REPUBLIC OF RWANDA

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AFFORDABLE HOUSING DEVELOPMENT PROJECT IN RWANDA

Table of Contents

I. PROJECT SUMMARY

1.1. Project overview

This project aims to provide the context of the housing challenge in Rwanda and confer the enabling strategies and operational instruments that need to be put in place to achieve the 'housing for all' vision in general, but specifically this project is analyzing the concept of **"Affordable Housing Development in Rwanda, the case of Government Employees".**

The main key initiatives and other strategies, worth applauding and which require immediate Government intervention, private sector and civil society involvement to accelerate housing supply are to be highlighted. This project proposal extends to integrate the reforms needed by all stakeholders intervening in housing supply program in Rwanda.
The goal of the proposed project is to improve the quality and the quantity of affordable housing units for Government employees in Rwanda in order to boost economic growth and reduce poverty by providing suitable and sustainable housing units for better settlement in both rural and urban areas of Rwanda.
This Affordable Housing Project for Government Employees is a project initiated by a group of various professional backgrounds with a mission to create the first working and implementable pilot project on affordable housing. The vision of the project proposal is to create an economically easily accessible affordable housing pilot project that will act as a model of a model of sustainable development addressing issues of population's economic status, environmental quality while meeting needs of the economically fragile group of the community and first house buyers.

The project targets government employees earning low and medium monthly salaries but with secure and stable jobs that can offer them opportunities to repay mortgages upon acquisition of the structure.
The total of housing units anticipated in this project is two hundred (200) residential units which will comprise of 2 and 3 bedroom apartments on four - storeyed structures as well as space efficient individual duplex units. The structures will be energy efficient with natural ventilation, lighting and water recycling services in place. Modern building technologies will be used alongside durable zero carbon emission building materials in this project.

The project proposal is based on the analysis of the baseline data obtained from the surveys conducted in the framework of integrating the needs assessed from beneficiaries, namely government employees from Rwanda Housing Authority, Kigali Institute of Science and Technology, Kigali Health Institute and Ministry of Infrastructure.

1.2 Problem statement

Rwanda is the most densely populated and fastest growing country in Africa with a growth rate of 10.7%. The country's total population is currently 10.6 million (NISR, 2011), of which about 1 million live in Kigali City. The population in Kigali City is expected to increase to about 3million by 2020. Attracted to the growing economic opportunities, people from the rural areas are moving to the City, creating a large demand for affordable housing.
The housing demand and housing supply levels arising from the falling levels of public funding, insufficient incomes, and the sheer scale of population growth and the huge rates of urbanization aggravates the matter. Countrywide, the job market and level of earning especially in the public sector (government employees) is alarming. This renders the employees' lack of savings for facility banks to offer loans. The banks' interest rates are also very high and cannot offer an opportunity for an individual to access credit facilities. The market forces controlled by the private sector play a much larger role in determining housing provision and in this way exploiting the economically weak groups in dire lack**.**

All the above coupled with the lack of statistics about the market demand given the lack of a clear and specific institutional framework worsens the issue. This project proposal attempts to address the above mentioned issues through modalities destined to improve supply and access to housing in a bid to improve socio-economic urban life.

1.3. Objectives of the project proposal

The main objective of this project is to design models and build low cost / affordable high density multi-storey apartments and therefore propose operational mechanisms/modalities on how affordable housing can be provided to, accessed and owned by Government employees. It can be noted here that there are many project designs and proposals nationwide that can be implemented but without implementation modalities or even enabling mechanisms for would-be beneficiaries to access them. This project proposal goes beyond design to attempt to propose appropriate mechanisms that can be used to have the beneficiaries access this finished project.

Specific objectives:

- Provide different models of residential multi-storey apartment with high density;
- Provide residential multi-storey apartments built by sustainable, low cost and local building materials;
- to attempt to develop a pilot project of 200 housing units for government employees within the city of Kigali while demonstrating land use management techniques
- Analyze the housing models cost accessibility by cooperative members.

1.4 Advantages of the project

The Project advantages are following:

- *Landscape management and development*: is the main need of our society, to gain a large space for other activities by reducing demographic pressure on arable land.
- *Environment protection* : there will be a place for rubbish, appropriate drainage for waste
- *Infrastructures serviceability*: It shows how easy and economic solutions this type of project can provide I providing infrastructures such as water, electricity, telecommunication cabling to the population.
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1.5 Needs assessment

To make sure that needs were assessed from the representative of government employees; the sampling technique was used in order to have a representative sample size of the whole population composing the employees of Rwanda Housing Authority (RHA), Kigali Institute of Science and Technology (KIST), Kigali Health Institute (KHI) and Ministry of Infrastructure.

At this level sampling was one of the important steps because it was very difficult and then impossible to reach all the population from these institutions, within the short time allocated to this survey. Surveys and interviews were done upon the selected sample in order to collect primary data by using a pre-established questionnaire.

Right type of simple random design had to be chosen for sampling. The sample size selected in this survey depended on the nature of units, population and study, number of variables, groups and sub-groups studied, intended to analysis, precision and validity of required results, level of expected non- response, size of questionnaire and population as well as available resources. Activities of collecting, analyzing and interpreting those data from different institutions were done immediately after interviews and surveys. The questionnaire was a written list of questions that was distributed to selected sample and answers to which was given by respondents accordingly. In using the questionnaire, respondents read questions, interpreted what was expected and then wrote down the answers. Questions were of two types; open-ended questions and close-ended questions so that questions may capture various and larger possible information.

1.6 Project linkages with country strategy and objectives

The Millennium Development Goals (MDGs), developed over the course of the 1990s were unanimously ratified by all United Nations member countries in September, 2000 as part of the Millennium Declaration. They provide a set of internationally accepted and quantifiable standards to measure progress in world development to be achieved by the year 2015. In Rwanda, this instrument led to the formulation of Vision 2020, Poverty Reduction Strategic

Paper (PRSP) and Economic Development and poverty Reduction Strategies in Rwanda (EDPRS) to respond to the stipulation of the MDGs.

The vision 2020 articulates how Rwandans envisage their future. It shows the kind of society they want to become and how they construct a united and inclusive Rwandan identity. It finally discusses the transformations needed to emerge from a deeply unsatisfactory social and economic situation. This Vision is a result of a national consultative process that took place in Village Urugwiro in 1998-99. There was broad consensus on the necessity for Rwandans to clearly define the future of the country. This process provided the basis upon which this Vision was developed.

The Poverty Reduction Strategic Paper (PRSP) stipulated the (i) Increase economic growth by investing in infrastructure; promoting skills development and the Service Sector; mainstreaming Private Sector; (ii) Slow down population growth through reducing infant mortality; family planning and education outreach programs; and (iii) Tackle extreme poverty by ensuring greater efficiency in poverty reduction through better policy implementation.

In its 2008-2012 Economic Development and Poverty Reduction Strategy (EDPRS), the Government of Rwanda has identified skills development as a key element of its strategy to achieve its objective to "become a modern nation, able to generate and disseminate technological knowledge and innovation" as stated in its vision 2020.

All of these instruments translated into government strategies and objectives are the main foundation of "Affordable Housing Development Project for Government Employees", since its main target is found in Social Economic Development of Rwanda.

II. PROJECT DESCRIPTION

The aim of this project is to produce affordable housing for low and medium income earners, specifically Government employees with priority given to professionals in Government.
A huge discrepancy between housing demand and housing supply levels arising from the falling levels of public funding, insufficient incomes, the sheer scale of population growth and the huge rates of urbanization has obliged the concerned administration to seek innovative alternative ways to attempt to address such demanding issues.

National targets need to be clear, realistic and measurable. As a first step, formulating affordable housing policies on the lines of National Urban Housing and Human Settlement Policies is imperative. Targets should be set following consultation on housing demand and needs assessment which will also consider location, type and size of housing required.
For the case of Affordable Housing for Government Employees, today, the housing market in Rwanda is so difficult so much that middle income earners may not get the privilege of owning a house during their lifetime. The houses available on the market are built by real estate developers, Government institutions or private businessmen whose objective is profit first and foremost.
The usual channels that give access to credit have shown their limit in Rwanda in view of the fact that the limited mortgage sources coupled with high cost resulting from the process effectively disqualifies the average middle income earners, a category in which most Government employees fall.
Since monthly salaries determine the borrowing power for our targeted group, access to outside funding is very weak and as such limits the path to house ownership. This situation does not fit with Rwanda's vision of social and economic progress.

2.1. Methodological Approach

Having been a group of professionals from various backgrounds that contribute to the existence and operation of affordable housing schemes, it was at first decided that a concept paper (refer to annex) be prepared as an orientation to the initiation of this particular project.
Later on, another meeting which convened to discuss on the details of the concept and break down the project tasks to form commissions that would undertake them. Three commissions which included: Strategies and Mechanisms Improvement commission; Urban Planning, Engineering and Architecture commission and Financial commission were proposed, their particular tasks, deliverables and timelines identified

From above, to ensure that the project is meeting the needs of beneficiaries, a survey was conducted in order to collect baseline data from the target group. Employees of Rwanda Housing Authority (RHA), Kigali Institute of Science and Technology (KIST), Kigali Health Institute (KHI) and Ministry of Infrastructure were considered as the representative sample for Government employees.

Other secondary data were used to enrich the project content by existing data. The project design has used the documentary approach by integrating and analyzing some key documents from various sources. Among those potential documents, we have:

- The Millennium Development Goals (MDGs), by the International Community;
- The 2020 Vision, by the Government of Rwanda;
- The Economic Development and Poverty Reduction Strategies (EDPRS), by the Government of Rwanda;
- The National Land Policy and Land Law, by the Government of Rwanda;
- National Human Settlement Policy, by the Government of Rwanda;
- National Urban Housing Policy, by the Government of Rwanda; among few others

Various information related to the concept of "Affordable Housing Development" and other best practice experiences from other countries were used as second-hand information from the secondary sources with access to internet.

Four-phase methodology was adopted.

- ✓ Data collection by using a questionnaire and interview to know how much apartment building are needed;
- ✓ Site investigation;
- ✓ Descriptive study showing proposed models (i.e. different views) suitable for developing apartment and sustainable, low cost and local building materials to be used.
- ✓ Access and cost-estimation using appropriate concepts and other approaches that support the layout of apartments.

After collecting all of these data, the analysis, interpretation and representation were the next step. After collecting all expected data, their treatment was done immediately by the researcher using computer and statistic skills (Quantitative and qualitative methods) in order to reach their effective analysis and representations.

2.2. Data Collection, Analysis and Interpretation

Primary data were collected from the respondents in sampled households and secondary data were obtained from literature review. Data were organized in a more meaningful and interpretive way to meet the objectives of research. After the collection from the field, data were entered into a computer to allow easy interpretation and analysis. The research employed descriptive statistical tools to analyse quantitative data obtained from the study. Table of frequency

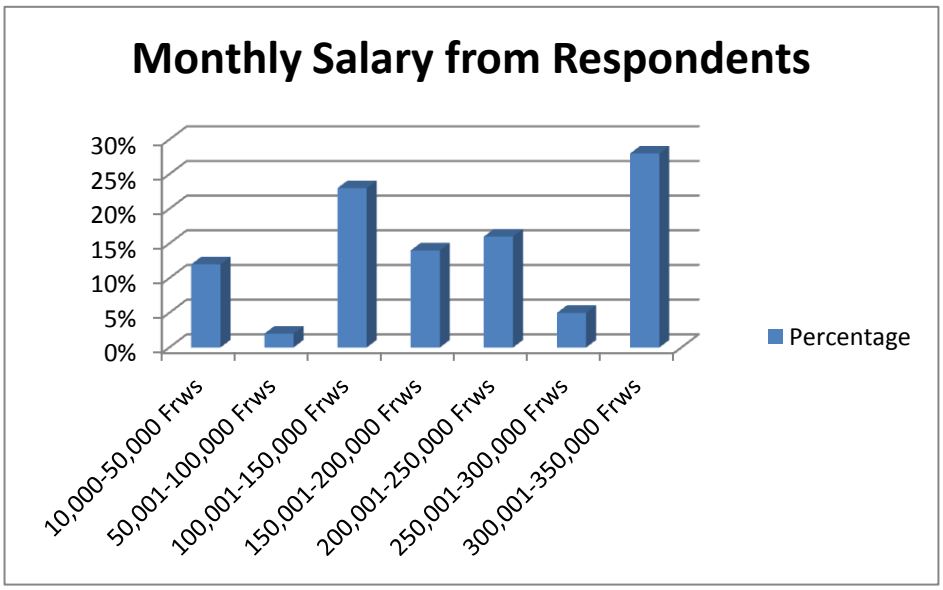
distribution was prepared whenever necessary as well as the percentage occurrence of each the response to a particular question.

Qualitative data were analysed by thematic analysis that is an analysis of the main themes as required in the study. The results were tabulated for easy interpretation in a way that one could easily visualize the various results as given by the respondents. A discussion was made at the end of every theme and was related to the objectives of the study.

2.3. Presentation of Project Results

Considering the use of questionnaire (see appendix one) and the compilation of collected data (see appendix two), results were analysed, interpreted and represented using below graphs:

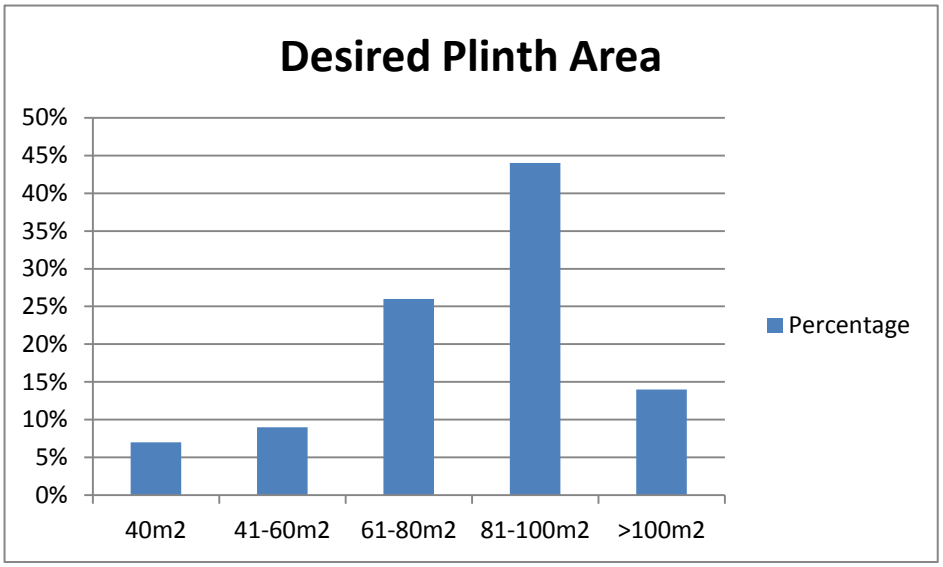
Figure 1: Monthly Salaries for Respondents (%)



Source: RHA/Affordable Housing development for Government Employees

From the above graph, it can be realized that among the respondents interviewed, the biggest number of respondents (just over 25%) earn a monthly salary between 300,000 – 350,000RwF followed by 22% of the respondents earning between 100,000-150,000RwF while just over 10% earn between 10,000 – 50,000RwF(the lowest salary category).

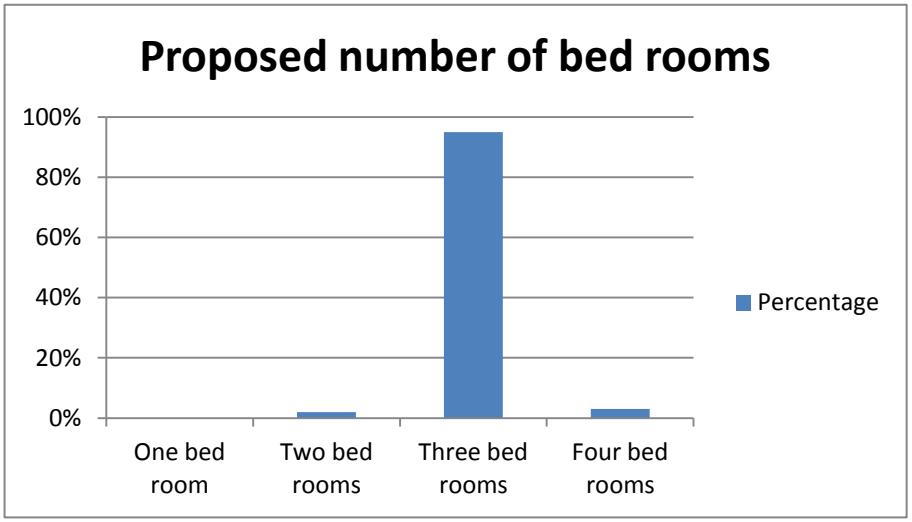
Figure 2: Preferred Plinth Area by Respondents



Source: RHA/Affordable Housing development for Government Employees

From the above graph, it can be realized that most of the respondents (44%) prefer a plinth area between 81-100sq.m followed by 25% desiring to have 61-80sq.m of house space. This implies that there is still desire for huge house space by respondents.

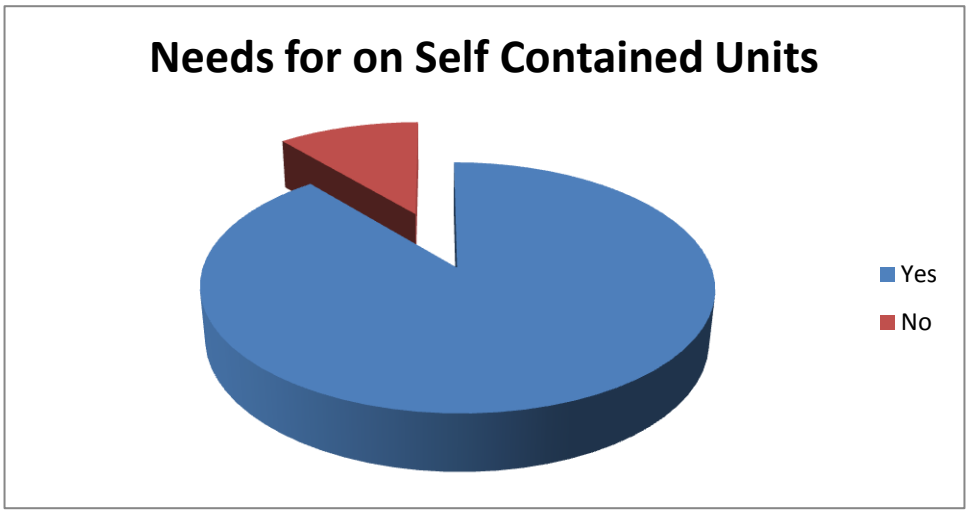
Figure 3: Proposed number of bed rooms by Respondents



Source: RHA/Affordable Housing development for Government Employees

Related to the previous graph on plinth area, it can still be argued and confirmed that the respondents interviewed are in great desire for big house space as over 90% of the interviewees prefer to have three bed-roomed housing units.

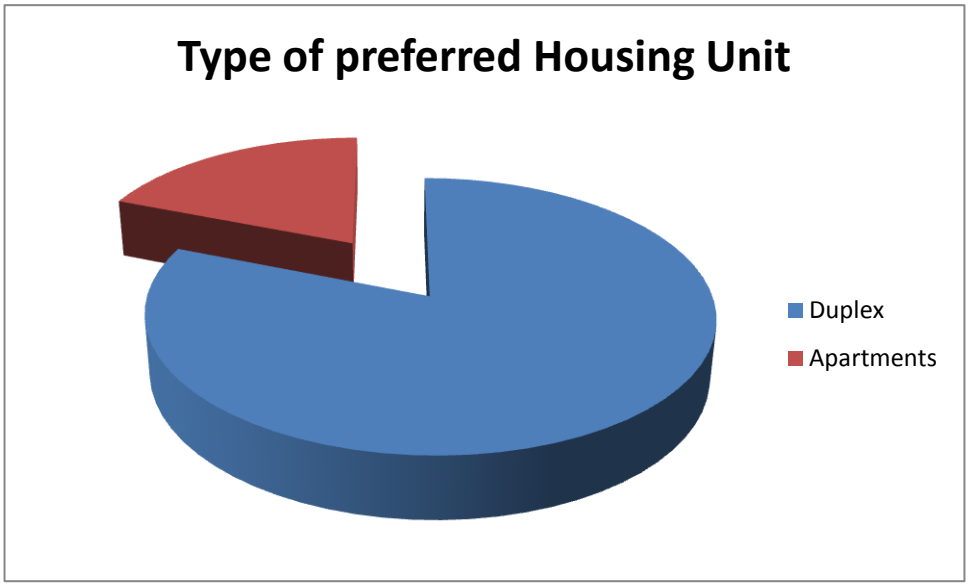
Figure 4: Preferred bed room by Respondents (Self contained or not)



Source: RHA/Affordable Housing development for Government Employees

From the graph shown in figure 4 above, it can be concluded that over 90% of the interviewees prefer to have self contained housing units and bedrooms – typical of a modern housing.

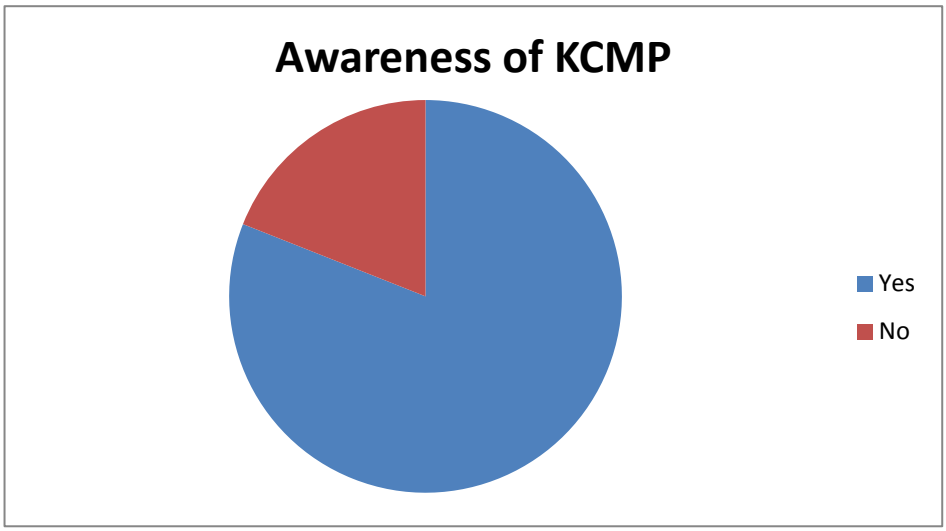
Figure 5: Type of Preferred House Unit by Respondents (Duplex or Apartments)



Source: RHA/Affordable Housing development for Government Employees

Regarding the desire by interviewees to leave in apartments or individual duplex units, the greatest percentage (over 80%) of respondents indicated the preference to have individual housing than living in apartments.

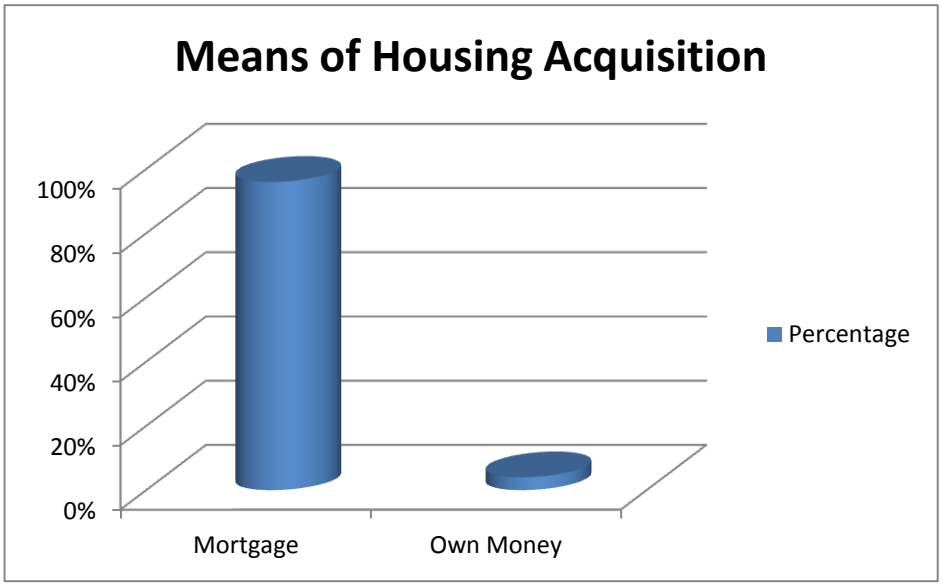
Figure 6: Respondent awareness of Kigali City Master Plan (Ye or Not)



Source: RHA/Affordable Housing development for Government Employees

Figure 6 above suggests that over 81% of the respondents have a good knowledge about the existence of the Kigali City Master Plan and its requirements.

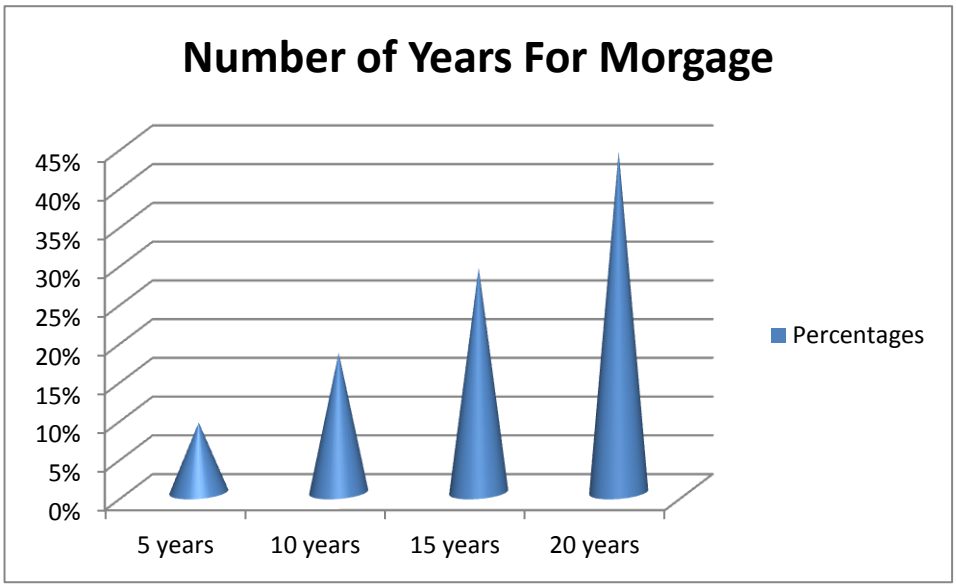
Figure 7: Suggested means of acquiring a house unit



Source: RHA/Affordable Housing development for Government Employees

The above graph indicates that over 80% of the respondents would acquire mortgage as a source of funding to own a house. This clearly suggests how vital establishment of mortgage systems are.

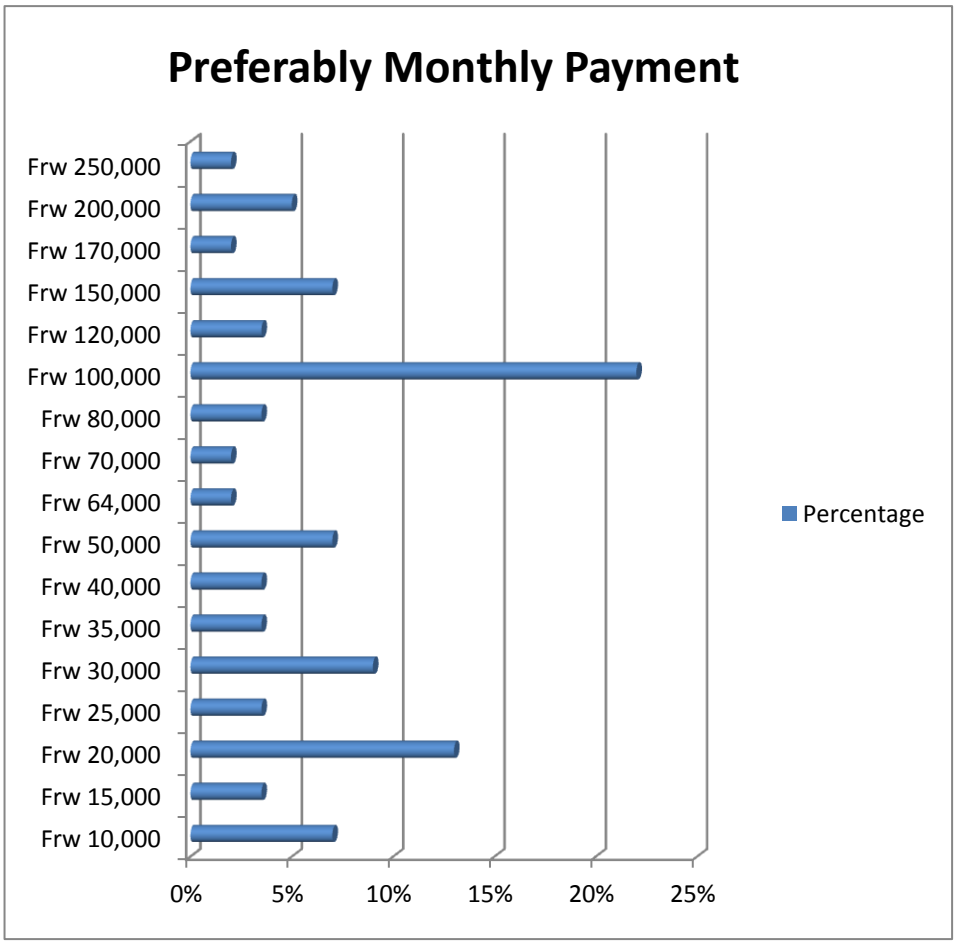
Figure 8: Suggested years of mortgage recovery by Respondents



Source: RHA/Affordable Housing development for Government Employees

From the graph above, over 40% of the respondents would prefer a 20year mortgage period while just over 25% of the respondents prefer a 15year mortgage period.

Figure 9: Preferable amount of monthly bank reimbursement by Respondents



Source: RHA/Affordable Housing development for Government Employees

From the above graph, a mixture of monthly payment values can be realized. A majority of the respondents (over 20%) would pay 100,000Rwf a month to acquire a house while just over 12% of the respondents would pay 20,000RwF/month to own a house.

Having described the current status of assessment needs from the respondents, a site management, including housing designs and cost estimation were proposed for project effectiveness.

2.4 Description of Project Sites and Layout Plans

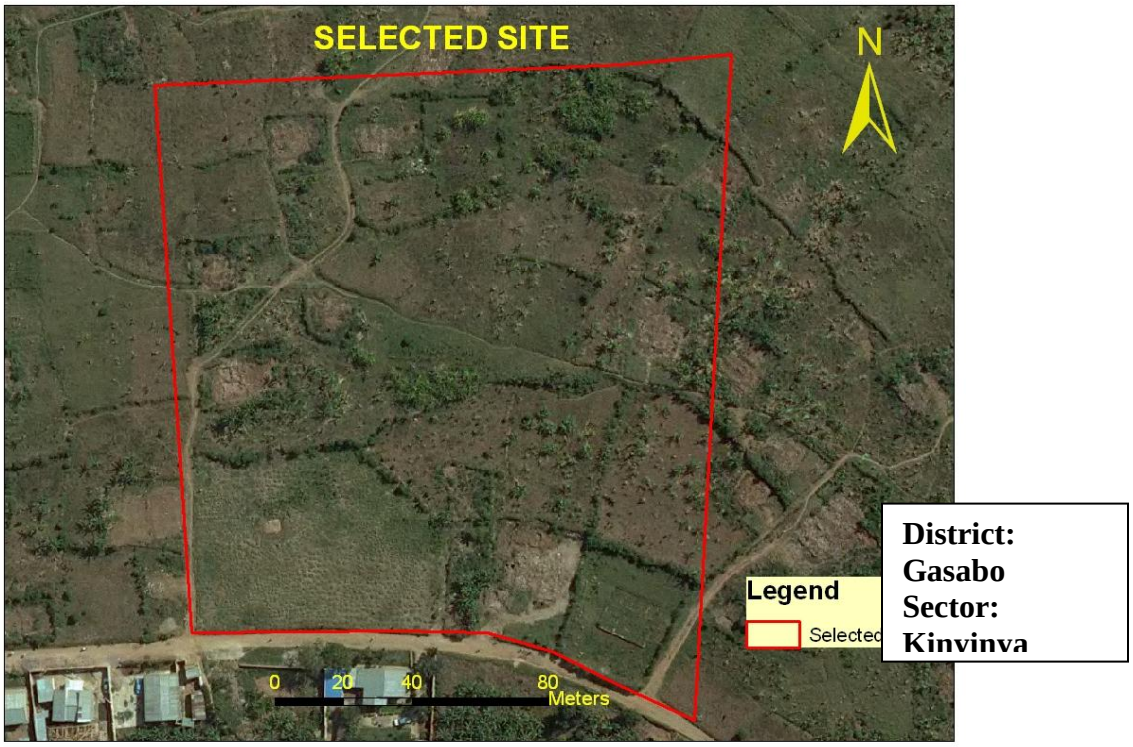
2.4.1 Site 1: Kinyinya

The project site is located in Kinyinya near the Deutsche Welle Antenna in East and its northern, western and southern sides are bounded by wetlands. The site is almost empty itself, but it is surrounded by few developments which are: a primary school of Kinyinya, few low-density informal rural houses scattered and two planned single family residential houses.

Access to Kinyinya is currently by way of a paved regional road. However, there are minimal pathways (connectivity) between the different few developments neighboring the designing area. Within the designing area, there are very few roads, all in the form of narrow mud tracks. A regional highway, offering connections to all housing developments, is being planned to pass through Kinyinya.

A chosen pilot site for Affordable Housing Development for Government employees, is located in Kigali City, Gasabo District, Kinyinya Sector in Murama Cell. The total area of the site is evaluated to 2.5 hectares that will cover a number of 200 housing units within four blocs of Apartments and twenty eight duplex blocks. The site is chosen considering environmental conservation and land management aspects to ensure a sustainable housing system.

Figure 10: An extract of Aerial Photograph for the Pilot site 1 (Murama)

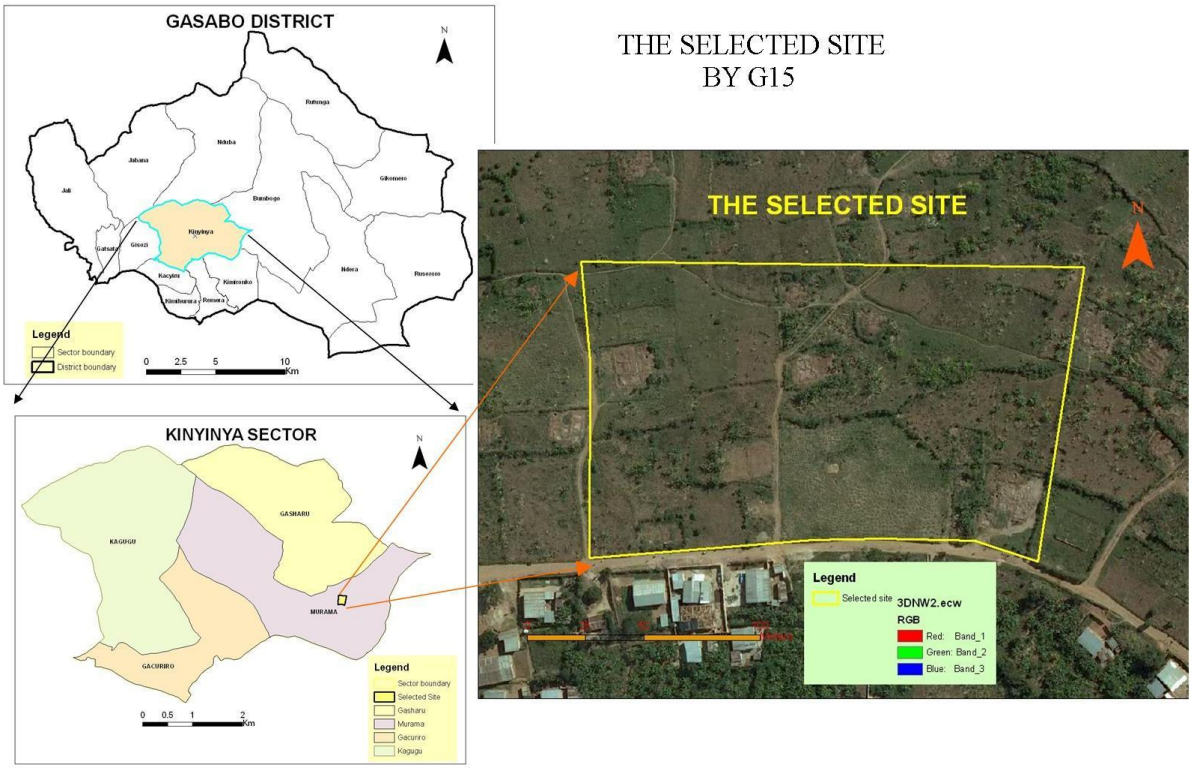


Source: RHA/Affordable Housing development for Government Employees

This site is not much built up, but still expropriation cost is needed in terms of land value and the two housing units there.

The Murama described site is divided into blocs for housing unit according to the designed Layout Plan. Housing Development is covering the average of 70% of the total site, whereas the remaining 30% of the site is reserved to public facilities and basic infrastructures, namely road networks, public places, green spaces, etc.

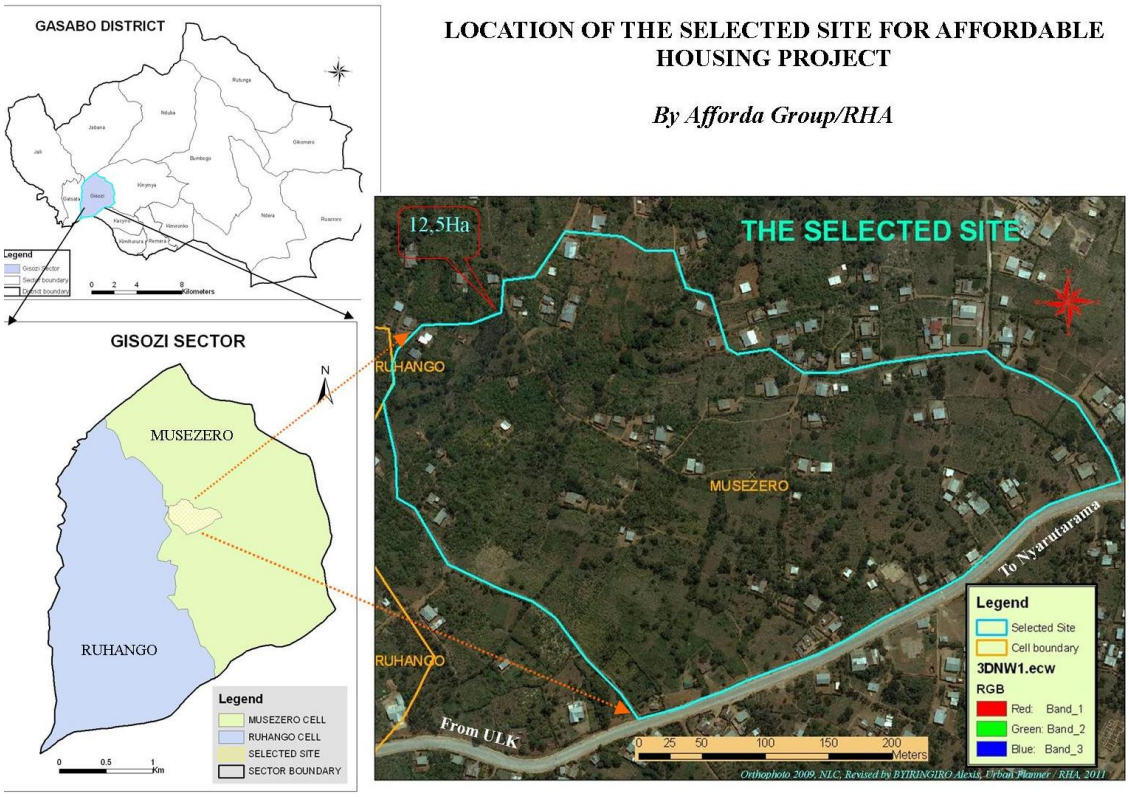
Figure 11: Site 1 Location (Murama)



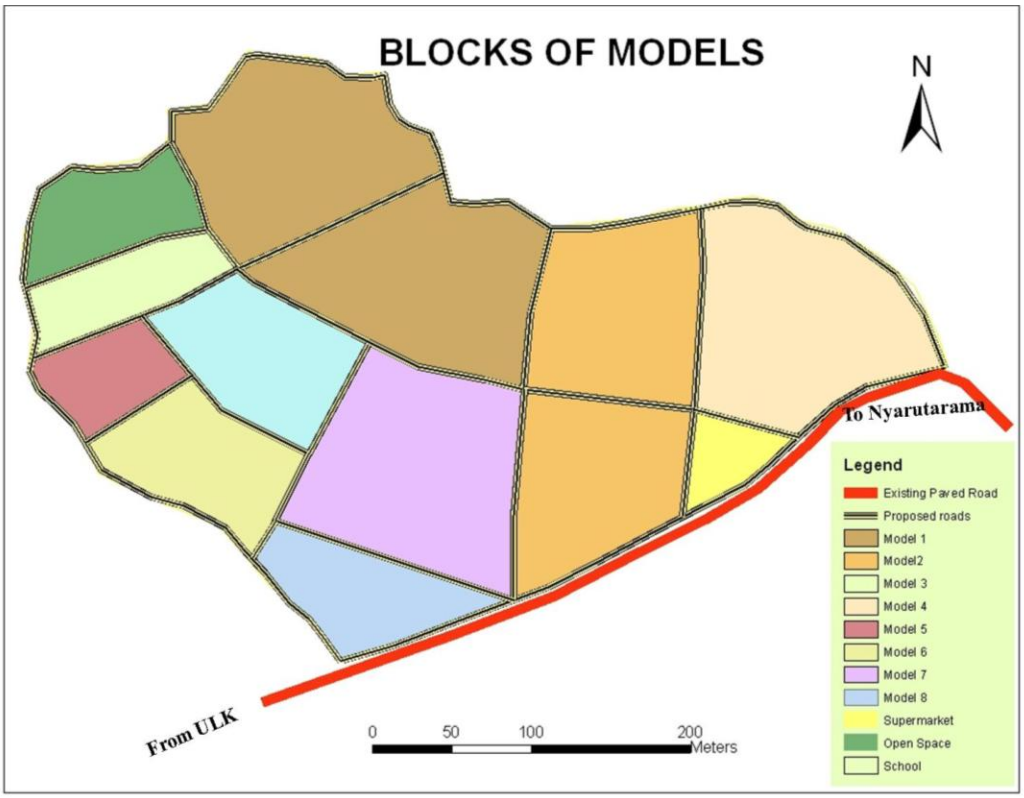
Referring to annex five, the details of the layout plan are shown:

2.4.2 Site 2: Gisozi

The selected site for Affordable Housing Project is located at Musezero cell,Gisozi sector, Kicukiro District **.** Within the designing area, the site is almost empty itself, but it is surrounded by few developments which are: few low-density informal rural houses scattered and two planned single family residential houses. The figure below shows the case study site of Gisozi.

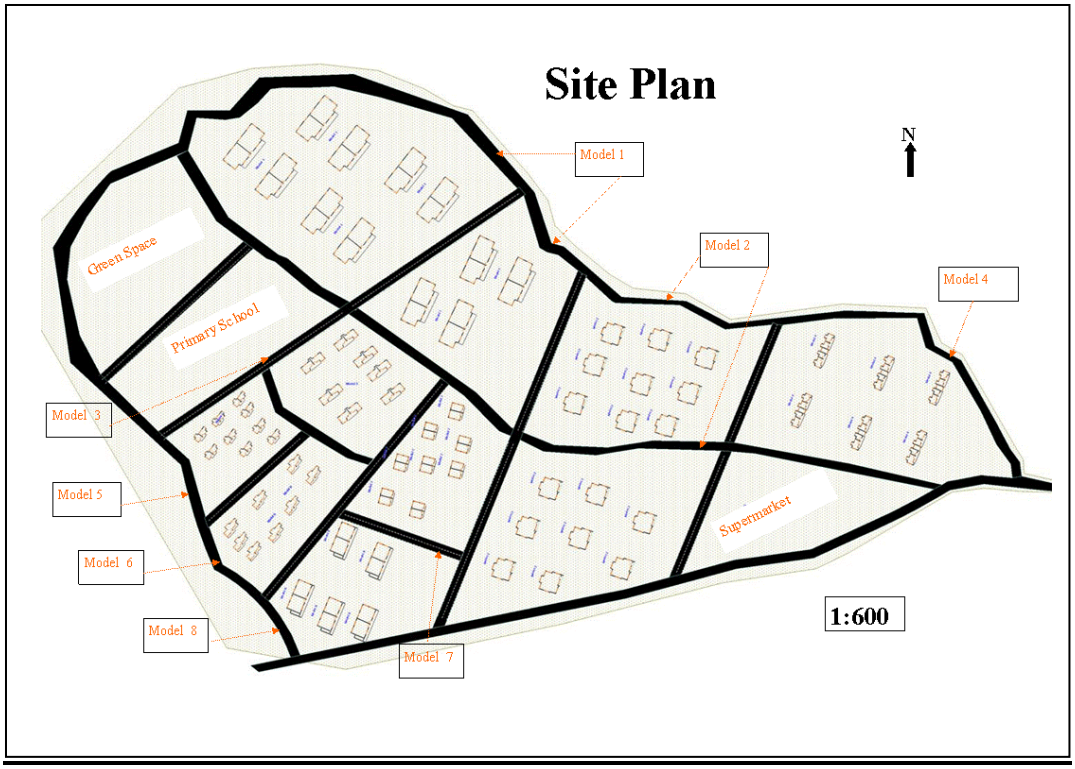


Source: RHA/Affordable Housing development for Government Employees



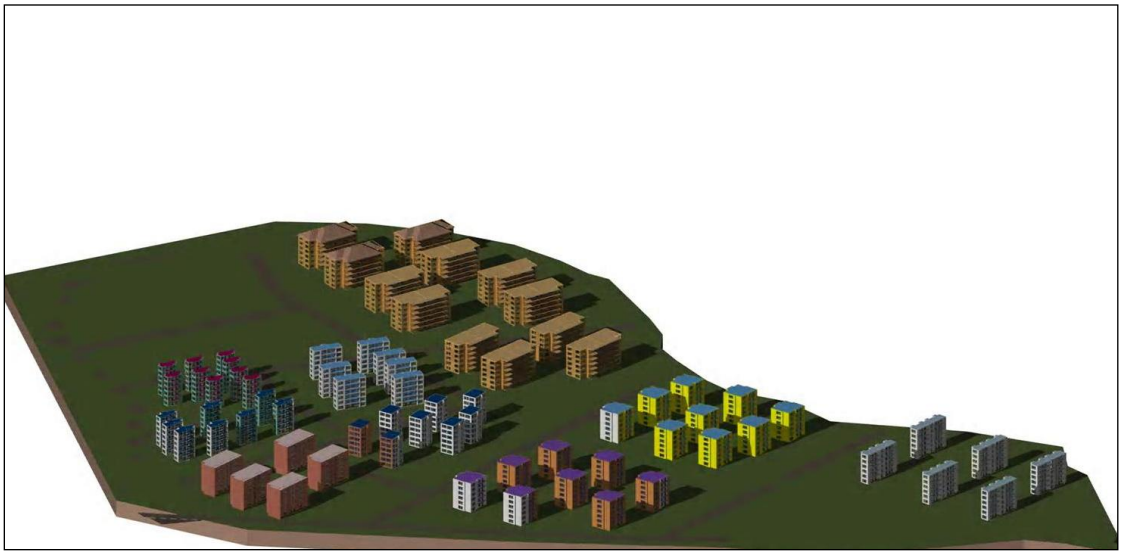
Source: RHA/Affordable Housing development for Government Employees

The figure here above illustrates the proposal dispatch of blocks of models in the project site area.



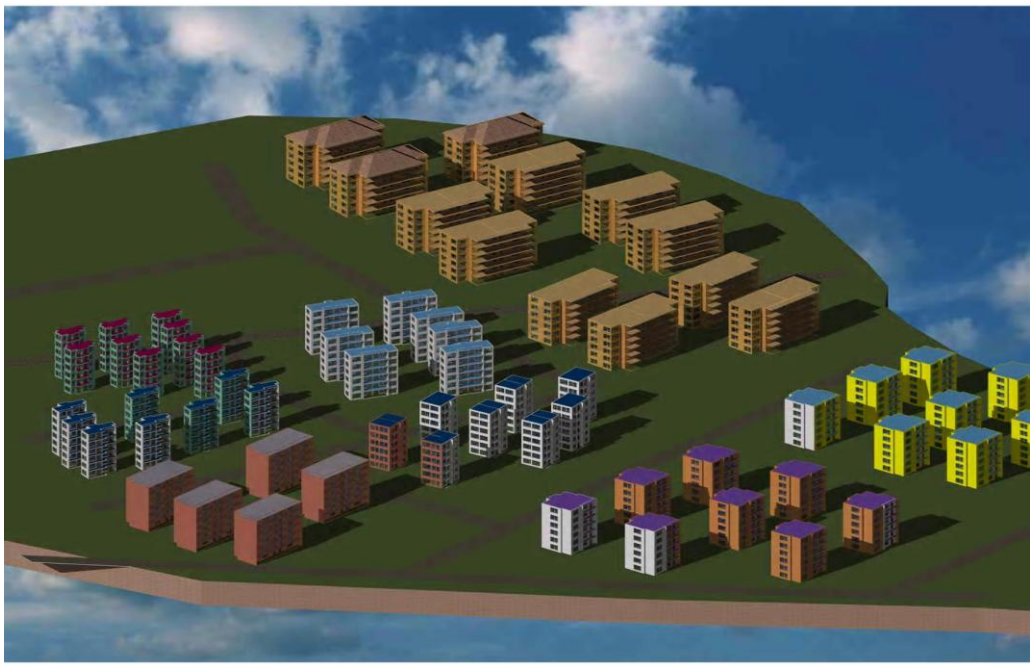
Source: RHA/Affordable Housing development for Government Employees

SITE PLAN IN 3D



Source: RHA/Affordable Housing development for Government Employees

SITE PLAN IN 3D



Source: RHA/Affordable Housing development for Government Employees

2.5. Housing unit designs and estimative costs

With reference to the Layout Plan, shown on Figure 9, housing unit designs, in correlation with the real site plan and management, are implemented at this level. The 200 housing units organized through blocs and duplex will be installed as presented in perspectives below of designs. The detailed design specifications are presented in annex 6.

Figure 12: Perspectives of a one, two and three mixed bed room units

This is a sample of a four storeyed apartment composed of one, two and three bed rooms, sitting room, dining room, bath room, Kitchen and a store room for each unit. Each block has 36 units.

Source: RHA/Affordable Housing development for Government Employees

Figure 13: Perspective of the duplex structure

Source: RHA/Affordable Housing development for Government Employees

This is a sample of a duplex structure composed of three bed rooms, living room, 2 bath rooms, kitchen and a store room for each unit.

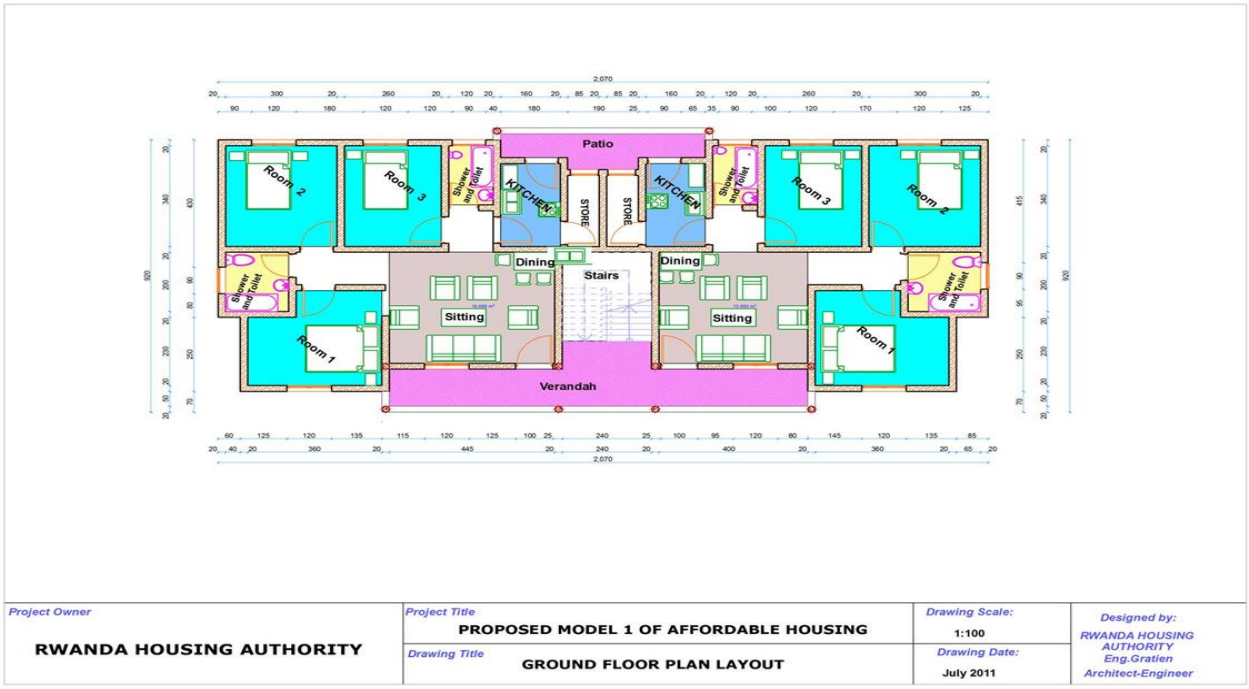
MODEL 1

Source: RHA/Affordable Housing development for Government Employees

Rental apartment buildings of 4 stories with 10 apartments each apartment has:

- ✓ 3 Bedrooms
- ✓ 1 Sitting + Dining
- ✓ 1 Kitchen
- ✓ 1 Store

2 Showers &Toilet



Source: RHA/Affordable Housing development for Government Employees

Rental apartment buildings of 4 stories with 10 apartments each apartment has:

- ✓ 3 Bedrooms
- ✓ 1 Sitting + Dining
- ✓ 1 Kitchen
- ✓ 1 Store
- ✓ 2 Showers &Toilet

Source: RHA/Affordable Housing development for Government Employees

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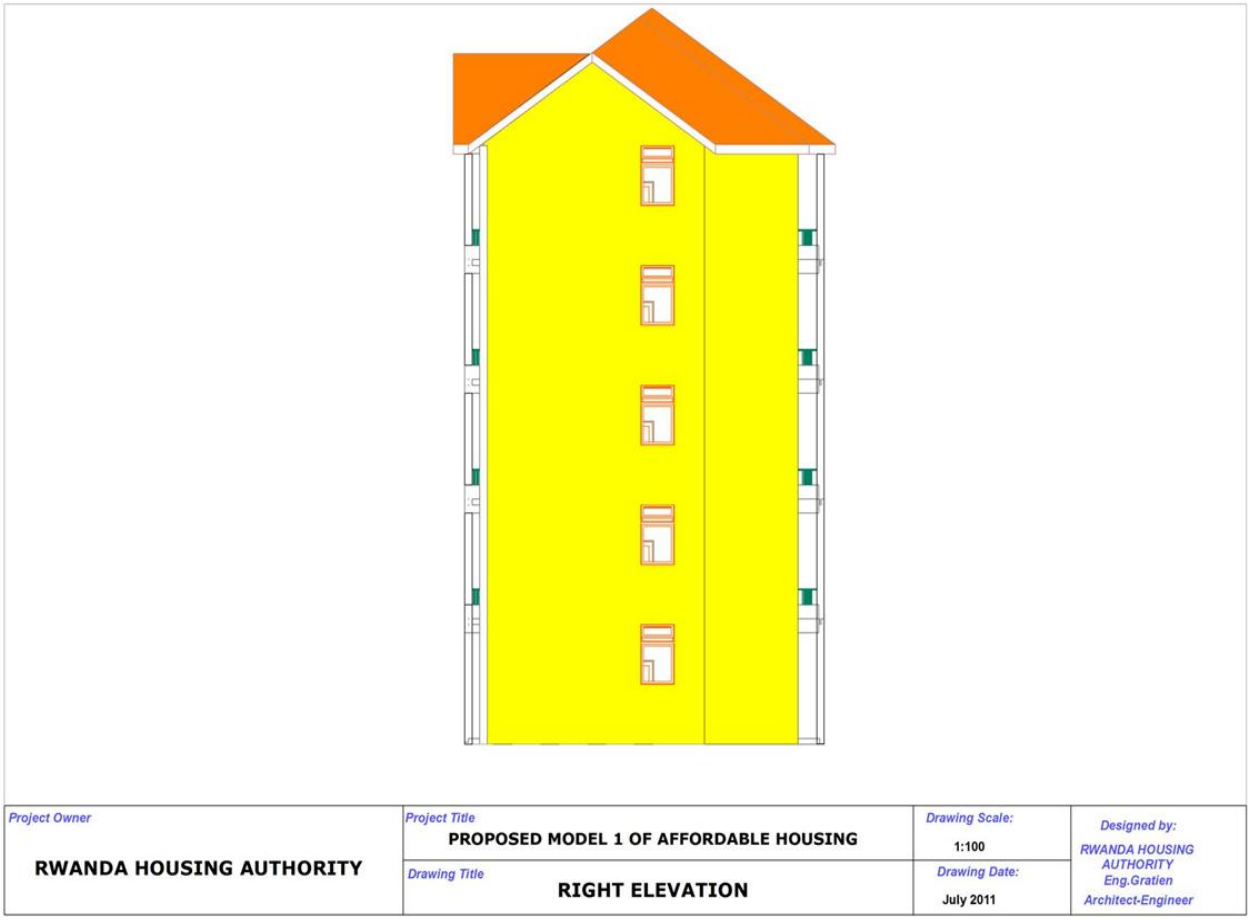


Source: RHA/Affordable Housing development for Government Employees

The project propose 12 blocks of 10 units each for the Model 2 (Site plan)
The total cost for one apartment unit: 24 691 500 RWF

Table …..: **<u>The time period in which people can achieve to the saving of 4 323 600 Rwf</u>**.

Total cost of one apartment unit(Rwf)	Required saving amount (Rwf)	Loan from the bank (Rwf)
24 691 500	2 469 150	22 222 350

The daily survival estimation per person in the City of Kiga;li is 2500RWF/person for someone having its own house, and the daily survival estimation cost of someone who is renting is 2500Rwf plus an estimation rent per day of 1666 Rwf (Equal to 50 000 Rwf/month) and the total daily cost estimation/ person is 4166.67 Rwf.

For a household of 5 persons the estimated monthly rent is 100 000RWF=3333.333RWF/day/ household

The total daily survival can be: 15833RWF for a family of five persons.

N°	1	2	3	4	5	6	7	8
Monthly salary or income	150 000	200 000	300 000	400 000	500 000	600 000	800 000	1 000 000
Estimated survival/day /person	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67
Survival/month /person	125000	125000	125000	125000	125000	125000	125000	125000
Remaining for saving/month	**25 000**	**75 000**	**175 000**	**275 000**	**375 000**	**-**	**-**	**-**
Total saving to get a loan	2 469 150	2 469 150	2 469 150	2 469 150	2 469 150	2 469 150	2 469 150	2 469 150
Saving period in month	**96**	**33**	**14**	**9**	**6**			
Estimated survival/day/ 5person	-	-	15 833,3	15 833,3	15833,3	15833,3	15833,3	15833,3
Survival/month/ 5person	-	-	475 000	475000	475000	475000	475000	475000
Remaining for saving	**-**	**-**	**- 175000**	**- 75000**	**25000**	**125000**	**325000**	**525000**
Saving period[years]	**-**	**-**	**-**	**-**	**96**	**20**	**7**	**5**

Table: ……..<u>Annual total installment to cover the bank loan</u>

Loan	Annual interest rate	Payback period [Years]	monthly interest	monthly Repayment	Monthly installment	Annual installment
22 222 350	17%	15	20 987	123 457.5	144 444.5	1 733 334

Cost accessibility

Accessibility of cost in apartment buildings refers to the ability of people to get an apartment or how they can have access to apartment either they are able to pay for it or not.

After reducing this monthly installment from the income, people can access to the apartment unit as following:

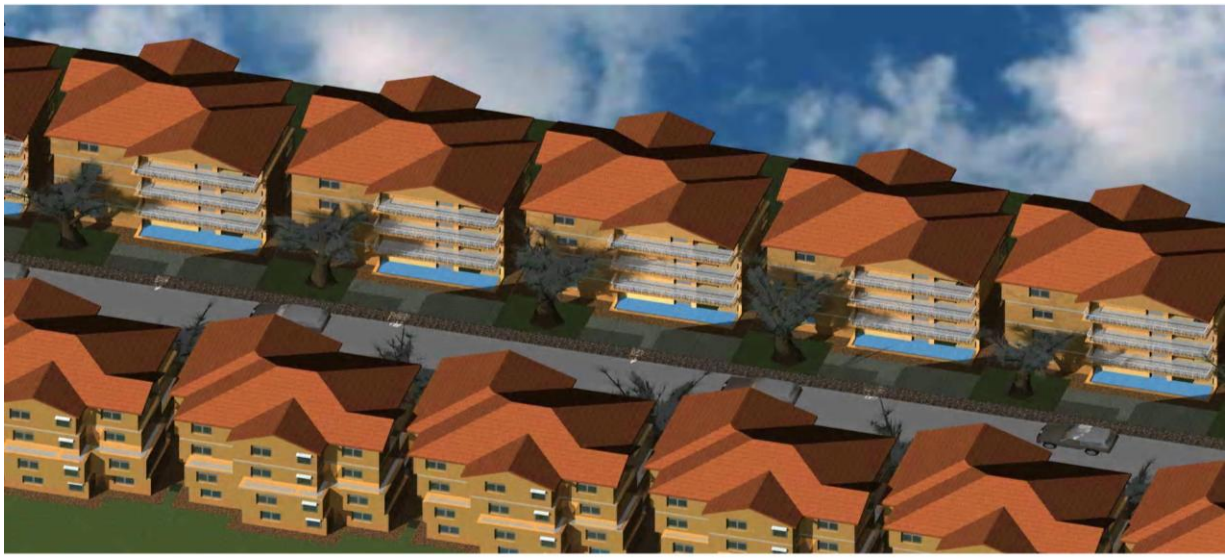
- For single persons

Only people with monthly income equal or superior to 500 000 Rwf can afford that apartment.

- For household/family

Only people with monthly income equal or superior to 600 000 Rwf can afford that apartment.

MODEL 2



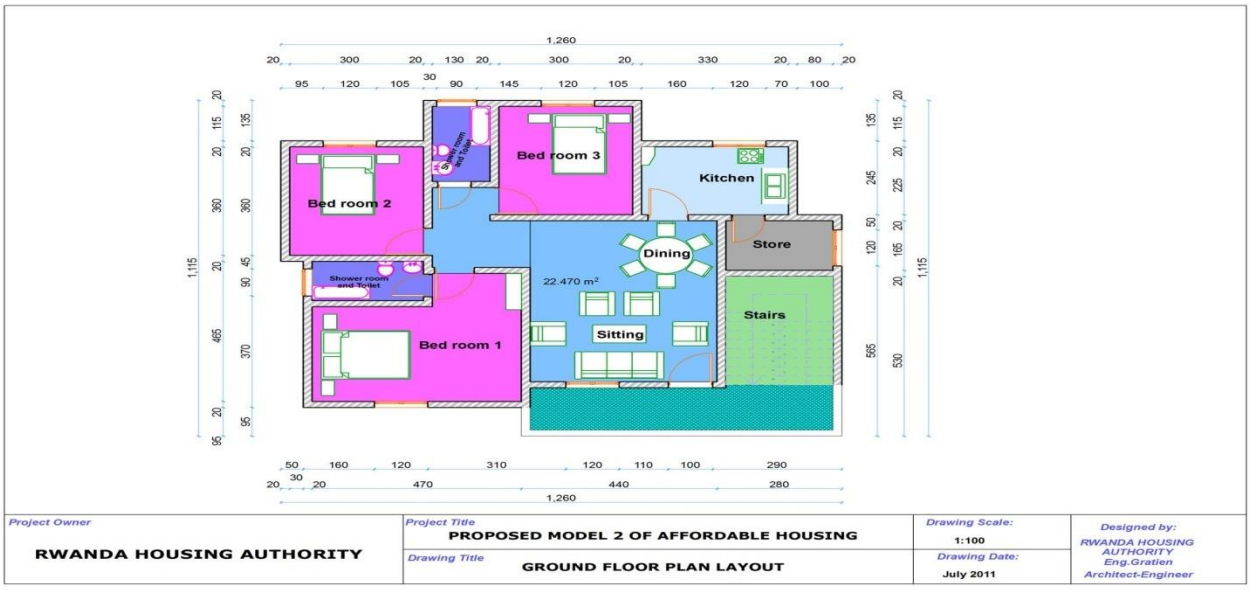
Source: RHA/Affordable Housing development for Government Employees

Rental apartment buildings of 3 stories with 4 apartments each apartment has:

- ✓ 3 Bedrooms
- ✓ 1 Sitting + Dining
- ✓ 1 Kitchen
- ✓ 1 Store
- ✓ 2 Showers &Toilet

Source: RHA/Affordable Housing development for Government Employees

Source: RHA/Affordable Housing development for Government Employees



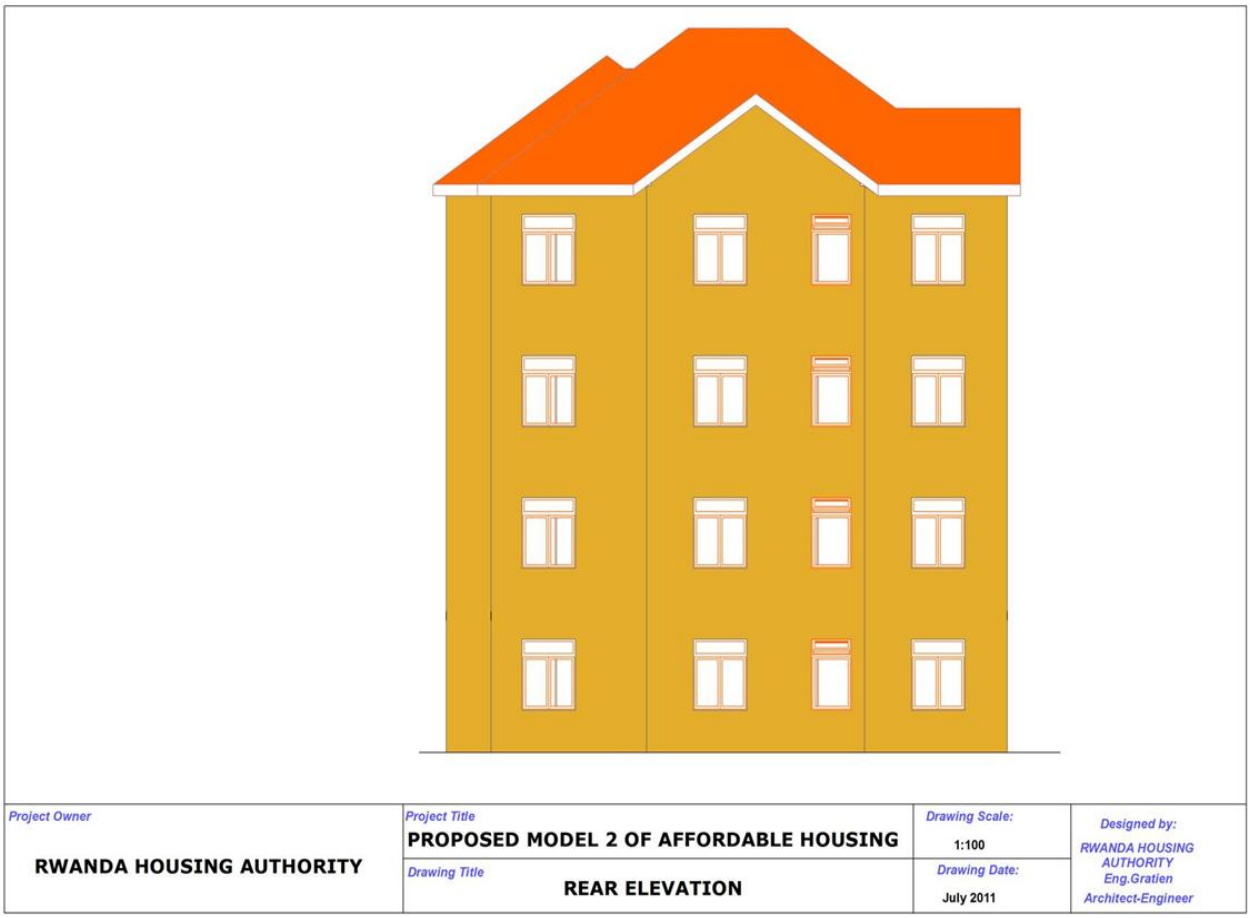
Source: RHA/Affordable Housing development for Government Employees

Rental apartment buildings of 3 stories with 4 apartments each apartment has:

- ✓ 3 Bedrooms
- ✓ 1 Sitting + Dining
- ✓ 1 Kitchen
- ✓ 1 Store

- ✓ 2 Showers &Toilet

Source: RHA/Affordable Housing development for Government Employees



Source: RHA/Affordable Housing development for Government Employees

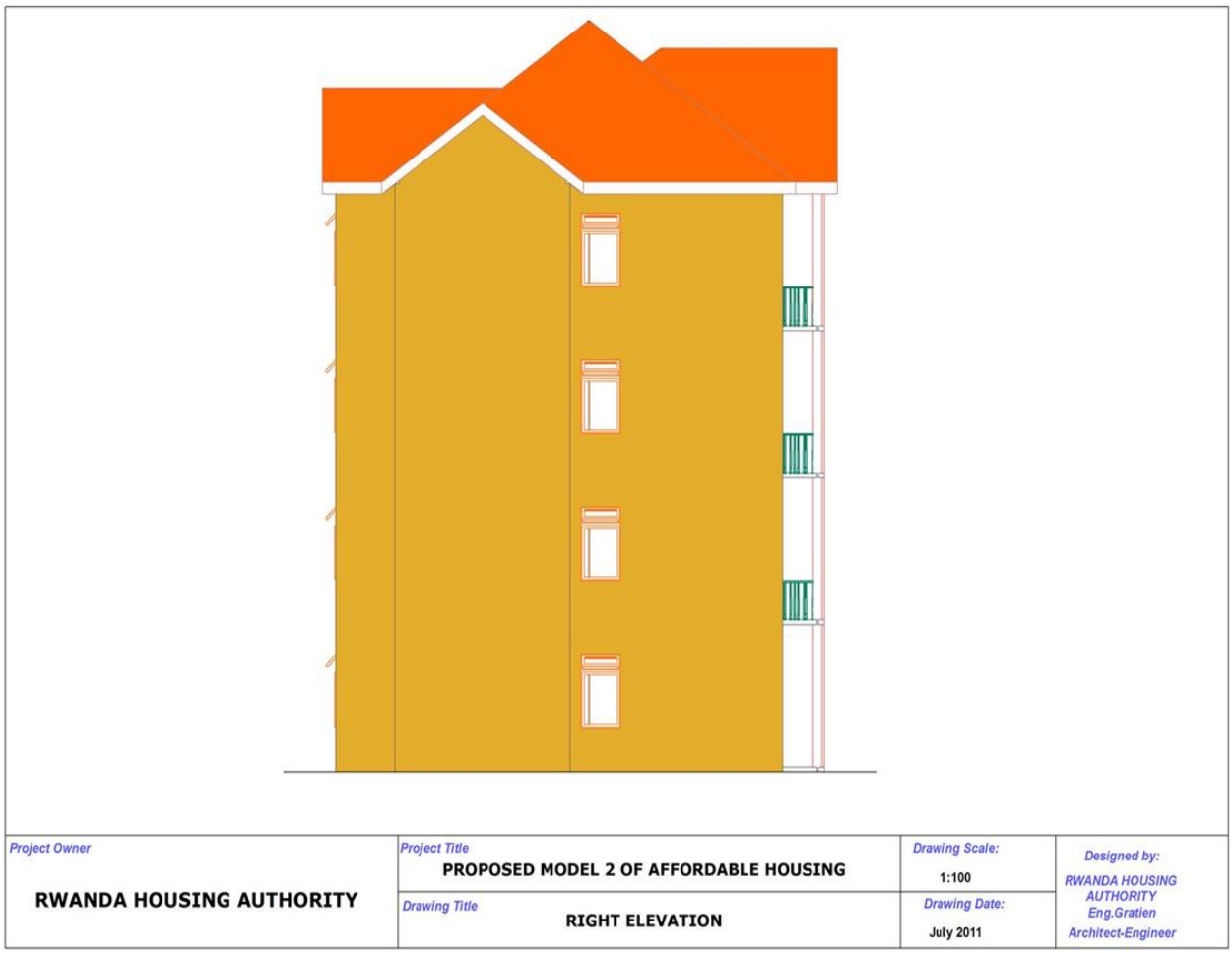


Table …..: **Needed bank loan to purchase one apartment**

Total cost of one apartment unit(Rwf)	**Required saving amount (Rwf)**	**Loan from the bank (Rwf)**
43 236 000 Rwf	4 323 600	38,912,400

As mentioned above the total daily cost estimation/ person who rent a house is 4166.67 Rwf and for a household of 5 persons the estimated monthly rent is 100 000RWF=3333.333RWF/day/ household, therefore the total daily survival can be: 15833RWF for a family of five persons.

Table …..: **<u>The time period in which people can achieve to the saving of 4 323 600 Rwf</u>**.

N°	1	2	3	4	5	6	7	8
Monthly salary or income	150 000	200 000	300 000	400 000	500 000	600 000	800 000	1 000 000
Estimated survival/day /person	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67
Survival/month /person	125000	125000	125000	125000	125000	125000	125000	125000
Remaining for saving/month	**25 000**	**75 000**	**175 000**	**275 000**	**375 000**	**-**	**-**	**-**
Total saving to get a loan	4 323600	4 323600	4 323600	4 323600	4 323600	4 323600	4 323600	4 323600
Saving period in month	**172**	**58**	**24**	**15**	**11**			
Estimated survival/day/ 5person	-	-	15 833,3	15 833,3	15833,3	15833,3	15833,3	15833,3
Survival/month/ 5person	-	-	475 000	475000	475000	475000	475000	475000
Remaining for saving	**-**	**-**	**- 175000**	**- 75000**	**25000**	**125000**	**325000**	**525000**
Saving period[years]	**-**	**-**	**-**	**-**	**172**	**34**	**13**	**8**

Table **….:** **<u>Annual total installment to cover the bank loan</u>**

Loan	Annual interest rate	Payback period [Years]	monthly interest	monthly Repayment	Monthly installment	Annual installment
38912400	17%	15	36750	216180		252930

Cost accessibility

Accessibility of cost in apartment buildings refers to the ability of people to get an apartment or how they can have access to apartment either they are able to pay for it or not.

After reducing this monthly installment from the income, people can access to the apartment unit as following:

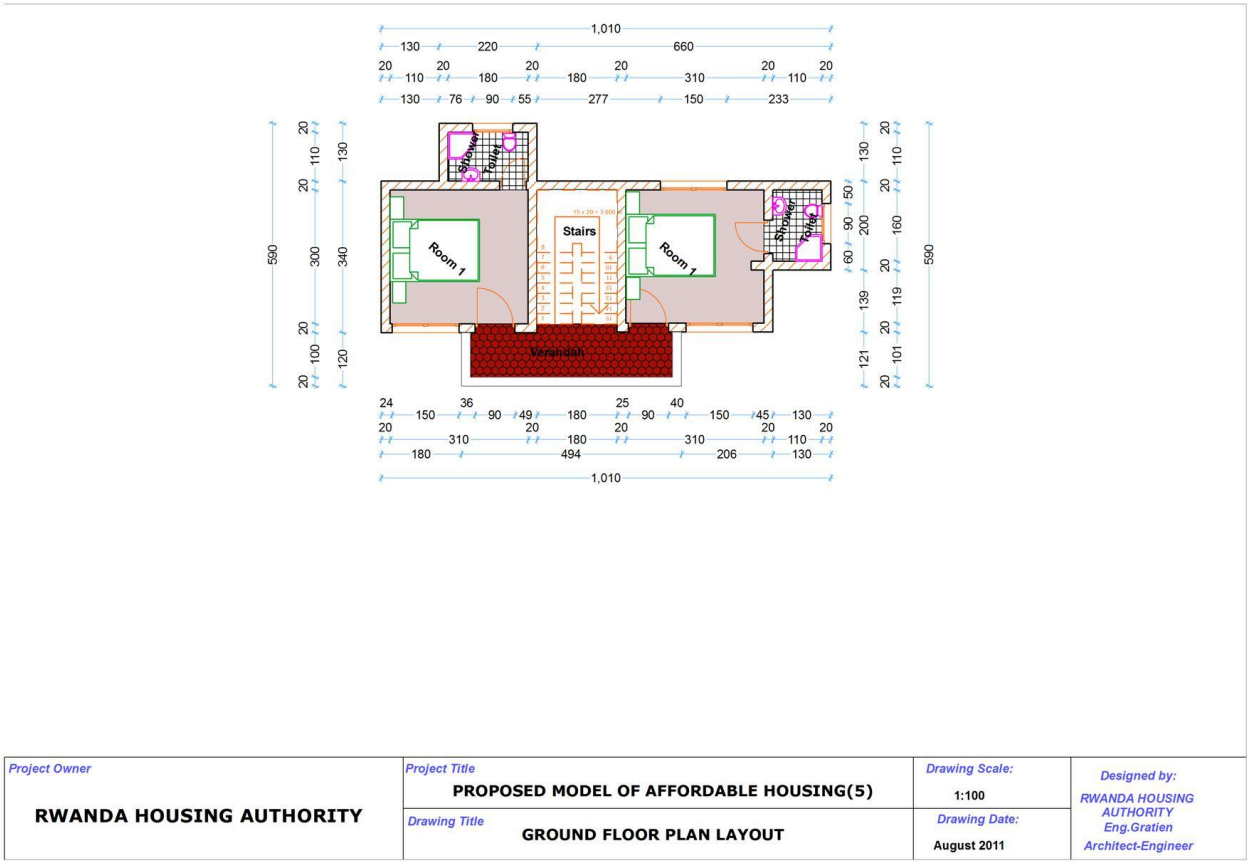
- For single persons:

Nobody can afford that apartment with a monthly income between 150 000 Rwf and 500 000 Rwf

- For households/family

Households which have monthly income of 800 000 Rwf and above can only afford.

MODEL 5



Source: RHA/Affordable Housing development for Government Employees

Source: RHA/Affordable Housing development for Government Employees

The Affordable housing development through housing cooperative project propose to build 9 blocks of 4 apartments each which will accommodate 36 families.

Table ……: **Needed bank loan to buy one apartment**

Total cost of one apartment unit(Rwf)	**Required saving amount (Rwf)**	**Loan from the bank (Rwf)**
5 575 000	557550	5 017 950

As mentioned above the total daily cost estimation/ person who rent a house is 4166.67 Rwf and for a household of 5 persons the estimated monthly rent is 100 000RWF=3333.333RWF/day/ household, therefore the total daily survival can be: 15833RWF for a family of five persons.

Table …..: **The time period in which people can achieve to the saving of 55750 Rwf**.

N°	1	2	3	4	5	6	7	8
Monthly salary or income	150 000	200 000	300 000	400 000	500 000	600 000	800 000	1 000 000
Estimated survival/day /person	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67	4166,67
Survival/month /person	125000	125000	125000	125000	125000	125000	125000	125000
Remaining for saving/month	**25 000**	**75 000**	**175 000**	**275 000**	**375 000**	**-**	**-**	**-**
Total saving to get a loan	557550	557550	557550	557550	557550	557550	557550	557550
Saving period in month	**22**	**7**	**3**	**2**	**1.4**			
Estimated survival/day/ 5person	-	-	15 833,3	15 833,3	15833,3	15833,3	15833,3	15833,3
Survival/month/ 5person	-	-	475 000	475000	475000	475000	475000	475000
Remaining for saving	**-**	**-**	**- 175000**	**- 75000**	**25000**	**125000**	**325000**	**525000**
Saving period[years]	**-**	**-**	**-**	**-**	**22**	**4.4**	**1.7**	**1**

Table ….: **<u>Annual total installment to cover the bank loan</u>**

Loan (Rwf)	Annual interest rate (Rwf)	Payback period [Years]	monthly interest (Rwf)	monthly Repayment (Rwf)	Monthly installment (Rwf)	Annual installment (Rwf)
5 017 950	17%	15	4739.17	27 877	32616	391398

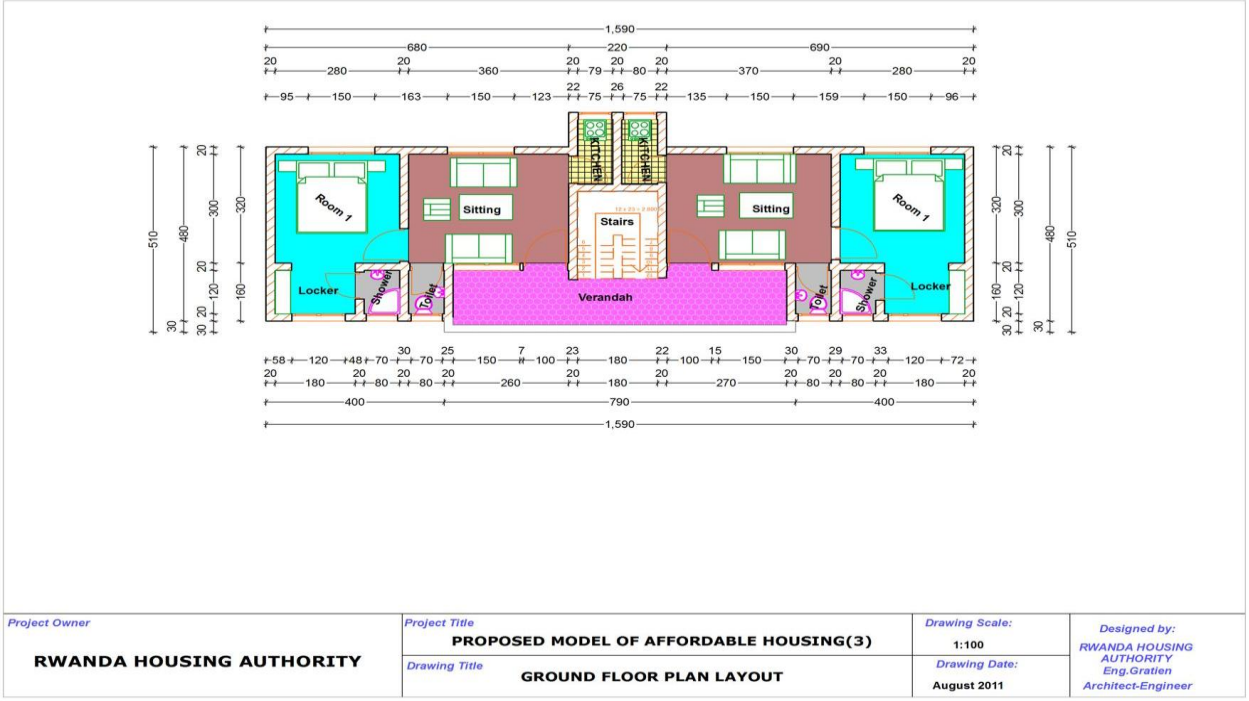
Cost accessibility

Accessibility of cost in apartment buildings refers to the ability of people to get an apartment or how they can have access to apartment either they are able to pay for it or not.

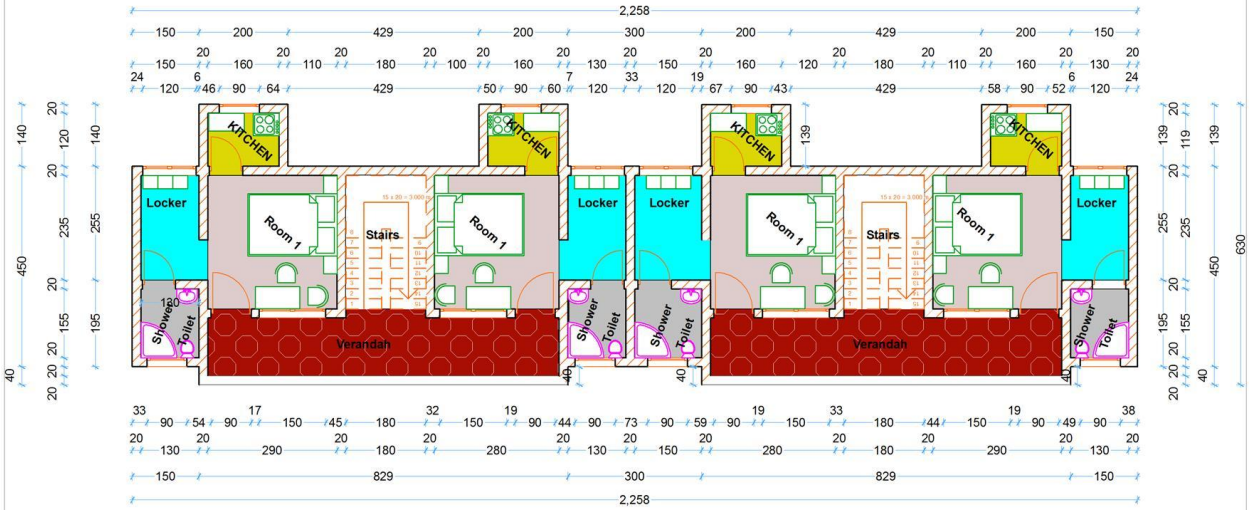
After reducing this monthly installment from the income, people can access to the apartment unit as following:
For single persons:
All persons can afford that apartment with a monthly income between 150 000 Rwf and 500 000 Rwf

For households:

All households which have monthly income of 500 000 Rwf and above can afford it.



Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	**PROPOSED MODEL OF AFFORDABLE HOUSING(3)**	1:100	RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer
	Drawing Title **FRONT ELEVATION**	Drawing Date: August 2011	

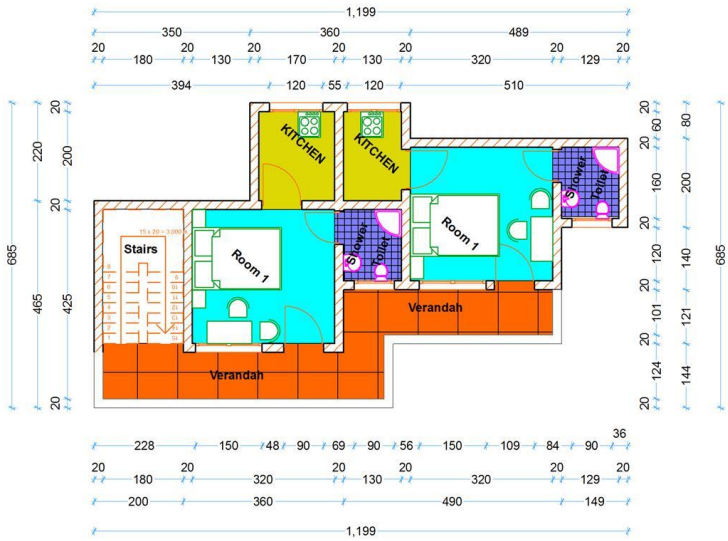


Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	**PROPOSED MODEL OF AFFORDABLE HOUSING(4)**	**1:100**	*RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer*
	Drawing Title **GROUND FLOOR PLAN LAYOUT**	*Drawing Date:* **August 2011**	

Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	PROPOSED MODEL OF AFFORDABLE HOUSING(4)	1:100	RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer
	Drawing Title: FRONT ELEVATION	Drawing Date: August 2011	

Source: RHA/Affordable Housing development for Government Employees

Source: RHA/Affordable Housing development for Government Employees



Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	**PROPOSED MODEL OF AFFORDABLE HOUSING(6)**	1:100	RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer
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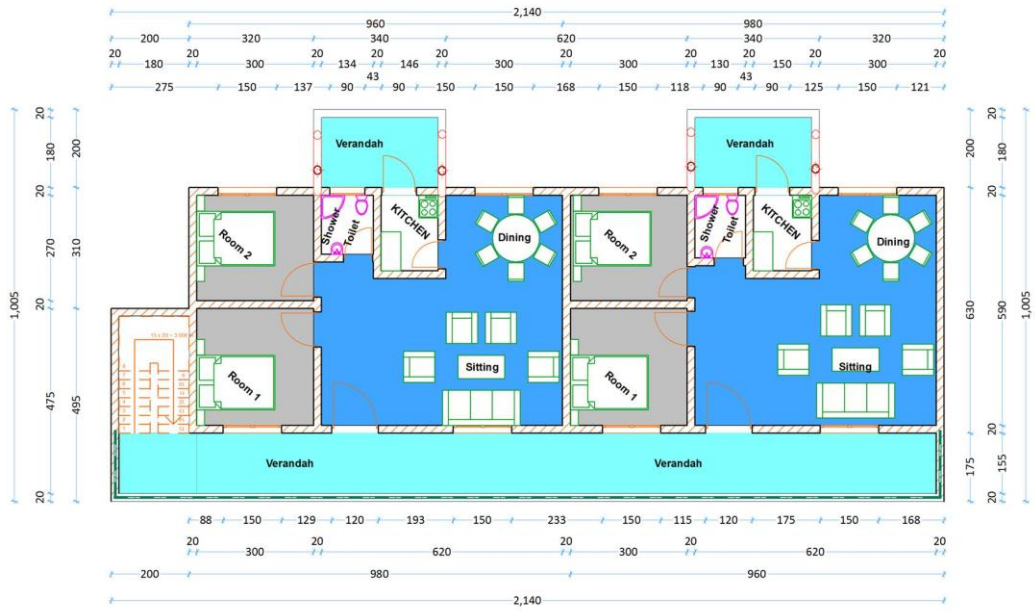
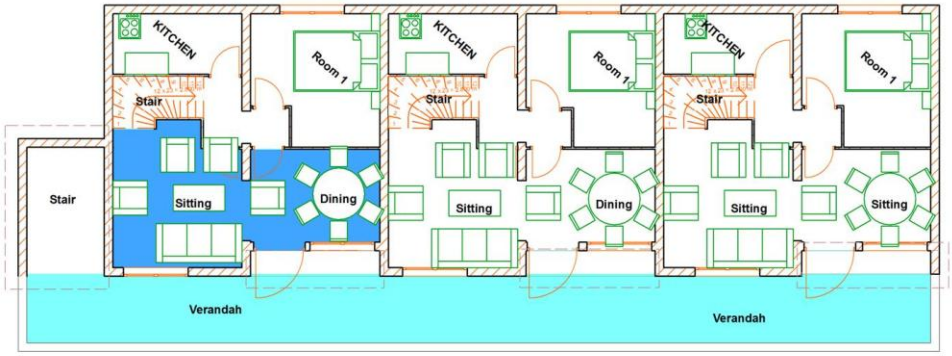
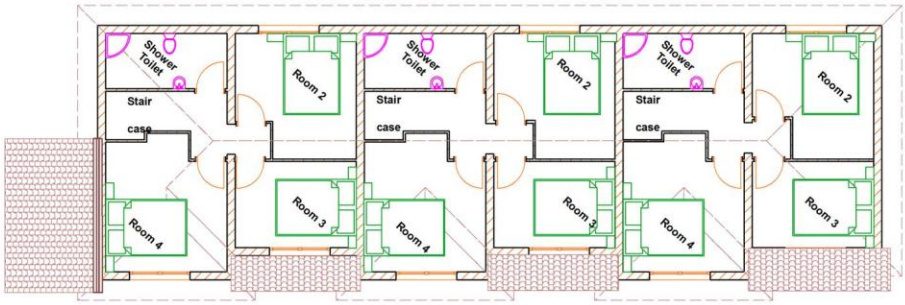


Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	**PROPOSED MODEL OF AFFORDABLE HOUSING(7)**	1:100	RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer
	Drawing Title: **GROUND FLOOR PLAN LAYOUT**	Drawing Date: August 2011	



Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	PROPOSED MODEL OF AFFORDABLE HOUSING(7)	1:100	RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer
	Drawing Title: FIRST FLOOR PLAN	Drawing Date: August 2011	



Project Owner	Project Title	Drawing Scale:	Designed by:
RWANDA HOUSING AUTHORITY	PROPOSED MODEL OF AFFORDABLE HOUSING(7)	1:100	RWANDA HOUSING AUTHORITY Eng.Gratien Architect-Engineer
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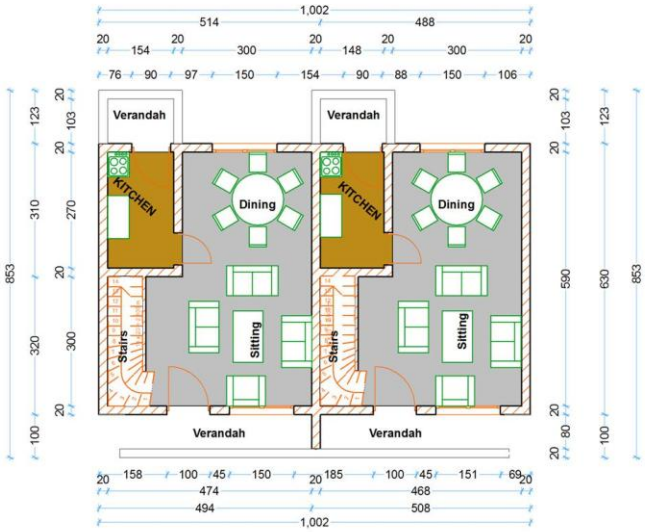

Project Owner	Project Title	Drawing Scale:	Designed by:
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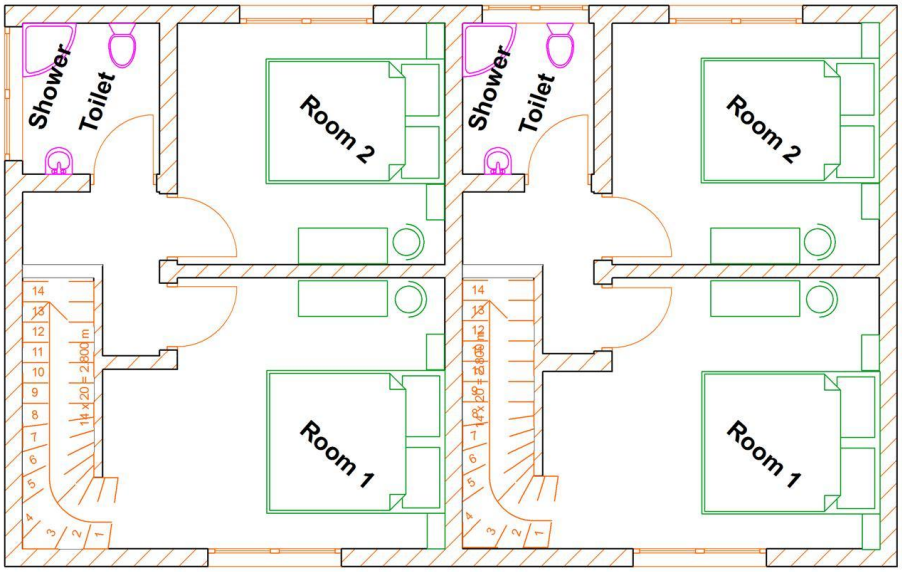
	Drawing Title **GROUND FLOOR PLAN LAYOUT**	Drawing Date: August 2011	



Project Owner	Project Title	Drawing Scale:	Designed by:
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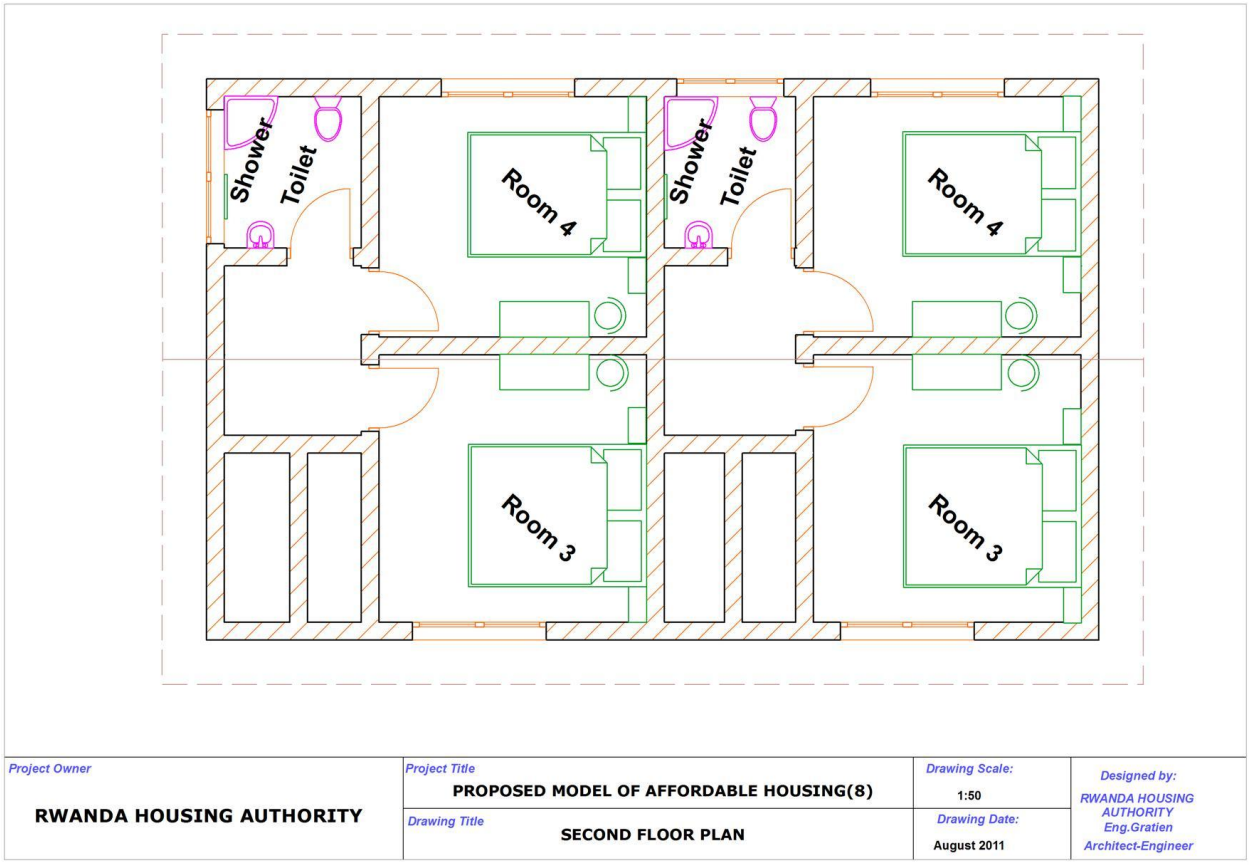
	Drawing Title **FIRST FLOOR PLAN**	Drawing Date: August 2011	



The total estimated cost

	Model	Number of Blocks	Cost/block (Rwf)	Total cost (Rwf)
	1	12	246 915 000	2 962 980 000
	2	17	129 708 000	2 205 036 000
	3	7	65 448 000	458 486 000
	4	6	96 714 000	580 284 000
	5	9	22 302 000	200 718 000
	6	8	31 914 000	255 312 000
	7	5	114 723 000	573 615 000
	8	7	55 188 000	386 316 000
	TOTAL			**7 622 747 000**

Basic infrastructure estimated cost

	Facilities	Cost (Rwf)
1	Roads	93 333 333
2	Electricity	100 000 000
3	Water	66 666 666
	Total	**259 999 999**

The Government Agencies such as RTDA (Rwanda Transportation Development Agency) and EWSA shall intervene in basic infrastructure supply in order to make affordable those apartments.

Expropriation cost

Property valuated	**Quantity**	**Cost (Rwf)**	**Total estimated cost/ item (Rwf)**
Low standing houses	87	12 000 000	1 044 000 000
Medium standing houses	2	57 000 000	115 200 000
Plots	12.5 Ha	14 000	1 750 000 000
Plants			25 000 000
TOTAL			**2 934 200 000**

The Government through the City of Kigali shall also intervene by availing land for housing development.

The total Project cost without Government intervention is 10 816 946 999 Rwf (17 879 252USD)

The total Project cost with Government intervention is 7 622 746 999 Rwf (12 599 582 USD)

III. STRATEGIES FOR IMPLEMENTATION AND ACCESS TO HOUSING BY THE TARGET GROUP

3.1 Introduction

From the implementation study and cost of design and construction proposal presented above, it can still be realized from outset that the unit cost of housing is still high and therefore not fully affordable. The major aspects that still render the unit cost unaffordable include the original cost of: land (and its location and status), available basic infrastructure (and its quality/class) and the building or built-up area/size. These further greatly impact on cost/sq.m of the housing.

As earlier mentioned, there are many implementable project designs all over Rwanda but always lack implementation and acquisition mechanisms. Our project goes beyond the mere designs to suggest the way forward with possible modalities for developers to easily implement the project and for beneficiaries to easily access ownership to this Affordable Housing development. This only applies to a category of beneficiaries wishing to own a house for the first time.

The financing of the project programme implementation will rely on public, semi-public, NGOs (Development Partners) and private sector funding (capital, financing, tax incentives and/or long term revenue stream) and land and plot servicing will be provided by government not private sector. This is clearly shown in the schematic drawing showing the general transaction procedure below:

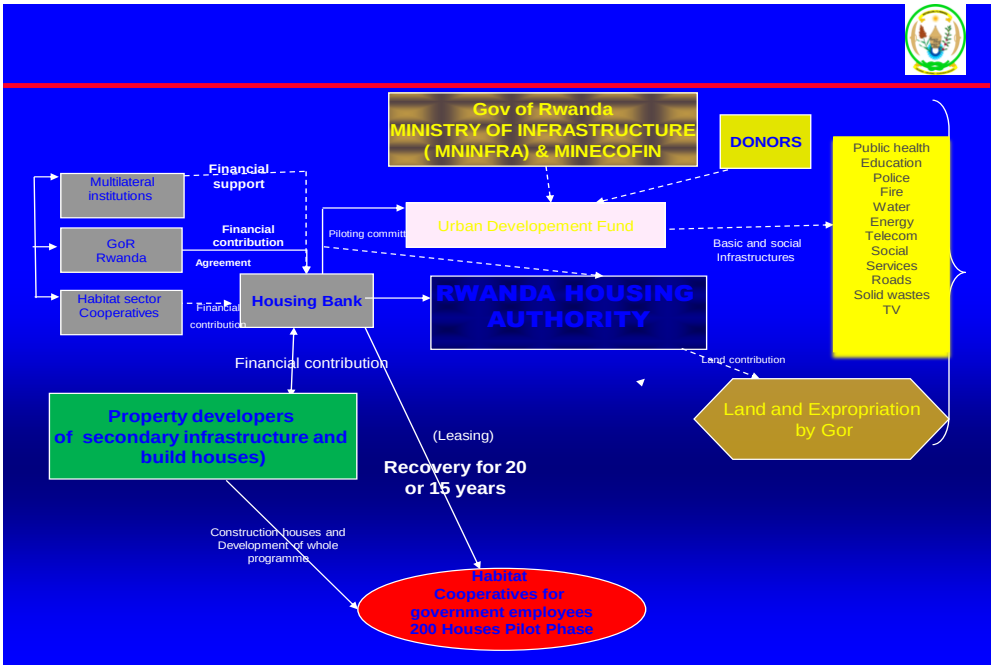


Figure 14 - showing how implementation and acquisition modalities will be

In order to fully achieve the objectives of this project, the following enabling strategies, both by government and/or individual beneficiaries have been initiated and these include:

3.2 Government Intervention

- The government assembling land for this particular affordable housing scheme would greatly render an expenditure reduction on the overall cost of the project. In this project, If the cost on land and expropriation is met by the Government, the overall cost of the project will be reduced by 15% and therefore the cost per housing unit will be 11.3M RwF, 14.2M RwF, 15.6MRwF and 17.6M RwF for single, double, triple bedrooms in the apartment blocks and individual duplex structure respectively.
- The government investing in and availing the primary infrastructure services in the construction site area since the site is unserviced. To this end, If the cost on plot servicing is met by the Government, the overall cost of the project will be reduced by 30% and therefore the cost per housing unit will be 9.3 RwF, 11.7M RwF, 13.1M RwF and 15.4M RwF for single, double, triple bedrooms in the apartment blocks and individual duplex structure respectively. This will also imply a relief on the mortgage payment.

Overall, if the government's enabling role in providing the required land and ensuring the ready supply of fully serviced and planned housing land is executed, the global cost of the project will be reduced by 45% and unit cost of the house will be 7.3M RwF, 9.2M 10.3M RwF, and 12.2M RwF for self contained single, double, triple bedrooms in the apartment blocks and individual duplex structure respectively. This cost will render an amount sufficient enough for a given category of government employees to access ownership to these housing units and pay for the intended mortgage period.

3.3 Housing Ownership Guarantee Sources

- There are various opportunities that can be explored to render government employees enjoy guarantees to own individual housing. Even though the assembling and servicing of land by government might be taken as a form of guarantee to beneficiaries, the other typical guarantee source can be the social security guarantee fund which can be used to provide guarantee to Housing Bank (now integrated in BRD) for public servants to get housing. Since it's public funds, the funds can be channeled into the housing bank at a low/nil interest rate for the beneficiaries to utilize ''their'' funds for housing in view of reconciliation during retirement age.
- Mother public organs or Leading government employers (e.g MINEDUC for teachers, MINADEF or MINALOC for army or police respectively) can also be used as guarantees for the construction and provision of housing to their employees (beneficiaries). A proportionate amount of money would be deducted from the employee's monthly salary into the funding of his/her housing and if employee quits the job before servicing the full

amount on housing, the property will be compulsorily acquired from him/her. This strategy will also act as the employer retention strategy in these organisations.

- Innovatively as a way of sharing housing costs, government can provide or construct the skeleton (primary structure) of the house with outside finishes and then hand it over to the beneficiary to undertake the secondary structure, infill and internal (in-house) services. This would be an alternative to government providing land and servicing plots, but rather sharing overall project cost (alternatively through subsidization process). Each party will be required to pay its own costs as well as contribute to a range of shared costs on a long- or short-term

3.4 Interest rate control

Reducing or controlling interest rates on loans requires a strong government intervention mechanism. This would also extend to the security fund handled by RSSB. Since RSSB uses public money, it ought not to be charged at high interest rates like any other commercial/business oriented entity instead it would act as part of the beneficiary's guarantee to Housing Bank for public servants to acquire houses. If the interest rates are lowered for example to 9% (a rate above developed nations interest rate line), the structure of pay back will shift upwards and constraints on beneficiaries reduced.

As realized from above, it is quite clear that the development of affordable housing calls for an immediate committed effort of both individuals as well as a strong government intervention in form of financial subsidies or land and infrastructure assembly.

IV. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The project report looked at key planning regime factors to consider in providing affordable housing which included the degree to which the public sector controls the overall planning process or leaves the visioning to the private sector and to what extent various levels are involved in overseeing the programme progress and how much is left to other involved actors.

The report shows that where housing for residents of all income levels and special housing needs could potentially most efficiently be provided through public sector. Private sector driven housing markets that provide substantial levels of affordable housing are often rare if not non-existent.

As realized from the cost of the project, it is very clear that individual government employees alone cannot dare manage to handle the development and accessibility to affordable housing ownership. As such, developing this affordable housing pilot project and its marketing requires significant government intervention to succeed. Experience from other countries shows how Government plays an important role in facilitating development through different control and/or enabling mechanisms ranging from partnerships to self commitments.

The fact that state intervention is minimal or inconsistent, stronger national guidance is required to steer decentralized governments in land (control of housing output and land price); infrastructure (subsidy and forward funding from government to ensure basis for new communities and that projects are viable); construction (set consistent build and minimum space standards – condominium law and enforce them as well as subsidize when cost of building homes is greater than its "value".

The government dare not leave the affordable housing playing field to the private sector. The government should be playing a leading role in affordable housing delivery. Research has indicated that a deeper level of government intervention is usually required in circumstances where a larger proportion of housing stock is being newly built or where a city is substantially being reconstructed (RICS, 2010).

From the survey undertaken, it was discovered from the representative sample that few if not minimal Rwandans prefer to live in apartments with reasons based on their own making even if they are aware of the insufficiency in available land. As such Sensitization/awareness campaigns about advantages of living in apartments should be undertaken. This initiative will act as a vehicle to implement the condominium law in view to ensure land management mechanisms.

With the implementation of the above vital reforms, it is clearly possible that improving provision of affordable housing programs and implementing of the national urban housing and human settlement policies with the most efficient use of resources can be achieved. To this end, housing demand will need to be managed, housing demand prioritized, adequate housing supply planned and delivered and housing sector fully enabled to finance, own, manage and invest in the housing stock over the long.

4.2 RECOMMENDATIONS

From the project proposal identified above, a lot of recommendations can be drawn, among these:

- The need for government reforms towards enabling affordable housing schemes throughout the country. As a matter of fact Affordable Housing world over has never been handled on an individual basis, but rather on a collective approach through community or target group associations or cooperatives with government support. Organizing people through associations and/or cooperatives to consolidate funds (savings) into housing finance institutions would be ideal.
- Specific established institutional frameworks in place entirely focused on enabling supply and demand of affordable housing should be set.
- Funding guarantee mechanisms should be devised
- Stringent allocation criteria to ensure the most-needy are considered first should be established to prevent mismatches and provide housing to those who need it most. These can be considered as important indicators to assess the eligibility of families to have access to affordable homes.
- More research on locally available sustainable construction materials in agro stone and their improvement in production quality should be undertaken.

4.3 The Way Forward (Management and Maintenance Strategy)

If the implementation and acquisition strategies proceed successfully, the key aspect just like in any major new development is how to manage the finished buildings and the public realm in the longer term. This is as relevant to a business park as it is to our new housing development as regards the construction phase, the letting/occupation process, and the management and maintenance of the completed buildings and open spaces.

For this project, management of the built up area will be organized depending on the tenure arrangement or the developer, who will form a management company for this purpose and charge ground rent to tenants to occupants. Alternatively the occupants will form an association to cater for the management and maintenance of the property and the surrounding open spaces

The management of public realm, whether roads and spaces are adopted will be undertaken by the local authority. Revenue implications were considered in this aspect.

ANNEXES

ANNEX 1: Concept Note RHA

PILOT PROJECT FOR THE PRODUCTION OF AFFORDABLE HOUSING IN RWANDA

1. **INTRODUCTION**

The aim of this project is to produce affordable housing for middle income earners, specifically Government employees with priority given to professionals in Government.

Today, the housing market in Rwanda is so difficult so much that middle income earners may not get the privilege of owning a house during their lifetime. The houses available on the market are built by real estate developers, Government institutions or private businessmen whose objective is profit first and foremost.

The usual channels that give access to credit have shown their limit in Rwanda in view of the fact that the limited mortgage sources coupled with high cost resulting from the process effectively disqualifies the average middle income earners, a category in which most Government employees fall.

Since monthly salaries determine the borrowing power for our targeted group, access to outside funding is very weak and as such limits the path to house ownership. This situation does not fit with Rwanda's vision of social and economic progress.

Considering the current situation, on average, the market cost of a **13mx10m** stand-alone house with 3 bedrooms, a living room, kitchen and one bathroom with cement pavement in bricks or other durable materials is approximately **25,000,000 RwF** if the cost of a **20mx20m** plot is included. The proposal however will not work in the above mentioned stand-alone development context for effective land management purposes.

With a monthly salary of **200 000 RwF** and a **16%** interest rate for the average mortgage to pay off in 20 years, access to house ownership is almost impossible in these conditions. If however low rise structures are considered, this being the objective of RHA, then the materials and building cost can be shared even more, leading to a reduction in individual house unit cost.

The only solution for those in the situation described above would be the promotion of housing financing mechanisms that would allow the Government of Rwanda to participate in pilot projects in terms of funding and land allocation. These projects would have to demonstrate the capacity to return these investments over a period of time that would be used for a subsequent pilot project and so on.

2. **OBJECTIVES**

The RHA has set two main objectives:

- Propose mechanisms of affordable housing ownership that worked in other African countries for the promotion of sustainable development in Rwanda, this being applied in the case of Government employees;
- Develop a pilot project of 150 houses in the city of Kigali

For this project to start, a site needs to be indentified in collaboration with KCC in addition to getting all three technical commissions within the RHA (Urban Planning, Engineering and Architecture) to work in harmony.

It would be preferable to combine on the same site individual homes, category F3 apartment blocks that would go up to four (4) stories in height

3. TECHNICAL ORIENTATIONS

The pilot project will take into consideration the following elements:

- The cost of buying an empty plot or expropriating an occupied one (to be discussed);
- The complete servicing of the chosen plot in terms of basic infrastructure (Water, Electricity, Telephone lines, Internet lines, Gas lines) as well as Waster water and Storm water sanitation mechanisms;
- The architectural design and engineering studies;
- The cost of construction
- The type of structures to be erected (F3 of F4)
- The minimum lot size for the pilot project implementation based on a 35% physical occupancy for erected structures, 25% for basic infrastructure, 20% for parking and 20% for landscaping design.

4. GOVERNMENT INTERVENTIONS

Government can be involved on many fronts:

- Provide the land for construction
- Construction of basic infrastructure
- Organize housing cooperatives in the country
- Get financial institutions to lower their interest rates and give longer loan reimbursement periods (20 years and above)
- Establish an Urban Development Fund
- Undertaking sensitization programs to create a new cultural mindset towards use of technologies in building materials like prefabricated materials

5. EXPECTED RESULTS

The Elaboration of a strategic document for the promotion of affordable housing in Rwanda;

The implementation of a pilot project for the construction of 200 houses within Kigali City will be used as a model for other projects in the country.

ANNEX 2: Questionnaire survey

REPUBLIC OF RWANDA

RWADA HOUSING AUTHORITY
P.O. BOX 2469 KIGALI – RWANDA

Ref. No:
……
…….

Date: 12th August 2011

To: **The Respondents**

Dear Sir/Madam

SUBJECT: QUESTIONNAIRE ABOUT AFFORDABLE HOUSING PROJECT

The Rwanda Housing Authority is planning to construct affordable housing units in Kigali for the Government Employees. These houses will be constructed with all basic amenities using cost effective, new technology building materials.

The proposed housing units will be well planned rooms with natural ventilation, rain water harvesting units, sewage treatment units, streets with street lights, Roads and foot paths, Shopping malls, Hospitals, Bus and Taxi Stations, Fire Hydrants, Greenery Areas, Schools and other Religion Centers.

In order to plan the process, we would like to get your preferences regarding the housing you would like to choose. We have attached a small questionnaire to capture your preferences.

Thank you for your valuable time spent in filling this survey form.

Sincerely,

Ms. Esther MUTAMBA
Director General

PERSONAL INFORMATION: *(please tick √ the appropriate box)*

Working Experience: 1-3 years | 4-7 years | > 7 years

Number of Children: 1-2 | 3-5 | > 5

Monthly Income: Frw 50,000 - Frw 100,000 | Frw 100,001 - Frw 150,000 | Frw 150,001 - Frw 200,000 | Frw 200,001 - Frw 250,000 | Frw 250,001 - Frw 300,000 | Frw 300,001 - Frw 350,000

HOUSING INFORMATION: *(please tick √ the appropriate box)*

Kindly provide your opinion about the type of house you need

Area of the Housing Unit: 40 m^2 | 41-60 m^2 | 61-80 m^2 | 81-100 m^2 | > 100 m^2

Number of Bed Rooms: 1 | 2 | 3

Do you want a Self Contained Bed Room? : YE | NO

(According to GoR land use policy, government is permitting ONLY group housing units)

So, what type of housing Unit do you prefer? : Duplex | Apartments

Will you accept New Construction Technology and Materials? : YE | NO

Are you aware of Kigali City Master Plan Proposals? : YE | NO

FINANCIAL INFORMATION: *(please tick √ the appropriate box)*

How you are going to finance your house? : Mortgage | Own Money

If it is mortgage, in how many years you will repay? : 5 years | 10 years | 15 years | 20 years

If it is mortgage, how much would you pay per month? : Frw

Please provide your valuable comments to improve our service:

No of Respondents: 57

Respondents from: Government Employees from Higher Learning Institutions (both Academic and Administration Staff), School, Government Organisation, etc.

Year: September 2011

Sl.No	Items	Monthly Income (Frw)	No of people in the Group	In Percentage (%)	
1	Monthly Income	10,000-50,000	7	12%	
		50,001-100,000	1	2%	
		100,001-150,000	13	23%	
		150,001-200,000	8	14%	
		200,001-250,000	9	16%	
		250,001-300,000	3	5%	
		300,001-350,000	16	28%	
HOUSING INFORMATION					
2	Plinth Area	40m^2	4	7%	
		41-60m^2	5	9%	
		61-80m^2	15	26%	
		81-100m^2	25	44%	
		>100m^2	8	14%	
3	No.of Bed Rooms	1	0	0%	
		2	1	2%	
		3	54	95%	

		4	2	3%	
4	Self Contained Bed Room	Yes	51	89%	
		No	6	11%	
5	Type of Housing Unit Preferred	Duplex	46	81%	
		Apartments	11	19%	
6	Acceptance of New Construction Technology and Materials	Yes	53	93%	
		No	2	3.5%	
		No Idea	2	3.5%	
7	Awareness of Kigali City Master Plan Proposals (KCMP)	Yes	46	81%	
		No	11	19%	
FINANCIAL INFORMATION					
8	Mortgage		55	96%	
	Own Money		2	4%	
9	Mortgage Years	5 years	5	9%	
		10 years	10	18%	
		15 years	16	29%	
		20 years	24	44%	
10	Preferable Monthly Payment	Frw 10,000	4	7%	
		Frw 15,000	2	3.5%	
		Frw 20,000	7	13%	
		Frw 25,000	2	3.5%	
		Frw 30,000	5	9%	
		Frw 35,000	2	3.5%	
		Frw 40,000	2	3.5%	
		Frw 50,000	4	7%	
		Frw 64,000	1	2%	
		Frw 70,000	1	2%	
		Frw 80,000	2	3.5%	
		Frw 100,000	12	22%	
		Frw 120,000	2	3.5%	
		Frw 150,000	4	7%	
		Frw 170,000	1	2%	
		Frw 200,000	3	5%	
		Frw 250,000	1	2%	

COMMENTS from the Respondents
I hope this will not remain a Study
Present the Survey Output
It is the best proposal to construct affordable housing units for Government Employees
Need presentation about this proposals
Cost of the Housing Unit
The location to be adequate facility with public transportation system
This is a good opportunity for Government Employees in Kigali. But more effort is needed in planning and implementing the project.
This is a good opportunity for Rwandan GoR Employees, if it is implemented well
If it is planned and implemented well, it would be a good opportunity for Rwandan Government Employees
If I given this chance of having MY HOUSE, I will be grateful
Please, don't evaluate only; put in practice what you will gather from this assessment
The idea id good and its implementation would be a great support for permanent staff. However the selection of suitable beneficiaries should be strictly entitled to those who do not have any house.
Improvement in Construction Materials in order to have the cheapest and hard
Please, bethink about the sustainability, cost effective and the new technology building materials.
Try to think, the poor people who prefer/ need to live in Kigali City.
It is a good idea. It has to be put in consideration.
Increase the number of rooms.
Rooms are not enough. There is no specification for beneficiaries and the purpose of research.
Please put in action if it is possible.
Bed rooms are few compared to the capacities of the people. I wish this is put in practice very soon. It is good idea, but do no,t dump it in your computer.
Please put in actions, what you are planning to do.
The number of bedroom is not enough. Please provide at least four bed rooms. Most of the people are not aware of Kigali City Master Plan Proposals. Please try to explain in more in details.
In order to improve your service, it could be better to consider all staff from Higher level to the lowest according to their salaries.
It is a good idea project. Please see how to implemented without delay.
A good project but we need to see its implementation rather than seeing from the survey results.
To provide a modern kitchen.

Don’t forget to provide a green space for vegetables.
The number of bed rooms must be between 4 and 6.The rooms are not enough for family composed of more than two children’s.
Why not more than 3 bed rooms
Rwanda Housing Authority should start construction with its staff as an example.
RHA must sensitize Rwandan Population to have an idea of living in the grouped homes(Apartments). As we have a scarcity of land in our country and the density of Rwandan population continue to be increased, (now 328/km^2). This number is so high compared to neighboring countries. Then the RHA should take a strategical measures on housing so that to manage the we have. This will be solved by vertical way (Apartments) in town and in rural the grouped houses.
We would like to have more information related to new construction technology and materials as it was communicated last month about the Centenary Real Estate. We would like to know, where to find the materials, who will provide the materials and at which cost. Thanks you.
Please think about how can exploit new places without making moving of the population already inplace. This can reduce the cost.
There should be consideration of personal capacity in terms of income and other rsources.1

ANNEX 5: COST ESTIMATIONS FOR PROJECT PROPOSAL

area of one block	Parcel for one building	construction cost o	cost of one
		of one building	apartment
20*27	44*27		
		186,650,921	186,509,210
		16,652,612	333,052,240
		76,759,321	767,593,210
			519,561,450.00
14*13	25*20		
		13,266,558	26,533,116.00
Total cost for all blocks	519561450	4	2,078,245,800
	26,533,116.00	5.00	132,665,580.00
			2,210,911,380.00

		Apartment			
G F			COST	HOME	
3b	18650921	2	18,650,921	10	186509210
2b	16652612	4	16,652,612	20	333052240
1b	76759321	2	76,759,321	10	767593210
ff	18650921	2			
	16652612	4			
	76759321	2	13,266,558	**2**	26533116
SF	18650921	2			
	16652612	4		blocks	
	76759321	2	519561450	4	2078245800
TF	18650921	2	26533116	5	132665580
	16652612	4			
	76759321	2			
FF	18650921	2			
	16652612	4			
	76759321	2			
	Duplex				
	13266558				

<u>Expropriation cost</u>			
Property valuated	**Quantity**	**Cost (Rwf)**	**Total estimated cost/ item (Rwf)**
Low standing houses	2	11500000	11500000
Plots	2.5	13200	330000000
Plants			15 000 000
			341 500 000

ANNEX 6: PROJECT DESIGN SPECIFICATIONS

Structure: RCC Framed Structure-Isolated Footings –Earthquake Resistance Design-Structural Designs will be based on BS-Orientation of building to get natural ventilation

Materials: Standardised Hollow Concrete Blocks-Mix Design and Quality Check by highly experienced Engineer-correct size of aggregates-river sand and good quality cement will used-if it is necessary, chemical admixtures may be used

Doors & Windows: Concrete door and window frames-Aluminium window panels-Agrostone door panels (in place of wood works)-Mosquito nets will be provided with every window, front and back doors-high quality locks

Floorings: Ceramic tiles will be paved-Bath rooms, tiles will be fixed at a height of 2.1m-cement pavement around the building

Water Supply & Sanitary Appliances: High quality ceramic appliances such as water closets, wash basins, etc will be provided-shower trays will be provided in every bath rooms-All bath rooms will be connected by hot water-Provisions will provided in the kitchen for water purifier-All the outlets will be connected to a centralized treatment plant-OHT and UGT will be constructed for 24hrs water supply-tanks will be filled by an automatic switch controlled water pump.

Electricity: All the rooms will be provided with minimum number of electrical sockets-TV and Telephone connection sockets will be provided-A separate meter for every flat-LEDs to save energy

Kitchen: A marble work top will be provided with a stainless sink and water connection-duct chamber will be provided for the easy disposal of wastes-Cupboards will provided(without doors)-Provision for electrical chimney. Exhaust fan, etc.

Bed Rooms: All the bed rooms will be provided with shelves without doors, provision for telephone and TV connections, etc-Provision for night lights
Children play grounds, large open and greenery area, street lights, paved street, covered car parking, ramp for physically challenged people in GF, wider staircases, fire exists, fire hydrants, fire extinguishing systems at every floors, etc-fenced compound.
A community hall will be constructed for every 3 apartments with modern kitchen and a dining hall to organize any type of gathering.

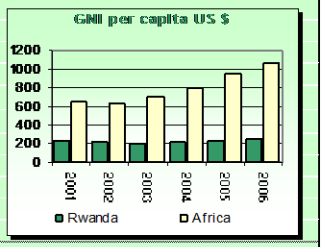
Others:

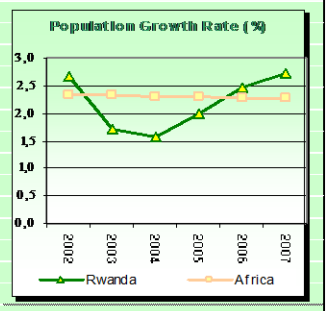
Quality of materials will be used as per the guidelines prescribed by RBS
EIA will be assessed properly as per the guidelines prescribed by REMA
Plans and Designs will be approved by City Council
A site maintenance office will provided by RHA for two years
A common room will be provided for servants to dwell in

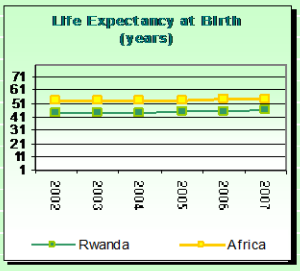
Rwanda

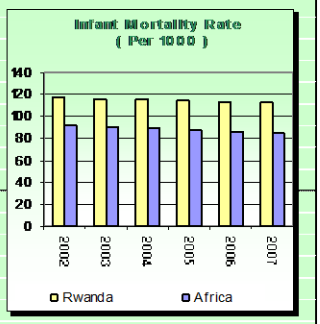
COMPARATIVE SOCIO-ECONOMIC INDICATORS

	Year	Rwanda	Africa	Developing Countrie	Developed Countrie
Basic Indicators					
Area ('000 Km²)		26	30 307	80 976	54 658
Total Population (millions)	2007	9,7	963,7	5 448,2	1 223,0
Urban Population (% of Total)	2007	24,7	39,8	43,5	74,2
Population Density (per Km²)	2007	369,2	31,8	65,7	23,0
GNI per Capita (US $)	2000	250	1 071	2 000	36 487
Labor Force Participation - Total (%)	2005	50,5	42,3	45,6	54,6
Labor Force Participation - Female (%)	2005	51,2	41,1	39,7	44,9
Gender -Related Development Index Value	2005	0,450	0,486	0.694	0,911
Human Develop. Index (Rank among 174 countrie	2005	161	n.a.	n.a.	n.a.
Popul. Living Below $ 1 a Day (% of Population)	2001	51,2	45,0	32,0	20,0
Demographic Indicators					
Population Growth Rate - Total (%)	2007	2,7	2,3	1,4	0,3
Population Growth Rate - Urban (%)	2007	9,9	3,5	2,6	0,5
Population < 15 years (%)	2007	42,9	41,0	30,2	16,7
Population >= 65 years (%)	2007	2,2	3,5	5,6	16,4
Dependency Ratio (%)	2007	84,2	80,1	56,0	47,7
Sex Ratio (per 100 female)	2007	93,2	99,3	103,2	94,3
Female Population 15-49 years (% of total populati	2007	25,6	24,2	24,5	31,4
Life Expectancy at Birth - Total (years)	2007	46,2	54,2	65,4	76,5
Life Expectancy at Birth - Female (years)	2007	47,8	55,3	67,2	80,2
Crude Birth Rate (per 1,000)	2007	44,5	36,1	22,4	11,1
Crude Death Rate (per 1,000)	2007	17,2	13,2	8,3	10,4
Infant Mortality Rate (per 1,000)	2007	112,4	85,3	57,3	7,4
Child Mortality Rate (per 1,000)	2007	187,8	130,2	80,8	8,9
Total Fertility Rate (per woman)	2007	5,9	4,7	2,8	1,6
Maternal Mortality Rate (per 100,000)	2005	750	622,9	440	13
Women Using Contraception (%)	2005	17,5	26,6	59,0	74,0
Health & Nutrition Indicators					
Physicians (per 100,000 people)	2005	1,8	38,2	78,0	287,0
Nurses (per 100,000 people)	2005	22,8	110,7	98,0	782,0
Births attended by Trained Health Personnel (%)	2005	38,7	43,7	56,0	99,0
Access to Safe Water (% of Population)	2004	74,0	62,3	78,0	100,0
Access to Health Services (% of Population)	2005	37,9	61,7	80,0	100,0
Access to Sanitation (% of Population)	2004	42,0	44,2	52,0	100,0
Percent of Adults (aged 15-49) Living with HIV/AID	2005	3,1	4,5	1,3	0,3
Incidence of Tuberculosis (per 100,000)	2004	371,0	310,2	144,0	11,0
Child Immunization Against Tuberculosis (%)	2005	91,0	78,1	82,0	93,0
Child Immunization Against Measles (%)	2005	89,0	68,0	73,0	90,0
Underweight Children (% of children under 5 years	2005	22,5	39,0	31,0	...
Daily Calorie Supply per Capita	2004	2 173	2 434	2 675	3 285
Public Expenditure on Health (as % of GDP)	2003	1,4	5,6	1,8	6,3
Education Indicators					
Gross Enrolment Ratio (%)					
Primary School - Total	2004/05	119,0	96,7	91,0	102,3
Primary School - Female	2004/05	120,0	90,4	105,0	102,0
Secondary School - Total	2004/05	14,0	43,1	88,0	99,5
Secondary School - Female	2004/05	14,0	36,5	45,8	100,8
Primary School Female Teaching Staff (% of Total)	2003/04	51,2	47,5	51,0	82,0
Adult Illiteracy Rate - Total (%)	2006	35,1	43,3	26,6	1,2
Adult Illiteracy Rate - Male (%)	2006	28,6	34,5	19,0	0,8
Adult Illiteracy Rate - Female (%)	2006	40,2	52,4	34,2	1,6
Percentage of GDP Spent on Education	2000	2,8	4,7	3,9	5,9
Environmental Indicators					
Land Use (Arable Land as % of Total Land Area)	2005	35,1	6,0	9,9	11,6
Annual Rate of Deforestation (%)	2000-05	3,9	0,7	0,4	-0,2
Annual Rate of Reforestation (%)	2000-05	9,0	10,9	...	...
Per Capita CO2 Emissions (metric tons)	2005	0,1	1,0	1,9	12,3









Sources : ADB Statistics Department Databases; World Bank: World Development Indicators; UNAIDS; UNSD; WHO, UNICEF, WRI, UNDP; Country Reports — *last update : avril 2008*

Note : n.a. : Not Applicable ; ... : Data ***Not Available; * : latest data available within 1995-2000***