

An Evaluation of the type plans of walk-up apartments for low income housing development in Colombo.



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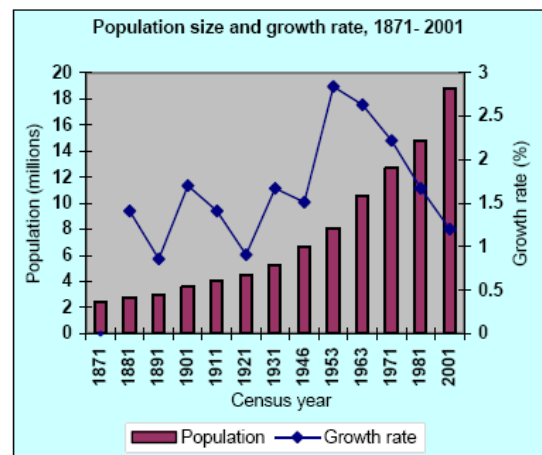
National Housing Development Authority, Sri Lanka.

Shelter Situation in Sri Lanka.

Population in Sri Lanka is 18.7M by 2001. Growth rate is 1.2. As shown in the table 1, population in Sri Lanka has been increasing at a decreasing rate.

Table 1.

Population size and rate of growth,		
Year and date of Population Census	Population	Average annual growth rate (percent)
1871 March 27	2,400,380	-
1881 February 17	2,759,738	1.4
1891 February 26	3,007,789	0.9
1901 March 01	3,565,954	1.7
1911 March 10	4,106,350	1.4
1921 March 18	4,498,605	0.9
1931 February 26	5,306,871	1.7
1946 March 19	6,657,339	1.5
1953 March 20	8,097,895	2.8
1963 July 08	10,582,064	2.6
1971 October 09	12,689,897	2.2
1981 March 17	14,846,750	1.7
2001 July 17	18,797,257	1.2



This data on population has to be compared with the data on housing stock. Following table indicates the distribution of the housing stock.

Census of Population and Housing 2001

Number of occupied housing units by district and sector

District	Total occupied housing units	Sector		
		Urban	Rural	Estate
Total (18 districts)	3,969,027	488,365	3,262,505	218,157
Colombo	473,045	240,531	230,684	1,830

According to the above two tables, around 70% of the population in Sri Lanka is rural based. The urban population accounts only for 30% of the total population. Although Sri Lanka is predominantly a rural nation, characteristics of urbanization are gradually appearing in the social and economic fabric. According to estimates the urban population in Sri Lanka is expected to increase up to 42% by the year 2010. In view of the present trend of urbanization 50% of population is predicted to be urban by the year 2025. The probable increase of urban population will be mainly in the present medium and small towns.

The escalation of land prices started in Colombo. But now it has become a common feature in all the large or medium towns.

In contrast to this, with limited land and space availability it is difficult to provide necessary infrastructure facilities and services to meet the demand in our cities.

This affects to the urban poor adversely. By the year 2000, 51% of the Colombo city population lived in settlements unfit for human habitation. Those are known as slums and shanties in the traditional terminology. There were about 66,000 poor families living in 11% of the total land area of Colombo city. Construction of condominium apartments for these urban poor was the strategy of the NHDA with the help of other organizations. At the same time rules and regulations were put forward to stop the growth of squatter settlements in the cities, along with the professionals, policy makers, funding and implementing agencies, who dominate the field of housing.

General Data of the country.

General Information

Sri Lanka, formally known as Ceylon is an island situated between latitudes 5°55' & 9°55' north of the equator, between eastern longitudes 79°42' & 81°02' in the Indian ocean very close to India. The island is 435 km in length and 220 km in width. It has a land area of 65,610 sq.km. Topography changes from plains and lowlands in the periphery to central hills in the centre. Sri Lanka has high bio-diversity experience from coastal areas to up country where the highest elevation is 2,524 meters.

The country experiences moderate rainfall at regular intervals throughout the year. The average rainfall varies between 1875 mm in the north 2050 mm in the central hills and 2232 mm on the west coast. Colombo is the capital city of Sri Lanka.

Population

Residential Population: 12M approx

Floating population: 7M approx

Average population density: 278 person/Ha

Annual population growth rate: 1.14% approx

Housing units

Permanent dwellings: 40,861-49%

Slums/Old settlements: 22,358-27%

Shanties: 20,685-24%

Infrastructure services

Road network length: 480km

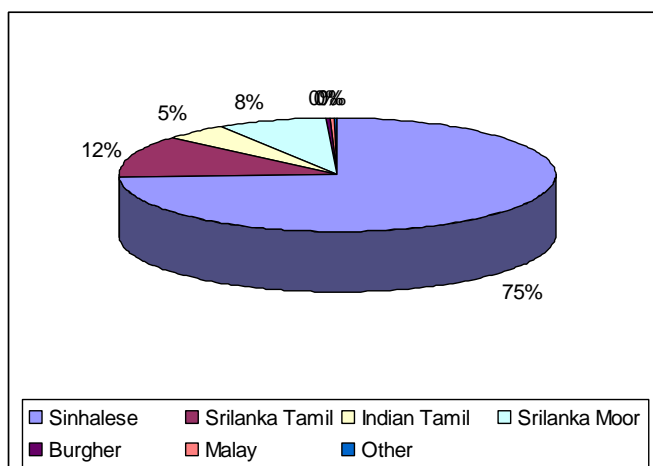
Sewerage network length: 250km

Garbage collection: 600 metric tons per day

Demography and Health

Ethnic groups

Sinhalese	14,011,734
SriLankan Tamil	2,233,624
Indian Tamil	859,052
SriLankan Moor	1,561,910
Burgher	38,388
Malay	55,382
Other	37,197
Total	18,797,257



Government provides health facilities to the public free. The impact of health sector investment reflects in the statistics. Crude birth rate in Sri Lanka in 2005 was 18.1 per 1000 p while the crude death rate was 6.5 per 1000p. Infant mortality rate in 2004 was recorded as 12.0 per 1000 live births. Life expectancy ratio in 2004 was 72 years for male and 77 years for female. In conclusion, health status in Sri Lanka is relatively unsatisfactory level. (Excluding three administrative districts where census was not conducted).

Shelter and services of the city

Number and percentage of occupied housing units

District	Total Occupied Housing Units	Type of Housing Unit					
		Permanent		Semi permanent		Improvised	
		No.	%	No.	%	No.	%
Total (18 districts)	3,969,027	2,771,860	69.8	1,123,003	28.3	33,799	0.9

Organization

There are three main actors engaged in housing activity in the country namely, the individuals, the private sector and the state. The lion's share of house building is carried out by the individual house builders using housing credit facilities. The organized private sector's presence in real estate development is becoming a significant feature, constructing houses for sale mainly for the upper end of the housing market. Direct construction by the state sector is diminishing and it is confined to public housing projects catering to special categories like public servants and plantation workers. The Ministry of Housing plays the leading role in devising appropriate strategies and ensuring their implementation through other relevant Ministries and institution at both national and local level.

i. Functional arms of the ministry

Housing and common Amenities

- Centre for Housing Planning Building.(CHPB)
- National Housing Development Authority(NHDA)
- Condominium Management Authority.(CMA)
- Ocean View Development Company.(OVDC)

ii. Vision of the National Housing Development Authority

“ To enhance the quality of life by enabling the people to acquire an adequate form of housing in a healthy living environment”.

iii. Housing policy

The government policy is to guarantee the right of every family to own or possesses a house according to the needs of the family.This should be adequate housing in the terms of space , stability and structural durability, lighting and ventilation, basic infrastructure facilities etc.

The activities of the state are constrained by limited resources. Therefore the role of the government should be facilitation and enablement and encouragement of other actors.i.e individual house builders, housing construction agencies and the private sectors.

Shelter Problem

In the mass housing situations neither a definitely identified user nor a set of identified user requirements are to be found. This factor leads us to make various assumptions on relevant issues in the process .

If one is to come out with proper and comfortable housing,he needs updated data information on various aspects.This factor is not adequately consideration today. Therefore usage of type plans in walk up apartments is a common phenomena in the urban context.

Type plans can be defined as rigid technical designs prepared by generalizing the need of people.Application of type plans are depended on size of the land ,location , availability of utilities etc.What is lacking in the type plan is the ‘social element’.Irrespective of community needs,type plans are applied in the urban context.When the need of people are not addressed, dissatisfaction occurs.It reflects in different forms.In many cases people tend to encroach due to this dissatisfaction.When the designs do not address the need of people, they lack homely feeling.

The problem faced in Sri Lankan walk up apartments seems to be varying from time to time .At the very beginning the problem was that the people did not have any facilities in these apartments. Later they suffered with the rigid nature of factory products. Further the lack of identity, variety etc:-were the problems. Later the supply to meet the demand was very poor and people who wanted these housing had to suffer. As a result the existing schemes were re - designed with more flats which causes over crowded situations and changes in certain existing patterns. Therefore both the occupants and the people who settled there, had to face difficulties .Poor maintenance and the poor considerations on the wants and needs of the user requirements were the major problems which could experience in this type of housing.

Wants and needs could be explained as the user’s expectations from the building. Primarily the buildings cater their user’s wants. Therefore it is clear that the wants and the needs are the key issues which are to be addressed in the building to satisfy their users.

The users may not be able to clarify and tell the exact need that they expect through the building. They might misaccount the wants as a need and therefore

they might be incorrect in explaining and communicating. Therefore it is the Architect's duty to clarify the correct needs of the users.

The wants and needs are unique to each architectural design. It is understood that the needs are more advanced and expected to get satisfied by the users, even though they are unable to communicate directly on what their needs are.

In the present day housing we can experience a variety of requirements of their occupants demands which are very poorly considered. These requirements are in two folds. That is qualitative requirements and quantitative requirements. Quantitative requirements such as the need of space area, the particular spatial relationships etc:- are very important in housing situations, because this will be the path to the other set of requirements, that is the qualitative requirements. These qualitative requirements are the qualities like identity, sense of enclosure, variety, sense of intimacy etc:- Both these requirements are very important to be considered in any type of housing. How best the designers achieve the quantitative and qualitative requirements of the housing, the most determinant factor in construction of housing seems to be the political environment. Therefore in developing a good housing both the user requirements, and the political aspirations have to be considered.

Who are affected by the problem – (urban poor or the homeless)

Though the emotions, requirements, desires and needs are common to all human beings, the society of Sri Lanka are divided into different levels based on income levels.

They are the 'upper, middle and lower income groups. The category of upper and middle levels have right of their own lands and houses and reasonable income levels. But these opportunities are mostly beyond the reach of the 'lower' income people in the society, automatically becoming the homeless group who are seeking help of the government. Homelessness is mostly two folds. On one hand, there is a lack of place to live in, the quantitative problem. On the other there is the lack of opportunity in the place to make a home, the problem of quality. In the urban situation of Colombo, the poor are faced with homelessness both quantitatively as well as qualitatively.

The purchasing of building materials required due to the prevailing high prices and shortages of supply in the construction industry is beyond the reach of this category. One difficulties in finding suitable and affordable technical advice with skilled labour to suit the needs and requirements of the said group.

With the rapid concentration of people in the urban centres, the Colombo city is faced with the problem of sheltering them with at least the minimum standards of supportive service facilities. Not only Colombo but also cities especially in the third world, failed to fulfil these targets, the result of which was addressing the homelessness with vertical developments without identifying the requirements and potentials of the user category. Therefore changes are being taken place with in the spaces provided as well as outside the dwelling unit, creating certain acute problems within the development.

Who can influence ?

It is in this context that the government, responsible public authorities, NGO,s etc, have intervened and built houses for them. At the same time being with the profit oriented economic structure and political intervention, this issue has been lying within the quantitative limits neglecting the potential avenue of the quality.

When does the problem appear?

The government has carried out certain housing programmes to provide housing for the homeless. National Housing Development Authority is the main institution that implements the national housing programme since 1985 in the country. They carried out a relocation housing programme in 1990 to relocate the homeless in the city of Colombo. Inhabitants were provided with a dwelling unit of 45 sq.m in 4 storied walk up apartment. The apartments provided for relocation could be categorized as follows.

1. 8 unit block – each block has 8 housing units. 2 housing units are located on either side of the staircase on each floor.
2. 16 unit block – each block has 16 housing units. 4 no houses are located on each floor with 2 no staircases. Each block has four floors.

3. Block with more than 16 units – about 8 to 10 no units on each floor. block is facilitated with the fire escape etc;. more than 40 no of units in a block.

After providing housing for homeless under this programme in the city of Colombo, the problem of changing the unit according to their requirement was a common happening which was done by the occupant.

Why does this problem exist?

With the rapid population growth the demand for housing has become worse than ever before. As a result of this demand during the last decade we as a nation have been able to focus our attention on this issue. We experimented various methods on housing constructions, housing designing and managerial aspect etc:- of the situation. Somehow we have been able to increase the housing stock of the country. But still the problem has not been resolved. Anyway, current investigations have revealed the fact that we have missed certain essential components in this process of housing design which demands our key attention and concern.

The mismatch of the housing to the people needs is a constant complain which is being experienced since a long time. It might have happened because of the poor understanding of the requirements of the actual users. This factor was never studied in Sri Lanka when building any type of apartment in the past. Hence there is no proper idea whether we are providing building to suit the real needs of their occupants. There is enough evidence to conclude that what we design and build are not the best. As soon as the occupants come to live in, they tend to change the given amenities very seriously.

A preliminary survey carried out in the urban walk up apartments have proved that neither the spaces nor the spatial configurations of them are accepted by the occupants. The only factor they accept is the economy and the distance or the proximity to various important places around.

In the situation of housing, the most powerful factor is the non availability of a fixed or an identified user. Therefore there is no way to find out their actual wants and needs. In the present Sri Lankan context the housing designers decide the user requirements by visualizing. This happens due to the lack of in

this respect. Therefore it will be useful to study a sample from the existing housing stock in order to derive conclusions which could be applied in housing designs in future. In this study an attempt is made to document the existing and the given situations of apartments in order to workout a system to arrive at conclusions regarding user requirements for the future.

Proposal For Changes And Improvements

The solution :- system of documentation to update user requirements.

In this solution basically three key factors were considered. They were,

- a) Building up a system for documentation.
- b) Identifying the user requirements which needs to be documented and
- c) A system to update the documentation process.

A survey done by using a questionnaire to document this was an acceptable initiatives. Therefore the first task was to develop a suitable questionnaire. This questionnaire itself was a good documentation of the situation.

The main objective in preparing the questionnaire was to identify the user requirements which needs to be documented . Out of these elements two basic factors were selected for further study.

They are the requirements of various spatial components of the dwellings and the requirements regarding the spatial configuration of the dwelling units. The need to update the data was another factor. The format of questionnaire was prepared so as it could be filled easily by the examiners with the help of the examinees within a very limited time duration.

The key elements included in the questionnaire are as follows.

- a) House hold composition.
- b) House component.
- c) House layout.
- d) House finishes.

House hold composition is recorded as follows:-

a) House hold composition

	1	2	3	4	5	6	7
Q. 1 No. of members in the family.							
Q.2 Male (M) or Female (F)							
Q.3 Civil Status							
(a) Married							
(b) Un Married							
(C) Widowed							
Q.4 Highest Education Qualifications							
(a) Primary							
(b)Secondary							
(c)Tertiary							
(d)Above							
Q.5 Employment							
(a) Employer(Gov./Pvt./Self)							
(b)Status (Per./Sem.p./Casual)							
(c) Catogory (Ski./S.Ski./UnSki.)							
(d)Income							

b) House components .

The questionnaire the house components were examined separately .The comments made by the dwellers were recorded in the questionnaire .The questionnaire details are as follows.For the purpose of the easy communication and quick recordings the components such as living, dinning, bedrooms , kitchen etc:- were separated.

1) Bedrooms

*No.of Rooms	1	2	3	4	5
Contd.	*	a/b/c/d	a/e/f		

2) Living room

(a)Given Ok() No(X)	
*Size Option	
(b)Too small(S) Too large(L)	
(C)2 B.R.are EQ. OK(X)	
(d)Large Small	
1 1	
2 -	
- 2	
(e) 3 B.R. are EQ. Ok() NO(X)	
(f) Large Small	
1 2	
2 1	
3 -	
- 3	

3) Dinning room

(a) Size *Given		
*Too small		
*Too large		
*No idea		
(b) Lighting & Ventilation	Li.	Ven.
*Given		
*Not enough		
*Too much		
*No idea		

4) Kitchen

(b) Size *Given		
*Too small		
*Too large		
*No idea		
(b) Lighting & Ventilation	Li.	Ven.
*Given		
*Not enough		
*Too much		
*No idea		
(c) Wast /refuse duct *Present		
*No idea		
*Location		

c) House layout.

The next attempt made through the questionnaire was to record the comments of the dwellers regarding the layout of the unit. For this purpose the spatial relationships necessary were explained .They were motivated to come out with a better option to suit their needs.

- Entrance (En)
- Kitchen (kit)
- Balcony(Bal)
- Living (Li)
- Toilet(Toi)
- Utility(Uti)
- Dinning(Di)
- Bedroom(BR)

(a) Given Layout (As was given at the beginning)

(b) Existing Layout(As is changed by occupants)

(c) Any better options house holders proposing(As is suggested by house holders)

d) House finishes.

A brief idea regarding the finishes and the materials were put on to the dwellers to get their comments.

	Suggestion
(a)Floor	
(b)Walls	
(c)Ceiling	
(d)Doors	
(e)Windows	
(f)Electrical Fittings	
(g)Sanitary Fittings	
(h)Water Supply Fittings	
(i)	

Case Study: Soyzasapura housing

The Soyzapura housing complex is enriched with certain characteristics which makes it the most appropriate walk-up apartment complex for this study. From its inception up to now it has undergone several changes which were done by occupants as well as the government housing authorities.

This has resulted the change of buildings , their appearance and the patterns of the open spaces. The commercial activities have crept into the scheme premises This has an enormous impact over the relationships of the inhabitants with their surroundings. A large variation among the social classes of the dwellers in the scheme is evident. It comprises people from lower income groups up to higher income groups; from less educated to higher educated from lower middle income upto higher middle class;from middle grade job categories up to higher professionals. Therefore this housing complex has a very rich social mix. Hence this particular housing complex sets the ideal context to this study. I t has the capacity to provide a broad cross section of the current walk- up apartments and the life style of the occupants.

The user requirements are varying with the floor levels of the apartments.

Units of the ground floor has a close relationship to the ground, roads and the trees around .These dwellers meet more people than those who live in an upper floor. They have the advantage to grow some plants near by or to encroach the land around. Despite all these advantages they have to face certain hardships which are unique to ground floor. Bad smells of the garbage from the refuse bin and the poorly maintained drains are to be tolerated.

The units at the first and the second floors have to deal with other different issues .They meet a lesser number of people when compared with the ground floor , dwellers .They don't have any access to the ground. These occupants are unable to grow plants except in balconies using flower pots. It is very difficult to dry clothes and other house hold goods etc:- They have to park their vehicles away from their vicinity, and from their apartments. At the sametime they have to climb up and have to walk a fair amount of distance .They are comparatively less disturbed by the other people. They don't have the problem of poorly maintained drains and their smells as at the ground floor , except the blocks occurred in the vertical stacks.

In the third floor or the top most floor dwellers have to face an entirely a different set of issues. They experience almost all the tree tops below their apartments. The fast blowing wind and the driving rain is an adverse experience for the dwellers. The heat in the dwelling unit is comparatively high from the other dwellings in the lower level. Apart from all these they have to accept the leaks of the roofs. Rats on the ceiling and the poor supply of water are also some hardships they undergo.

It is evident from the above mentioned facts that the issues are different in each floor level. Therefore the user requirements are varying at different floor levels.Based on this assumption the study is continued through collecting data from dwellers selected from the three floor levels in different type of apartments.

1) Apartment type A

This block is facing to an internal courtyard across a common balcony.

This is served with 2 common stairs at each end. It consist with a single bed room, a living room, dining room, kitchen and toilet.



Fig 1: Exterior View of the Apartment



Fig 2: Internal court yard and the walkway

2) The second type (typeB) of apartments are overlooking the road in front. Each block is served by a single stairway. These units are having a living and a bed room, a dining room , a kitchen and a toilet.

Apartment (type B)



Fig 3: Exterior view blocks on either side of the road apartment



Fig 4: View to the adjacent road apartment

3) Apartment (Type C)

Apartment Type C

Each block is served by a single stairway.

These units are comparatively larger and have two bed rooms , a common living dining area , a kitchen , utility and toilets.

View from a distance apartment (type C)



Fig 5: Exterior view of the apartment

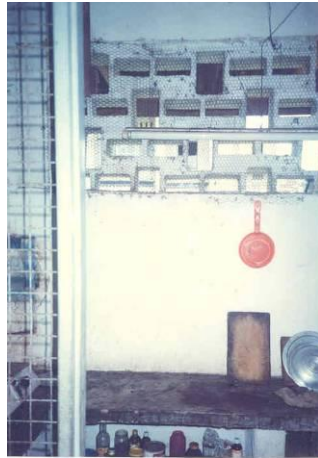


Fig 6: Changes by the occupants

When the data sheets of the survey were analyzed the assumptions of the initial survey were to be accepted. That is to accept that the user requirements vary according to the floor level. The first and the second floors have similar requirements , where as the ground and the third floor apartments have their own different requirements . Therefore this survey method which was developed is very valuable in making design decisions regarding user requirements of the walk-up apartments in urban SriLanka.

Apartment type A

This type of apartment seems to be very tight. The occupant of these units seems to be very tight. The occupants of these units seem to be comfortable with their living rooms. The only bedroom which is provided in these units seem to be inadequate for a family. Therefore all of them tend to convert their dinning room to be another bedroom. Due to this reason at present they don't have a separate dinning space. Therefore they dine either in the bedroom or in the living room.



Changes of honey comb brick wall view from outside apartment .The honey comb wall was filled with brick and mortar. This is to ensure the security and to keep the driving rain.

Drying clothes along the side wall of court yard apartment. The poor maintenance of the drainage and the least effort made by the authorities to clean the refuse bin unit has created problems for the dwellers in the ground floor. On several occasions the dwellers have encroached the no mans land behind the unit. They have expanded the unit by adding some spaces.



First and second floor .

The first and the second floor dwellers of these apartments feel very inconvenient as they don't have certain essential requirements in their dwellings such as space for drying clothes and other household goods. They insist on the fact that they need a private balcony to their apartment. These dwellers demand space for parking and for drying the clothes .The thieves of various kinds use to enter the apartments through the refuse duct . The layout of the apartment blocks which is in line with the others make somewhat inconvenient , because the inside of the houses can be seen from the apartment at the other side of the road.

Third floor

They demand a space with plants and soil. They prefer a larger balcony or a terrace for this purpose.

Most of the dwellers in the ground floor have extended their apartments by adding some rooms etc:- towards the rear side. This was another encroachment to the no mans land behind.

Because of the advantage of more volume , due to the roof pitch, most of the occupants constructed an attic over their dinning area which is used as a space for sleeping or storage purposes.

When doing the survey it was found that the most interesting and more inspiring issue to document by designers were the changes which the users have done.They did these changes for the simple reasons like reducing circulation spaces ,gain some more space for planting and drying, achive some sort of variety and identity and sometimes to get better facilities etc:- Therefore it can be suggested that this part could be added to the system in future.

The documentation of various house components found to be very successful.This leads to identify that the user requirements are varying from floor to floor.The requirements of the ground floor is unique to that floor.The other important conclusion arrived at in this study is that the present walk up apartments have a very minimum set of spaces .That is two bedrooms , a common living and dinning area, a well equipped kitchen, a toilet and a

bathroom, private balcony and common or individual parking spaces in the vicinity. It was evident that the design brief has not changed with time. But it has found that the users wants and needs have changed.

It is very clear and evident through this study the occupants are expecting the housing which cater their wants to the maximum and further more to cater the needs of each individual families and the community as a whole.

The above conclusions were derived from the data which were documented through the particular system which was developed. These findings are very important to the designers of housing in Sri Lanka.

By documenting data on house hold compositions, house components, house layout and house finishes we come out with certain characteristics of the key functional spaces in a standard housing unit, their inter relationships, internal furniture arrangements with desirable clearances and floor areas with critical dimensions.

One should give a special consideration to the designing of the main activity spaces, for example the food preparation area should be designed to make it a proper kitchen with adequate space for the cleaning, preparing and cooking of traditional food items, washing, drying and storing of kitchen utensils etc:- It is always desirable to have the kitchen separated from the living and dining spaces by a well ventilated passage to avoid fumes getting into them. There should be a chimney for the hearth in the case of individual housing units and other suitable mechanism for the heated air and the fumes to get out in the case of condominiums. The verandahs or balconies should be located properly with floor areas adequate to perform the required function.

No	Room/Space	Key Functions	Minimum Recommended Floor Area	Minimum Recommended Dimension
1	Living	Family gathering, entertaining visitors, place for watching T.V., multipurpose place.	12.0 sq. meters (125.0 sq. ft.)	Min. Height 3.0m (10.0ft.) Ave Height 2.7m (9.0 ft.) 3 meters (10 feet.)
2	Dining	Semi Private space, Selected visitors are entertain, could be combined with living.	9.0 sq. meters (100.0 sq. ft.)	Min. Height 3.0m (10.0 ft.) Ave Height 2.7m (9.0 ft.) 2.7 meters (9.0 feet.)
3	Kitchen	Food preparation, Private space, storing, informal dining.	8.0 sq. meters (90.0 sq. ft.)	2.1 meters (7.0 feet)
4	Bed Room1	Private and quiet area . Should be well lit and ventilated.	11.0 sq. meters (120.0 sq. ft.)	3.0 meters (10.0 feet)
5	Bed Room2		10.0 sq. meters (110.0 sq. ft.)	2.7 meters (9.0 feet.)
6	Bed Room3		13.0 sq. meters (130.0 sq.ft.)	3.0 meters (10.0 feet)



A typical Floor plan for urban area - Option 1



Option 2



Typical two storey town house

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