructed temporary structures initially with completed houses as the final structures.</li> <li><b>Level of formalisation:</b> Not only are there many extensions but the type of housing includes three formal structures. Despite large families and numerous expenses these families have managed to produce permanent structures. To be more specific, household A constructed three additions of which one was the completed house, household B managed to build two additions (one shack and one completed house), and household C built a house, a rondavel and two shacks. Each household managed to build one completed house at the end after building shacks. 30% of all additions made were permanent structures.</li> </ul>	<ul style="list-style-type: none"> <li><b>Number of additions:</b> In total, eight additions had been built, of which three were shacks, three were completed houses, one was a garage and one an incomplete house. Household A had constructed two additions, and households B and C had constructed three additions. The number of additions produced by each household appears regular, i.e. 2, 3, 3.</li> <li><b>Time:</b> The initial units constructed were toilets, which were placed at the back of the erf in two cases and one at the front. This would imply that all households had arrived after housing provision had been conducted. Households A and C had arrived in 1997 and household B in 1998. Households A and C would therefore be at an advantage of a year.</li> <li><b>Type of structures:</b> All households had initially constructed temporary structures, which were quickly followed by permanent structures. The number of permanent structures produced exceeds the number of temporary structures built.</li> <li><b>Level of formalisation:</b> Each household went through the phase of constructing an initial shack, followed by a permanent structure and in two cases another permanent structure. The transition from temporary structures to permanent was therefore quick. More than sixty percent of additions were permanent. Households are better able to build additions.</li> <li><b>Size of additions:</b> Average extension sizes appear to be large (31m<sup>2</sup>). The average size of temporary additions is 10.5m<sup>2</sup>, whilst for permanent structures the average size is 49m<sup>2</sup> (5m<sup>2</sup> - 76m<sup>2</sup>). There is a large difference between the two. Permanent structures tend to dominate in this typology, in numbers and in size.</li> <li><b>Configuration:</b> The combined configuration of additions is 7m x 4m (temporary structures - 2.4m x 4m and permanent structures - 5m x 9m).</li> <li><b>Area of additions:</b> The average area covered by all extensions are 72m<sup>2</sup>, which account for 40% of the erven. Almost half of the erven has been occupied. This implies a larger amount of space per person. On average permanent structures occupy 65m<sup>2</sup> and temporary structures, 21m<sup>2</sup>. The area of permanent structures is three times as much as temporary structures.</li> <li><b>Occupational density:</b> Each person residing within any one of these additions has at least 13m<sup>2</sup> to themselves. The additions built promote comfortable spaces to reside in.</li> </ul>



COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

	TYPOLOGY 1	TYPOLOGY 2	TYPOLOGY 3	TYPOLOGY 4
CONCLUSION	<ul style="list-style-type: none"> <li><b>Configuration:</b> The average dimensions of structures prevalent here is 3.2m x 4.5m.</li> <li><b>Area of additions:</b> On average the amount of space occupied by the dwellers is also small (34m<sup>2</sup> - average area of all additions combined) ranging from 20m<sup>2</sup> to 47m<sup>2</sup> considering the number of people that actually occupy that space.</li> <li><b>Occupational density:</b> This leaves an average occupational density of 8m<sup>2</sup> per person within this typology.</li> <li><b>Coverage:</b> The additions cover an average of 19% of the erven and range from 11% to 27%. It appears that a small amount of the erven is occupied by structures. This leaves a lot of the area around the structures open for activities or for future construction.</li> <li><b>Shape:</b> Characteristic of additions here is a rectangular shape.</li> <li><b>Arrangement of structures:</b> However, the arrangement of the additions generally takes on an 'L' shape along the back and side boundaries. It appears to be an indication of the desire to restrict the use of the central area of the erf in expectation of the construction of the house. This space is used as socialising space at present.</li> <li><b>Type of employment:</b> The type of employment seems to have no effect on the additions made, i.e. even though household B had two sources of income from part-time employment, the level of formalisation is a degree higher than the other two households that had one source of income from a full-time employment source.</li> </ul> <p><b>Conclusion</b>  <u>Household B</u> seems to have been the successful household to build a permanent structure. Factors that have played a role here in comparison to the other households is the low expenditure levels, more income sources, fewer family members, and having more time to consolidate.  <u>Household C</u> also had more time to consolidate than household A, but was inhibited by more family members, one income source, and many expenses.  <u>Household A</u> had one addition but was the largest one across all the households. Although household A had the same family size as household B, it was inhibited from consolidating by arriving later than the other two households, one source of income, and numerous expenses.</p>	<ul style="list-style-type: none"> <li><b>Coverage:</b> On average the extensions on the erven cover 28% of the erven (erven sizes ranging from 166m<sup>2</sup> to 179 m<sup>2</sup>). Coverage sizes range between 24% and 35%. Considering that erven sizes are small, coverage is small.</li> <li><b>Shape:</b> All additions appear rectangular.</li> <li><b>Arrangement of structures:</b> All shacks constructed seem to have been placed at the back or side of the erven in formations of 'U' and 'L' shapes. Households A and B explained that this arrangement of the shacks was for the reservation of space for the construction of the future houses. Household C arranged the shacks in this manner in order to create a socialising space for the customers of the spaza shop in one of the structures.</li> <li><b>Type of employment:</b> The type of employment does not seem to have an effect on the level of formalisation or the number of additions produced.</li> </ul> <p><b>Conclusion</b>  <u>Household C</u> seems to be the most successful in terms of the number of extensions produced. The factors that have facilitated its success are the numerous income sources and the ability to save. Inhibiting factor was the number of family members and numerous expenses.  <u>Household A</u> is also quite successful considering the number of additions produced in comparison to household B. The beneficial factor here is also the number of income sources available. The factors that inhibited growth were the number of family members and the expenses.  <u>Household B</u> had numerous expenses to contend with as well as just one source of income. However, this household managed to produce the largest structure of the three households.</p>	<ul style="list-style-type: none"> <li><b>Size of additions:</b> Average addition size is 27m<sup>2</sup>, ranging from 12m<sup>2</sup> to 52m<sup>2</sup>. On average temporary structures were 16m<sup>2</sup> (ranging between 12m<sup>2</sup> and 18m<sup>2</sup>). Sizes of permanent structures ranged between 29m<sup>2</sup> and 52m<sup>2</sup> with an average of 42m<sup>2</sup>. Permanent structures appeared to be two and a half times larger in size than temporary structures.</li> <li><b>Configuration:</b> Temporary structures generally had dimensions of 2.9m x 5.6m whilst permanent structures appeared larger (5m x 8m). Dimensions of permanent structures are larger than those of temporary structures.</li> <li><b>Area of additions:</b> The average area of all additions combined is 63m<sup>2</sup>. Permanent structures on their own have an average area of 42m<sup>2</sup> (range 29 - 52); whilst temporary structures have an average area of 21m<sup>2</sup> (range 12 - 34). Temporary structures are half the size of permanent ones.</li> <li><b>Occupational density:</b> Each person on the erven has at least 9m<sup>2</sup> to themselves.</li> <li><b>Coverage:</b> In terms of coverage of the erven, the average coverage is 35%. This leaves more than half of the property open for development or activities. Temporary structures have coverage of 12% and permanent structures, 23%. Temporary structures occupy less space.</li> <li><b>Shape:</b> The houses built take irregular shapes but all shacks were rectangular.  <b>Arrangement of structures:</b> The shacks were all placed at the back of the erven and houses either in front or in the centre. The reason for each household is different for the structures being placed in such a manner but eventually the centre of the erven was the area of selection.</li> <li><b>Type of employment:</b> In this case the type of employment could attribute to the level of formalisation, i.e. although household C has a full-time employment source plus rental money, households A and B have <b>two full-time</b> employment sources coupled with entrepreneurial/informal activity, where the latter two households have managed to produce permanent structures of better quality than household C.</li> </ul> <p><b>Conclusion</b>  <u>Household A</u> has managed three additions with a high quality permanent structure. Although the family size was large and expenses were large, the presence of three sources of income (two of which were full-time employment sources) and arriving on the erven earlier and having savings has enabled this household to construct a formal structure of good quality.</p>	<ul style="list-style-type: none"> <li><b>Coverage:</b> Permanent structures have 36% coverage whilst temporary structures have coverage of 11%. Permanent structures occupy three times as much space as temporary structures.</li> <li><b>Shape:</b> The dominant shape is rectangular.</li> <li><b>Arrangement of structures:</b> The placing of the shacks at the back and the houses in the centre of the erven imply that the households had planned to build their houses in the centre. They were keeping space for the houses by building the shacks at the back. All households had admitted that this was the ideal place for their houses.</li> <li><b>Type of employment:</b> There is no clear relation between the type of employment and the level of formalisation. It does not seem to have affected any households' ability to consolidate.</li> </ul> <p><b>Conclusion</b>  <u>Household A</u> managed to build a good quality house despite the large family size and two sources of income. This household had fewer expenses and an advantage of a year compared to household B.  <u>Household B</u> had an advantage of three income sources and a small family size. This household managed to build the best quality house inclusive of the boundary walls despite arriving a year later than the other households.  <u>Household C</u> had the most expenses, the smallest family size and the same number of income sources as household A. Even after being on the erven for a year before household B had arrived, this household has produced permanent structures but not to the same standard and quality as household B. Household B and C produced the same number of additions.</p> <p>All households had the advantage of having the ability to save.</p>



COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

	TYPOLGY 1	TYPOLGY 2	TYPOLGY 3	TYPOLGY 4
CONCLUSION			<p><u>Household B</u> has also managed to produce a good solid permanent structure after the construction of one temporary structure. The factors that have enabled the transition from temporary to permanent structure seem to be the number and type of sources of income accompanied by limited expenses. Family size could have limited the level of formalisation to standards produced by household A.</p> <p><u>Household C</u> also has a large household size with many expenses, savings and two sources of income. Although this household has managed to construct many temporary structures, the permanent structure produced is of less quality than the other two households' houses. The type and number of employment sources become relevant here, where this household has only one full-time employment source that is supplemented by rental income.</p>	
	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li>• <b>Sourcing of materials:</b> Quite interestingly to note is the sourcing of materials. In relation to temporary materials, these were sourced within Mamelodi and permanent materials were sourced outside. The poor financial state also lead to one household making their own bricks.</li> <li>• <b>Cost:</b> Costs of these additions are low. Each addition cost between R450 to R1300 averaging R875. Not much more could be afforded.</li> <li>• <b>Funding:</b> Access to credit was not an option in these households since all had used savings.</li> <li>• <b>Builders:</b> There was an equal usage of private contractors and owners skills in the construction of additions. In light of the affordability levels being affected by so many inhibiting factors, private contractors are still made use of in addition to the building skills within this typology.</li> <li>• <b>Time:</b> The time between each addition is quite small, indicating that people save up a little over a small time period and then build small additions.</li> </ul>	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li>• <b>Sourcing of materials:</b> All materials were sourced within Mamelodi (all structures produced were temporary).</li> <li>• <b>Cost:</b> Costs range between R870 to R3300 with an average of R2 085.</li> <li>• <b>Funding:</b> In most cases credit was the main source of funding, which re-emphasises the low affordability levels and poor savings abilities inherent in this typology.</li> <li>• <b>Builders:</b> The use of private contractors also became quite apparent. Only in two additions did the owners use their own building skills. Although affordability was an issue, private contractors were used in abundance compared to using their own skills.</li> <li>• <b>Time:</b> The time period between extensions seem quite small (between a few months to three years). Household B took three years between extensions, which seems to be related to the limited income sources. Although lots of time was taken, household B was able to build the largest addition. The other two households managed to build up quite quickly and smaller additions were made.</li> </ul>	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li>• <b>Sourcing of materials:</b> Materials for building had been acquired from numerous sources but the interesting observation to note is the acquisition of temporary and permanent materials from almost distinctly different sources, i.e. the trend visible here is of temporary materials being purchased from within Mamelodi and permanent materials mostly being purchased from outside Mamelodi.</li> <li>• <b>Cost:</b> The costs generally ranged from R2000 to R100 000 for permanent structures and R3 000 for temporary structures.</li> <li>• <b>Funding:</b> The costs of these additions were expensive in the case of these families that had used their savings in most cases. A loan had been acquired for the construction of one addition.</li> <li>• <b>Builders:</b> Owners had used their own skills in the construction of their additions. Private contractors had been employed in one or two cases. The level of skills usage within this typology is therefore quite high. The use of private contractors and owners had been used for the construction of both shacks and formal additions.</li> <li>• <b>Time:</b> The time lapse between additions range from a few months to a year. The speed of delivery is fast. This implies that the families are able to mobilise money fast enough to enable the construction of additions. Having construction skills also benefit the time within which additions were completed.</li> </ul>	<p><b>PROCESS</b></p> <ul style="list-style-type: none"> <li>• <b>Sourcing of materials:</b> The purchasing of temporary materials was done within Mamelodi and for permanent structures, outside Mamelodi.</li> <li>• <b>Cost:</b> The costs of extensions within this typology ranged from R17 000 to R20 000 for permanent structures. A lot of money was invested.</li> <li>• <b>Funding:</b> For certain extensions loans were acquired, but in most cases savings was used.</li> <li>• <b>Builders:</b> In relation to the type of additions made, i.e. temporary or permanent, the type of labour employed correlates. Owners had used their own skills to build their shacks but employed private contractors to build their homes.</li> <li>• <b>Time:</b> The time lapse between additions appears to be between one and five years.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

CONCLUSION	<p><b>TYPOLGY 1</b></p> <p><i>USE OF SPACE</i></p> <p><i>Within structures</i></p> <ul style="list-style-type: none"> <li>The uses within the additions are the essentials, i.e. kitchens and bedrooms. On average each household has two bedrooms, one kitchen and also makes use of the toilet provided by government. It appears that these households are surviving on the essentials based on their poor financial situation and the family members to support.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Gardens:</b> The uses on the erven itself indicate some level of diversity. In general the flower gardens are placed at the front and vegetable gardens at the back of the erven. It seems that flower gardens are decorative and are placed at the front for passers by to admire. Vegetable gardens can also be admired, but its purpose differs slightly. Not only is it decorative but it also provides the owners with food. The placing of such gardens at the back is for the protection of this investment and potential guarantee of food, if taken care off. The presence of vegetable gardens can be seen as a survival strategy. It provides a saving of money.</li> <li><b>Parking:</b> Parking for vehicles is accommodated at the front of the erven. This use was probably not planned for initially and hence takes such a position. Both households have fenced off their homes that helps protect their cars. The cars parked in these properties belong to friends and are not luxuries of these households.</li> <li><b>Tenants:</b> Household B has a renter in the structure placed against the boundary along the street.</li> <li><b>Other:</b> Tents have also been erected here to serve as the car ports and a social space. A clothesline appears in household A.</li> </ul>	<p><b>TYPOLGY 2</b></p> <p><i>USE OF SPACE</i></p> <p><i>Within structures</i></p> <ul style="list-style-type: none"> <li>In terms of the use of space within the additions, they appear to be the basic needs, i.e. bedrooms and kitchens. One household (B) does however have the <i>luxury</i> of a lounge. All households make use of the toilet provided by government.</li> <li>In total there are 15 bedrooms which average out to five bedrooms per household. The number of bedrooms is related to the number of people residing between these three households.</li> <li>The number of kitchens can be explained in much the same manner, i.e. there are 13 kitchens in total with 4 per household as the average. The number of people occupying the households explains the large number of kitchens and bedrooms.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Gardens:</b> Within the erven, the uses extend from gardens to the use of tents. Only one household has a garden in front of the house.</li> <li><b>Parking:</b> Space for the parking of vehicles is made in the centre of the erf. Household B and C do possess cars (<i>luxury</i>) of which one is in working condition (household C).</li> <li><b>Tenants:</b> Renters exist in the other two households (A and C) along the side boundaries.</li> <li><b>Commercial:</b> In household C the <i>survival strategy</i> employed is that of a spaza shop that occupies one temporary structure at the back of the erf.</li> <li><b>Other:</b> Other uses include storage spaces for building materials which is generally kept at the back of the erven. All households have storage facilities or spaces. Clotheslines are also erected between extensions or on the side of the erven. In household C a tent is erected for the relaxation of its customers.</li> </ul>	<p><b>TYPOLGY 3</b></p> <p><i>USE OF SPACE</i></p> <p><i>Within structure</i></p> <ul style="list-style-type: none"> <li>The spaces within the structures are used as follows: bedrooms, kitchens, lounges, toilets, and bathrooms.</li> <li><b>Bedrooms:</b> In total there are 12 bedrooms with an average of four per household. This is a large number of bedrooms that attempt to accommodate the large household structures.</li> <li><b>Kitchens:</b> Each household has at least one kitchen - four kitchens in total.</li> <li><b>Lounge:</b> All households also have a lounge. These households are able to make space for socialising within the structures as well, which is seen as a luxury.</li> <li><b>Toilets:</b> The toilets provided by government are use as well as indoor toilets (<i>luxury</i>).</li> <li><b>Bathrooms:</b> Two households have the luxury of bathrooms.</li> <li>Households have divided spaces into uses that suit the needs of their families and what they can afford to build. They exceed the basic needs (kitchens and bathrooms) by building indoor toilets and bathrooms, lounges and many bedrooms. Comfort needs of the households are also catered for and many luxuries have been attained.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Garden:</b> In terms of use of space on the erven, each household has a garden at the entrance to the erven. One household (C) has a vegetable garden in front of the erven.</li> <li><b>Survival strategy:</b> Each household generates other income either via providing a service (repairs of refrigerators, etc), selling goods or renting out a structure. Each of these activities is specific to each household.</li> <li><b>Parking:</b> In two households the centre of the erven are used to accommodate vehicles.</li> <li><b>Storage:</b> Storage of building materials tend to happen on two erven, one at the front and one at the back. Storage of materials therefore happens where space is available, whether in front or at the back.</li> <li><b>Other:</b> Just one household has a clothesline erected at the side of the erf.</li> <li>The use of space on the erven is very diverse. The only commonality between all three households is the presence of gardens at the front of the erven.</li> </ul>	<p><b>TYPOLGY 4</b></p> <p><i>USE OF SPACE</i></p> <p><i>Within structure</i></p> <ul style="list-style-type: none"> <li>The use of space within the houses displays diversity and the ability of these households to afford to build such homes to accommodate such uses. The uses go beyond the basic needs of a kitchen and bedroom. Each household has an average of three bedrooms, one kitchen, a lounge, an indoor toilet and a bathroom, the latter three uses being luxuries.</li> <li>In total there are ten bedrooms across the three households. Two households have a dining room (<i>luxury</i>) and every household makes use of the toilet provided by government apart from their indoor ones.</li> </ul> <p><i>Within erven</i></p> <ul style="list-style-type: none"> <li><b>Gardens:</b> Two households have flower gardens in front of their homes (decorative).</li> <li><b>Parking:</b> One household is able to accommodate a vehicle. Household B has the luxury of owning a car.</li> <li><b>Survival strategy:</b> Commercial activity is conducted from within households A and B.</li> <li><b>Other:</b> Storage of building materials occurs on two erven (household A and B) and clotheslines are erected at the back and on the side.</li> <li>Uses of the erven are not very simple.</li> </ul>

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

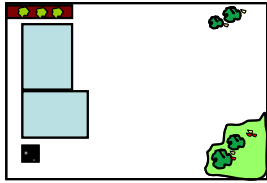
CONCLUSION	<p><b>TYPOLOGY 1</b></p> <p><i>PUBLIC/PRIVATE INTERFACE</i></p> <ul style="list-style-type: none"> <li>• <b>Street boundary:</b> All households have made attempts to cordon off their properties either with fencing or the use of stones. Two households are much more defined in their attempts than household A. The use of stones in household A creates a decoration but does not succeed in preventing people from invading their space, i.e. public space from the street invades the erven thereby creating interaction, increasing security risks and preventing the creation of privacy. Besides the use of fencing in the other two households, trees and plants are used to create a secure environment within the erven.</li> <li>• <b>Space between the street and the structure:</b> The space between the street and the additions appear to range from simple to a bit complex. Apart from the use of trees and fences there are paved areas for parking, gardens and stoeps. An attempt is therefore made to create a more complex environment before one enters the additions thereby making the experience of the transition from public space to private space more clearly defined and functional where interaction with the public is not cut off and where the public space does not invade the space within the erven.</li> <li>• <b>Side and back boundaries:</b> Although the fencing is continuous throughout all boundaries on all erven, this fencing does not serve the purpose of creating privacy because of its transparent nature. Rather, the placing of the additions in the 'L' shape along the boundaries and the placing of the gardens facilitate the desire for privacy and satisfy that need to a certain degree. Private space is therefore created in household B.</li> <li>• <b>Placing of units:</b> All structures have been placed along the side and back boundaries, leaving a large central space open in front of the structures. It has been used mainly for socialising.</li> <li>• <b>Placing of doors:</b> All doors in all households face this central socialising space created.</li> </ul>	<p><b>TYPOLOGY 2</b></p> <p><i>PUBLIC/PRIVATE INTERFACE</i></p> <ul style="list-style-type: none"> <li>• <b>Street boundary:</b> The attempt at definition of private space within households A and B are quite evident with the use of fencing in the front and the planting of trees and creepers. However household C attempted to create interaction with the street in order to attract people to the spaza shop. The street definition of each household is therefore different for the different intentions pursued.</li> <li>• <b>Space between the street and the structure:</b> The level of complexity within the erven of household B differs to that of the other two households. Household B is much more complex, i.e. upon entrance to the erf through the gate; there is a garden and a concrete area that could function as a verandha or stoep. The progression from public to private space is gradual allowing interaction with the public space until a certain point. The other households have almost direct interaction with the street if it were not for the gates in front of the erven, the rest area in household C, and the trees and clotheslines in household A. Household C therefore invites public space in while household A attempts to cut off the interaction with the placing of the clothesline.</li> <li>• <b>Side and back boundaries:</b> All side and back boundaries appear to be made of transparent wire fencing. Some side boundaries are re-enforced with walls and trees. This helps to facilitate the definition of semi-private space, which seems to be successful in household A.</li> <li>• <b>Placing of units:</b> The placing of the units on all erven is done in such a manner that a central socialising area is created. The units also re-enforce the boundaries that were attempted to be defined by the fencing. The placing of the units therefore plays two roles, i.e. creation of socialising space and boundary definition.</li> <li>• <b>Placing of doors:</b> All doors face the central space created (socialising space).</li> </ul>	<p><b>TYPOLOGY 3</b></p> <p><i>PUBLIC/PRIVATE SPACE</i></p> <ul style="list-style-type: none"> <li>• <b>Street boundary:</b> Fencing at the front of the erven doesn't assist in creating privacy since the fencing used is transparent.</li> <li>• <b>Space between the street and the structure:</b> Movement toward the structures on each erven is first encountered by a flower garden. One household has a vegetable garden at the entrance as well which makes the use of space more complex, thereby facilitating a gradual transition from public to private space. Further inward, before entering any structure within household C there is a tented area with a concreted area below. This creates a 'veranda' that adds to the gradual transition. Households A and B also have a diverse use of space that assists in creating the gradual transition from public space to private space. Household B had erected a tent between the entrances of the shack and the house to create some privacy. The presence of the tent allows for interaction and privacy when desired by the residents simply by raising the tent or lowering it over the area. The entrance to the house is also facilitated by stairs. The use of space is not as diverse but achieves the objective of privacy. Household A has the least amount of space that is used in a diverse manner, but attempts it by creating a veranda at the front of the house accompanied by a small garden on the side.</li> <li>• <b>Side and back boundaries:</b> Side boundaries tend to be weak where privacy is not accomplished. Privacy from the public is created but neighbours can intrude. Household A on the other hand had built a wall along one boundary that creates some privacy from the adjoining neighbour.</li> <li>• <b>Placing of units:</b> The placing of the structures has facilitated private space at the back of the erven generally. The houses have been placed either in the centre of the erven or at the side.</li> <li>• <b>Placing of doors:</b> The orientation of doors in each erven differs. Whilst household A offers itself for interaction with the street by placing the front door facing the street, the other two households prefer to create some privacy. Households B and C have placed their doors on the sides and have attempted to re-inforce this by placing tents in appropriate positions. The use of tents in each case has been used above entrances to structures and attempts to break down the use of space to become more private.</li> </ul>	<p><b>TYPOLOGY 4</b></p> <p><i>PUBLIC/PRIVATE SPACE</i></p> <ul style="list-style-type: none"> <li>• <b>Street Boundary:</b> Some cases reflect a desire for privacy with the construction of a brick wall whilst in the other cases transparent fencing is used or not at all. There are varying degrees in the type of fencing built. Household B allows for some interaction at the front of the property with the use of spikes in combination with the wall.</li> <li>• <b>Space between the street and the structure:</b> The lack of diverse use of space within the erven reflects a bad attempt at the gradual progression from public to private space. The result is that in one case the public space is cut off to a certain degree (household A) and in another case the public space intrudes to a great degree on the erven (household C). Household B encourages interaction with the public because of the spaza shop.</li> <li>• <b>Side and back boundaries:</b> The definition of boundaries is quite apparent in all households. However, the use of materials used differs: household A and C have used transparent fencing, which defines boundaries but creates no privacy. Household B constructed a wall, which allows for a great degree of privacy.</li> <li>• <b>Placing of units:</b> All structures have been placed at the centre of the erven which allows for the creation of private space at the back of the erven. It is successful in the case of household B but not to such a degree in the other households because of the type of fencing used.</li> <li>• <b>Placing of doors:</b> Although household B encourages interaction with the street, this is via the garage (location of the spaza shop). The door of the house is placed in a way that suggests the need for privacy. Households A and C have placed the doors on the side of the houses, which also suggests the need for privacy.</li> </ul>
	9			

COMPARATIVE ANALYSIS OF TYPOLOGIES WITHIN EXTENSION SIX

CONCLUSION

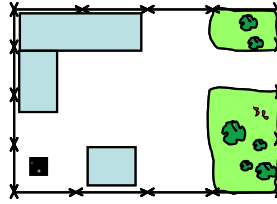
TYPOLGY 1

**Pattern:** All structures have been placed at the back of the erven leaving maximum space open in front. Gardens and trees exist at the entrance with vegetable gardens at the back.



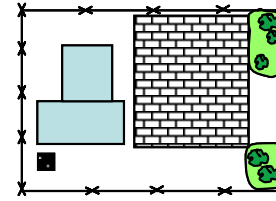
TYPOLGY 2

**Pattern:** All structures have been placed along the side and back boundaries either in 'L' or 'U' shapes creating a central space for socialising. The entire erf is fenced with a garden or trees planted at the entrance. All structures focus on the central area.



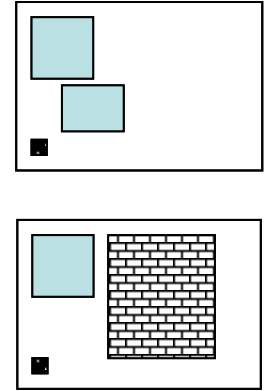
TYPOLGY 3

**Pattern:** All temporary structures were initially placed at the back with the permanent structures in front leaving space at the back which is private from the public but not from the neighbours. All erven are fenced with gardens at the entrances. Tents are used at entrances to structures to create a break from public to private space and to create some socialising space.



TYPOLGY 4

**Pattern:** Initially temporary structures were placed at the back of the erven with permanent structures placed in front of them. Some temporary structures were removed in order to construct the house. Differing levels of boundary definition with little diversity in the use of space.



4.4. QUALITY GUIDELINES  
4.4.1. HOUSING CODE

The Housing National Code sets out the National Housing Policy of South Africa in one comprehensive document and is not intended to replace the key legislation and laws relating to the National Housing Policy. It is rather, a statement of present policy and provides an overview and confirmation of the existing policy that is in place. With the continually changing National Housing Policy, the Housing Code will change. Housing development within the Code is defined as follows:

" (vi) **"housing development"** means the establishment and maintenance of habitable, stable and sustainable public and private residential environments to ensure viable households and communities in areas allowing convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and permanent residents of the Republic will, on a progressive basis, have access to-

- (a) permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and
- (b) potable water, adequate sanitary facilities and domestic energy supply' (National Housing Code: Annexure A, Chapter 3, Part 2: 1 - 2).

CATEGORY	FINANCE (R16 000 SUBSIDY)	SERVICE (MINIMUM LEVEL)	MEC EMPOWERED TO PERMIT DEVIATIONS
Municipal Services	Maximum R7 500	Land acquisition and township establishment	
		Water: single metered standpipe per erf	
		Sanitation: VIP per erf	
		Roads: Access to erf with graded road	
		Stormwater: lined open channels	
		Street Lighting: Highmast security lighting (subject to conditions)	
Top Structure	Residual of R8 500	Top Structure: 30m <sup>2</sup> (gross floor area)	

Summary of Norms and Standards in respect of Permanent Residential Structures (National Housing Code: 120)

4.4.1.1. NORMS AND STANDARDS

These are the norms and standards set out and quoted from the Housing Code - Annexure A, Chapter 3, Part 2:

**FORM**

The buildings must be simple in form and straightforward to construct.

**STRUCTURAL DESIGN**

Any building and any structural element or component thereof must be designed to provide strength, stability, serviceability and durability for the life of the structure, in accordance with accepted principles of engineering design and construction practice.

**MATERIALS AND COMPONENTS**

All materials and components used in the dwelling and in any associated structures must be:

- durable and suitable for the purpose for which they are used,
- installed or used, in accordance with the manufacturers' instructions.

**DIMENSIONS**

The minimum size of the completed structure shall be not less than thirty square metres. Any room or space must have dimensions that will ensure that such room or space is fit for the purpose for which it is intended.

**THE SITE AND SITE PREPARATION**

Before finally approving the site a geological survey must be conducted to determine the suitability of the founding conditions. The site works must be compatible with the aim of producing affordable housing within the cost constraints imposed by the subsidy scheme. The ground in the vicinity of the building must be levelled before construction commences. This must be done with due attention to the need to control and dispose of rainwater runoff. The finished ground levels must direct water away from the building.

In areas where termite infestation is known to be a problem, the soil within the site must be treated in accordance with the recommendations set out in SABS 0124 - Application of certain soil insecticides for the protection of buildings.

### **THE FOUNDATIONS**

*The foundation of any building must be designed to safely transmit all the loads from the building to the ground without causing or being subjected to excessive movements.*

*In favourable ground conditions the foundations must be designed to reduce as far as practically possible, the depth of excavation, the height of the foundation walls and the cost of unnecessarily large footings.*

*Any variation from the foundations required by the Deemed-to-satisfy rules of the NBR must be the subject of a rational design by a Professional Engineer.*

*In problematic ground conditions a Professional Engineer must design the foundations and advise on the articulation of the superstructure, if this is deemed necessary.*

### **CONCRETE**

*Concrete must be of the grade specified or of a higher grade.*

### **CEMENT**

*The correct cement for the purpose intended must be clearly specified and it must comply with the requirements of SABS ENV 197-1 common cements and SABS 413-1 Masonry Cements. Masonry cement must not be used in concrete. Masonry cement MC 22,5X must not be used in shell bedding mortar. Cement for use in concrete, mortar or plaster shall be chosen in accordance with Table 1.*

### **FLOORS**

*Any floor of any building shall be:*

- *strong enough to support its own weight and any loads to which it is likely to be subjected without undue distortion or distress;*
- *water resistant in the case of the floor of any kitchen, shower room, bathroom or room containing a WC;*
- *provided with adequate under-floor ventilation in the case of a suspended timber floor;*
- *so constructed that any moisture present in the ground or filling is prevented from penetrating the slab in the case of a concrete floor slab that is supported on ground or filling.*

### **DAMP PROOF COURSES (DPC) AND MEMBRANES (DPM)**

*These items must be provided and installed in accordance with SABS 021: Waterproofing of buildings. The horizontal DPC must be installed at not less than 150mm above the level of the surrounding ground. The horizontal DPC must not be plastered over.*

### **WALLS**

*Any wall shall be:*

- *capable of safely sustaining any loads to which it is likely to be subjected and in the case of a structural wall, shall be capable of safely transferring these loads to the supporting foundations;*
- *so constructed that it will adequately resist the penetration of water into any part of the building where it would be detrimental to the health of the occupants or to the durability of the building;*
- *provided with the means to fix any roof truss, rafter or beam to the wall in a secure manner that will ensure that any forces to which the roof may normally be subjected will be transmitted to the wall supporting it; and*
- *of combustibility and fire resistance characteristics appropriate to the use of the wall.*

### **ROOFS**

*The roof of any building shall:*

- *be so constructed that it will resist any forces to which it is likely to be subjected;*
- *be durable and waterproof;*
- *not allow the accumulation of any rainwater upon its surface;*
- *be constructed to provide adequate height in any room immediately beneath the roof/ceiling assembly;*  
*and*
- *have a fire resistance appropriate to its use.*

### **DOORS**

*The correct type and quality of doors must be specified, supplied and properly hung in the appropriate opening.*

### **GLAZING**

*Any glazing shall be of glass or plastics and be fixed in a manner and position that will ensure that it will:*

- *safely sustain any wind loads to which it is likely to be subjected; and*
- *not allow the penetration of water to the interior of the building.*

### **LIGHTING AND VENTILATION**



Any habitable room, bathroom, shower-room and room containing a WC shall be provided with a means of lighting and ventilation which will enable such room to be used, without detriment to health and safety or causing any nuisance, for the purpose for which it is designed. All dwellings shall be provided with the means of ventilation and natural lighting set out in the table below.

DESCRIPTION	FLOOR AREA OF DWELLING	
	_45M <sup>2</sup>	_45M <sup>2</sup>
Minimum window area (light area) for each habitable room, including kitchens	5% of floor area	Greater of 10% of floor area or 0,2m <sup>2</sup>
Minimum area of openable windows or controllable ventilation openings for each habitable room, including kitchens.*	5% of floor area with one opening having an area of at least 0,1m <sup>2</sup> .	Greater of 0,2m <sup>2</sup> or 5% of floor area.

*\*Not more than half the number of the ventilation openings shall occur on one side of the dwelling (refer to section on thermal efficiency).*

#### **DRAINAGE AND SANITATION**

Drainage installations shall be:

- designed and constructed so that the installation is capable of carrying the hydraulic design load and of discharging it into a common drain, connecting sewer or sewer provided to accept such discharge;
- watertight;
- capable of sustaining the loads and forces that it may normally be subjected to;
- protected against any damage wherever this is necessary; and
- capable of being cleaned and maintained through the means of access provided.

Drains shall be laid strictly in accordance with the requirements of the municipality. French drains and septic tanks shall be constructed to a size and design approved by the municipality. Non waterborne means of sanitation must comply with the requirements of Section 7.4 of SABS 0252-2: Water supply and drainage of buildings; Part 2: Drainage Installations for buildings, all to the requirements of the municipality. Where waterborne sewage disposal is not available, no person shall construct a pit latrine without the permission of the municipality.

#### **STORM WATER**

The design shall provide for suitable means for the control and disposal of accumulated storm water. Storm water drains shall comply with the requirements of the municipality.

#### **ENVIRONMENTALLY EFFICIENT HOUSING**

##### **Water Supply**

The design of the water supply and the specification of devices such as taps, showers and toilets must be in accordance with the aims of the National Water Conservation Campaign.

Before specifying water saving devices such as low-flow showerheads, the designer must satisfy himself that they will function satisfactorily with the available water pressure.

Water saving measures that are undertaken, must be compatible with imperatives that the water supply and the sewerage disposal systems must be safe and hygienic, and be capable of operating efficiently with only normal and reasonable maintenance.

##### **Thermal efficiency**

Designs for affordable housing must take cognisance of the need for the resultant dwellings to be thermally efficient' (National Housing Code: Annexure A, Chapter 3, Part 2: 1 - 18).