MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT (STATE DEPARTMENT FOR HOUSING AND URBAN DEVELOPMENT)

CONSULTANCY SERVICES FOR PREPARATION OF THE PROGRAMME MASTER PLAN OF THE AFFORDABLE HOUSING AGENDA UNDER THE BIG FOUR

Housing Supply Report

17 December 2018

KPMG Advisory Services Limited
8th Floor, ABC Towers,
Waiyaki Way,
PO Box 40612 - 00100 GPO,
Nairobi, Kenya.

Telephone +254 20 2806000
Email info@kpmg.co.ke
Website www.kpmg.com/eastafrica

Charles Hinga Mwaura
Principal Secretary
State Department of Housing and Urban Development
Ministry of Transport, Infrastructure, Housing and Urban Development
Ardhi House, 6th Floor
P.O. Box 30119-00100
Nairobi
Kenya

17 December 2018

Dear Charles

Re: Consultancy Services for Preparation of programme master plan of the affordable housing agenda under the Big Four

In accordance with Contact Agreement MTIHAD/HUD/HD/35/2017-18 between KPMG Advisory Services Limited ("KPMG") and Ministry of Transport, Infrastructure, Housing and Urban Development ("MoTI") dated 12th June 2018 for provision of consultancy services for preparation of programme master plan for delivery of one (1) million housing units (the "Contract"), we enclose two copies of our Housing Supply Report dated 17 December 2018.

Our report is for the benefit and information only of those Parties who have accepted the terms and conditions of the Contract and should not be copied, referred to or disclosed, in whole or in part, without our prior written consent, except as specifically permitted in the Contract. To the fullest extent permitted by law, we will not accept responsibility or liability to any other party (including those Parties' legal and other professional advisers) in respect of our work or the report.

We draw your attention to the important notice included on the next page.

Yours sincerely,

Sheel Gill
Director

KPMG Advisory Services Limited

Important Notice

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During the supply of our services, we may supply oral, draft or interim advice, reports or presentations but in such circumstances our written advice or final written report shall take precedence. No reliance should be placed by you on any oral, draft or interim advice, reports or presentations. Where you wish to rely on oral advice or an oral presentation, you shall inform us and we will provide documentary confirmation of the advice.

KPMG shall not be under any obligation in any circumstance to update any advice or report, oral or written, for events occurring after the advice or report has been issued in final form.

Glossary

ABMT	Alternative Building Materials and Technologies
AHP/Project	Affordable Housing Programme
CAHF	Centre for Affordable Housing Finance
CECM	County Executive Committee Members
Constitution	Constitution of Kenya
Contract	Contact Agreement MTIHUD/HUD/HD/35/2017-18 between KPMG Advisory Services Limited and Ministry of Transport, Infrastructure, Housing and Urban Development dated 12th June 2018 for provision of consultancy services for preparation of the programme master plan of the affordable housing agenda under the big four
CSHSF	Civil Servants Housing Scheme Fund
DFGs	Development Framework Guidelines
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
FY	Financial Year
GDP	Gross Domestic Product
Government/GoK/State	Government of Kenya
HH	Households
Housing project	Affordable housing project under the big four agenda
IPOA	Independent Police Oversight Authority
IPDU	Integrated Project Delivery Unit
KENSUP	Kenya Slum Upgrading Programme
Ksh	Kenya Shillings
KISIP	Kenya Informal Settlement Improvement Project
KNBS	Kenya National Bureau of Statistics
m	Metre
MoICNG	Ministry of Interior and Coordination of National Government
MoTIHUD	Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works
MoU	Memorandum of Understanding
NCCG	Nairobi City County Government
NEMA	National Environment Management Authority
NHC	National Housing Corporation
NLC	National Lands Commission
NPS	National Police Service
NSSF	National Social Security Fund
PDP	Part Development Plan
PIIP	Privately Initiated Investment Proposal
PPP	Public-Private Partnership
President	President of the Republic of Kenya
RC	Reinforced Concrete
SACCO	Savings and Credit Cooperative Organisation
SDG	Sustainable Development Goals
SDHUD	State Department of Housing and Urban Development
Survey	Survey undertaken by KPMG across the 47 counties
USD	United States Dollar

Key definitions

Phrase	Description
Affordable Housing	Housing that is affordable to Kenyan households with a monthly income below Ksh 100,000
Housing Demand	Housing demand refers to the ability to purchase a house due to availability and access to finance. Housing demand makes allowance for affordability
Housing Need	Housing need is the total number of new housing units required if all households are adequately housed. It refers to the number of houses required, given growth in households and is computed as the sum of the current deficit and the net emerging housing need.
Income Bands	Gross monthly income in Ksh received by households grouped into the following parts: • 0 - 4999 • 5,000 - 9,999 • 10,000 - 14,999 • 15,000 - 19,999 • 20,000 - 24,999 • 25,000 - 29,999 • 30,000 - 49,999 • 50,000 - 99,999

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1 Executive Summary

1.1 Background of the assignment

The Government of Kenya (GoK) has identified four (4) priority initiatives, 'The Big Four', to be implemented over the next five (5) years (2017 – 2022) with an aim to promote long-term economic development. The initiatives focus on key basic needs that are critical in uplifting the standards of living of Kenyans and setting the country on the path to becoming an upper middle-income country by 2030 and include:

a) 20% of gross domestic product from the manufacturing sector
b) 100% food and nutrition security
c) 100% Universal Health Coverage (UHC)
d) 1 million affordable homes for Kenyan families

The State Department for Housing and Urban Development (SDHUD) has been mandated to deliver the one (1) million Affordable Housing Programme (AHP) and to manage the delivery throughout the project lifecycle. In line with this, the Cabinet of Kenya approved the Development Framework Guidelines (DFGs) which seeks to provide qualitative guidance on key components of the AHP. The guideline provides instruction on how the vision and policies of GoK, through the SDHUD, will be implemented and how progress will be monitored and evaluated.

The AHP encompasses drafting of the concept, development, financial close, implementation and handover of one (1) million housing units within the next five years with a target of building 200,000 units every year. It is to this end that the SDHUD has engaged KPMG to develop a demand-based masterplan for the housing sector. As per the Terms of Reference (ToRs) in the Contract dated 12th June 2018, the objective of this consultancy is to develop a demand based master plan for the housing sector including a market analysis and segmentation as well as a supply strategy that will guide the implementation of the one (1) million AHP by 2022 in Kenya.

1.2 Project scope

In developing the master plan for the AHP, KPMG's scope of work was divided into four key elements:

- Market study of housing demand in Kenya
- Development of sustainable housing supply strategy
- Internal diagnostic of NHC and development of a high level strategic roadmap
- Case studies and benchmarking of affordable housing programmes across the globe.

This report is focused specifically on the development of a sustainable housing supply strategy in Kenya. To inform the housing supply strategy, KPMG gathered insights on the housing supply situation in the country, land available for housing development, market preferences on housing typologies, role of various stakeholder in delivery of affordable housing and key interventions to encourage private sector participation. These insights were then used to develop the housing supply strategy which details the project implementation plan, identifies key project implementation risk and their corresponding mitigation measures, identifies key stakeholders to be engaged in the delivery of the AHP and practical critical strategic interventions for consideration in provision of affordable housing.

This supply strategy is informed by data collected following a Survey conducted by KPMG. Furthermore, the report is prepared in line with the DFGs and builds upon key components of the AHP outlined therein.

1.3 Survey approach and methodology

KPMG conducted a survey to gather insights into the supply and demand needs of affordable housing in Kenya, identify the land available for the AHP including site specific details such as the acreage, availability of titles, registered proprietors etc., understand preferences for housing in relation to

property type, as well as the construction costs and materials. Implications of the Survey findings on the housing master plan were also highlighted.

KPMG adopted a four phase approach in conducting the Survey. These included:

- **Survey design:** The Survey was conducted across all 47 counties and targeted different players in the housing sector including developers, financiers, county officials, households and utility connectors amongst others.
- **Data collection:** Data was collected through desktop research and interviews with multiple stakeholders including Government officials, property developers, housing financiers, Kenyan households, independent consultants, architects, planners and civil society's representatives. Different questionnaires were developed to assist in this data collection exercise.

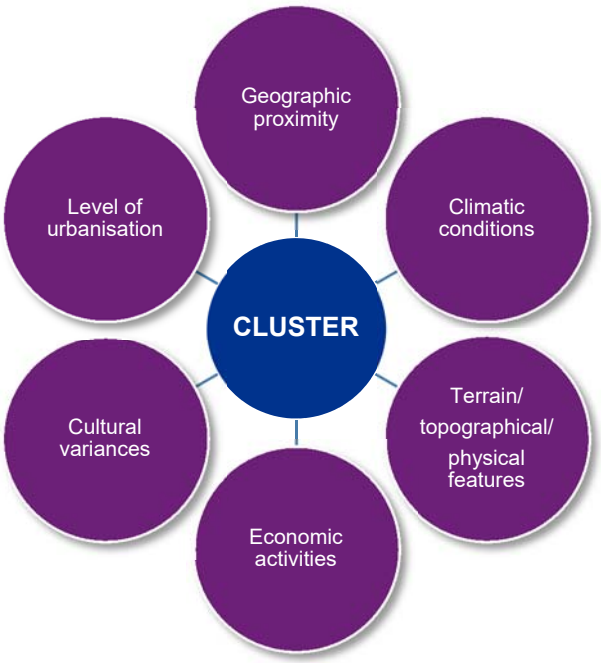
  A key focus area relating to affordable housing supply was identifying land available and the progress made within the counties towards realising the affordable housing agenda. To this end, KPMG conducted a review of the Memorandum of Understanding (MoU) signed between each county and the National Government under the AHP. Furthermore, KPMG collected available documentation relating to land identified for the AHP. Records collected included titles, Part Development Plans (PDPs), deed plans, survey maps, registry index maps, letters of allotment, search certificates, asset registers amongst others.
- **Data analysis:** Data collated was entered into a central database and analysed to provide inferences for the housing master plan. As part of this analysis, counties were grouped into ten clusters from which inferences were drawn. A verification exercise was undertaken for each title provided by the various counties. This involved verifying ownership of the land through conducting an official search, at the lands registry, of the titles provided.
- **Reporting and conclusions:** Based on the data collected, KPMG has developed this robust housing supply strategy which looks into the current housing deficit in Kenya, land available for the programme, housing designs based on market preferences, project implementation plan to support delivery of the programme and corresponding implementation risks. In developing this report, data has been aggregated at a county level and in other instances at a cluster level.

1.4 Clustering approach

Clustering of counties was performed to aggregate data collected from the different counties to form a basis of developing the financial model for the AHP. In developing the various clusters, KPMG identified indicators, shown in Figure 1, against which the counties were assessed and consequently grouped as shown in Figure 2. Six (6) indicators were identified in the clustering of counties. However, the key indicators identified included:

a) Prevailing economic activities
b) Terrain/ topographical/ physical features

Figure 1: Clustering indicators



Source: KPMG analysis

Figure 2: County clusters

Cluster	Counties	Cluster	Counties
1	• Mombasa	6	• Baringo • Elgeyo Marakwet • Samburu • Turkana • West Pokot
2	• Kilifi • Kwale • Lamu • Taita Taveta	7	• Bomet • Kericho • Nakuru • Nandi • Narok • Trans Nzoia • Uasin Gishu
3	• Garissa • Isiolo • Mandera • Marsabit • Tana River • Wajir	8	• Bungoma • Busia • Kakamega • Vihiga
4	• Embu • Kirinyaga • Meru • Murang'a • Nyandarua • Nyeri • Tharaka Nithi	9	• Homa Bay • Kisii • Kisumu • Migori • Nyamira • Siaya
5	• Kajiado • Kitui • Laikipia • Machakos • Makueni	10	• Nairobi • Kiambu

Source: KPMG analysis

1.5 Situational analysis

Housing contributes to quality of life and is a major driver of economic growth due to the multiplier effect that investment in housing has on job creation and poverty alleviation. Kenya requires approximately 356,569 new housing units annually to meet demand yet only 50,000 homes are built,

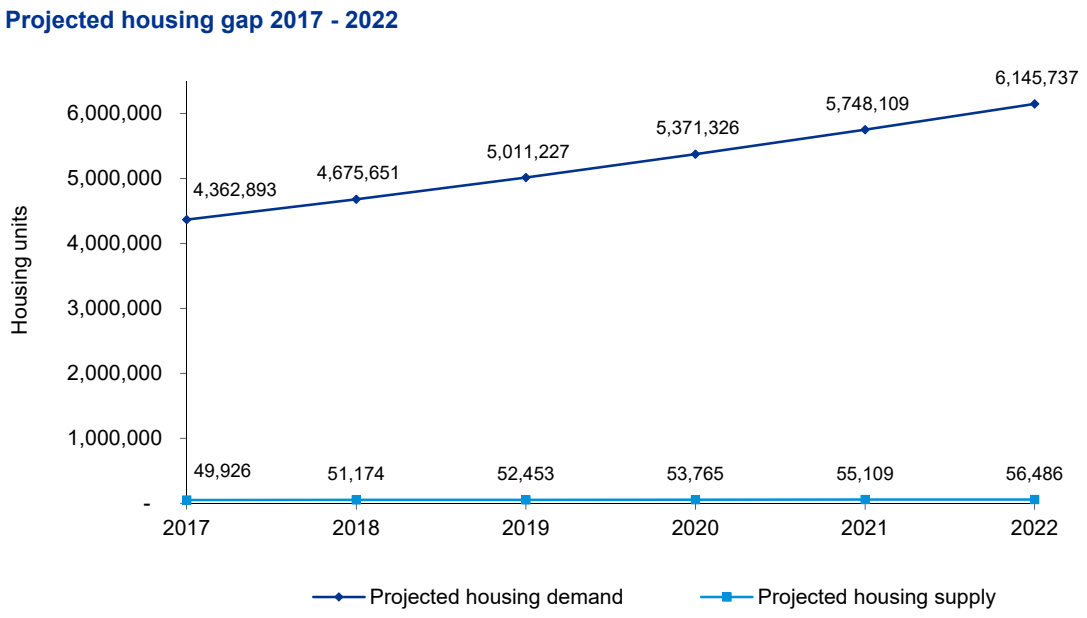
leaving the housing deficit growing by 150,000 units per year[1]. The mismatch between demand and supply has led to rising house prices and excluded low income earners from the formal housing market forcing them into slums[2]. The low income group in Kenya has a housing deficit of over 2 million units[3], with approximately 61% of urban households living in slums.

Housing supply in Kenya continues to face varied challenges which have resulted in this expanding housing gap. Some of these challenges include:

- Shortage of serviced land for housing development
- High cost of financing to fund development
- Inadequate infrastructure
- Bureaucracy and delays in obtaining approvals
- High cost of building material
- Bias towards developing housing for the middle to high income earnersby private developers in housing provision
- Low investment in affordable and social housing by Government
- Lack of proper planning in housing development, and
- Property registration and titling.

Based on housing approval data collected from the 47 counties, KPMG's professional judgment and market knowledge the annual projected supply of housing units in the period 2017 – 2022 increases from 49,926 to 56,486. A summary of this is detailed below.

Figure 3: Projected housing supply 2017 – 2022



Source: KPMG Survey

It is projected that 56,486 housing units will be developed in 2022 without any interventions from the AHP. The quality of data does not allow for disaggregation to determine how many of these housing units fall into the affordable housing bracket. This level of supply remains low given that approximately 356,569 units are required annually over the five year period of the AHP to keep up with the annual increase in demand. Only once this annual average number of units is reached will the backlog of 4,362,892 start to be reduced. Consequently, the housing deficit is anticipated to rise. To close this

[1] Kenya Property Development Association – Affordable Housing Investment in Kenya (2018)
[2] The ABCs of Affordable Housing in Kenya – Acumen Fund
[3] World Bank (April 2017) - Kenya Needs 2 Million More Low-income Homes: Building Them Would Boost Its Economic Growth http://www.worldbank.org/en/country/kenya/publication/kenya-needs-2-million-more-low-income-homes-building-them-would-boost-its-economic-growth

growing housing shortfall, the SDHUD is working towards delivering one (1) million affordable housing units by 2022 through implementing the AHP.

1.5.1 Regulatory framework

Although the country has been experiencing challenges in providing adequate housing, the GoK is compelled to take necessary steps towards realisation of the progressive right to house all its citizens. The Government has therefore put in place the following programmes and policies towards addressing the housing gap:

a) Vision 2030
b) Sustainable Development Goals (SDGs)
c) Kenya Slum Upgrading Programme (KENSUP)
d) Kenya Informal Settlement Improvement Project (KISIP)
e) Housing Infrastructure Development Programme
f) Rural and Peri-Urban Housing Loans
g) Civil Servants Housing Scheme Fund (CSHSF)
h) Housing Sector Incentives
i) Building Surveyors Bill, 2017
j) Housing Amendment Bill, 2017
k) The Housing Bill, 2018
l) Housing Act, Cap 117
m) National Building Maintenance Policy, 2015
n) Sessional Paper No. 2 of 2016 on National Slum Upgrading and Prevention Policy
o) Built Environment practitioners Bill, 2017
p) Sessional Paper No. 3 of 2004 on National Housing Policy for Kenya, and
q) Sessional Paper No. 3 of 2016 on National Housing Policy for Kenya.

1.6 Stakeholder engagement

1.6.1 Background to stakeholder engagement

The Constitution of Kenya requires public participation at various levels ranging from disclosure of information to involvement of the public in decision making. In the context of affordable housing, the public can be viewed as:

- Individuals living or conducting economic activities within the particular project sites' zone of influence, including neighbourhood residence associations
- Project developers
- Beneficiaries of housing under the AHP
- Government agencies, national ministries and regulatory authorities tasked with the delivery of specific aspects of the AHP
- Suppliers and service providers enabling efficient delivery of the AHP
- Individuals and stakeholder groups at local, county or national level who would partner with the AHP delivery units to enable the achievement of the program objectives
- Commercial or development finance institutions to provide funding to developers and buyers of affordable housing units
- Civil society groups including non-governmental professional associations with interests/mandates in cross-cutting issues of relevance to housing, specifically affordable housing

1.6.2 Stakeholder engagement framework

The approach to stakeholder engagement will be governed by the Constitution and the laws of Kenya.

The main objective of the SDHUD activities in stakeholder engagement for the program will be to provide an enabling environment for the delivery of the AHP at national level. This can be categorised as follows:

a) **SDHUD roles at program level** – Provide an enabling environment for delivery of the AHP.

b) **SDHUD roles at regulatory level** – Check compliance by regulatory agencies with regard to their observance of public participation requirements in the particular statutory roles mandated to them by Kenyan law.
c) **SDHUD Roles at site level** – Ensure employers' requirements within project contracts integrate stakeholder engagement.

The public participation activities at site level will be undertaken by the particular developers under the supervision of the relevant regulatory authorities as defined by law and outlined in the specific sections as required in Kenya's legal and policy framework. The existing stakeholder engagement framework focuses on the following initiatives to achieve the set goals:

i. **Partnership building** – Built on the shared investment and commitments to achieve shared outcomes through a formally signed agreement to deliver one (1) million housing units.

ii. **Collaboration with key stakeholders** – The various institutions key to delivering the AHP will align their work schemes for mutual benefit and to eventually deliver on the program.

iii. **Two-way Consultation** – A two–way time bound engagement on every key issue affecting the delivery of the AHP. The consultation will be undertaken in a manner that will ensure that all stakeholders provide specific information and feedback on the project.

iv. **Information and knowledge sharing** – Where the Government encourages the participation of all stakeholders key in delivering the AHP. These stakeholders include citizens, commercial banks, insurance firms, pension funds, development financial institutions, National Treasury, line ministries of infrastructure, water, energy, lands among others.

The proposed stakeholder engagement strategy aims to build up on the engagement undertaken to-date and to operationalise the public participation activities for the AHP. The strategy will focus on:

- Key messaging
- Stakeholder meeting management
- Reporting on stakeholder engagement

1.7 Affordable housing supply projections

In projecting the affordable housing supply, KPMG sought to:

1. Define housing affordability
2. Review affordable housing initiatives, at both national and county level, identified to deliver the AHP, and
3. Identify land available and understand the land aggregation process.

Based on an understanding of these, KPMG has further estimated the affordable housing deficit resulting from the projected demand and supply.

1.7.1 Housing affordability

A housing unit is considered affordable if its cost does not threaten or compromise the occupants' enjoyment of other human rights. KPMG recommends that the cost of the housing to be provided not exceed 30% of the household's gross income. This recommended threshold is based on research that shows that generally, lenders recommend that households spend no more than between 28% and 35% of gross monthly income on a mortgage.

Based on the proposed costs for the various housing units under the affordable housing programme, KPMG has analysed the minimum monthly income required to afford the proposed houses. The affordability analysis assumes a 25 year mortgage on 90% of the house price and a housing budget of 30% of the household's income. The current annual mortgage interest rate of 13.5% has been used in arriving at the minimum monthly income. However, other interest rates (8% and 4%) have been considered for comparison.

Table 1: Analysis of the minimum monthly income to afford the proposed houses

Proposed GoK house type	House price (Ksh)	Minimum monthly income (Ksh)

		13.5% interest rate	8.0% interest rate	4.0% interest rate
Three bedroom	3,000,000	105,000	69,500	47,600
Two bedroom	2,000,000	70,000	46,400	31,700
One bedroom	1,000,000	35,000	23,200	15,900
Bedsitter	800,000	28,000	18,600	12,700

Source: KPMG analysis

From this analysis we note that the minimum income required for a household to service a mortgage on a three bedroom house selling for Ksh 3 million at current interest rate of 13.5% is Ksh 105,000 per month. The target group of households earning less than Ksh 100,000 per month will therefore not be able to afford the three bedroom apartment at this price and interest rate.

Any possible demand for households earning less than Ksh 100,000 per month at this price point and current interest rates will only be possible if either the assumptions of 30% housing budget are relaxed, the household has other sources of income not reported or the mortgage interest rates are reduced. If GoK offers an 8% annual mortgage interest rate, the minimum household income required to own a three bedroom house reduces to Ksh 69,500 per month. KPMG has considered the two interest rates (i.e. 13.5% and 8%) in analysing the housing demand. A detailed analysis on housing affordability has been documented in the housing demand/market analysis report.

1.7.2 Affordable housing initiatives

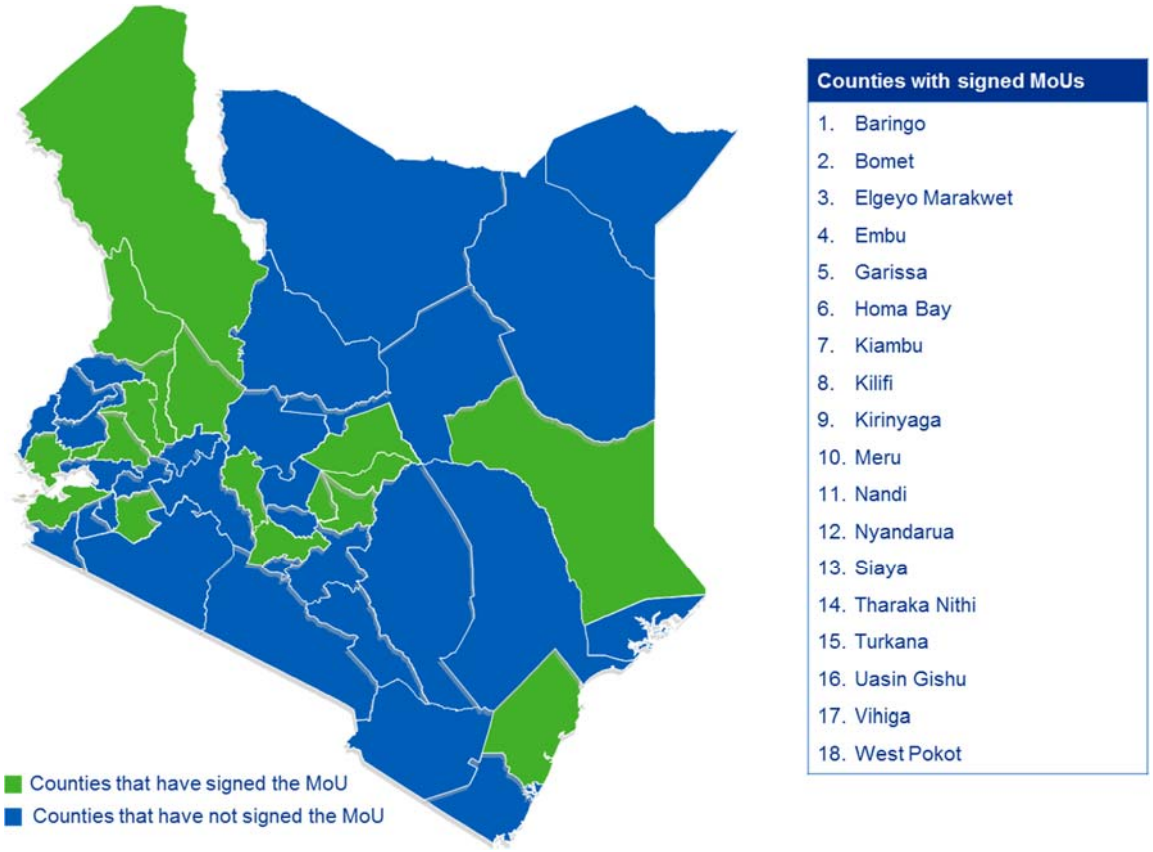
The SDHUD has identified key projects through which the affordable housing agenda will be realised. For the purpose of this report, KPMG has grouped these as either county or national affordable housing projects.

1.7.2.1 County affordable housing projects

The GoK reckons that the 47 counties are crucial in the delivery of the AHP. For this reason, the GoK, through the SDHUD, has sought to enter into a Memorandum of Understanding (MoU) with all the 47 counties with an aim to establish a framework for cooperation towards achieving the goals envisioned in the field of housing development, urban and metropolitan development. Identified areas of cooperation include delivery of quality and affordable housing. To this end, the Government shall provide the affordable housing delivery framework, technical support and capacity building to the county institutions and technical personnel. On the other hand, the counties undertake to guarantee land availability and provide an enabling environment to facilitate development of at least 2,000 affordable housing units each year for the next 5 years.

As at the date of writing this report, 18 of the 47 counties had signed the MoU. Consequently, these have been identified as the priority counties in the implementation of the AHP.

Figure 4: Priority counties for the implementation of AHP



Source: KPMG Survey and analysis

1.7.2.2 National affordable housing projects

The GoK acknowledges the importance of forging strategic partnerships towards realisation of the affordable housing goals. With this in mind, the SDHUD has identified other national housing projects beyond the County MOU programme whose development contributes further towards delivery of the projected one (1) million housing units. The following National affordable housing projects have been identified Projects identified include:

a) **Slum upgrading programme:** The KENSUP was initiated in 2001 by the GoK in collaboration with UN-HABITAT. The program is aimed at improving the lives and livelihoods of the people living and working in the slums and informal settlements. KENSUP is working towards improving the livelihood of 5.3 million slum dwellers in Kenya by 2020. The Slum upgrading programme has not being included in the demand forecast for affordable housing as these projects are social housing in nature.

b) **Police housing:** A study undertaken by the Independent Police Oversight Authority (IPOA) in 2015, aimed at getting an in depth understanding of the current housing issues within the National Police Service (NPS), identified that there exists a chronic housing shortage. It was estimated that the Kenya Police Service was experiencing a shortfall of 28,922 housing units against a staff complement of 39,238 at the time. Further, it was noted that 80% of approximately 35,000 Administration Police Officers were not housed in decent housing.

   With a view to address this housing gap, the Ministry of Lands, Housing and Urban Development is spearheading the construction of 20,000 housing units for the National Police Service (NPS).

c) **Civil servants housing programme:** To address the housing need for civil servants, the GoK established the CSHSF in 2004 in line with the National Housing Policy for Kenya 2004. The CSHSF was established with an aim to advance loans to civil servants of all cadres to either build or purchase their residential houses, to develop housing units for sale and rental by civil

servants and to raise funds for implementation of the two objectives. Since inception, CSHSF has facilitated more than 3,000 civil servants to access housing. There are lessons to be learned on eligibility criteria and property maintenance from this project.

d) **National Social Security Fund (NSSF):** NSSF remains a key investor in the local real estate sector holding an investment portfolio worth over Ksh 50 billion in both commercial and residential properties. As an administrator of a provident scheme for all workers in Kenya, NSSF has access to long-term funds that can be used for long-term investments. NSSF plans to develop 30,000 low cost housing units on a 1,000 acre piece of land in Mavoko within Machakos County.

e) **Cooperatives:** Cooperative movements are identified as a major driver to economic growth in Kenya as they play an important role in uplifting lives within the communities through financial inclusion. The cooperative movement in Kenya continues to play a crucial role in bridging the gap in the country's housing market. Cooperatives own vast parcels of land and have a huge asset base pooled from their members. Currently, there are 1,980 housing cooperatives with an asset base of Ksh 21 billion. The Kenya Vision 2030 blue-print envisaged that cooperative movements had the capacity to contribute 25% of the household stock in urban areas within the country.

f) **Private developers:** Private developers are a key delivery channel under the AHP. The GoK proposes to partner with private housing developers through signing of agreements to undertake and execute delivery of the agreed upon housing projects.

KPMG acknowledges that the national projects discussed above are not exhaustive and merely identify some of the stakeholders involved in providing of affordable housing in Kenya. For example, a discussion with Kenya Railways Pension Fund may provide additional land and supply opportunities to aid achievement of AHP's targets.

1.7.3 Land identification and titling process

The Survey undertaken by KPMG sought to identify land available for development of the affordable housing units within each county. From the data collected across the 47 counties, a total of 2,112 acres have been identified as available and suitable, based on a visual inspection of the sites, for the AHP.

A key highlight from the Survey exercise showed that, although the counties had earmarked sites for affordable housing development, most counties were unable to provide titles to the land parcels identified for varied reasons.

Figure 5: Status of titles for land identified by counties

Status	County		
Title available and provided to KPMG for verification	• Laikipia • Uasin Gishu	• Bungoma • Vihiga	• Baringo
Title available but not provided to KPMG by the county	• Mombasa • Nyeri • West Pokot	• Nandi • Narok • Kisumu	• Migori • Kiambu • Nairobi
Title not available	• Taita Taveta • Garissa • Isiolo • Mandera • Kirinyaga • Meru • Nyandarua • Kisii	• Tharaka Nithi • Machakos • Makueni • Samburu • Turkana • Bomet • Kericho • Nakuru	• Trans Nzoia • Busia • Kakamega • Homa Bay • Nyamira • Siaya
No land identified by the county for the AHP	• Kilifi • Kwale	• Tana River • Wajir	• Kajiado • Kitui

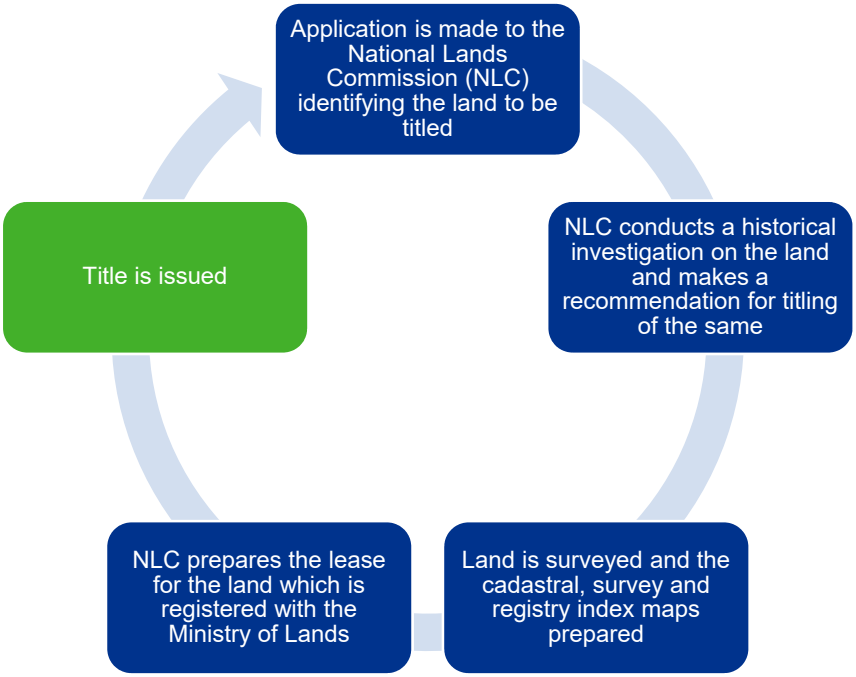
• Lamu • Marsabit	• Embu • Murang'a	• Elgeyo Marakwet

Source: KPMG Survey and analysis

1.7.3.1 Land titling process in Kenya

The process of land registration and titling has been identified as a key challenge to housing supply in Kenya. Although the Government has adopted various reforms to accelerate land transaction processes, the titling process remains inefficient. According to a survey conducted by the World Bank, Kenya is ranked 125 worldwide with respect to registration of property[4].

Figure 6: Process of county land titling in Kenya



Source: Kenya Law

The NLC, which derives its mandate from the Constitution of Kenya, is responsible for managing public land on behalf of the National and County Governments. From discussions held between KPMG and the NLC, the Commission is equipped and has the capacity required to support the counties in the land titling process.

1.7.4 Approach to estimating housing supply under the AHP

KPMG undertook an analysis with a view to estimating the projected housing supply under the AHP. In arriving at this, the following approach was adopted:

Step 1: Determine the land available for the AHP

From the Survey exercise undertaken, a total of 2,112 acres of land have been identified as available and suitable, based on a visual assessment of the land, for the AHP across the 47 counties.

Step 2: Applied the proposed housing development split

As stipulated in the DFGs, an essential principle in the development of the affordable housing units in Government-owned property is that a portion of the land will be solely dedicated to the construction of affordable housing units while a smaller portion will be allocated to the developer, private investor or contractor for their unrestricted development. The proposed sharing ratio of 30:70 for private to public split for use has been considered in estimating the housing supply.

Step 3: Applied the proposed ground coverage ratio

[4] Doing Business 2018 - Kenya

Based on the building guidelines annexed to the DFGs, 50% ground coverage has been considered.

Step 4: Determined the optimal cost of the housing units

Based on the proposed housing unit designs and sizes, KPMG has arrived at an estimated cost of constructing each type of housing unit. The costs were compared against the proposed sales price. A summary of this is included below.

Table 2: Housing construction costs analysis

Housing typology	Construction cost estimate (Ksh)	Proposed unit sale price (Ksh)
3 bedroom	2,487,467	3,000,000
2 bedroom	1,847,893	2,000,000
1 bedroom	1,487,935	1,000,000
Bedsitter	1,005,924	800,000

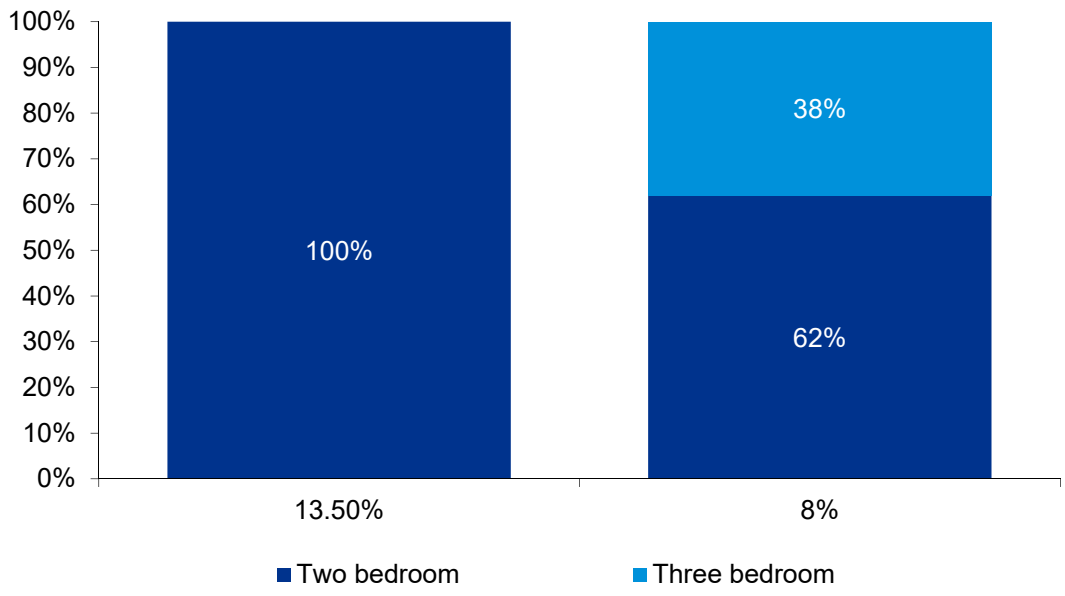
Source: KPMG analysis

The construction cost estimate above is an average of the construction costs estimated across the ten clusters. Details on the construction costs is included in section 7.9 of this report. Based on this analysis, only the two and three bedroom units fall under the proposed unit sale price. Consideration needs to be given either to subsidise the 1 bedroom and bedsitter units and/or change the proposed unit sale price to cover the estimated costs.

Step 5: Estimated the housing typology mix for the proposed units

Based on Survey data collected with regards to the housing unit preferred, KPMG conducted an analysis of demand of the various housing types whilst considering ability to afford the housing unit. This was analysed at both 13.5% and 8% annual mortgage interest rates. The typology mix ratio arrived at following this analysis is detailed below:

Figure 7: Typology mix



Source: KPMG Survey and analysis

It is important to note that at the 13.5% annual mortgage interest rate, the two bedroom, one bedroom and bedsitter units are affordable while the tree bedroom, two bedroom, one bedroom and bedsitter units are affordable at 8% mortgage interest rate. However, based on step 4 above, the bedsitter and one bedroom are not profitable at the current proposed sale price. These units have therefore not been considered in the typology mix analysis as there is no return incentive to justify construction.

Step 6: Applied the proposed housing unit size

The housing unit sizes identified are in line with those proposed in the DFGs. A 10% allowance for circulation has been added onto the proposed unit areas.

Table 3: Housing unit area

Housing type	Proposed unit area in square meters (sqm)	Proposed unit area including 10% circulation space (sqm)
Three bedroom	50.15	55.17
Two bedroom	36.04	39.64
One bedroom	28.20	31.02
Bedsitter	18.54	20.39

Source: DFGs and KPMG analysis

Step 7: Reviewed projected housing supply against demand

KPMG reviewed the projected housing supply against the housing demand. Where supply outstrips demand, the housing supply numbers have been revised to complement the demand. This was particularly the case for Kirinyaga and Garissa counties at 13.5% annual mortgage interest rate.

A summary of the progress made within the various counties as well as the estimated affordable housing demand and supply is detailed below:

Table 4: County affordable housing units analysis at an annual mortgage interest rate of 13.5%

Cluster	County	Signed MoU	Suitable for housing	Estimated affordable housing units ('000) at 13.5%
				0 20 40 60 80 100 120 140 240 280 360 400 560 580 2,400
1	Mombasa	×	✓	
2	Kilifi	✓	●	
	Kwale	×	●	
	Lamu	×	●	
	Taita Taveta	×	✓	
3	Garissa	✓	✓	
	Isiolo	×	✓	
	Mandera	×	✓	
	Marsabit	×	●	
	Tana River	×	●	
	Wajir	×	●	
4	Embu	✓	●	
	Kirinyaga	✓	✓	
	Meru	✓	✓	
	Murang'a	×	●	
	Nyandarua	✓	✓	
	Nyeri	×	✓	
	Tharaka Nithi	✓	✓	
5	Kajiado	×	●	
	Kitui	×	●	
	Laikipia	×	✓	
	Machakos	×	✓	
	Makueni	×	✓	
6	Baringo	✓	●	
	Elgeyo Marakwet	✓	●	
	Samburu	×	✓	
	Turkana	✓	✓	
	West Pokot	✓	✓	
7	Bomet	✓	✓	
	Kericho	×	✓	
	Nakuru	×	✓	
	Nandi	✓	✓	
	Narok	×	✓	
	Trans Nzoia	×	✓	
	Uasin Gishu	✓	✓	
8	Bungoma	×	✓	
	Busia	×	✓	
	Kakamega	×	✓	
	Vihiga	✓	✓	
9	Homa Bay	✓	✓	
	Kisii	×	●	
	Kisumu	×	✓	
	Migori	×	✓	
	Nyamira	×	✓	
	Siaya	✓	✓	
10	Kiambu	✓	✓	
	Nairobi	×	✓	

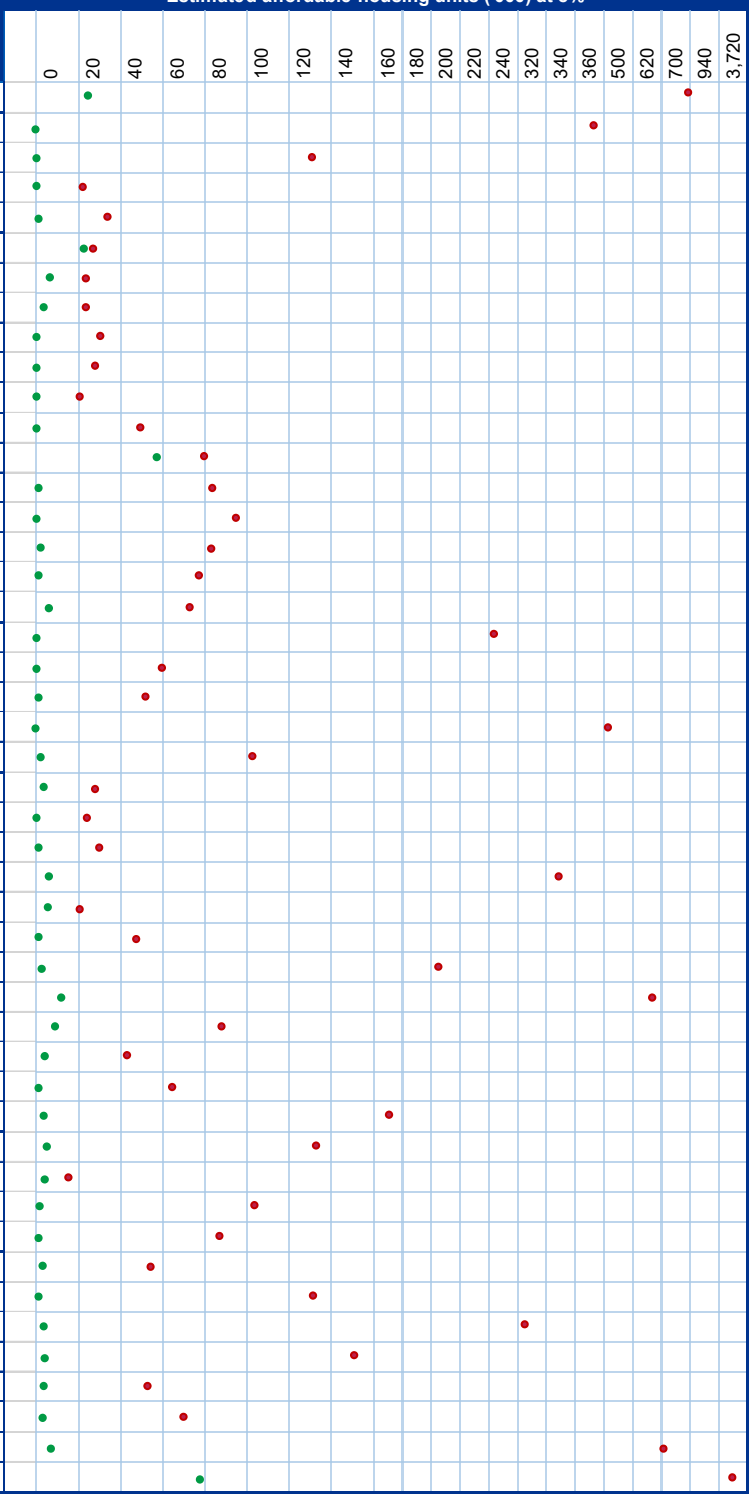
Source: KPMG analysis

Assuming the current annual mortgage interest rate of 13.5% to assess housing affordability and, therefore, the housing typology mix, the estimated housing supply is 303,927 housing units over the 5

year period. This represents 30% of the projected one (1) million housing units and 5% of the projected demand of 6,145,737 in 2022.

Table 5: County affordable housing projects units at an annual mortgage rate of 8%

Cluster	County	Signed MoU	Suitable for housing	Estimated affordable housing units ('000) at 8%
1	Mombasa	×	✓	
2	Kilifi	✓	●	
	Kwale	×	●	
	Lamu	×	●	
	Taita Taveta	×	✓	
3	Garissa	✓	✓	
	Isiolo	×	✓	
	Mandera	×	✓	
	Marsabit	×	●	
	Tana River	×	●	
	Wajir	×	●	
4	Embu	✓	●	
	Kirinyaga	✓	✓	
	Meru	✓	✓	
	Murang'a	×	●	
	Nyandarua	✓	✓	
	Nyeri	×	✓	
	Tharaka Nithi	✓	✓	
5	Kajiado	×	●	
	Kitui	×	●	
	Laikipia	×	✓	
	Machakos	×	✓	
	Makueni	×	✓	
6	Baringo	✓	●	
	Elgeyo Marakwet	✓	●	
	Samburu	×	✓	
	Turkana	✓	✓	
	West Pokot	✓	✓	
7	Bomet	✓	✓	
	Kericho	×	✓	
	Nakuru	×	✓	
	Nandi	✓	✓	
	Narok	×	✓	
	Trans Nzoia	×	✓	
	Uasin Gishu	✓	✓	
8	Bungoma	×	✓	
	Busia	×	✓	
	Kakamega	×	✓	
	Vihiga	✓	✓	
9	Homa Bay	✓	✓	
	Kisii	×	●	
	Kisumu	×	✓	
	Migori	×	✓	
	Nyamira	×	✓	
	Siaya	✓	✓	
10	Kiambu	✓	✓	
	Nairobi	×	✓	



Source: KPMG analysis

Estimating the housing typology mix based on affordability at 8% annual mortgage interest rate results in a housing supply of 310,549 housing units which represents 31% of the projected one (1) million housing units and 3% of the projected demand of 10,430,811 in 2022.

Under both scenarios, there is a shortfall in supply of units compared to projected demand by at least 95%.

Key
✓ *Yes*
× *No*
● *Not applicable*

In addition to the county Projects, other potential housing projects, which fall outside the county AHPs outlined above, have been put forth by the SDHUD with an aim to achieve the one (1) million housing units goal. It is estimated that an additional 82,298 housing units will be developed under these national Projects. However, this estimate is anticipated to increase as more projects are identified by the SDHUD. The table below summarises the estimated supply projected from the national AHPs. Actual numbers have been used in arriving at the estimates.

Table 6: Projected affordable housing supply from national projects

Project	Estimated acreage	Estimated number of housing units
Police housing	TBD	23,728
Civil Servants	TBD	870
NSSF Mavoko	1,000	30,000
Cooperatives	TBD	TBD
UN Mavoko	55	8,000
Total	**1,265**	**82,298**

Source: KPMG Survey and analysis

Based on both the county and national AHPs, the housing supply increases to 386,225 units at 13.5% annual mortgage interest rate and 392,847 units at 8% annual mortgage interest rate. This represent 6% and 4% of the projected housing demand in 2022 respectively.

Table 7: Projected affordable housing supply from county and national projects

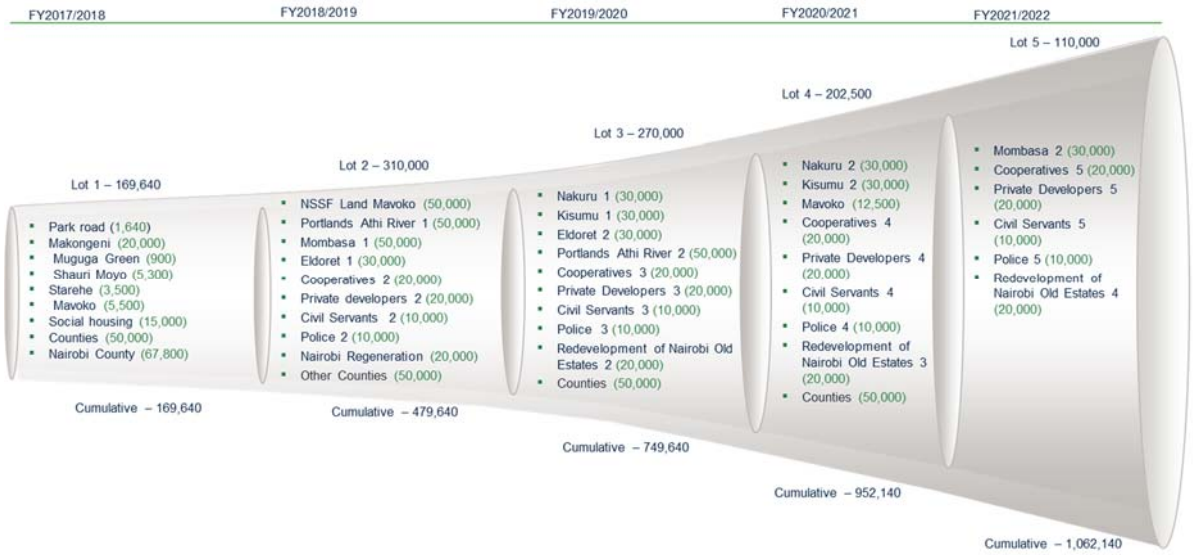
Project	Estimated housing supply at 13.5% annual mortgage rate	Estimated housing supply at 8% annual mortgage rate
County projects	303,927	310,549
National projects	82,298	82,298
Total	**386,225**	**392,847**

Source: KPMG Survey

1.7.5 Timing of affordable housing supply

Below is the project pipeline and delivery timelines as estimated by the SDHUD in delivering of the approximately one (1) million affordable housing units.

Figure 8: Proposed affordable housing pipeline



Source: SDHUD

Based on data collected from the Survey and discussion with the various stakeholders, KPMG has revised the supply forecast over the five (5) years period. KPMG has considered both the 13.5% and 8% annual mortgage interest rate scenarios in the housing supply forecast. The project timing is based on when project development is anticipated to commence. Further, the forecast assumes that:

i. Where titles are available, the average development timeframe is 2 years. Projects within this category will be implemented in 2 phases with half of the projected housing units being developed in the first year (FY2018/2019) and the balance in the next year (FY2019/2020). Development of the housing units has been phased for ease of management of the Project.
ii. Average time taken to obtain a title is one (1) year if none is held. Projects within this category will be implemented in 2 phases (i.e. FY2019/2020 and FY2020/2021).
iii. Each land parcel identified passes all compliance checks outlined by the SDHUD in determining the suitability of the land for the AHP.

A summary of the supply forecast based on the above assumptions is included below:

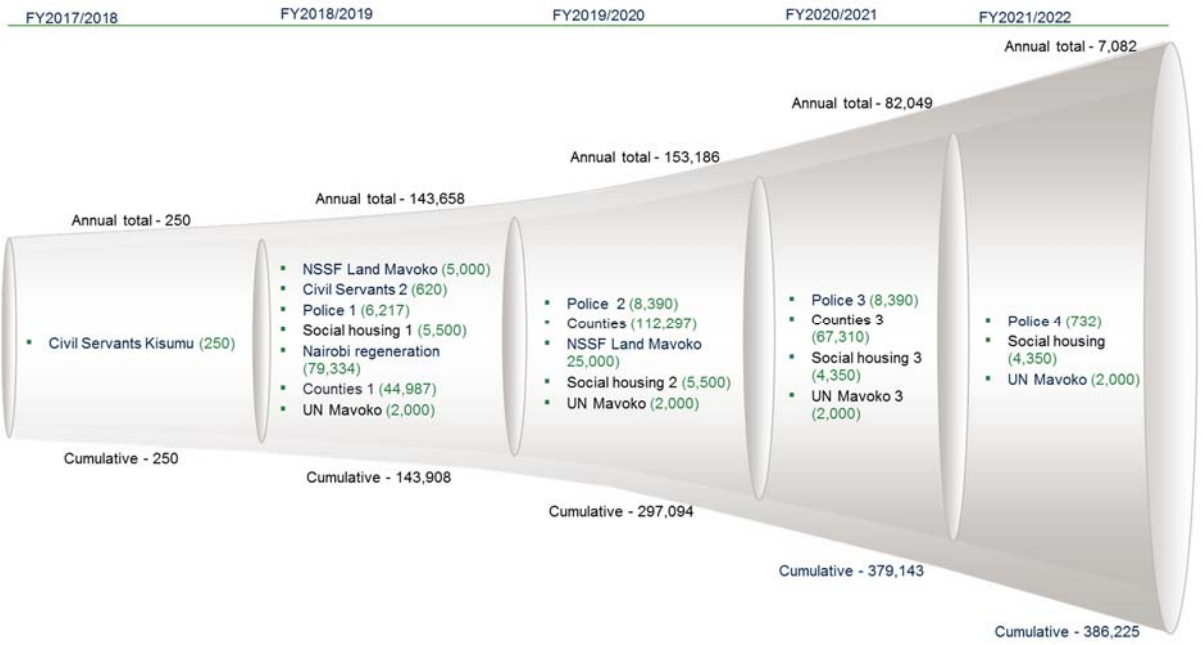
Table 8: KPMG projected affordable housing pipeline

Projects	FY2017 /2018	FY2018 /2019	FY2019 /2020	FY2020 /2021	FY2021 /2022	Total
Projected units (13.5% annual mortgage interest rate)	250	143,658	153,186	82,049	7,082	**386,225**
Projected units (8% annual mortgage interest rate)	250	139,462	156,497	89,556	7,082	**392,847**

Source: KPMG Survey and analysis

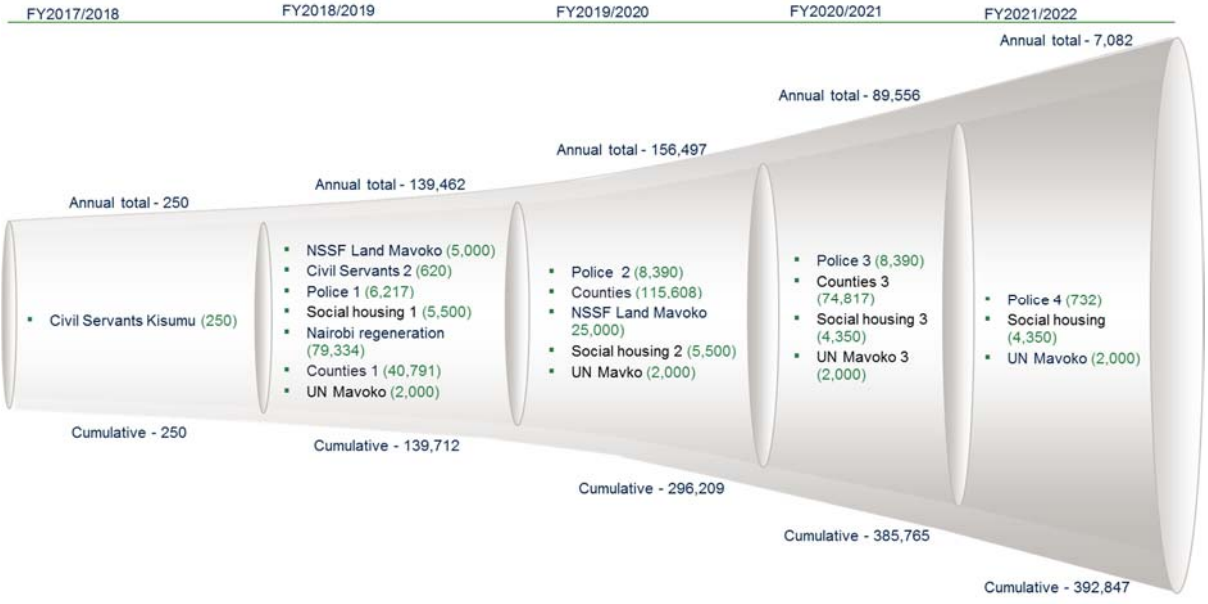
A detailed breakdown of the supply forecast above is shown below:

Figure 9: KPMG projected affordable housing pipeline at 13.5% annual mortgage interest rate



Source: KPMG Survey and analysis

Figure 10: KPMG projected affordable housing pipeline at 8% annual mortgage interest rate



Source: KPMG Survey and analysis

1.8 Technology review for various housing development and impact on cost

It has become a necessity to adopt cost effective, innovative and environment-friendly housing technologies in the construction of houses and buildings thus enabling the people within the low and middle income brackets to own homes. The technology adopted for each housing component should suit the level of skills and handling facilities available. A logical approach should be adopted in identifying the appropriate technology based on the available options whilst taking into consideration the technical and economic strength of each. Key considerations in optimising housing solutions should seek to:

a) Develop an effective mechanism for providing appropriate technology-based shelter particularly to the vulnerable group and economically disadvantaged communities

b) Adopt cost effective construction systems

c) Consider economy in the design of individual buildings, layouts, clusters etc.

d) Consider energy efficiency which has gained considerable importance due to the global climate change agenda. Orientation, built–form, openings and materials play a vital role besides landscaping/outdoor environment

e) Identify optimal space in the design considering efficiency of space and minimum circulation space

1.8.1 Housing designs

KPMG has proposed passive design principles and low cost sustainability measures for adoption in developing the affordable housing designs without unnecessarily increasing construction costs. This report highlights various interventions for consideration with regards to building regulations in order to make the AHP a success.

A sustainable/green building is one whose construction and lifetime of operation assure the healthiest possible environment while representing the most efficient and least disruptive use of land, water, energy and resources. The optimum housing design is one that effectively emulates all of the natural systems and conditions of the pre-developed site once the development is complete. KPMG has proposed various sustainable measures to be taken into consideration at the different levels of construction. These build upon the measures proposed in the DFGs. It is, however, important to note that each climatic zone across the country demands its own sustainable measures and technical features for affordable housing construction.

a) Design features – The form and building orientation adopted should seek to maximise use of natural resources such as heat and lighting. Furthermore, the building should be aesthetically appealing whilst adopting green building principles. Following a review of the proposed housing typologies as outline in the DFGs, KPMG is of the view that the designs for the various housing units could be improved by increasing the overall units' modular depth from 5m to 6m to allow a slightly bigger kitchen space and circulation space within the units.

b) Energy efficiency – Energy efficient designs should be incorporated into the site layout and building design so as to reduce the non-renewable energy use to meet the building's cooling needs.

c) Water conservation – Kenya is a water scarce country hence the most readily available water supply from the various water supply companies is not sufficient to meet the current water demand. It is therefore prudent to explore strategies that can reduce reliance on potable water supply.

d) Water recycling – Where sewer infrastructure is not readily available, treatment and recycling of wastewater is recommended.

e) Natural ventilation – Natural ventilation should be adopted rather than mechanical systems which can have high energy demand. Effective natural ventilation lowers the internal

temperature in the building and reduces the need for air conditioning which has high energy demand.

f) **Landscaping** – Sustainable landscape designs seek to conserve water and energy, reduce waste and pollution and decrease runoff. In order to achieve these, the gardens should treat water as a resource, value soil, preserve existing plants and conserve resources.

g) **Car park design** – Open car parking spaces are proposed to be located in front of the housing blocks. The parking areas and associated access roads should be paved with material that allows for water percolation back into the groundwater strata.

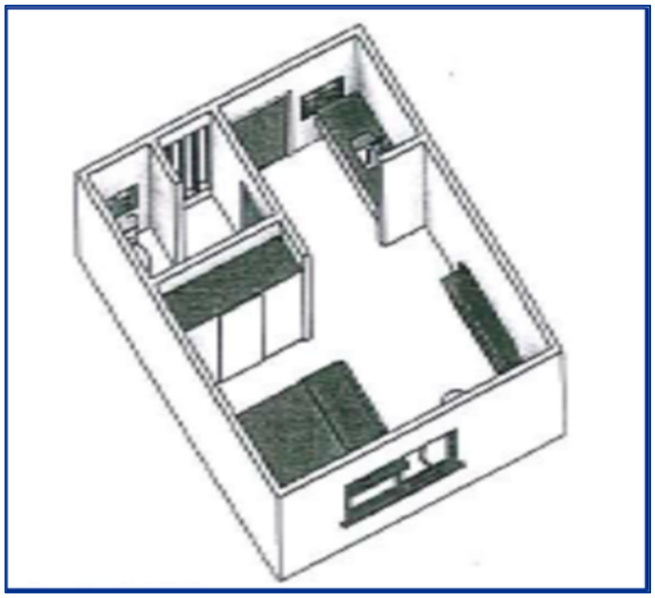
h) **Economic sustainability** – With an aim to create a source of income for the tenants, the ground floor bays will be utilised as stores. Formalising store fronts will reduce the establishment of informal kiosks.

i) **Building materials** – The selection of building materials should meet the needs of local conditions as well as improve quality new structures. Locally available and low maintenance materials with long life spans are proposed. A balance of environmental, economic and social concerns with technical considerations is required to achieve a sustainable housing project. New locally manufactured building materials with cost saving potential should be considered after value engineering reviews.

1.8.2 Housing unit typologies

In line with the DFGs, the following housing typologies have been proposed:

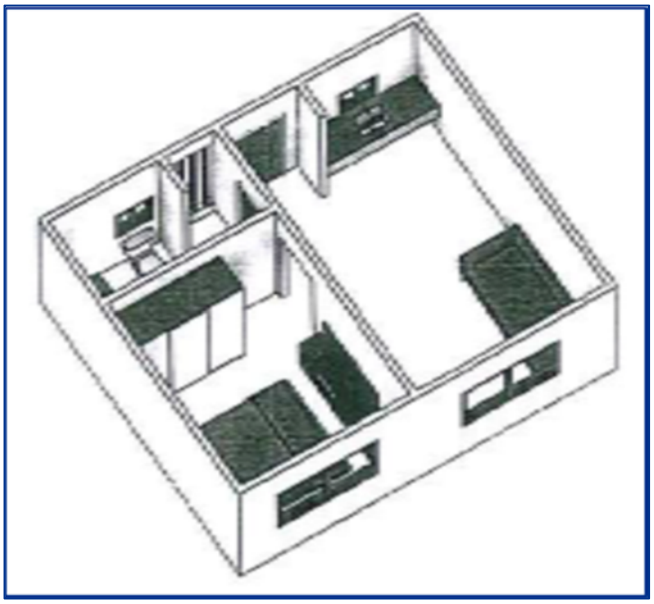
Figure 11: Studio



Source: DFGs – Building Design Guidelines

Room	Area (sqm)
Bedroom	12.5
Kitchen	3.14
Bath	2.9
Total	**18.54**

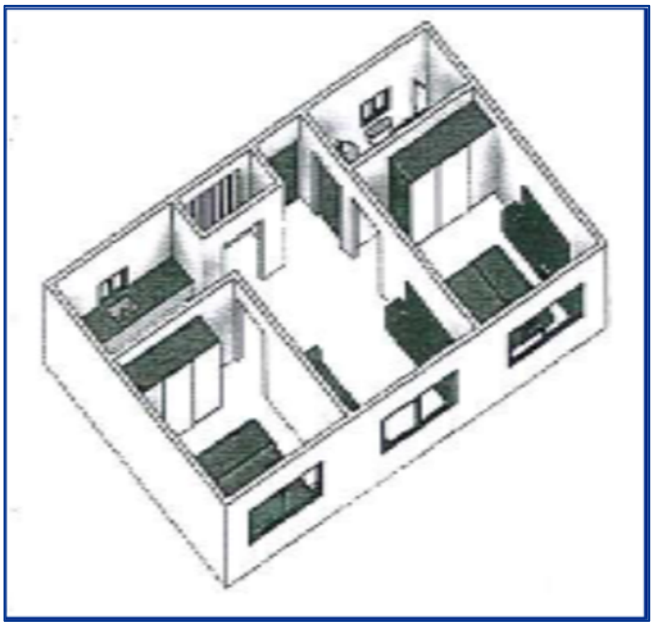
Figure 12: One bedroom apartment



Source: DFGs – Building Design Guidelines

Room	Area (sqm)
Living/Dining	10.6
Bedroom	9.2
Kitchen	4.6
Bath	3.8
Total	**28.2**

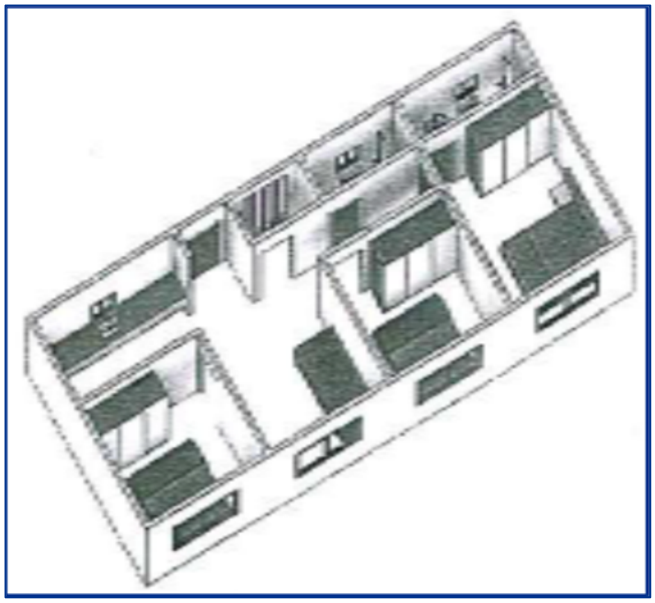
Figure 13: Two bedroom apartment



Source: DFGs – Buillding Design Guidelines

Room	Area (sqm)
Living/Dining	10.6
Bedroom 1	9.1
Bedroom 2	8.05
Kitchen	4.1
Laundry	1.05
Bath	3.14
Total	**36.04**

Figure 14: Three bedroom apartment



Source: DFGs – Buillding Design Guidelines

Room	Area (sqm)
Living	8.55
Bedroom 1	11.1
Bedroom 2	8.2
Bedroom 3	8.3
Kitchen/Dining	7.4
Laundry	1.6
Bath 1	2.8
Bath 2	2.2
Total	**50.15**

1.8.3 Estimated affordable housing construction costs

Housing construction costs have been analysed at a cluster level. Each cluster's estimate has been divided into 11 discrete work items, with a "unit price" being allocated for each item to give a cost per Square Metre (sqm). The overall cost per sqm is then multiplied by the total built up area of units proposed per cluster to find the total construction cost of the proposed housing units.

Table 9: Estimated unit cost per sqm for each cluster

Clusters	1	2	3	4	5	6	7	8	9	10
County	Mombasa	Kwale Taita Taveta Kilifi Lamu	Isiolo Mandera Tana River Wajir Garissa Marsabit	Embu Kirinyaga Meru Murang'a Nyeri Tharaka Nithi	Kajiado Machakos Kitui Makueni Laikipia	Elgeyo Marakwet Samburu Turkana	Bomet Nakuru Nandi Trans Nzoia Uasin Gishu Kericho	Bungoma Busia Kakamega Vihiga	Homa Bay Kisumu Migori Siaya Kisii Nyamira	Nairobi Kiambu
Typologies	**Ksh**									
3 bedrooms	45,975	46,250	55,671	48,229	50,055	56,579	49,045	45,832	48,172	50,198
2 bedrooms	47,354	49,455	57,342	49,956	51,557	58,276	50,516	46,958	49,617	51,704
1 bedroom	48,733	50,896	59,012	51,123	53,058	59,974	51,987	48,582	51,062	53,210
Bedsitter	50,113	52,336	60,682	52,570	54,560	61,671	53,459	49,957	52,508	54,716
Single unit	36,779	38,748	45,019	38,870	40,426	45,741	39,596	36,942	38,929	40,555
Double unit	35,818	37,740	43,853	37,843	39,370	44,591	38,559	35,981	37,920	39,499

Source: KPMG Survey and analysis

Table 10: Estimated construction cost per unit typology for each cluster

Typology	Construction cost per cluster (Ksh)										Average cost (Ksh)
	1	2	3	4	5	6	7	8	9	10	
3 bedrooms (50.15m^2)	2,305,636	2,319,432	2,791,919	2,418,696	2,510,255	2,837,430	2,459,584	2,298,469	2,415,829	2,517,422	2,487,467
2 bedrooms (36.04m^2)	1,706,639	1,782,369	2,066,588	1,800,406	1,858,099	2,100,275	1,820,592	1,692,348	1,788,205	1,863,404	1,847,893
1 bedroom (28.2m^2)	1,374,278	1,435,260	1,664,129	1,441,668	1,496,242	1,691,255	1,466,039	1,370,007	1,439,959	1,500,514	1,487,935
Bedsitter (18.54m^2)	929,086	970,313	1,125,040	974,645	1,011,540	1,143,380	991,121	926,198	973,490	1,014,428	1,005,924
Single unit (14m^2)	514,908	542,478	630,262	544,179	565,967	640,376	554,339	517,189	544,999	567,768	562,247
Double unit (21m^2)	752,171	792,537	920,911	794,712	826,780	936,412	809,733	755,593	796,318	829,481	821,465

Source: KPMG Survey and analysis

1.9 Interventions to encourage private sector participation

From interacting with the developer and financiers, KPMG sought to understand what interventions would stimulate private sector participation in the low cost affordable housing programme. The importance of GoK creating an enabling environment towards the successful delivery of a project of such magnitude cannot be overemphasised. Key interventions identified include:

Figure 15: Proposed interventions to encourage private sector participation

Focus area	Intervention
Development	• Avail serviced land for housing development • Reduce cost of construction material • Review of zoning regulations to allow higher housing densities
Legislation	• Extend tax breaks to low cost housing developers • Accelerate approval of land transfer and construction plans • Regularisation of land tenure • Integration of locally available building materials into the building code • Review the building code to accommodate reduced spatial provisions for habitable rooms • Review the Physical Planning Rules to accommodate new densities as a response to population growth and rapid urbanisation • Enhance the Environmental Management and Coordination Act to incorporate best practices for green buildings and sustainable construction • Enforcement, to the letter, of the Energy Act, 2006
Partnerships	• Initiate partnerships with developers and key stakeholders including housing cooperatives and pension funds • Clearly defined frameworks governing Public-Private Partnerships (PPPs) • Active stakeholder engagement
Financing	• Access to developer financing • Access to home buyer financing

1.10 Project implementation risks

Identification of project risks is a key element in successfully delivering on any projects. For this reason, KPMG has identified implementation risks foreseen in the delivery of the affordable housing programme. These include:

1. **Design, construction and commissioning risk:** Risk that the project fails to meet the design and construction standards agreed upon
2. **Financial risk:** Risk that the Project is not sufficiently funded, as well as risk of cost overruns by the developer
3. **Demand risk:** The risk that the actual housing demand is lower than that projected or the units being developed in that region
4. **Legal & regulatory risk:** Risk that Government regulations do not favour participation of the private sector
5. **Project operations risk:** Risk that the Project will not be operated in accordance to the agreed terms
6. **Project maintenance risk:** Risk that the Project will not be maintained in accordance to the agreed terms
7. **Land risk:** The risk that the required land to undertake the Project in not available as well as insecurity of tenure

8. **Inflation and foreign exchange risk:** Risk that the project financials will be adversely affected by inflation. The impact of imported construction materials may also be affected by foreign exchange.
9. **Insolvency and debt default risk:** The risk the debt drawn down by the developer to finance project activities cannot be repaid
10. **Subcontractor risk:** The risk that sub-contractors do not perform in line with expectations
11. **Stakeholder support risk:** The risk that key stakeholders including the Government, Government agencies and the private sector players fail to support the AHP
12. **Resettlement risks:** For the redevelopment of old estates, the risk that the public is agitated as a result of resettlement to new dwellings.
13. **Force majeure risk:** Risk that an unforeseeable event occurs and impedes the construction and/or operation and maintenance of the project as agreed upon
14. **Resource risk:** The risk that there is insufficient local skilled labour, technical knowhow and construction material production to deliver the project
15. **Housing allocation risk:** The risk that the developed housing units do not benefit the intended beneficiary owing to misallocation
16. **Supply risk:** The risk that the actual housing supply is lower than that projected
17. **Governance risk:** The risk that the Project objectives are not advanced as a result of transitioning from one government to the next
18. **Poor planning:** The risk that the project is not considered holistically and therefore does not encompass provision of key utilities and services
19. **Corruption risk:** The risk that there exists vulnerabilities within the systems or processes which might enable or facilitate corrupt practices

A detailed list of mitigation measures has been included in chapter 9 of this report. It is imperative for the GoK, through its appointed agency, to closely monitor and evaluate these risks throughout implementation of the AHP. Monitoring will involve identifying project risks and analysing the likelihood and impact of these on the project. Monitoring of these risks aims to provide decision makers and other stakeholders with an early indication of challenges thus allowing time to put in place mitigation measures where possible.

2 Overview of the housing sector in Kenya

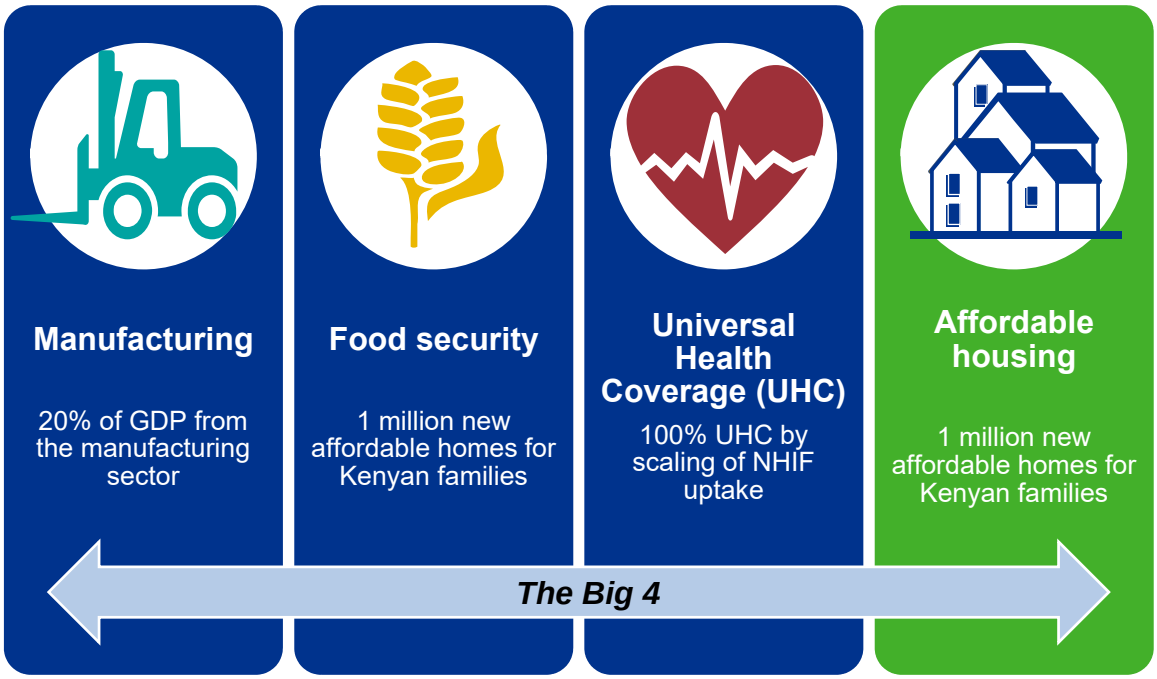
2.1 Background of the housing agenda

Kenya has been experiencing rapid population growth which has seen the country's population double over the last 25 years to approximately 40 million people in 2017. This burgeoning growth in the population has been attributed to the high fertility rates, increase in life expectancy and a reduction in mortality rates as a result of improved healthcare services. The growing population has resulted in an upsurge in demand for housing as more and more people seek to be housed. However, owing to various challenges within the housing sector, the country continues to experience a shortfall in its housing stock to meet this growing demand.

Worldwide, proper housing contributes towards the socio-economic growth of a country as a result of its forward and backwards linkages with other economic development processes such as poverty reduction through job creation and increased productivity of the labour force. Aside from this, housing is recognised as one of the most basic human rights, besides food and clothing, and as an essential component of the right to an adequate standard of living. In Kenya, access to housing is recognised as a basic human right for every citizen. This right is enshrined in Chapter 4 article 43 (1b) of the Constitution of Kenya, 2010; "Every person has the right to accessible and adequate housing and to reasonable standards of sanitation". Consequently, the Government of Kenya is compelled to take necessary steps towards realisation of this progressive right.

On 12 December 2017, the President of the Republic of Kenya announced four priority initiatives, 'The Big Four', which his administration would implement over his second term of presidency. These initiatives, which are founded on four (4) pillars, focus on key basic needs that are critical in uplifting the standards of living of Kenyans and setting the country on the path to becoming an upper middle-income country by 2030.

Figure 16: The Big Four Agenda



Source: KPMG Intellectual Property

Globally, majority of people live in cities and major towns as more and more people move in search of better jobs and opportunities. The Kenya urban population increased from 19% in 1999 to 32% in 2009 and is expected to increase further to 50% by the year 2030. This rapid urbanisation has resulted in the need to increase the housing stock within urban areas.

Kenya has been identified as an emerging middle-income country with a growing share of its population living in urban areas. According to the World Bank, there is an estimated accumulated housing deficit of over 2 million housing units within the country and at least 61% of the urban residents living in slums with no access to proper infrastructure. This is because 244,000 housing units in different market segments are needed annually to keep up with demand, while current production is less than 50,000 units[5].

Through implementation of the 'Affordable Housing Agenda', the GoK resolves to bring to fruition the delivery of affordable and quality houses for its citizens. Investment in the affordable housing agenda will stimulate Kenya's economy and serve as a catalyst for further investment. It is against this backdrop that the Government is keen on facilitating the delivery of one (1) million housing units by 2022. This is in line with the National Housing Policy, National Urban Development Policy as well as Kenya's commitment to the global agenda on Sustainable Development Goals (SDGs).

The SDHUD has been charged with the mandate of structuring and delivering the one (1) million AHP. The programme encompasses drafting of the concept, development, financial close, implementation and handover of one (1) million housing units within the next five years with a target of building 200,000 units every year.

2.2 Regulatory framework in the housing sector in Kenya[6][7]

The housing sector continues to face various challenges which have resulted in the growing demand-supply gap. The Government has, however, embarked on strengthening the housing sector through initiating laws, regulations, policies and programmes aimed at improving the housing sector and thus the housing situation in the country. In addition to the Constitution of Kenya, 2010 the following have been under implementation and consideration:

i. Vision 2030

Supporting the Government's call for adequate housing is the Vision 2030. The Kenya Vision 2030 is the long-term development blueprint for the country driven by the collective aspiration for a better society by 2030. The Vision aims to transform Kenya into a newly industrialising, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. The Vision is anchored on three key pillars: Economic, Social and Political. The Social Pillar of the 2030 Vision relating to housing, population and urbanisation envisions an adequately and decently-housed nation in a sustainable environment.

ii. Sustainable Development Goals

The SDGs are a call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. Goal 11 seeks to develop sustainable cities and communities through making cities and human settlements inclusive, safe, resilient and sustainable. A key housing target of this goal is to ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums by 2030.

iii. Kenya Slum Upgrading Programme (KENSUP)

This programme is aimed at addressing the housing challenges affecting majority of the urban population living in slums and informal settlements. It further aims at contributing to poverty reduction and fulfilment of the millennium Development Goals, particularly goal no 7 target 11 on improving the lives of 100 million slum dwellers by the year 2020. A Slum Upgrading and Low-Cost Housing and Infrastructure Fund has been established to mobilise additional funding to support the programme initiatives.

[5] Kenya Economic Update – April 2017
[6] Sessional Paper No. 3 of 2016 on National Housing Policy
[7] Kenya National Housing Survey Report 2012/2013

iv. Kenya Informal Settlement Improvement Project (KISIP)

The objective of the Informal Settlements Improvement Project is to improve living conditions in informal settlements in selected towns in Kenya. The programme was launched in June 2011 and seeks to undertake tenure regularisation and installation of social and physical infrastructure in informal settlements across the various towns.

v. Housing Infrastructure Development Programme

This was established in 2006 with an aim to open up new areas for housing development and to compliment private sector development in reducing the cost of housing delivery.

vi. Rural and Peri-Urban Housing Loans

With the growing rural and peri-urban housing need, the National Housing Corporation (NHC) has been advancing construction loans of up to Ksh 3 million to qualifying residents living in rural and peri-urban areas and who wish to develop or improve their housing.

vii. Civil Servants Housing Scheme Fund

This has been discussed in detail in section 4.2.2.2 below.

viii. Housing Sector Incentives

To attract investment from the private sector in the housing sector, the Government has assented to incentives intended at spurring growth in the housing sector and encourage partnerships. The incentives include:

a) Incentives under the Income Tax Act
b) Assignment of retirement benefit
c) Incentives under the Value Added Tax (VAT) Act

The Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works (MoTIHUD), under which housing falls, continues to lobby for implementation of more incentives so as to encourage further private sector engagement.

ix. Building Surveyors Bill, 2017

A building surveyor is the professional with the necessary academic and technical expertise that enables one to implement property management needs which include surveying the structures and conditions of buildings to establish defects and prescribe appropriate remedial measures among others. The bill seeks to introduce registration of Building Surveyors and to professionalise building surveying services in the country in order to ensure accountability in the sub sector.

x. Housing Amendment Bill, 2017

Once enacted, the Act will provide for incentives to investors in the housing and construction industry in order to encourage their investment in low cost housing so as to provide affordable housing.

xi. The Housing Bill, 2018

The Bill if enacted into law will repeal the Housing Act, Cap 117 Laws of Kenya. It aims to give effect to Article 43 (1) (b) of the Constitution which provides for the right to accessible and adequate housing and to reasonable standards of sanitation. The Bill seeks to provide for sustainable programmes to ensure progressive realisation of the right to accessible and adequate housing.

xii. Housing Act, Cap 117

The Act is the core legislation that deals with matters pertaining to housing in Kenya. It establishes the National Housing Corporation (NHC) and provides for the establishment of a housing fund and management of the same. It also makes provision of loans and grants of public monies for construction of dwellings.

xiii. National Building Maintenance Policy, 2015

This Policy was developed with an aim to set standards for building maintenance in all organisations in order to preserve and prolong the life of the building stock.

xiv. Sessional Paper No. 2 of 2016 on National Slum Upgrading and Prevention Policy

This Policy's objective is to provide a legal and institutional framework for effective slum upgrading and prevention initiatives on a sustainable basis.

xv. Built Environment practitioners Bill, 2017

This Bill makes provision for the training, registration and licensing of all the professions in the construction industry with aim of achieving harmony in the regulation of professionals in the built environment. It provides for the establishment, powers and functions of the Built Environment Practitioners Board.

xvi. Sessional Paper No. 3 of 2004 on National Housing Policy for Kenya

The aim of the National Housing Policy for Kenya 2004 was to enable the poor access housing and basic services and infrastructure necessary for a healthy living environment especially in urban areas. This Policy also aimed at establishing a Housing Development Fund that would be financed through budgetary allocations and financial support from development partners and other sources and establishing a Low-cost Housing and Infrastructure Fund that was proposed for funding shelter related infrastructure among others.

xvii. Sessional Paper No. 3 of 2016 on National Housing Policy for Kenya

The National Housing Policy for Kenya 2016 is expected to ensure progressive realisation of the right to accessible and adequate housing and reasonable standards of sanitation for every person as per article 43 of the Kenyan constitution. The policy also aims to promote and fund collaborative research on the development of low cost building materials and construction technologies and to facilitate increased investment by the private sector in the production of housing for low and middle-income urban dwellers.

2.3 Challenges to housing supply in Kenya

Housing supply goes beyond merely putting up of habitable structures. Housing suitability and market preferences are important aspects that must be considered. If the type of houses demanded are notably diverse from those supplied, then there might be a lag in the uptake as the market adjusts to the changing preferences. As is seen in the current proposed plans.

SDHUD estimates the annual average housing supply at 50,000 units which falls below the approximately 250,000 units demanded annually[8]. KPMG analysis shows a deficit of 4,312,966 as at 2017 and 6,089,251 without the AHP and 5,841,810 with the AHP over the 5 years to 2022. Challenges affecting the supply of housing are varied and have resulted in the expanding gap between housing demand and supply. These include:

i. Land shortage

Land is a key input necessary for housing development. There is limited supply of serviced land for housing development in urban areas which has resulted in high cost of land. Soaring land prices have resulted in high development costs which is then passed on to the home owners or tenants. Land cost accounts for c. 30% of the total development cost particularly in urban areas.

ii. Unaffordable finance for development

Housing development projects are capital intensive and costly for developers and thus require a large pool of funds availed either in the form of debt or equity. In Kenya, c.95% of developer funding is sourced from banks, with only c.5% coming from non-bank institutions[9]. Even with the capping of interest rates, cost of credit still remains high averaging c.17% due to administration fees incurred.

[8] http://www.transport.go.ke/downloads/projects/Housing_shortage.PDF
[9] https://www.cytonn.com/topicals/affordable-housing-in-kenya

These high borrowing costs have resulted in limited access to development finance and as a result, fewer housing units supplied countrywide.

iii. Inadequate infrastructure

A key consideration in the development of housing projects is the availability of supporting infrastructure. Parts of the country lack the requisite infrastructure for housing development. This results in high construction costs incurred by developers who may shy away from venturing into the AHP.

iv. Bureaucracy and delays in obtaining approvals

The process of obtaining approvals for construction is tedious and time consuming. Currently, too many institutions are involved in the approval process for development project applications thus prolonging and making the process expensive before an approval is granted.

v. High cost of building material

There still exists a strong preference for traditional building materials and techniques. End users remain biased to housing units constructed from brick and mortar which has resulted in developers using these construction materials to meet the consumer needs. Traditional material is expensive in comparison to the alternative building material. However, marketing and adaption of new building technologies remains low resulting in high construction costs. A benchmarking exercise undertaken by the Centre for Affordable Housing Finance (CAHF) in 2015 and 2016 across sixteen African countries ranked Kenya as having the highest total construction costs, with the cost of materials accounting for approximately 25% of the total construction cost of USD 63,241[10]. Building materials often constitute the single largest expense in housing construction in most developing countries. Most housing developers prefer to use conventional building materials and technologies and have not adopted the use of readily available local building materials. The resulting cost of imported materials is high thus pushing the pricing of the housing units beyond the affordability limits.

vi. Bias by private developers in housing provision

As a result of the higher investment returns realised, private sector developers are biased towards developing housing for the middle to high income earners. The market seeking to address the housing needs of the low income earners has therefore been left unserved by the private sector thus exacerbating the housing crisis within this segment who form majority of the population.

vii. Low investment in housing by Government

The GoK's investment in the housing sector remains low. Between 2009 and 2012, GoK's investment in the sector amounted to approximately Ksh 4.5 billion. This amount of money could only help develop 3,000 housing units for the 5 year plan period assuming a cost of Ksh 1.5 million per unit[11]. On the other hand, there has been minimal participation by the private sector players in the low income housing segment due to the low returns. This has resulted in a huge housing gap for the lower middle and low income earners.

viii. Lack of proper planning

Many developers do not seek guidance on the most economical and environmentally friendly developments to put up on identified sites. Further, where physical development plans are in existence, they are not necessarily implemented in full. This results in conflicting land use particularly in urban areas where there is an increased affordable housing demand owing to the rapid urbanisation.

ix. Property registration and titling

The process of land registration and titling has been identified as a key challenge to housing supply in Kenya. Although Government has adopted various reforms to accelerate land transaction processes, the titling process remains inefficient. Following a survey conducted by the World Bank, Kenya was

[10] http://housingfinanceafrica.org/dashboards/benchmarking-housing-construction-costs-africa/
[11] Kenya National Housing Survey Report 2012/2013

ranked 125 worldwide with respect to property registration. The average process has 9 steps and takes an average of 61 days to complete.

3 Clustering approach

In the analysis of the county data collected during the Survey exercise, the 47 counties were grouped into clusters for ease of analysis and as a basis of developing the financial model for the AHP. An assessment to identify correlation between counties in meeting housing needs for their population informed how counties were clustered. To facilitate this, KPMG identified key indicators against which the counties were assessed and consequently grouped. The key indicators determining the clusters include:

a) Prevailing economic activities of the counties
b) Terrain/ topographical/ physical features

The effects of these indicators on costs in different clusters are discussed further in section 7.9 of this report. Other indicators including geographical proximity, climatic conditions, cultural variances and level of urbanisation, all of which have lesser implications on the financial model, are discussed in Annexure I of this report.

Table 11: County clusters

Cluster	Counties	Cluster	Counties
1	• Mombasa	6	• Baringo • Elgeyo Marakwet • Samburu • Turkana • West Pokot
2	• Kilifi • Kwale • Lamu • Taita Taveta	7	• Bomet • Kericho • Nakuru • Nandi • Narok • Trans Nzoia • Uasin Gishu
3	• Garissa • Isiolo • Mandera • Marsabit • Tana River • Wajir	8	• Bungoma • Busia • Kakamega • Vihiga
4	• Embu • Kirinyaga • Meru • Murang'a • Nyandarua • Nyeri • Tharaka Nithi	9	• Homa Bay • Kisii • Kisumu • Migori • Nyamira • Siaya
5	• Kajiado • Kitui • Laikipia • Machakos • Makueni	10	• Nairobi • Kiambu

Source: KPMG analysis

4 Projecting affordable housing supply

In analysing and projecting the affordable housing supply, KPMG found it necessary to gain a comprehensive understanding of key drivers within the context of the AHP. These included:

1) Defining housing affordability
2) Identifying affordable housing initiatives, at both national and county level
3) Identifying land available for the programme

4.1 Affordability

The definition for housing affordability adopted in projecting of affordable housing supply is in line with the demand report.

Table 12: Proposed housing pricing by the GoK under the affordable housing programme

	1 room	2 rooms	Bedsitter	1 bedroom	2 bedrooms	3 bedrooms
Affordable housing	n/a	n/a	800,000	1,000,000	2,000,000	3,000,000

Source: SDHUD

Household income data collected during the Survey exercise was grouped into income bands which were then used to analyse the minimum monthly income required to afford the housing units. Further, a 25 year mortgage on 90% of the house price at current an annual interest rate of 13.5% and comparative annual interest rates of 8% and 4% was assumed.

Table 13: Analysis of the minimum monthly income to afford the proposed affordable houses

Proposed GoK house type	House price (Ksh)	Minimum monthly income (Ksh)		
		13.5% interest rate	**8.0% interest rate**	**4.0% interest rate**
Three bedroom	3,000,000	105,000	69,500	47,600
Two bedroom	2,000,000	70,000	46,400	31,700
One bedroom	1,000,000	35,000	23,200	15,900
Bedsitter	800,000	28,000	18,600	12,700

Source: KPMG analysis

From this analysis we note that, the minimum monthly income required for a household to service a mortgage on a three bedroom house selling for Ksh 3 million at current interest rate of 13.5% is Ksh 105,000. The target group of households earning less than Ksh 100,000 will therefore not be able to afford the three bedroom apartment at this price and interest rates.

Any possible demand for households earning less than Ksh 100,000 at this price point and current interest rates will only be possible if either the assumption of 30% housing budget is relaxed, the household has other sources of income not reported or the mortgage interest rates are reduced. If GoK achieves an 8% annual mortgage interest rate, the minimum household income required to own a three bedroom house reduces to Ksh 69,500 per month. For this reason, KPMG has considered the two annual mortgage interest rates (i.e. 13.5% and 8%) in analysing the housing demand. A detailed analysis on housing affordability has been documented in the housing demand/market analysis report.

4.2 Affordable housing initiatives

The GoK has instituted various measures to facilitate delivery of low-cost affordable housing throughout the country. This includes identifying housing flagship projects such as county housing programmes, slum upgrading programmes, civil servants housing programme and most recently, Public-Private-Partnerships (PPPs) with an aim to mobilise financial resources and transfer of technology to hasten delivery of decent housing to Kenyans. For the purpose of identifying these

initiatives, KPMG has broadly categorised these as either county or national county affordable housing projects.

4.2.1 County affordable housing projects

A key delivery channel towards realisation of the affordable housing agenda is through the County Governments. According to the SDHUD, it is estimated that more than 50% of the proposed housing units will be delivered through collaboration with the 47 counties. In view of this, the importance of the County Governments in successfully delivering the affordable housing programme is pertinent.

The GoK, through the SDHUD, has drawn a MoU seeking to enter into an agreement with the County Governments with an aim to establish a framework for consultation and cooperation towards achieving the goals envisioned in the housing, urban and metropolitan development. As outlined in the MoU, the National Government is required to provide:

a) The affordable housing delivery framework
b) Technical support and capacity building to the county stakeholders and technical personnel

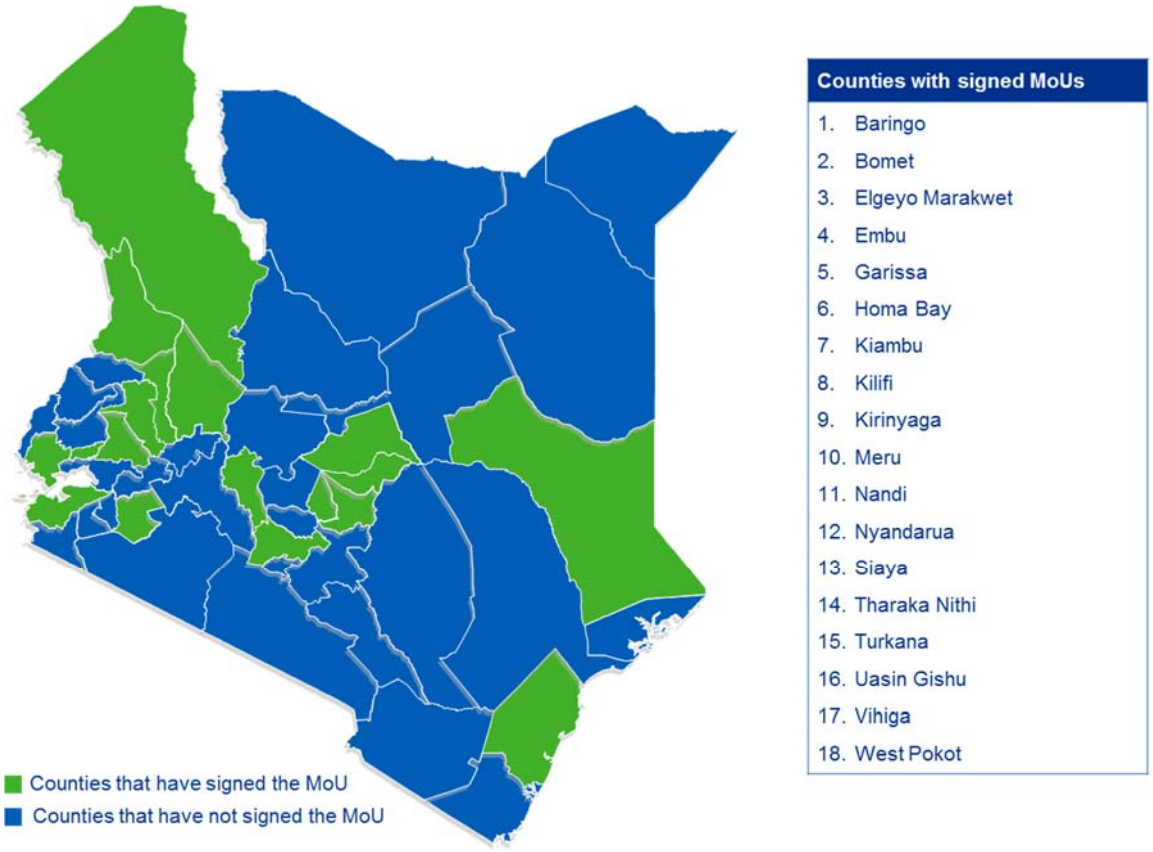
On the other hand, the County Government is required to:

a) Undertake to guarantee land availability by providing an inventory of the available land in the county and efficient approval processes
b) Provide an enabling environment to facilitate development of at least 2,000 affordable housing units each year or as per the demand analysis for the next 5 years upon signing of the MoU
c) Demonstrate political goodwill to enable timely completion of the identified projects
d) Guarantee the uptake of the housing units or underwrite investment value in case of low uptake rates where the National Government sources for a developer for social and affordable housing development within the county

It is noted by KPMG that the wording of final agreements signed with counties needs to align with the DFGs.

As part of the data collection exercise and from discussions with the SDHUD, 18 of the 47 counties had signed the MoU as at the time of preparing this report. It is, however, expected that more counties will sign the agreement as the SDHUD continues to pursue this. KPMG has identified these 18 counties as priority counties for implementation of the AHP.

Figure 17: Priority counties for implementation of the AHP



Source: KPMG Survey and analysis

4.2.2 National affordable housing projects

The GoK acknowledges the importance of forging partnerships towards realisation of the affordable housing goals. Delivery of 1 million housing units, particularly in the short time frame of five (5) years, would require a concerted effort all housing sector players. With this in mind, the SDHUD has identified other national housing projects that are involved in delivering affordable housing and thus contribute greatly in achieving the projected one (1) million housing units.

4.2.2.1 Slum upgrading

The slum upgrading programme has been discussed in detail in the demand report.

4.2.2.2 Civil Servants[12]

The 2004 National Housing Policy for Kenya called for employers to facilitate employees to acquire housing by way of extending loan facilities to employees or facilitating them to get mortgages. Prior to July 2001, the Government was charged with providing subsidised housing to its employees through provision of Government owned or leased housing or payment of house allowance to those not provided housing by the Government. This resulted in a number of problems such as inequity in subsidised housing provision benefiting only 12% while 88% were left to the private housing market. There was a disparity between officers receiving house allowance and those receiving owner occupier house allowances, with the latter being much higher.

In July 2001, the Government commenced the implementation of a new housing policy for civil servants. One of the key objectives of this policy was to divest the Government of the responsibility of providing direct housing to its employees and instead encouraging them to own their own houses. The implementation of the policy gave birth to the establishment of the Civil Servants Housing Scheme Fund (CSHSF).

[12] http://housing.azurewebsites.net/the-civil-servants-housing-scheme-fund-cshsf/

The CSHSF was initiated in 2004 in line with the National Housing Policy for Kenya 2004. The fund was established with an aim to advance loans to civil servants of all cadres to either build or purchase their residential houses, to develop housing units for sale and rental by civil servants and to raise funds for implementation of the two objectives. In extending these housing loans to civil servants, CSHSF has partnered with Housing Finance and Kenya Commercial Bank both of which have nationwide coverage. Loan amounts offered under this scheme range between Ksh 4 million and Ksh 20 million, depending on the civil servants job grade, at a mortggae interest rate of 5% per annum on a monthly reducing balance.

Since inception, CSHSF has facilitated more than 3,000 civil servants to access housing. The scheme has also initiated construction of a total of 870 civil servants housing units in Embu, Kiambu, Kisumu and Machakos.

Table 14: Ongoing civil servants housing project

No.	Town	Housing units under construction	Expected completion date
1	Kisumu	250	Complete
2	Machakos	200	August 2019
3	Embu	220	August 2019
4	Kiambu	200	August 2019
	TOTAL	**870**	

Source: SDHUD

4.2.2.3 Police Housing[13][14]

Due to lack of proper housing, police officers live in deplorable and squalid conditions. The current staff quarters housing the police force are dilapidated, congested and in most instances uninhabitable. However, the National Police Service (NPS) Act requires that all officers below the rank of inspector to live within the police quarters provided by the government. Over the years, this poor state of housing and office accommodation has been a key contributor to the police officers' low morale.

In 2015, the Independent Police Oversight Authority (IPOA) conducted research seeking to get an in-depth understanding of the current housing issues in the NPS. A key factor identified as having contributed to the poor state of police housing was the lack of a NPS Housing Policy. The study identified that the NPS faces a chronic housing shortage with the Kenya Police Service experiencing a shortfall of 28,922 housing units against a staff complement of 39,238 as at August 2015. Further, it was noted that 80% of approximately 35,000 Administration Police Officers were not housed in decent housing. Theseis figures continues to increase each year as new officers join the police service.

The Ministry of Lands, Housing and Urban Development is spearheading the construction of 20,000 housing units for the National Police Service (NPS). There are ongoing consultations between the MoTIHUD and the Ministry of Interior and Coordination of National Government (MoICNG) with a view to finding a sustainable solution to the NPS housing crisis. Several options arising from these discussions include:

i. Utilising budgetary funding to deliver a portion of the units in the short term while allowing long term solutions to be implemented
ii. Provision of housing through PPPs as a long term plan
iii. Leasing of residential accommodation
iv. Purchasing strategic accommodation facilities from private developers

The consultations also identified stations that urgently required housing accommodation and phased provision of the units in line with the budgetary allocation.

Phase I

The housing units, which are primarily for housing non-commissioned officers residing within the police stations and prison compound, include a mix of bedsitter, two-bedrooms and three-bedrooms in 15 sites across the country.

[13] Brief on National Police and Kenya Prisons Services Housing Programme
[14] IPOA Performance Report January – June 2016

Table 15: Phase 1 - Police housing

Phase	Site	Location	Units	Status
IA	1	CID Training School	50	1,050 housing units completed and handed over to the respective institutions in 2017.
	2	Migosi Police Station	100	
	3	Kamulu Police Station	100	
	4	Presidential Escort – Ruiru	300	
	5	Kamiti Maximum Prison	200	
	6	GSU Recce - Ruiru	300	
IB	7	Garsen Police Station	50	800 housing units completed and handed over to the respective institutions in 2018
	8	Shimo La Tewa Prison	100	
	9	AP Training College – Embakasi	150	
	10	Emali AP Camp	100	
	11	Ruiru GK Prison	50	
	12	Eldoret Airport	50	
	13	Garissa Police Station	150	
	14	Bungoma Police Station	50	
	15	Kajiado Police Station	100	
	TOTAL		**1,850**	

Source: SDHUD – Brief on National Police and Kenya Prisons Services Housing Programme

Phase II

Development of Phase IIA commenced in March 2018 and is currently ongoing. Completion of Phase II police housing project will see 1,888 housing units developed across 25 sites across the country.

Table 16: Phase 2 - Police Housing

Phase	Site	Location	Units	Status
IIA	1	Ndaragwa Police Station	60	732 housing units completed and handed over to the respective institution in 2018.
	2	King'ong'o GK Prison	60	
	3	Siakago Police Station	60	
	4	Meru Main Prison	60	
	5	Kwa Vonza Police Post	60	
	6	Kitui AP Border Patrol Unit Training School	60	
	7	Bondo AP Line	60	
	8	Eldama Ravine AP Camp	60	
	9	Narok Police Station	60	
	10	Kapenguria Main Prison	60	
	11	Kakamega Main Prison	60	
	12	National Police Training College - Loresho	72	
IIB	1	Kisii Main Prison	60	Development of 1,156 housing units to commence in the 2018/2019 financial year. Currently awaiting authority to commence procurement process.
	2	Sondu Police Station	60	
	3	Narok APS	60	
	4	Korinda Police Post	60	
	5	Kiambu APS	60	
	6	Thika Prison	60	
	7	ASTU HQ – Gilgil	60	
	8	Rapid Deployment Unit HQ – Embakasi	60	
	9	DCI HQ – Kiambu Road	264	
	10	Chuka Police Station	72	
	11	Eldoret Police Station	60	
	12	Kathiani Police Station	72	
	13	Presidential Escort Unit – State House	208	
	TOTAL		**1,888**	

Source: SDHUD – Brief on National Police and Kenya Prisons Services Housing Programme

With an aim to address the housing gap in the NPS, Kenya Commercial Bank submitted a Privately Initiated Investment Proposal (PIIP) for the provision of housing units. The target of the project is to construct a total of 20,000 NPS housing units in 53 sites across the country. Implementation of the proposed project will be phased with the first phase anticipated to deliver 4,685 housing units across nine (9) sites. Approval to proceed with implementation of this first phase, which is estimated to cost Ksh 16 billion, was granted in December 2017. A committee, comprising of representatives from the various stakeholders, has since been constituted to take the project forward. Currently, the committee is working towards finalising the technical aspects of the project before actual construction work commences.

Table 17: Phase 1 – KCB police housing project

No.	Site - Location	Total housing units approved
1	South B Depot - Nairobi	665
2	Industrial Area - Nairobi	535
3	APT Unit – Embakasi	640
4	GSU Training Camp – Ruaraka	640
5	Police Logistics Center – Ruaraka	535
6	State House – Nairobi	300
7	Rapid Deployment Unit – Embakasi	835
8	Security of Government Buildings	235
9	DCI Headquarters	300
	TOTAL	**4,685**

Source: SDHUD – Brief on National Police and Kenya Prisons Services Housing Programme

4.2.2.4 Co-operatives[15]

Limited access to capital to finance housing development projects and home ownership remains a major limiting factor to the growth of the housing market in Kenya. Housing construction is capital intensive and this results in developers seeking external capital which is often in form of debt. The high interest rates coupled with time needed for construction, which is in some instances occasioned with delays, weighs heavily on the total financing. These high financing costs are then passed on to the end user through marked prices for the housing units.

On the other hand, buyer's access to finance remains a challenge as portrayed by the mortgage penetration rate in the country. Currently, this stands at 4.3% of the country's gross domestic product which is substantially lower than developed countries. Owing to the stringent credit requirements and high interest rates, local institutions offering mortgage facilities tend to serve the high and middle income earners thus sidelining the low-income market segment. Consequently, more and more people are seeking avenues to access cheaper financing. In the urban areas, Savings and Credit Cooperative Organisations (SACCOs) have assisted people raise funds to get into commerce, construct housing and raise deposit to buy houses. These institutions therefore play a critical role in realisation of housing and in mobilising funds for purchase of land to put up housing besides raising capital for housing development.

Cooperative movements are identified as a major driver to economic growth in Kenya as they continue to play a crucial role in bridging the gap in the housing finance market in the country. It is estimated that the SACCOs have a membership of 14 million and thus have a significantly wide reach in bridging the existing housing gap.

There are currently 1,980 housing SACCOs with an asset base of Ksh 21 billion. It is estimated that less than 10% of all housing credit is in the form of mortgage loans from banks with the balance sourced from SACCOs and housing cooperatives. It is further estimated that SACCOs and cooperative sectors are providing over 100,000 housing loans with 10% of these being actual registered mortgages[16]. Consequently, if SACCOs and cooperatives are applied appropriately, they have the potential to address the housing finance sector in both urban and rural areas.

[15] http://kippra.or.ke/the-role-of-cooperative-societies-creating-275-new-home-owners-daily/
[16] Kenya economic update

4.2.2.5 National Social Security Fund (NSSF)

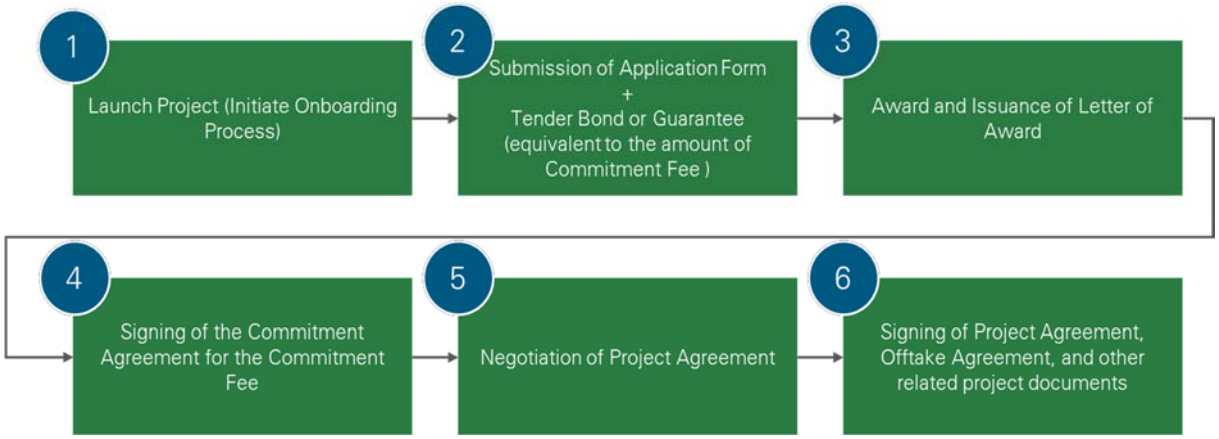
NSSF remains a key investors in the local real estate sector, holding an investment portfolio worth over Ksh 50 billion in both commercial and residential properties. The Fund's investment in property development is regulated by the Retirement Benefit Authority (RBA) which stipulates that a maximum of 30% of assets be held in real estate. As an administrator of a provident scheme for all workers in Kenya, NSSF has access to long-term funds that can be used for long-term investments. Industry data published by the RBA reported the NSSF asset value at Ksh 209.26 billion as at December 2017.

The long term plan of the NSSF is to construct 30,000 low cost housing units on a 1,000 acre piece of land in Mavoko, Machakos County. Rollout of the Mavoko housing project will be phased with 5,000 housing units planned for delivery in the first phase. This investment will enable the NSSF to tap the growing returns from the real estate sector thus benefiting the fund members from sale of the housing units.

4.2.2.6 Private Developers

GoK proposes to partner with private housing developers through signing of agreements to undertake and execute delivery of the agreed upon housing projects. The proposed process of engagement, as per the DGFs, is illustrated below. It should be noted that there is need to reconcile the final agreed engagement process with the financing structure being proposed.

Figure 18: Proposed engagement process with developers



Source: DFGs

Conclusion

The table below summarises the national affordable housing projects identified. The national projects discussed above are not exhaustive and merely identify some of the stakeholders involved in providing of affordable housing in Kenya. For example, a discussion with Kenya Railways Pension Fund may provide additional land and supply opportunities to aid achievement of AHP's targets.

Table 18: Projected affordable housing supply from national projects

Project	Estimated acreage	Estimated number of housing units
Police housing	TBD	23,728
Civil Servants	TBD	870
NSSF Mavoko	1,000	30,000
UN Mavoko	55	8,000
Total	**1,265**	**82,298**

Source: KPMG Survey and analysis

4.3 Land identification

As part of the Survey exercise, each county was required to provide details on the land parcel identified for the AHP including their sizes, specific locations where this was known and avail land titles where these were available.

From the county data collected across the 47 counties, a total of 2,112 acres of land have been identified as available and suitable for the affordable housing programme. In assessing the suitability of the land for housing, a visual inspection of each site was undertaken by the data collection supervisors. Particularly, the supervisors assessed;

- type of soil
- whether the land sits on riparian reserves
- whether the land sits in a swampy area
- whether there are any slopes on the land

Based on this review, one site identified in West Pokot county was marked as unsuitable as it sits on a riparian reserve. All other sites were found suitable.

Conducting a visual inspection of the sites identified is a critical part of the due diligence exercise as it enables one to quickly determine if the site meets basic suitability requirements. However, other compliance checks should be undertaken to identify any issues that could impede successful delivery of the AHP.

Table 19: Suitable county land identified for the AHP

Cluster	County	Acres per site	Land title status
1	Mombasa	265.83	×
2	Kilifi	-	●
	Kwale	-	●
	Lamu	-	●
	Taita Taveta	8.90	○
3	Garissa	123.55	○
	Isiolo	30.00	○
	Mandera	25.00	○
	Marsabit	-	●
	Tana River	-	●
	Wajir	-	●
4	Embu	-	●
	Kirinyaga	317.73	○
	Meru	4.90	○
	Murang'a	-	●
	Nyandarua	13.40	○
	Nyeri	7.49	×
	Tharaka Nithi	35.36	○
5	Kajiado	-	●
	Kitui	-	●
	Laikipia	5.40	✓
	Machakos	0.50	○
	Makueni	10.00	○
6	Baringo	24.12	✓
	Elgeyo Marakwet	-	●
	Samburu	4.94	○
	Turkana	40.00	○
	West Pokot	33.45	×
7	Bomet	7.00	○
	Kericho	10.01	○
	Nakuru	64.00	○
	Nandi	52.00	×
	Narok	25.58	×
	Trans Nzoia	7.81	○
	Uasin Gishu	19.76	✓
8	Bungoma	32.00	✓
	Busia	19.88	○
	Kakamega	13.34	○
	Vihiga	5.26	✓
9	Homa Bay	14.83	○

	Kisii	10.00	●
	Kisumu	27.96	×
	Migori	20.00	×
	Nyamira	19.30	○
	Siaya	20.84	○
10	Kiambu	50.00	×
	Nairobi	742.00	×
Total land available from counties		**2,112.11**	

Source: KPMG Survey and analysis

Key:

✓ *Title available and provided to KPMG for due diligence*

× *Title available but not provided to KPMG by the county*

○ *Title not available*

● *No land identified by county for the programme*

Observations

- 11 of the 47 counties had not identified land for the affordable housing programme at the time of the Survey in July 2018.
- Only 5 of the 27 counties availed titles to KPMG for due diligence. KPMG has since conducted a formal search of these titles at the lands registry to confirm land ownership. A report on this exercise is included in Appendix I of this report.
- 21 counties had earmarked sites for the affordable housing programme but are not currently in possession of the land titles. A key reason cited for this is that no land titles were issued for Government owned land. In the absence of titles, county representatives availed Part Development Plans (PDPs) for the identified project site. These were received from ten (10) counties. PDPs, and their place in the titling process in Kenya, have been discussed further in the section below.

4.3.1 Land titling process in Kenya

Lack of titles poses a great challenge to the realisation of the AHP. This is due to the fact that titling brings about security of tenure. Where titles are not available for land identified for the AHP, it is imperative that these are obtained. It is therefore important to understand the land titling process in Kenya as this sheds light on the process to be undertaken in obtaining titles for each parcel.

i. Defining a Part Development Plan

The Physical Planning Act (PP Act) defines a short term plan as a local physical development plan which elaborates detailed policies and proposals in relation to precise areas of land, and which provides the basis for both positive and regulatory planning to be realised within a specified period of time not exceeding 10 years. A PDP is listed as one of the short term plans under the PP Act.

Part B of the third schedule to the PP Act provides that PDPs indicate precise sites for immediate implementation of specific projects including land alienation (i.e. sale or other disposal of the rights to land) purposes.

Part B further provides that the most important considerations in preparation of short term PDPs are:

a) Assessment of immediate land requirement to accommodate specific population needs as they arise for a period of 3 to 5 years
b) Detailed allocation of the land requirements to various land uses taking into account compatibility of adjoining land uses and conforming with a long-term plan proposals for the area
c) Identification of authorities to service and/or develop the various land use allocations

Section 24 (1) of the PP Act provides that the Director of Physical Planning may prepare, with reference to any Government land, trust land or private land within the area of authority of a city, municipal, town or urban council or with reference to any trading or marketing centre, a local physical development plan. Subsection (2) provides that a local physical development plan may be a long-term or short-term physical development. This means that PDPs may be with respect to government land, community land or private land as classified under Article 61 of the Constitution of Kenya, 2010.

The existence of a PDP in a county (formerly county council) is an indication that a county has identified a particular part of the county for implementation of a specific project but does not necessarily confirm that the proposed site, as per the PDP, is titled.

ii. Legal framework for titling in Kenya

Before commenting on the legal framework of titling in Kenya, it is important to briefly illustrate the land ownership tenures in Kenya from pre-colonial to current times.

a) **Pre-colonial:** The predominant form of land ownership in Kenya was communal land ownership. In this case the community, rather than the individual, owned the land in trust for the benefit of its individual members.

b) **Colonial period:** During this time a law was enacted declaring all land within the protectorate as crown land regardless of native occupancy or reservation.

Other legislations were also enacted that introduced the possible grant of 999 year leases while also providing for perpetual or freehold land that could be granted to settlers.

Thereafter laws were passed which reserved specific territories for use exclusively by natives while still empowering the Governor of the Colony to dispossess natives of such land.

c) **Post-Independence:** In 1963, the Registration of Land Act was enacted as a form of registration of title on land thus assuring individual ownership of land amongst Africans. This in essence was individual land.

Trust land was previously designated as a special area for natives Africans. This Trust land was situated outside of the Nairobi area. At independence freehold title of Trust land was registered under Registration of Land Act, in the name of county council.

Government land was essentially crown land renamed with the title therein vesting to the President instead of the Crown.

d) **Constitution of Kenya 2010 (Current):** Part 1 of Chapter 5 of the Constitution makes general provisions with respect to land in Kenya. Under Article 61(2) of the Kenyan Constitution, 2010, land is classified as being either public, community or private land.

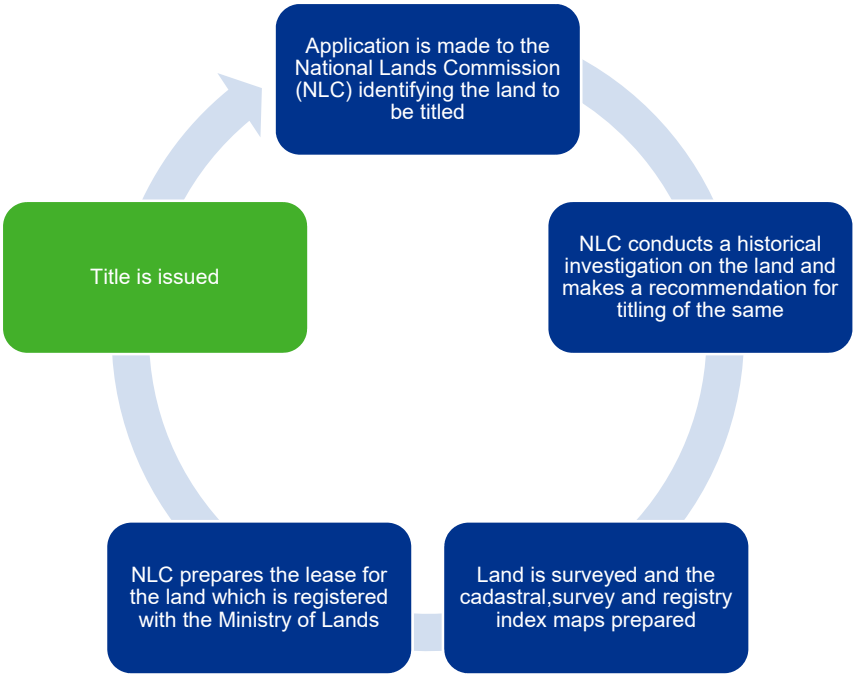
Public land is set out as including any un-alienated Government public land. This land vests in and is held by a County Government in trust for the people resident in the County. Accordingly, any public land that is un-alienated is vested in the County Government therefore the important thing would be titling of this land.

It is therefore important to enumerate the steps through which the County Governments can procure titles to their land.

iii. Titling of county land

Article 62 (2) and (3) of the Constitution provides that the National Land Commission (NLC) shall administer public land on behalf of the Government. This, therefore, means that the NLC is a key player in the titling of the county land that is un-alienated.

Figure 19: Process of titling county land



Source: Land Act, 2012

iv. Acquisition of land

Section 7 of the Land Act, 2012 outlines the following ways by which a title to land may be acquired:

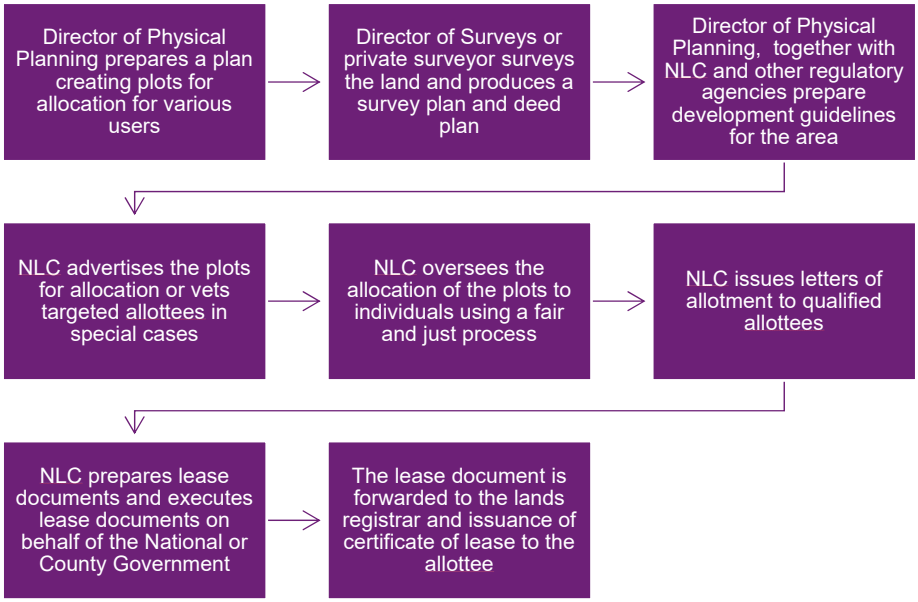
- allocation
- transfer
- lease
- compulsory acquisition

a) Allocation

This is where public land is transferred by the Government to individuals usually on lease hold basis for a specified period of time and subject to specific conditions. Section 12 (1) of Land Act 2012 empowers NLC to allocate public land on behalf of National and County Governments through either of the methods outlined below:

- Public auction to highest bidder at the prevailing market rate subject to, and not less than the reserved price
- Direct allocation to specially targeted group of persons or groups in order to alleviate their disadvantaged position
- Public notice of tenders as may be prescribed
- Public drawing of lots as may be prescribed
- Public request of proposals as may be prescribed
- Public exchanges of equal value as may be prescribed

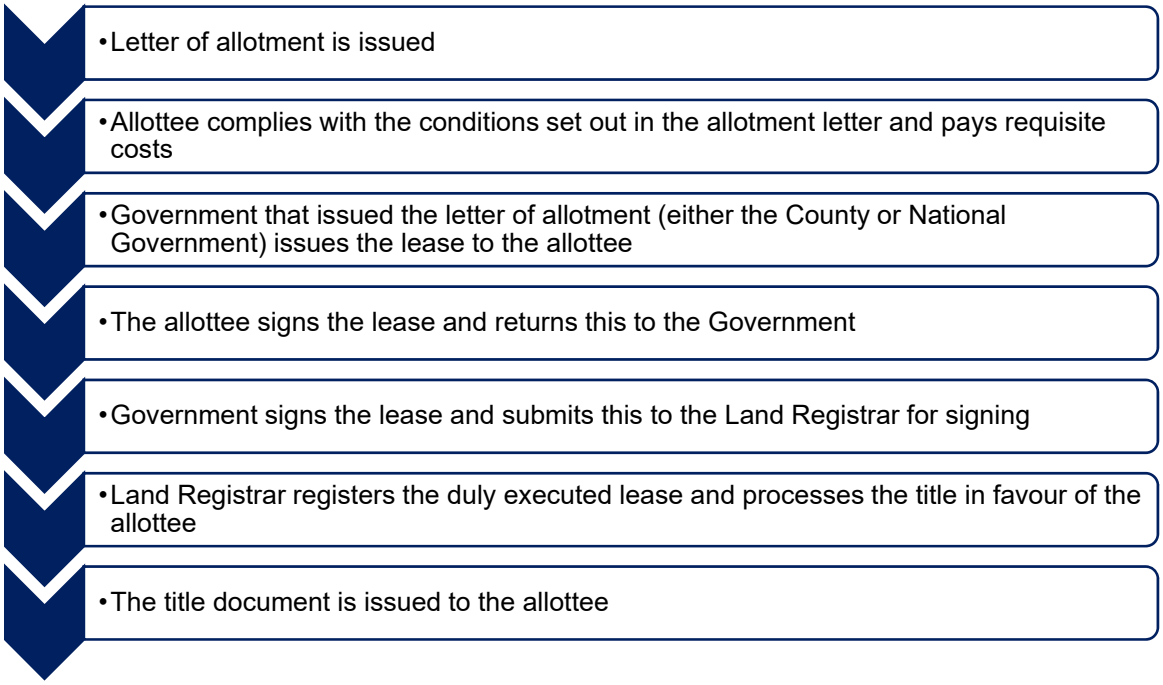
Figure 20: Process of allocation of public land



Source: Land Act, 2012

A summary of the process of acquiring a title in Kenya is detailed below following the land allocation process:

Figure 21: Process of acquisition of title



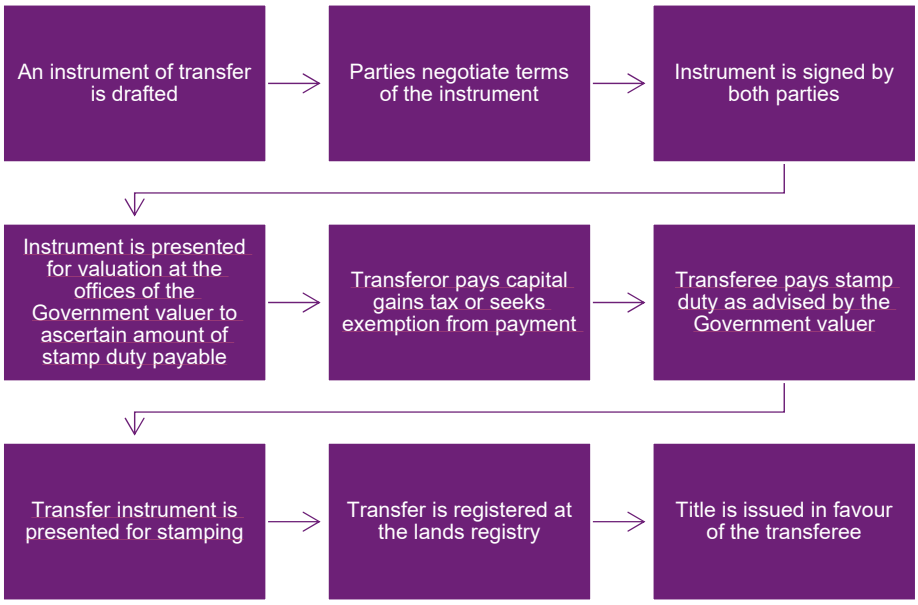
Source: Land Act, 2012

b) Transfer

The Land Act, 2012 defines a transfer as the passing of land, a lease or a charge from one party to another by an act of the parties and not by operation of the law and includes the instrument by which such passing is effected. An individual acquires title to land by transfer when they purchase the land from the registered land owner.

The process of transfer of a property is preceded by an agreement between parties to a transfer. A property may be transferred by registration of an instrument of transfer in favour of a purchaser.

Figure 22: Process of transfer of land



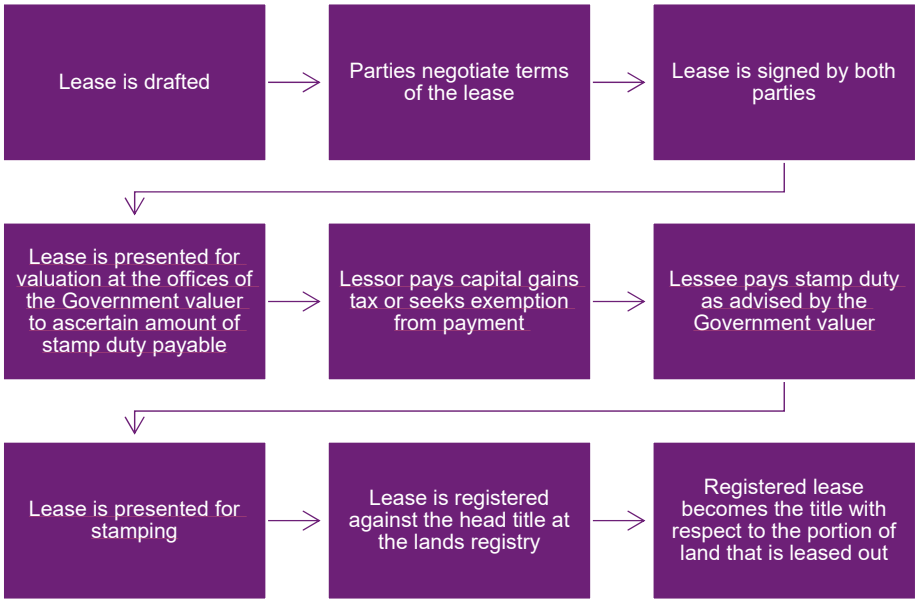
Source: Land Act, 2012

c) Long term lease

The Land Act, No. 6 of 2012 defines a lease to mean the grant, with or without consideration, by the land owner of the right to the exclusive possession of his or her land.

Section 7 (h) of the Land Act, 2012 provides that title to land may be acquired through a long term lease exceeding 21 years created out of private land. An individual can therefore acquire title to a parcel of land by way of a long term lease over a portion of private land.

Figure 23: Process of creating a long term lease



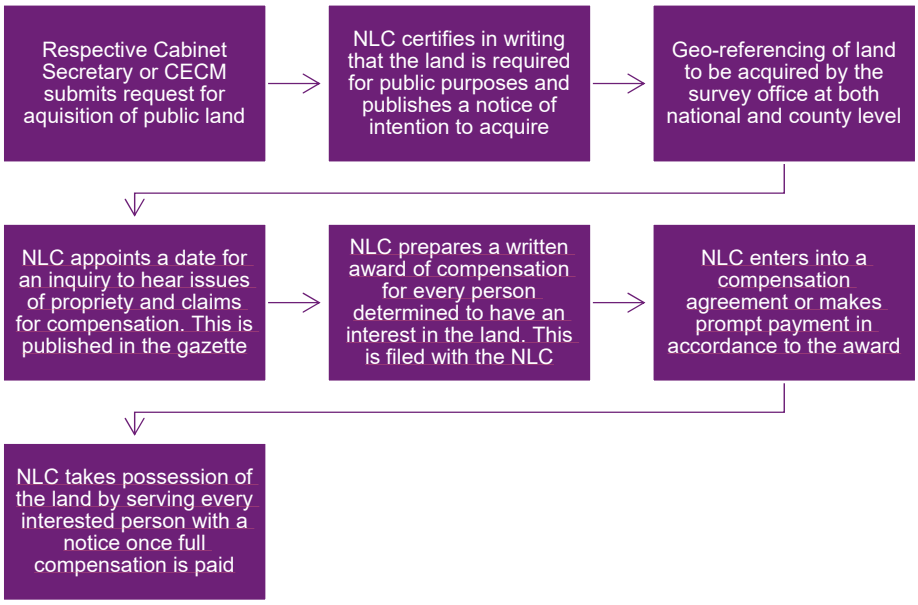
Source: Land Act, 2012

d) Compulsory acquisition of land

Compulsory acquisition is defined under the Land Act, 2012 as the power of the State to deprive or acquire any title or other interest in land for a public purpose subject to prompt payment of compensation.

The Constitution empowers the State to deprive a person of property or of any interest in, or right over, property where the deprivation is, inter alia, for a public purpose or in the public interest. Any entity comprising the GoK is authorised to compulsorily acquire land in Kenya. It is therefore one of the ways through which the Government can acquire land for affordable housing programme. Compulsory acquisition is governed by Part VIII of the Land Act.

Figure 24: Process of compulsory land acquisition



Source: Land Act, 2012

In the compulsory acquisition of land, the NLC has the discretion to authorise, in writing, any person to enter the land, for which notice of compulsory acquisition has been published, to inspect the land for purposes of ascertaining whether the land is suitable for the intended purpose. Such authorised person is required to first obtain the occupier's consent or to serve the occupier with a 7 days' written notice of their intention to enter.

Where there is an urgent necessity for acquiring the land, and following the above process would be contrary to the public interest, the NLC may take possession of uncultivated or pasture or arable land after 15 days from the date of publication of the notice of intention to acquire. After this period, the NLC can take possession of the land notwithstanding that no award has been made.

4.4 Affordable housing supply projections

Following identification of the available land for the AHP in each county, KPMG has adopted the following methodology in estimating the number of housing units to be developed. This analysis is built upon the key building guidelines outlined in the DFGs and corresponding annexures.

4.4.1 Approach to estimating number of units per acre

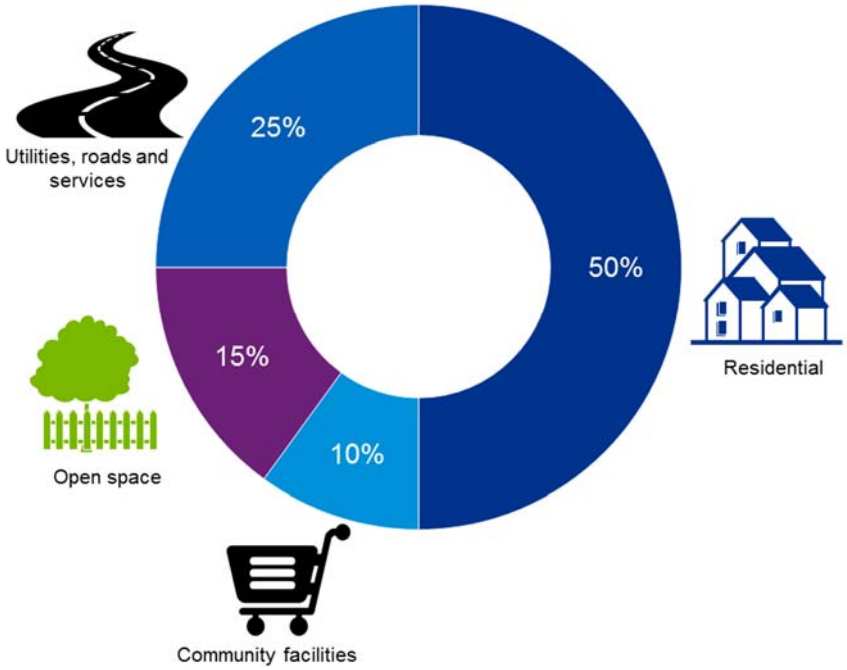
Step 1: Apply the housing development split

As outlined in the DFGs, an essential principle in the development of housing units on Government owned property is that a portion of the land will be solely dedicated for the construction of affordable housing units, while a smaller portion will be allocated to the developer, private investor or contractor for the purpose of approved development, from which the latter can achieve a reasonable commercial return. A preliminary target split of 30:70 for commercial to residential units has been recommended in the guidelines. This proposed ratio has been adopted by KPMG in estimating the housing supply.

Step 2: Apply the ground coverage

Ground coverage refers to the total area occupied by the ground floor of a building relative to the size of the site. It gives rise to the total built up area, on ground level, for the residential development. In accordance with the building design guidelines, which are annexed to the DFGs, the target land breakdown is shown below:

Figure 25: Typical land breakdown



Source: DFGs – Building design guidelines

50% ground coverage has therefore been assumed in the analysis. KPMG further assumes that each building block has six (6) floors as an optimum.

Step 3: Determine the housing unit that are profitable

KPMG has analysed the estimated construction costs for the various proposed housing typologies. Unit cost estimating has been discussed in section 8.9.2.3 of this report. The construction costs arrived at were compared against the proposed selling prices for the various housing units. It was noted that only the three and two bedroom units are profitable. Therefore, only these two units were considered in arriving at the typology mix.

Table 20: Housing construction costs analysis

Housing typology	Construction cost estimate (Ksh)	Proposed unit sale price (Ksh)
3 bedroom	2,487,467	3,000,000
2 bedroom	1,847,893	2,000,000
1 bedroom	1,487,935	1,000,000
Bedsitter	1,005,924	800,000

Source: KPMG analysis

Step 4: Estimate the housing typology mix for the proposed units

Based on the Survey data collected with regards to housing demand by unit type and the analysis on affordability, KPMG applied professional judgment in arriving at an appropriate typology mix. The following methodology was adopted in arriving at the housing typology mix:

a) Identify house type

Select the type of house to be analysed.

b) Determine eligible income bands for each housing type

Based on the affordability analysis conducted, KPMG determined the income bands eligible for each house type. This was done by analysing the maximum affordable house price against the household's income.

Table 21: Analysis of the maximum value of house affordability across the income bands

Monthly Income Groups (Ksh)	Median income (Ksh)	Housing budget (Ksh) – 30% of Income	Maximum affordable house price	Maximum affordable house price	Maximum affordable house price
			13.5% interest rate	8.0% interest rate	4.0% interest rate
0 - 9,999	5,000	1,500	129,000	194,327	284,150
10,000 - 14,999	12,500	3,750	321,750	485,848	710,418
15,000 - 19,999	17,500	5,250	450,500	680,194	994,597
20,000 - 24,999	22,500	6,750	579,100	874,541	1,278,776
25,000 - 29,999	27,000	8,100	694,900	1,049,473	1,534,565
30,000 - 49,999	40,000	12,000	1,029,400	1,554,755	2,273,401
50,000 - 99,999	75,000	22,500	1,930,300	2,915,182	4,262,652
100,000* +	100,000	30,000	2,573,700	3,886,936	5,683,574

Source: KPMG analysis

*Households earning 100,000+ are not eligible for the AHP

c) Determine minimum income level that can afford the house type

KPMG identified the minimum monthly income required to own the house type at a specified interest rates refer to step 7 of the demand report.

Table 22: Analysis of the minimum monthly income to afford the proposed houses

Proposed GoK house type	House price	Minimum monthly income		
		13.5% interest rate	8.0% interest rate	4.0% interest rate
Three bedroom	3,000,000	105,000	69,500	47,600
Two bedroom	2,000,000	70,000	46,400	31,700
One bedroom	1,000,000	35,000	23,200	15,900
Bedsitter	800,000	28,000	18,600	12,700

Source: KPMG analysis

d) Determine the proportion of households that can afford the housing type

Based on the minimum monthly income computed above, the demand for each housing type has been computed. Demand for each housing type is the number of households that earn more than the minimum monthly income. Since the minimum monthly income may fall within the income bands, we prorated the demand of the households in that income band.

(Income band upper limit – Minimum monthly income) / (Income band upper limit – Income band lower limit)

For instance, at 13.5% interest rates, the minimum household income required to afford a two bedroom house is Ksh. 70,000. The number of households that can afford the two bedroom house are a proportion of the total demand in the Ksh 50,000 – Ksh 99,000 income band. Applying the formula above:

$\frac{99,000-70,000}{99,000-50,000}$= 59.2%

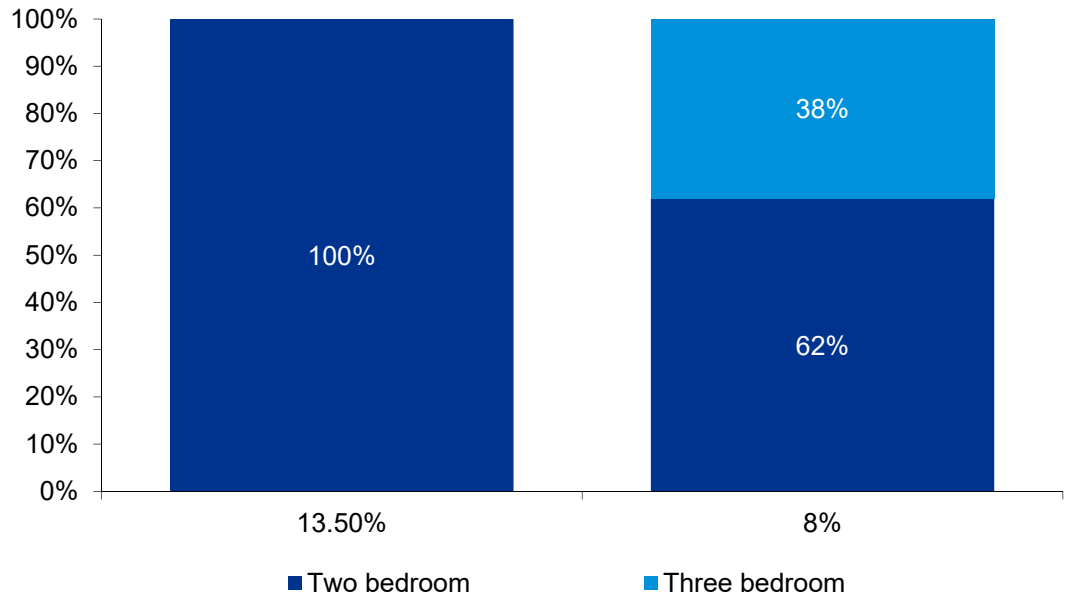
Therefore, only 59.2% of the households in the Ksh 50,000 – Ksh 99,000 income band can afford the two bedroom house at 13.5% interest rates and Ksh 2 million price point.

The resulting percentage was then applied on the demand estimate (i.e. the number of households) within the income band being apportioned.

A total of all eligible households across all income bands was then arrived at by adding up the eligible number of households.

Following this analysis, the typology mix for the various units was identified as:

Figure 26: Proposed typology mix



Source: KPMG Survey and analysis

Step 5: Applied the housing unit area

The building design guidelines annexed to the DFGs provide the square meter (sqm) area of the various housing typologies. For the purpose of this analysis, KPMG has assumed an additional 10% of the unit size to allow for circulation spaces.

Table 23: Housing unit area

Housing type	Proposed unit area in sqm	Proposed unit area including 10% circulation space in sqm
Three bedroom	50.15	55.17
Two bedroom	36.04	39.64
One bedroom	28.20	31.02
Bedsitter	18.54	20.39

Source: DFGs – Building design guidelines

Step 6: Review projected housing supply against demand

KPMG assessed the projected housing supply against the demand to determine sites where supply was in excess of demand. In such instances, KPMG has revised the supply estimates downwards thus matching the supply to demand. This was particularly the case for Kirinyaga and Garissa counties at 13.5% annual mortgage interest rates.

Nairobi and Mombasa counties have provided KPMG with the actual number of housing units to be developed. The actual numbers have been considered in the analysis for these two counties.

A summary of the steps outlined above is shown below.

Figure 27: Estimating the number of units per acre

Key assumptions		Calculations	Notes
Acreage	1		
Commercial ratio	30%		
Residential ratio	70%		
Portion available for residential construction		**0.70**	=Acreage*residential ratio
Ground coverage	50%		
Total built up area on ground level		**0.35**	=Ground coverage*proportion available for residential construction
No. of floors per block	6		
Total built up area in per block (in acres)		**2.10**	=Total built up area on ground level*no. of floors per block
Total built up area in per block (in sqm)		**8,502.02**	=Built up area in acres*4048.58 (convert to sqm)
		Unit area (in sqm) incl. 10% for	
Unit type	**Unit area (in sqm)**	**circulation spaces**	
Bedsitter	18.54	**20.39**	=Unit size of 18+10% area increase for circulation spaces
One bedroom	28.20	**31.02**	=Unit size of 28+10% area increase for circulation spaces
Two bedroom	36.04	**39.64**	=Unit size of 36+10% area increase for circulation spaces
Three bedroom	50.15	**55.17**	=Unit size of 51+10% area increase for circulation spaces
Scenario 1: 13.5% interest rate			
Unit type	**Typology mix**	**Sharing ratio**	
Bedsitter	0%	-	=Typology mix ratio*area inclusive of 10% circulation
One bedroom	0%	-	=Typology mix ratio*area inclusive of 10% circulation
Two bedroom	100%	39.64	=Typology mix ratio*area inclusive of 10% circulation
Total units per sqm		**39.64**	
Total number of units per acre		214	=Total built up area per block/total number of units per acre
Scenario 2: 8% interest rate			
Unit type	**Typology mix**	**Sharing ratio**	
Bedsitter	0%	-	=Typology mix ratio*area inclusive of 10% circulation
One bedroom	0%	-	=Typology mix ratio*area inclusive of 10% circulation
Two bedroom	62%	24.62	=Typology mix ratio*area inclusive of 10% circulation
Three bedroom	38%	20.90	=Typology mix ratio*area inclusive of 10% circulation
Total units per sqm		**45.52**	
Total number of units per acre		187	=Total built up area per block/total number of units per acre

Source: KPMG analysis

Table 24: County affordable housing supply estimates at 13.5% annual mortgage interest rates

Cluster	County	Acres available	At 13.5% interest rate			
			Estimated housing supply (units)	Estimated housing demand (units)	Supply gap (units)	Supply gap (acres)
1	Mombasa	265.83	25,000*	577,181	552,181	2,574.76
2	Kilifi	-	-	253,559	253,559	1,182.32
	Kwale	-	-	84,803	84,803	395.43
	Lamu	-	-	12,559	12,559	58.56
	Taita Taveta	8.90	1,907	16,932	15,025	70.06
3	Garissa	123.55	9,857**	9,857	-	-
	Isiolo	30.00	6,433	16,368	9,935	46.33
	Mandera	25.00	5,361	12,792	7,431	34.65
	Marsabit	-	-	21,318	21,318	99.40
	Tana River	-	-	19,064	19,064	88.89
	Wajir	-	-	13,087	13,087	61.02
4	Embu	-	-	26,863	26,863	125.26
	Kirinyaga	317.73	47,570**	47,570	-	-
	Meru	4.90	1,050	56,592	55,542	258.99
	Murang'a	-	-	59,627	59,627	278.03
	Nyandarua	13.40	2,873	53,579	50,706	236.44
	Nyeri	7.49	1,606	30,523	28,917	134.84
	Tharaka Nithi	35.36	7,582	45,474	37,892	176.69
5	Kajiado	-	-	120,848	120,848	563.50
	Kitui	-	-	27,430	27,430	127.90
	Laikipia	5.40	1,158	28,255	27,097	126.35
	Machakos	0.50	107	295,391	295,284	1,376.88
	Makueni	10.00	2,144	64,611	62,467	291.28
6	Baringo	24.12	5,172	18,930	13,758	64.15
	Elgeyo Marakwet	-	-	10,496	10,496	48.94
	Samburu	4.94	1,059	19,073	18,014	84.00
	Turkana	40.00	8,578	45,833	37,255	173.72
	West Pokot	33.45	7,173	13,145	5,972	27.85
7	Bomet	7.00	1,501	28,174	26,673	124.37
	Kericho	10.01	2,146	128,194	126,048	587.75
	Nakuru	64.00	13,725	375,771	362,046	1,688.18
	Nandi	52.00	11,151	35,691	24,540	114.43
	Narok	25.58	5,484	22,431	16,947	79.02
	Trans Nzoia	7.81	1,674	35,306	33,632	156.82
	Uasin Gishu	19.76	4,236	94,992	90,756	423.19
8	Bungoma	32.00	6,862	71,833	64,971	302.95
	Busia	19.88	4,262	11,653	7,391	34.46
	Kakamega	13.34	2,861	67,700	64,839	302.34
	Vihiga	5.26	1,128	39,352	38,224	178.23
9	Homa Bay	14.83	3,179	28,040	24,861	115.92
	Kisii	10.00	2,144	80,493	78,349	365.33
	Kisumu	27.95	5,993	153,110	147,117	685.99
	Migori	20.00	4,289	109,609	105,320	491.10
	Nyamira	19.30	4,138	29,835	25,697	119.82
	Siaya	20.84	4,468	38,581	34,113	159.07
10	Kiambu	50.00	10,722	403,690	392,968	1,832.37
	Nairobi	742.01	79,334*	2,389,522	2,310,188	10,772.15
TOTAL		**2,112.11**	**303,927**	**6,145,737**	**5,841,810**	**27,239.71**

Source: KPMG Survey and analysis

** Actual housing unit estimates as provided by the county*
*** Based on the land available and our supply methodology outlined above, there is an oversupply in the county. Supply projections have therefore been revised to match projected demand in the county*

Observations:

- Assuming the current annual mortgage interest rate of 13.5% to assess housing affordability and therefore the housing typology mix, the estimated housing supply is 303,927 housing units over the 5 year period. This represents 30% of the projected one (1) million housing units and 6% of the projected demand of 6,145,737 units in 2022.
- For the purpose of this estimate, KPMG assumes that each parcel of land identified meets all the site compliance checks and can therefore be developed. Projected housing supply will be lower where land identified does not meet compliance checks.

Table 25: County affordable housing supply estimates at 8% annual mortgage rates

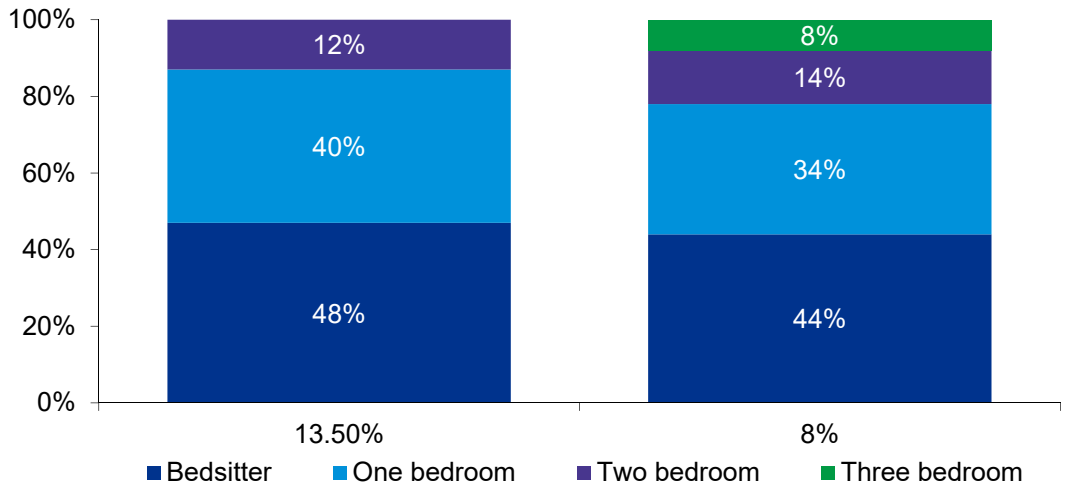
Cluster	County	Acres available	At 8% interest rate			
			Estimated housing supply (units)	Estimated housing demand (units)	Supply gap (units)	Supply gap (acres)
1	Mombasa	265.83	25,000*	940,216	915,216	4,900.58
2	Kilifi	-	-	371,969	371,969	1,991.73
	Kwale	-	-	132,062	132,062	707.13
	Lamu	-	-	21,634	21,634	115.84
	Taita Taveta	8.90	1,661	35,887	34,226	183.27
3	Garissa	123.55	23,074	26,352	3,278	17.55
	Isiolo	30.00	5,602	24,680	19,078	102.15
	Mandera	25.00	4,668	24,974	20,306	108.73
	Marsabit	-	-	32,224	32,224	172.55
	Tana River	-	-	29,783	29,783	159.47
	Wajir	-	-	19,996	19,996	107.07
4	Embu	-	-	48,734	48,734	260.95
	Kirinyaga	317.73	59,337	79,598	20,261	108.49
	Meru	4.90	915	83,787	82,872	443.74
	Murang'a	-	-	95,162	95,162	509.55
	Nyandarua	13.40	2,502	84,075	81,573	436.79
	Nyeri	7.49	1,399	77,919	76,520	409.73
	Tharaka Nithi	35.36	6,603	73,978	67,375	360.76
5	Kajiado	-	-	243,528	243,528	1,303.99
	Kitui	-	-	60,173	60,173	322.20
	Laikipia	5.40	1,008	51,204	50,196	268.78
	Machakos	0.50	93	508,908	508,815	2,724.48
	Makueni	10.00	1,867	101,720	99,853	534.67
6	Baringo	24.12	4,504	29,498	24,994	133.83
	Elgeyo Marakwet	-	-	24,167	24,167	129.40
	Samburu	4.94	922	31,007	30,085	161.09
	Turkana	40.00	7,470	349,787	342,317	1,832.96
	West Pokot	33.45	6,246	20,626	14,380	77.00
7	Bomet	7.00	1,307	48,708	47,401	253.81
	Kericho	10.01	1,869	206,396	204,527	1,095.15
	Nakuru	64.00	11,952	632,067	620,115	3,320.45
	Nandi	52.00	9,711	85,791	76,080	407.38
	Narok	25.58	4,776	40,867	36,091	193.25
	Trans Nzoia	7.81	1,458	61,584	60,126	321.95
	Uasin Gishu	19.76	3,689	171,348	167,659	897.74
8	Bungoma	32.00	5,976	133,731	127,755	684.07
	Busia	19.88	3,712	18,054	14,342	76.80
	Kakamega	13.34	2,492	107,514	105,022	562.35
	Vihiga	5.26	982	86,257	85,275	456.61
9	Homa Bay	14.83	2,768	56,908	54,140	289.90
	Kisii	10.00	1,867	133,042	131,175	702.38
	Kisumu	27.95	5,219	321,506	316,287	1,693.58
	Migori	20.00	3,735	148,087	144,352	772.94
	Nyamira	19.30	3,603	55,492	51,889	277.84
	Siaya	20.84	3,891	70,012	66,121	354.05
10	Kiambu	50.00	9,337	701,476	692,139	3,706.10
	Nairobi	742.01	79,334*	3,728,323	3,648,989	19,538.74
TOTAL		**2,112.11**	**310,549**	**10,430,811**	**10,120,262**	**54,189.58**

Source: KPMG Survey and analysis
** Actual housing unit estimates as provided by the county*

Observations:

- Assuming the lower annual mortgage interest rate of 8% to assess housing affordability and therefore the housing typology mix, the estimated housing supply is 310,549 housing units over the 5 year period. This represents 31% of the projected one (1) million housing units and 4% of the projected demand of 10,430,811 units in 2022.
- At 8% annual mortgage interest rate, there is no housing over supply in Garissa and Kirinyaga as more people are able to afford the housing units thus increasing demand.
- For the purpose of this estimate, KPMG assumes that each parcel of land identified meets all the site compliance checks and can therefore be developed. Projected housing supply will be lower where land identified does not meet compliance checks.
- If all the four housing unit typologies were profitable to construct, the typology mix would be as shown below:

Figure 28: Typology mix assuming all housing units are profitable



Source: KPMG analysis

Based on this typology mix, the estimated number of units per acre would be 315 (resulting in 370,736 housing units from the 2,112.11 acres identified) at 13.5% annual mortgage interest rate and 288 (resulting in 400,988 housing units from the 2,112.11 acres identified) at 8% annual mortgage interest rate.

Conclusions:

- At both 13.5% and 8% annual mortgage interest rates to assess affordability and therefore the product mix, the projected housing target of one (1) million housing units cannot be achieved. The projected housing gap as at 2022 at 13.5% and 8% annual mortgage interest rate is 5,841,810 and 10,120,262 housing units respectively.
- The SDHUD should consider identifying additional land for the AHP within the various counties.
- Strategic partnerships with other stakeholders offering affordable housing should be considered in bridging the gap between the county affordable house programmes and the projected one (1) million AHP target.

4.4.2 Estimated affordable housing supply from national projects

The table below summarises the housing supply projected from national affordable housing projects. These projects are outside of the County MOU programme.

Table 26: Projected affordable housing supply from national projects

Project	Estimated acreage	Estimated number of housing units
Police housing	TBD	23,728
Civil Servants	TBD	870

NSSF Mavoko	1,000	30,000
UN Mavoko	55	8,000
Total	**1,265**	**82,298**

Source: KPMG Survey and analysis

Conclusion

In summary, the projected housing supply from the county and national affordable housing projects as discussed in the above sections is shown below:

Table 27: Projected housing supply for both county and national AHP

Project	13.5% annual mortgage interest rate		8% annual mortgage interest rate	
	Acreage	Projected housing units	Acreage	Projected housing units
County projects	2,112	303,927	2,112	310,549
National projects	1,265	82,298	1,265	82,298
Total	**3,377**	**386,225**	**3,377**	**392,847**

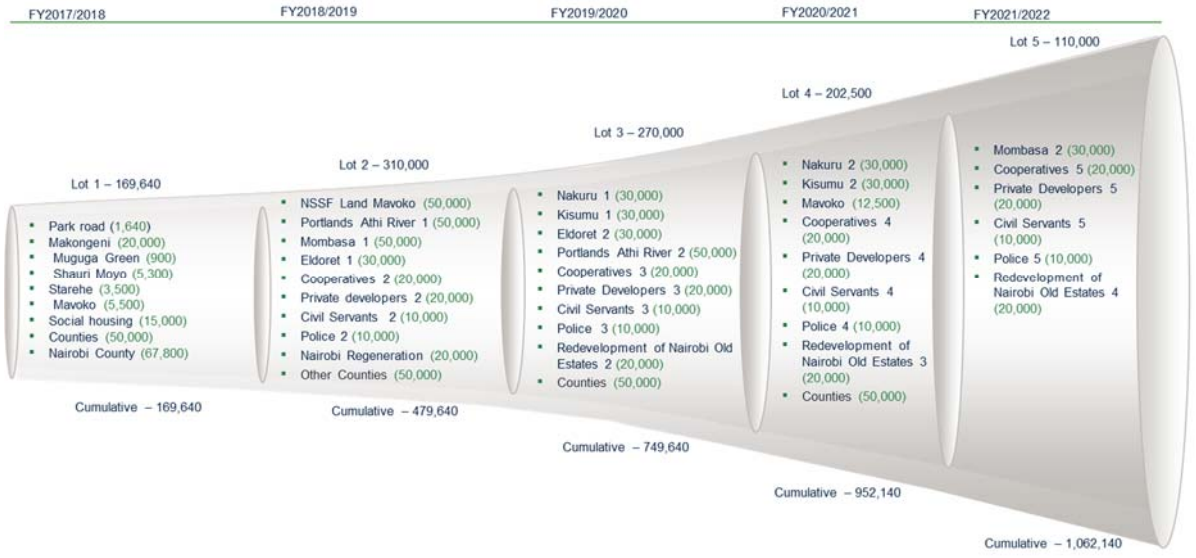
Source: KPMG analysis

It is important to note that housing supply for county projects is estimated based on land available. Therefore should additional land be identified, the projected housing supply will increase to reflect the additional available land. Conversely, where land identified is deemed unsuitable based on compliance checks conducted, projected housing supply will reduce.

4.4.3 Project pipeline for the AHP

The SDHUD project pipeline is as shown in the figure below:

Figure 29: Affordable housing pipeline as projected by the SDHUD



Source: SDHUD

Based on data collected from the Survey and discussion with the various stakeholders, KPMG has revised the supply forecast over the five (5) years period. KPMG has considered both the 13.5% and 8% annual mortgage interest rate scenarios in the housing supply forecast. The project timing is based on when project development is anticipated to commence. Further, the forecast assumes that:

i. Where titles are available, the average development timeframe is 2 years. Projects within this category will be implemented in 2 phases with half of the projected housing units being

developed in the first year (FY2018/2019) and the balance in the next year (FY2019/2020). Development of the housing units has been phased for ease of management of the Project.

ii. It will take, on average, one (1) year to obtain a title where titles are not currently held. Projects within this category will be implemented in 2 phases (i.e. FY2019/2020 and FY2020/2021).

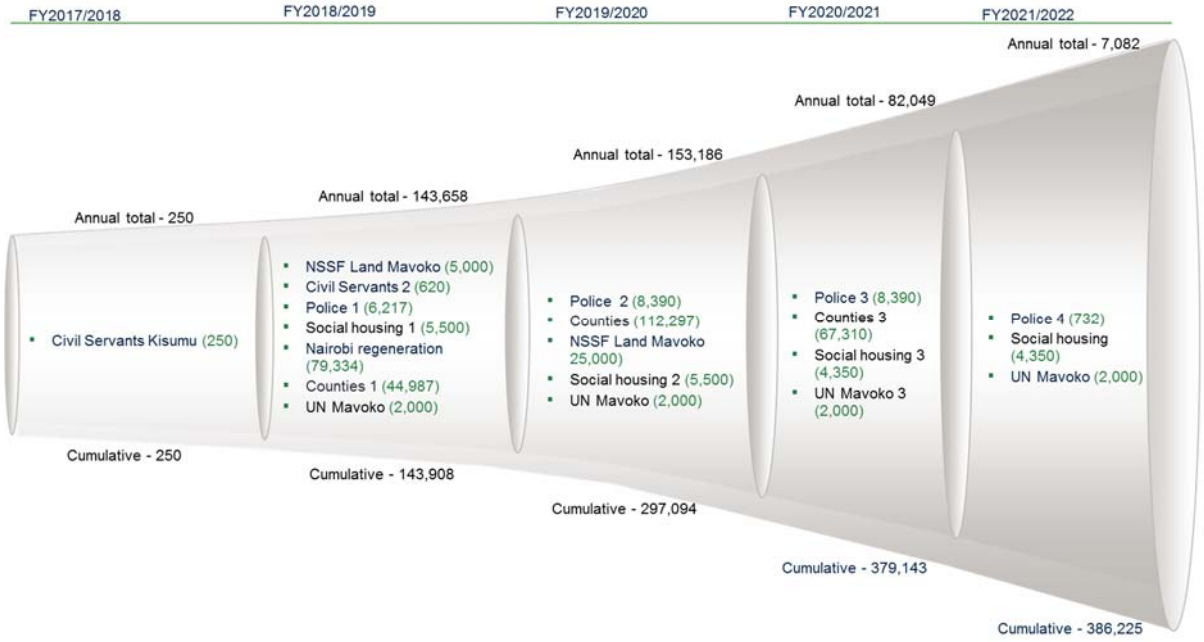
A summary of the supply forecast based on the above assumptions is included below:

Table 28: KPMG projected affordable housing pipeline

Projects	FY2017 /2018	FY2018 /2019	FY2019 /2020	FY2020 /2021	FY2021 /2022	Total
Projected units (13.5% annual mortgage interest rate)	250	143,658	153,186	82,049	7,082	**386,225**
Projected units (8% annual mortgage interest rate)	250	139,462	156,497	89,556	7,082	**392,847**

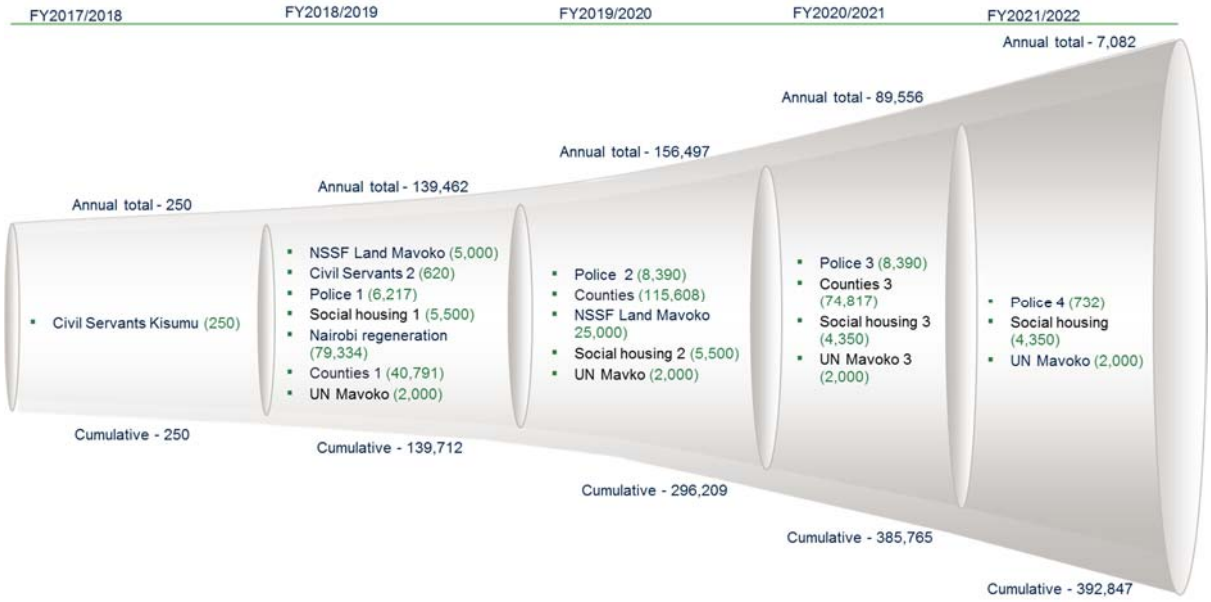
Source: KPMG Survey and analysis

Figure 30: KPMG projected affordable housing pipeline at 13.5% annual mortgage interest rate



Source: KPMG Survey and analysis

Figure 31: KPMG projected affordable housing pipeline at 8% annual mortgage interest rate



Source: KPMG Survey and analysis

5 Land banking

The intention of SDHUD is to create a land bank to identify public land parcels that are used, occupied or unutilised, for purposes of securing, developing, maintaining or managing the land in a coordinated manner, to foster the development or rehabilitation of such land to promote economic growth. The land bank shall comprise of an asset register consisting of:

- All public land
- All other parcels of land designated for purposes of affordable housing and urban development
- All other parcels of land designated for purposes of public use

5.1 Benefits of land banks

i. **Land asset register:** The land bank aggregates land by tracking the geographical and topological aspects of each parcel identified in a central database. The database, which requires to be updated regularly, captures data relating to location, size, ownership, connectivity to infrastructure, best use, availability of amenities etc. This central database not only confirms that land for development is readily available but also creates a single source of truth by providing an end to end view on all land captured in the register.

ii. **Appreciation of the land's value:** Land is one of the few assets that appreciate over time. Hence, buying land, with high development potential, at or near its present market value, ensures maximum value deliverance to the investor. If the land is secured at a time when demand is low, which also means a lower acquisition price, a substantial profit can be made in the future, when the demand is high.

iii. **Value addition:** Value addition to the site is possible, by obtaining property development approvals and then, over time, proceeding with property development. Value addition makes the land more attractive for developers, who may be willing to pay a premium for it. Alternatively, the land banker may opt for financing and continue with property development.

iv. **Transparency:** The land data base developed as part of the land banking exercise creates confidence particularly for developers partnering with the Government as they are guaranteed of land availability. Further, the land can be used to guarantee transactions where the Government uses the land as collateral to such transactions.

5.2 Functions and responsibilities of the land bank

i. Land bank policy, planning and implementation.
ii. Consolidation, management and maintenance of all public land.
iii. Acquisition of private land for public use.
iv. Creation and maintenance of an asset register for all publicly held land and classifying them according to their potential uses.
v. Liaising with the National Treasury to identify and transfer all land held by it to the Land Bank for purposes of affordable housing, urban development or public use.
vi. Incorporation of environmental protection and resource conservation issues of all the land identified.
vii. Liaising with counties in identifying properties for the land bank.

5.3 Structure of the land bank

The structure of the land bank will need to be development through consultation with the National Lands Commission and Ministry of Lands and Physical Planning. Considerations should include:

i. Where the functions of the land bank shall vest.
ii. Who will operate and manage the land bank.
iii. The process for transferring titles held by the National Treasury into the land bank.
iv. The development and publishing of policies and bills to support the land bank.

v. The establishment of such institutions and offices as may be considered necessary for the performance of the functions and the exercise of the powers of the land bank.

6 Stakeholder engagement plan

6.1 Background

The Constitution of Kenya requires public participation at various levels ranging from disclosure of information to involvement of the public in decision making. In the context of affordable housing, the public can be viewed as:

- Individuals living or conducting economic activities within the particular project sites' zone of influence, including neighbourhood residence associations
- Project developers
- Beneficiaries of housing under the AHP
- Government agencies, national ministries and regulatory authorities tasked with the delivery of specific aspects of the AHP
- Suppliers and service providers enabling efficient delivery of the AHP
- Individuals and stakeholder groups at local, county or national level who would partner with the AHP delivery units to enable the achievement of the program objectives
- Commercial or development finance institutions to provide funding to developers and buyers of affordable housing units
- Civil society groups including non-governmental professional associations with interests/mandates in cross-cutting issues of relevance to housing, specifically affordable housing

Specific highlights of the Kenyan legal and policy framework on public participation are presented in the table below:

Table 29: Legal requirement for public participation

Document	Highlights
The Constitution of Kenya	Article 69 (1) (d) of the Kenyan Constitution states that the State shall: "Encourage public participation in the management, protection and conservation of the environment".
	37. Every person has the right, peaceably and unarmed, to assemble, to demonstrate, to picket, and to present petitions to public authorities.
	118. (1) Parliament shall — (*a*) conduct its business in an open manner, and its sittings and those of its committees shall be open to the public; and (*b*) facilitate public participation and involvement in the legislative and other business of Parliament and its committees.
	119. (1) Every person has a right to petition Parliament to consider any matter within its authority, including to enact, amend or repeal any legislation. (2) Parliament shall make provision for the procedure for the exercise of this right.
	174. The objects of the devolution of Government are — (*d*) to recognise the right of communities to manage their own affairs and to further their development.
	196. (1) A county assembly shall — (*a*) conduct its business in an open manner, and hold its sittings and those of its committees, in public; and (*b*) facilitate public participation and involvement in the legislative and other business of the assembly and its committees.

	(2) A county assembly may not exclude the public, or any media, from any sitting unless in exceptional circumstances the speaker has determined that there are justifiable reasons for doing so.
	201. The following principles shall guide all aspects of public finance in the Republic — (*a*) there shall be openness and accountability, including public participation in financial matters.
	232. (1) The values and principles of public service include — (*d*) involvement of the people in the process of policy making (*f*) transparency and provision to the public of timely, accurate information.
	256. (1) A Bill to amend this Constitution — (2) Parliament shall publicise any bill to amend this Constitution, and facilitate public discussion about the bill.
Vision 2030	The political pillar of Vision 2030 while calling for public participation in governance recognises that public participation in Kenya has improved. Further to this it calls for an appreciation of values of tolerance and respect for difference in opinion in a competitive society as envisioned for Kenya.
Rio Declaration	Kenya is a signatory of the. Principle 10 of the Rio Declaration on Environment and Development (1991) states that "*Each individual shall have an opportunity to participate in the decision-making processes, facilitated by the widespread availability of information*".
Aarhus Convention	United Nations Economic Commission for Europe (UNECE) convention on Access to Information, Public Participation in Decision making and Access to Justice in International Environmental Matters (1998) is the most comprehensive legal instrument relating to public involvement. It indicates that "*Public participation should be effective, adequate, and formal and provide for information, notification, dialogue, consideration and response*".
Kenya Land Policy	Section 51 (g) states that the Government shall: "*Ensure effective public participation in the exercise of development control".*
National Gender and Development Policy-	Recognises the role of women in environmental conservation. To that effect the policy requires the specific involvement of women in all stages of environmental and water projects and incorporates their training in environmental management.
Environmental Management and Co-ordination (Amendment) Act, 2015 and its regulations	The Act identifies the principle of public participation as a requirement of the grievance management process under the right to a clean and healthy environment. The Environmental (Impact Assessment and Audit) (Amendment) Regulations 2016, give the legal provisions for conducting Environmental Impact Assessment (EIA) in Kenya. Regulation 17 outlines the requirements for stakeholder engagement during the Environmental and Social Impact Assessment (ESIA) study. Regulation 17 (1) requires that a developer/proponent during the process of conducting an EIA should seek the views of the persons who may be affected by a project. Section 17 (2) defines how a developer/proponent should disclose project information when seeking the views of those who are affected by the project. Disclosure of the study findings is done in accordance with regulations 20, 21, 22 and 23 of the Environmental (Impact Assessment and Audit) (Amendment) Regulations 2016.
Intergovernmental Relations Act	The Intergovernmental Relations Act establishes a framework for consultation and co-operation between the national and county governments and amongst

	county governments and to establish mechanisms for the resolution of intergovernmental disputes. Section 3(d) in specific terms, provides a framework for the inclusive consideration of any matter that affects relations between the two levels of Government and amongst County Governments. Section 4(a) (b) states that the framework may be utilised in times of resource conflict between communities across counties. It is therefore an important law when it comes to dealing with disagreements on resource sharing. This is based on a recognition of the sovereignty of the people as provided for under Article 1 of the Constitution and the need to establish an inclusive and participatory governance.
Public Private Partnership Act	This Act provides for the participation of the private sector in the financing, construction, development, operation, or maintenance of infrastructure or development projects of the Government through concession or other contractual arrangements and the establishment of the institutions to regulate, monitor and supervise the implementation of project agreements on infrastructure or development projects. Section 17 (1) (f) In its functions it is obliged to '*liaise with all stakeholders during the entire project cycle*.
Protection of Traditional Knowledge and Traditional Cultural Expressions Act	The Act requires that where the use or exploitation of traditional knowledge or culture is intended to be gainful, equitable remuneration or benefit-sharing should be based on terms determined and agreed with the relevant community. In the absence of such agreement it shall be determined by the National Competent Authority in consultation with the relevant community. Section 24 (2) (a) states that the National Competent Authority which is a body entrusted with the responsibility of administering the provisions of the Act; shall not grant the authorisation for exploitation of traditional knowledge before the interested party has undertaken appropriate consultations with the relevant communities, in accordance with their traditional processes for decision-making and public affairs management. The Act requires that anyone with an interest in using certain traditional knowledge or culture must follow the procedure set out in Section 27 and 28 to publicly disclose their intention to use this knowledge or culture in order to identify the holders of this knowledge of culture.
Kenya Wildlife Conservation & Management Act	Section 4 (b) states that Conservation and management of wildlife shall entail effective public participation.
Climate Change Act	Section 4 (2) (e) mandates the Council, the Cabinet Secretary, County Government to ensure integrity and transparency when executing its obligations in as far as stakeholder engagement is concerned. The Act includes a Schedule that provides for public participation in the making of policies, strategies, programmes, plans or actions. The schedule also prescribes mechanisms including mass media that can be used for information dissemination, hence disclosure of information. It also prescribes the form and manner in which information will be disclosed to the public as well as mechanisms for receiving feedback on the same. Section 15 (4) indicates that prior to implementation of climate change duties (implement climate change actions consistent with the national goal of low carbon climate resilient development), public awareness and consultations shall be adopted. This would enable the public to be able to give out their views on the proposed action plans and have them adopted prior to implementation of the climate change duties.

Land Act (*with 2016 amendments*)	Outlines how public participation should be conducted for registration of properties and compulsory acquisition.
Land Registration Act (*with 2016 amendments*)	Land Laws (Amendment) Act 2016 Section 3 (a) requires that every land registration process shall conform to involvement and engagement of the people residing in the land by creating awareness on the adjudication process and taking an inventory of their land. This suggests community sensitisation (awareness) and some level of grievance management. Engagement and participatory decision making would also be required in resolving boundary disputes.
The County Government Act	Part VIII on citizen participation provides the principles and requirements for *inter alia* development, decentralisation and implementation of citizen participation. Section 87 of the County Government Act outlines the requirements for citizen participation in County Government. The first principle for citizen engagement is "*timely access to information, data, documents, and other information relevant or related to policy formulation and implementation*." Section 87 (d) calls for a platform by which citizens will be able to submit their grievances. It is particular on the inclusion and provision of persons with disabilities, women, youth, traditionally marginalized communities and disadvantaged communities. Section 94, 95 and 96 requires counties to establish mechanisms to facilitate public communication and access to information using media with the widest public outreach. It is envisaged that every county shall designate an office for ensuring access to information. Section 100 and 101 indicates that as a necessity for public participation, every county is required to create an institutional framework for civic education.
Urban Areas and Cities Act	It makes provision for the integrated development planning of all urban areas, identifying environmental plans as a key component of integrated development. The Second Schedule of the Urban Areas and Cities Act outlines the rights of, and participation by residents in affairs of their city or urban area.
Access to Information Act	According to section 5(1)(c) a public body shall publish all relevant facts while formulating important policies or announcing the decisions which affect the public, and before initiating any project, or formulating any policy, scheme, programme or law, publish or communicate to the public in general or to the persons likely to be affected thereby in particular, the facts available to it or to which it has reasonable access which in its opinion should be known to them in the best interests of natural justice and promotion of democratic principles. Section 5(1)(d) requires that a public body shall provide to any person the reasons for any decision taken by it in relation to that person.
Community Land Act	Section 8(4) states that the Cabinet Secretary shall issue a public notice of the intention to survey, demarcate and register community land. The notice shall be for a period of sixty (60) days. It further prescribes the requirements of the content of the notice to be issued. Section 8(2) requires that the process of documenting, mapping and development of the inventory of community land be transparent, cost effective and participatory. Registration of communities is one of the key processes to facilitate registration of community land. Section 7 gives provision for registration of communities and outlines the public participation activities that must be undertaken during this process.

Kenya National Commission on Human Rights Act	The Acts states that the public hearings undertaken during investigations by the Commission during an inquiry "*shall be open to the public, except where the commission otherwise decides*."

6.2 Existing approach to stakeholder engagement

Institutional stakeholder engagement begun before the commencement of this consultancy. Currently, stakeholder engagement is guided by a stakeholder engagement framework. The principles of stakeholder engagement under this framework include:

- Resources and expertise will be the major goal for partnerships for mutual benefit and to achieve common outcomes and objectives in delivering the one (1) million housing units
- Collaboration will bring about initiatives which can fast track implementation of the AHP and benefit each participating party
- Stakeholders will be regularly consulted on the changes made on the delivery of AHP, the financing arrangements, the challenges and solutions made thereof
- The Government will provide opportunities for information sharing and will actively engage the stakeholders in areas of shared interests including the need to constantly give information to citizens and eventual beneficiaries of the AHP
- Information sharing, participation and knowledge sharing will ensure that housing types, locations, prices and financing arrangements evolve to meet the citizens' demands and tastes

The stakeholder engagement framework aims to achieve the above goals through the following initiatives:

i. **Partnership building** – Built on the shared investment and commitments to achieve shared outcomes through a formally signed agreement to deliver one (1) million housing units.

ii. **Collaboration with key stakeholders** – The various institutions key to delivering the AHP will align their work schemes for mutual benefit and to eventually deliver on the program.

iii. **Two-way Consultation** – A two–way time bound engagement on every key issue affecting the delivery of the AHP. The consultation will be undertaken in a manner that will ensure that all stakeholders provide specific information and feedback on the project.

iv. **Information and knowledge sharing** – Where the Government encourages the participation of all stakeholders key in delivering the AHP. These stakeholders include citizens, commercial banks, insurance firms, pension funds, development financial institutions, National Treasury, line ministries of infrastructure, water, energy, lands among others.

The various channels of stakeholder engagement as identified in the existing framework include:

- Memorandum of Understanding signed to deliver the one (1) million housing units
- Letters of engagement between various stakeholders
- Face to face meetings and workshops with various categories of stakeholders
- Focus groups
- Reference groups
- Sector meetings
- Facilitated consensus building forums to agree on land, infrastructure, pricing and house allocations with an aim to enhance collective decision making
- Workshops, seminars and barazas
- Social media sites (Twitter, Facebook, WhatsApp)
- Government websites
- Citizen satisfaction surveys on the AHP

The following issues have been discussed at the various stakeholder forums held so far:

1. **Target number of housing units –** The current annual housing demand was estimated at 200,000 housing units, against a supply of 50,000 units. Cumulatively, the estimated housing

deficit in Kenya was reported as two (2) million housing units. Developers sought to understand whether the target numbers of houses were driven by demand for housing or the need for housing.

2. **Modalities for delivery of the housing –** A key concern on the current model for delivery of the AHP is the delays experienced in the Government's procurement process. The planned modality for delivery of the housing units would therefore be through tri-party agreements between the Government, developers and financiers. However, to facilitate quick mobilisation, an amount equivalent to 10% of the equity would be provided upfront.
3. **Government's support to facilitate the AHP –** Government's support to facilitate delivery of the AHP is to be built on mechanisms that reduce the cost of construction and improve the buyers and tenant's ability to pay for home ownership or rent. Aspects of Government support that have been discussed in previous stakeholder engagement activities are as outlined below:
    i. **Land:** It was reported that the cost of land accounted for approximately 30% of the cost of housing development projects. With the Government providing land for development of projects, it is expected that this would result in lower development costs and hence reduce the cost of the housing units. To facilitate this, the Government would be required to establish a land banking programme to ensure availability of public land that would then be allocated for provision of affordable housing.
    ii. **Construction materials:** The Government would facilitate the development of standardised designs and fittings hence enabling the developers to leverage on economies of scale from mass production of construction materials and preparation of design.
    iii. **Review of the policy, legal and regulatory framework:** The Government would undertake a review of the framework to facilitate delivery of the AHP. The Building Code, The Retirement Benefits Authority Act and the Internal Revenue Authority Act were flagged as codes or laws that may require review. Subsidies and tax relief were also to be considered to encourage tax payers and developers to buy or invest in affordable housing. Examples given were an increase of the home ownership savings plan from Ksh 48,000 per annum to 5% of the gross income and waivers of stamp duty for first time home buyers.
4. **Perceived Risks:** The following were raised by the developers:
    i. The type of guarantees that the Government would provide to the private sector
    ii. Mechanisms that will be applied to ensure that projects are delivered on time, at the agreed costs and quality
    iii. Mechanisms for ensuring that the right contractors are procured to construct the houses
    iv. A concern that the cost of a mortgage is much higher than the cost of rent. This is reportedly in comparison with more developed countries where the rent to mortgage ratio is at 1:1
    v. The project risk management framework
5. **Public utilities and amenities:** There was a concern from the developers as to whether the Government would provide support amenities under the AHP. These amenities include schools, hospitals and transportation systems to manage the increased population due to densification of development within the target properties. It was noted that the Government would provide the infrastructure and amenities to enable connection to the housing developments.

6.3 Approach to stakeholder engagement

The approach to stakeholder engagement for the AHP will be governed by the Constitution and the laws of Kenya. The Constitution of Kenya outlines the national values and principles of governance to include patriotism, democracy and participation of the people, human dignity, equity, social justice, inclusiveness, equality, human rights, non-discrimination and protection of the marginalised, good governance, integrity, transparency and accountability-among others.[17]

[17] The Constitution of Kenya, Article 10(2)

In keeping with this, the following values and principles will guide stakeholder engagement for the AHP:

- Transparency and honesty in engaging with stakeholders
- Timely access to information and documents relevant to decision making. The amount of time required will depend on the decision-making processes of the rights-holders. E.g. some stakeholder groups have procedures to be followed before certain decisions can be made. Planning ahead with this in mind provides for proper management
- Clear communication and adequate time investment to ensure all affected stakeholder groups understand the issues at hand prior to decision making
- Engagement over disagreements or grievances with an aim to understanding the point of view of the various parties and problem solving. Where necessary negotiation or mediation will be undertaken to seek solutions for the good of the affected parties
- Respect of local culture and related values but with full cognisance of human rights as provided for by the Constitution
- Observance of human rights
- Promotion of inclusiveness including clear mechanisms to empower vulnerable and marginalised groups to promote their active participation. Reasonable measures will also be undertaken to reduce the barriers to participation as experienced by these groups
- Actively consult stakeholders and seek feedback on issues

As such, key actors identified to support the SDHUD in stakeholder engagement for the AHP include:

- Bodies established under the inter-government relations laws and procedures
- National Environmental Management Authority
- National Land Commission
- Ministry of Land Housing and Physical Planning;
- County Governments as supported by County Executive Committees, County Administrators and County Assembly
- Ministry of Finance and National Treasury;
- Kenya National Commission on Human Rights

A high-level review of the stakeholders for the AHP are as presented below:

Table 30: Review of AHP stakeholders

Category	Stakeholder group	Interests in the AHP	Relevance
Primary: – Key actors for delivery – Beneficiaries – Negatively affected groups	SDHUD	– The State Department is responsible for providing policy direction and coordination of all matters related to housing, urban planning and development. This includes the KENSUP and KISIP	– Program has a positive effect on their interests – Critical player to the success of the program – Very Influential over the delivery of the program
	NHC	– The primary mandate of NHC is to play a principal role in the implementation of the Government's housing policies and programmes	– Program has a positive effect on their interests – Critical player to the success of the program – Very Influential over the delivery of the program
	Beneficiaries (benefit from	– End users of the program. They are the	– Program has a positive effect on their interests

Category	Stakeholder group	Interests in the AHP	Relevance
	project implementation)	key respondents in measurement of the achievement of the program goals	– Critical player to the success of the program – Very Influential over the delivery of the program
	Those who live or conduct economic activities within or around the target properties.	– Likely to experience both direct and indirect positive and negative impacts within the physical and socio-political environment around the target sites for construction of affordable housing – Depending on how they are managed, this group can cause delays and cost over-runs on projects, but can also act as ambassadors of the program	– Program may have a positive or negative effect on their interests – Very Important to the success of the program – Significant influence over the delivery of the program
Secondary: – Supporters/ representatives of primary stakeholders	NLC	– Administration of land identified for the AHP as per the Kenyan land laws – Participate in arbitration of land cases including boundary disputes. They are therefore critical players in land acquisition and management of land related grievances	– Program has a positive effect on their interests – Critical player to the success of the program – Very Influential over the delivery of the program
	NEMA	– Issue Environmental Approvals for construction of housing	
	County Governments	– Approval for developments including housing projects – Provision of housing to county constituents – Provision of land for the AHP	
	Private Equity Firms, Commercial Banks and SACCOs	– Provision of financing for housing projects either a debt or equity – Provision of financing for purchase of homes in the form of loans or mortgages	
	Development banks/ International Finance Institutions	– Provision of financing for housing development projects	

Category	Stakeholder group	Interests in the AHP	Relevance
	Legislature and the judiciary	– Amendments and interpretation of the policy, legal and regulatory framework necessary for the delivery of the program as per its objectives.	– Depending on their interpretation of the program objectives, the program may have a positive or negative effect on their interests – Critical player to the success of the program – Very influential over the delivery of the program
	Public infrastructure developers and public utility service providers e.g. road authorities, water and sanitation supply companies, water services boards etc.	– Provision of public infrastructure and utilities critical for sustainable development of properties targeted under the AHP	– Depending on their priority programs for the particular financial year, the program may have a positive or negative effect on their interests – Very important to the success of the program – Significant influence over the delivery of the program
Secondary: – Professionals in the construction industries	Examples include civil, mechanical and structural engineers, architects, land valuers, quantity surveyors etc. and their professional bodies		– Depending on their priorities the program may have a positive or negative effect on their interests – Moderate importance to the success of the program – Some influence over the delivery of the program

Source: KPMG analysis

6.4 Stakeholder engagement framework

The main objective of the SDHUD activities under stakeholder engagement for the AHP will be to provide a framework for the delivery team as follows:

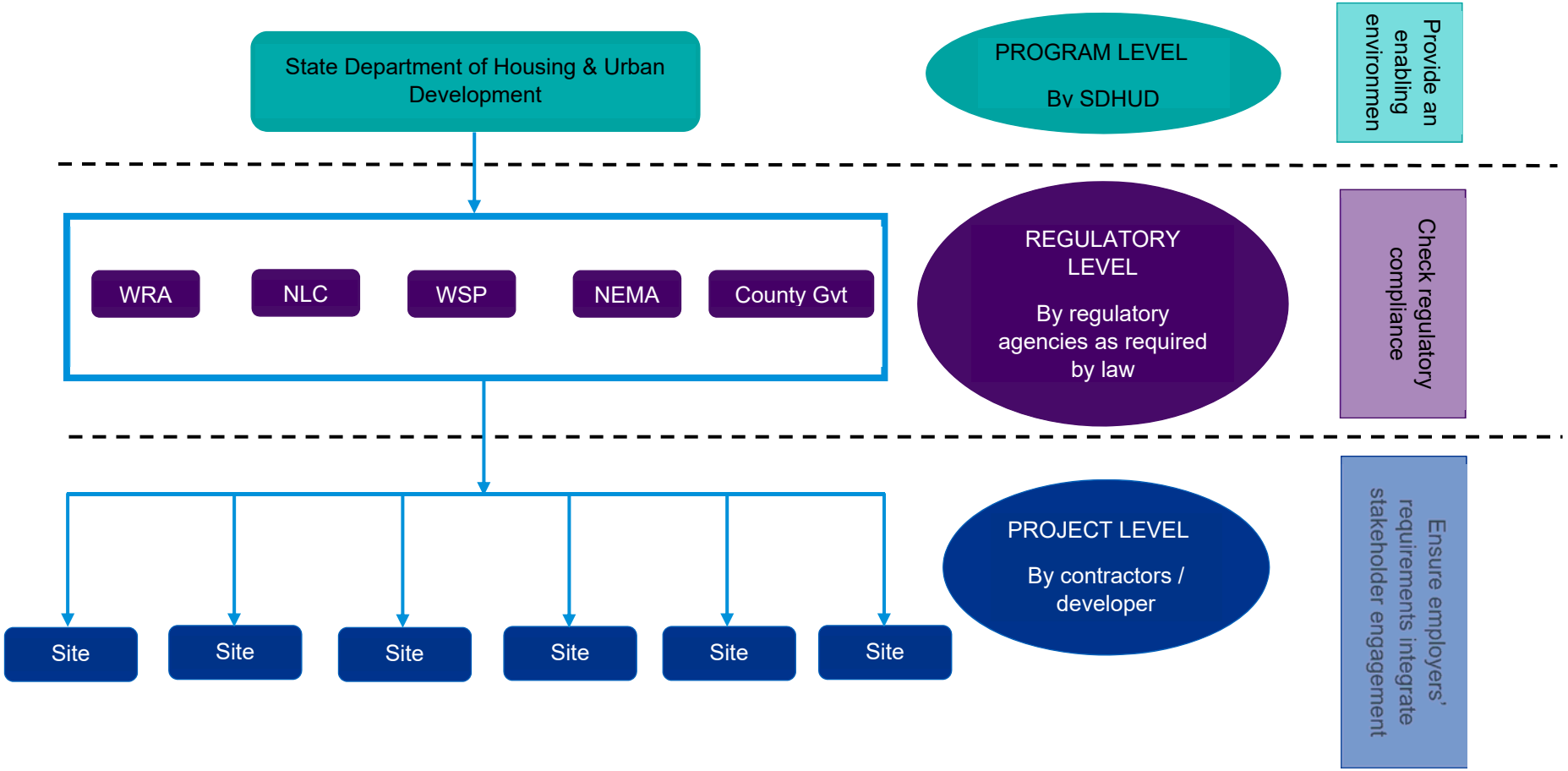
d) **Program level** – provide an enabling environment for delivery of the AHP.

e) **Regulatory level** – check adherence by regulatory agencies to regulations with regard to public participation requirements under the statutory role mandated to SDHUD by Kenyan law. SDHUD's role will be to monitor that the regulatory authorities are legally compliant with regard to public participation so that there is no duplication of roles.

f) **Site level** – ensure employers' requirements within project contracts are complaint. It is the responsibility of the contracting authority to clearly outline their requirements for public participation that each developer and joint venture partner must adhere to for each site. SDHUD's role would be to ensure pre-contractual oversight as SDHUD would not be involved in the day to day delivery activities for each site.

The public participation activities at site level will be undertaken by the private sector developers under the supervision of the relevant regulatory authorities as defined by the laws of Kenya. A summary of the framework for stakeholder engagement is presented below:

Figure 32: Framework for stakeholder engagement



Source: KPMG analysis

6.5 Stakeholder engagement strategy

This stakeholder engagement strategy aims to build up on the engagement undertaken to-date and to operationalise the public participation activities for the AHP.

6.5.1 Key messaging

Key messaging during engagement by SDHUD will be classified as follows:

1. ***Disclosure of project information***: Awareness raising on what the AHP is about. Information should be accessible, clear, consistent, accurate, constant, and transparent. It should also be delivered in an appropriate language and culturally appropriate format (including radio, video, graphics, documentaries, photos, oral presentations).
2. ***Sensitisation:*** Civic education on how the AHP will affect the lives/activities/rights of each target stakeholder group. Aimed at promoting informed participation and decision making.
3. ***Collection of feedback on the program:*** This will be structured to inform specific program components to build ownership with the stakeholder groups.
4. ***Participatory decision making:*** Components that require participatory decision making to meet the legal threshold. Again, this will be structured to legal and regulatory framework in Kenya.
5. ***Seeking common understanding and agreements:*** Targeting potential project partners such as investors, lenders, developers etc.
6. ***When engaging groups at project level, contracting authorities and regulatory agencies will be advised to ensure that all the information is:***
    - Complete, covering the spectrum of potential social, financial, political, cultural, environmental impacts, including scientific information with access to original sources in appropriate language
    - Delivered in a manner that strengthens and does not erode indigenous or local cultures
    - Delivered by culturally appropriate personnel, in culturally appropriate locations and include capacity building of indigenous or local trainers
    - Delivered with sufficient time to be understood and verified
    - Reach the most remote, rural communities, women and the marginalised
    - Provided on an ongoing and continuous basis throughout the project cycle

Figure 33: Considerations for the engagement process

- ***The Engagement Process –*** This Engagement process borrows strongly from community engagement principles of Free Prior Informed Consultation or Free Prior Informed Consent as the particular case requires
- ***Performance Impact –*** The key performance indicators of this aspect are to:
    - Provide evidence of stakeholder engagement
    - Provide a platform for meaningful stakeholder engagement through involvement in decision making on the AHP
    - Promote buy-in to the AHP
- ***Use of Mass Communication –*** The key performance indicators of this aspect are:
    - Cost effectiveness and reach of available mass communication platforms
    - Reach of representative groups
- ***Compliance*** with legal requirements and minimisation of the risk of litigation
- ***Seeking social license –*** Promotion of project acceptance and buy-in. Demonstration of social license attracts investors who are averse to project social risks
- ***Avoiding cost and time over-runs –*** Avoidance of project delays through early identification of project social risks in a bid to resolve them in line with project target timelines

Source: KPMG analysis

6.5.2 Stakeholder meeting management

For stakeholder meetings, the following will be observed:

- Ensuring there is adequate quorum and proper representation of the critical groups prior to commencement of the engagement process. Where attendees do not meet the quorum threshold, the event may be postponed to a more appropriate time
- Clear communication of meeting objectives and confirmation of understanding and concurrence on the agenda
- Setting ground rules of engagement to ensure that all participants adhere to the principles of engagement as required by the project
- Reminding the attendees of the meeting agenda and sticking to it through-out proceedings. For heated issues, there may be need to appoint an unbiased moderator
- Correction of misunderstandings immediately they are identified
- To avoid non-participation by some groups, integration of measures to promote full participation by all individuals including:
  - Break-out sessions into smaller groups
  - Drawing out of quiet participants
  - Set-up of exhibition areas manned by feedback desks for one on one interaction with participants
  - Encouragement of supplementary participation techniques such as handing in of written comments
  - Health breaks incorporated with informal discussions to draw out more debate on issues
- Maintenance of a tone and structure that allows for receipt of feedback on issues raised
- Use of experienced facilitators to ensure consistent flow in discussions without losing track of time or the audience
- Proper documentation of proceedings through documenting minutes of meeting, photos and where possible videos for future reference

6.5.3 Reporting on stakeholder engagement

It will be important to continually monitor the activities and outcomes of the stakeholder engagements. To this effect, individual quarterly reports will be prepared to present;

- Activities conducted during each month
- Reports on public outreach activities (meetings with stakeholders)
- Progress on partnership and other social projects
- Update of database to include new stakeholder groups (where relevant)
- Lessons learnt and corrective actions that should be communicated back to the particular party in delivery of the AHP
- Resources (human and financial) plans for the next quarter

6.5.4 Engagement platforms

Engagement platforms to be applied are presented below:

Figure 34: Proposed engagement platforms

	Round Tables	Workshops	Barazas	Radio / TV	Printed materials	Websites	Interviews	Seminars	Social Media	Official letters	Suggesti on boxes
Disclosure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	---
Sensitisation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	---
Civic education	---	✓	---	✓	✓	✓	---	✓	✓	---	---
Needs assessment	---	✓	---	---	---	✓	✓	✓	✓	---	---
Discussion & debate	✓	✓	---	✓	---	✓	---	✓	✓	---	---
Negotiation & agreement	✓	---	---	---	---	---	---	---	---	---	---
Validation	---	✓	✓	---	---	✓	---	---	✓	✓	✓
Participatory M&E	✓	✓	✓	----	-----	✓	✓	✓	✓	---	✓
Collection of feedback	✓	✓	✓	---	----	✓	✓	✓	✓	✓	✓

Source: KPMG analysis

6.6 Resource allocation

Stakeholder engagement requires setting aside of resources to facilitate its realisation. Organisation and execution of public participation requires allocation of funds and human resources to put in place the required logistical arrangements and provide for time inputs of the relevant expertise.

Based on the budgetary allocation to stakeholder engagement for the particular financial year, a quarterly stakeholder engagement activity schedule will be developed for implementation. Funding for the quarter's activities will be provided prior to the commencement of the quarter.

Collaborative efforts will be made to maximise on resources allocated for mass media such as television, radio, newspaper, SDHUD website and social media accounts.

6.7 Immediate actions for stakeholder engagement

The following activities will be undertaken in the short term:

1. Allocation of a job description to specific individuals within SDHUD and where necessary members of the AHP Steering Committee who would be charged with undertaking stakeholder engagement
2. Establishment of a reporting line aligned to the current SDHUD management structure to ensure that the Permanent Secretary's Office is informed of the latest outcomes of the stakeholder engagement plans and outcomes under the AHP
3. Establishment of quarterly stakeholder engagement schedules and provision of appropriate letters of engagement to the key members tasked with delivery of stakeholder engagement for the AHP
4. Identification of key players within the agencies identified for delivery of the AHP and inclusion of the relevant staff into the sensitisation programs for stakeholder engagement
5. Identification of AHP champions from Government agencies, political groups and civil society to act as ambassadors for promotion of buy-in across the various actors in the program
6. Provision of information for staff sensitisation on stakeholder engagement for the AHP
7. Allocation of adequate space and set-up of a page on the AHP on the SDHUD Website
8. Roll-out of a mass media campaign (television, radio, social media and websites) to sensitise the public on the AHP. Key messaging and conversations around the AHP will cover the basic questions that the general public may want to know. Examples of such issues include:
    - What is affordable housing?
    - Will the units be for sale or rental?
    - When will the program begin?
    - Where will the location of the housing units be?
    - Who is the target group set to benefit from the AHP?
    - What is the decision matrix for who benefits from the AHP?
    - Will people in the private sector have access to these benefits or will it only target civil servants?
    - What mechanisms have been put in place to ensure that the target beneficiaries are the ones who actually get the housing?
    - If the houses can be mortgaged, what are the repayment terms?
    - Will there be incentives to banks to offer mortgage at lowest possible interest rates?
    - What is the plan for services, water, garbage and grounds maintenance?
    - Which government agency will be responsible for delivery of the program?
9. Establishment of virtual and physical contact centres for stakeholders who want to know more about the AHP. This should immediately be followed by dissemination of the contact information to the public.

10. Preparation of '*popular*' or *non-technical* versions of packaged information in printed form on the goals and objectives of the AHP. Information for disclosure should be approved at the appropriate Government levels prior to release to the public under any platform.

7 Housing designs

7.1 Design strategy

A housing unit is considered to be affordable if the total cost to acquire the unit is deemed 'inexpensive' to those within a specified median household income. In developing affordable housing units, the technology adopted for each housing component should be such that the construction technologies suit the level of skills and handling facilities available within each county/cluster.

A logical approach should be adopted in identifying the appropriate technology based on the options available and an analysis of the technical and economic strengths of each option. Key considerations in optimising housing solutions should seek to:

a) Develop an effective mechanism for providing appropriate technology-based shelter particularly to the vulnerable group and economically disadvantaged communities
b) Adopt cost effective construction systems
c) Consider economy in the design of individual buildings, layouts, clusters etc.
d) Consider energy efficiency which has gained considerable importance due to the global climate change agenda.
e) Orientation, built–form, openings and materials play a vital role besides landscaping/outdoor environment
f) Identify optimal space in the design considering efficiency of space and minimum circulation space

7.1.1 Key design principles

The following architectural building design principles adopted from the building design guidelines and development standards as annexed to the DFGs inform the strategies and guidelines adopted for development of the AHP and form the basis of the cost estimates detailed herein:

a) Double loaded corridor

The architectural layout has apartments on either side of the corridor to maximise efficiency.

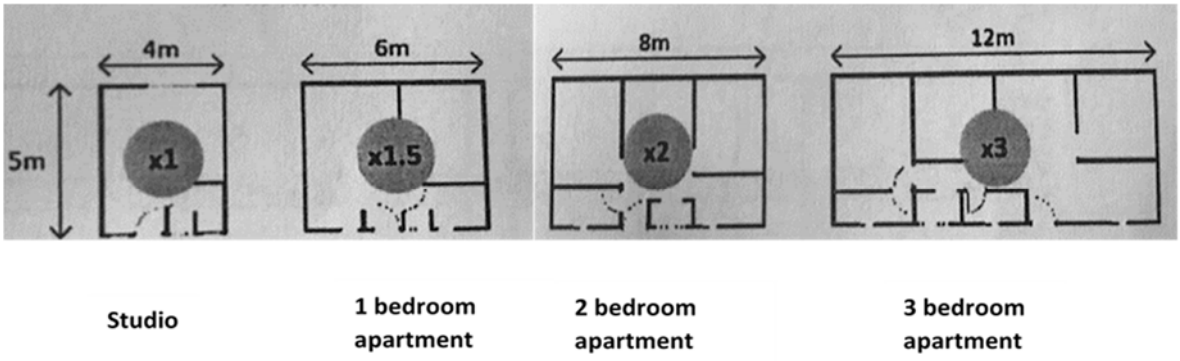
b) Fire strategy

In order to reduce the number of cores and fire exits, the width of the building is linked to the maximum allowed fire exit route.

c) Modular design

A modular design is opted in order to maximise efficiency in terms of structure and utilities. The designs could be improved by increasing the overall units' modular depth from 5m to 6m to allow a slightly bigger kitchen space and circulation space within the units.

Figure 35: Modular house design



Source: DFGs – Building Design Guidelines

7.2 Sustainability

While the costs related to sustainable house construction vary from country to country and across regions, poverty remains as the fundamental barrier to sustainability in low income communities. Every climate and urban situation has its particular potential and limitations. The use of new building materials could stimulate the climate friendly industry, which minimises the amount of energy consumed in the manufacturing of building materials.

A sustainable/green building is one whose construction and lifetime of operation assure the healthiest possible environment while representing the most efficient and least disruptive use of land, water, energy and resources. The optimum design solution is one that effectively emulates all of the natural systems and conditions of the pre-developed site after development is complete.

Below is a compilation of sustainable measures to be taken into consideration at the different levels of construction i.e. urban planning, design, house construction and human behaviour. It must be noted that each climatic zone demands its own sustainability measures and technical features for affordable housing construction.

7.2.1 Design feature

a) Form and orientation

The buildings, rectilinear in form, should be orientated with the long axis along the East-West, with majority openings facing the North-South. This enables maximum exposure to North light and minimises glaring East-West light and incident solar heat gains through glass. Thermal masses should be used along the East and West ends to absorb and radiate heat.

b) Natural lighting

Maximise the use of natural daylighting by optimising solar orientation. The building should be designed such that it maximises penetration of natural daylight into interior spaces. Shades or daylight controls should be provided where these are needed.

c) Structure and aesthetic

The structure and aesthetic of the buildings should be influenced by the use of green building principles and technologies. Expressed structure can be used in combination with recessed skins, allowing for extended overhangs and shading devices to be fixed to the structural elements. Concrete can serve as the major structural component and also act as a major heat store, absorbing and radiating heat throughout the day.

d) Site planning

As far as the site can allow, the scale of the buildings should be placed to allow for East-West running structures. Improved site grading and incorporation of landscape features will help control erosion and reduce heat islands.

e) Access

In line with creating sustainable buildings by using existing infrastructure to minimise the project's environmental footprint, the proposed accesses should be extended from existing roads as opposed to putting up new access roads. The proposed accesses should also reinforce the East-West axis and connect housing blocks along a landscaped boulevard.

7.2.2 Energy efficient design

Energy efficient designs should be incorporated into the site layout and building design so as to reduce non-renewable energy use to meet the building's cooling needs. These can be factored into the designs in the following ways;

a) Passive solar design

Passive solar design can lead to reductions in heating and cooling costs. Shading buildings, reducing the amount of heat absorbed by the building and it surroundings, can further reduce cooling costs.

The proposed designs should also utilise exterior roof materials/roof colours that minimise solar heat absorption i.e. use of flat concrete roofs instead of pitched metal based sheets. Dark, heat absorbing exterior building materials should also be avoided.

b) Orientation of buildings to reduce solar gain

The designs should adopt optimised passive solar orientation, building massing and use of external shading devices such that the buildings minimise undesirable solar gains during the hot seasons while maximising desirable solar gains during wet and cold seasons.

The proposed designs should also optimise building orientation, massing, shape, design, and interior colours and finishes in order to maximise the use of controlled natural day lighting which significantly reduces artificial lighting energy use thereby reducing the buildings internal cooling load and energy use.

c) Recessed facades and vertical shading to East/West portals

The façades on the East/West ends should be deeply recessed, opening into semi enclosed decks. Sun shades can be used to allow diffused light to descend into the functional spaces that flank it. Vertical sun shading can be employed to keep direct low lying sunlight off the façades.

d) Light-Emitting Diode (LED) lighting

LED lamp (or LED light bulb) is a solid-state lamp that uses light-emitting diodes (LEDs) as the source of light. LED lamps offer long service life and high energy efficiency although initial costs are higher than those of fluorescent and incandescent lamps. Chemical decomposition of LED chips reduces luminous flux over life cycle as with conventional lamps.

e) Energy saving lamps to common areas

Energy saving lamps are a source of artificial light that employ advanced technology to reduce the amount of electricity used to generate light, relative to traditional filament-burning light bulbs. In this development, energy saving light fittings should be installed in commons areas e.g. corridors, stairways to reduce power consumption.

7.2.3 Water conservation

a) Rain water harvesting

Kenya is a water scarce country, hence the most readily available water supply from the various water supply companies is unable to meet the current water demand. It has therefore become prudent to explore strategies that can reduce reliance on the potable water supply. Rain water harvesting therefore needs to be incorporated into the project design.

Increased water conservation through rainwater harvesting will reduce reliance on the potable water supply. The pressure on the environment will consequently reduce besides lowering the cost of water as rainwater is free and can easily be collected over the expansive roofed areas of the developments.

b) Low consumption sanitary ware

Implementation of a design that minimises the use of potable water by using low-flow plumbing fixtures, toilets and waterless urinals is proposed. Harvest, process and recycle rainwater, site storm water, and building gray water and identify appropriate uses within the building and site.

Water consumption should be minimised by incorporating low water use sanitary ware such as 6/4litres water closet (WCs) and delayed action wash hand basins (WHBs). In addition, sanitary supply shut off valves and water monitoring systems should also be included to minimise any unnecessary waste of water. Check meters should be provided to allow consumption of the potable water supply to be easily monitored.

7.2.4 Water recycling and package treatment plant

Treatment and recycling of wastewater is only recommended if sewer infrastructure is not readily available from the local authority.

Recycling would require the installation of a packaged wastewater treatment plant which has high initial and operations cost due to power requirements. Recycling would also require separation of the housing plumbing system thus increasing the cost of the housing units.

7.2.5 Solar water heating

Solar water heating systems absorb energy from the sun to heat water. The system often works alongside conventional water heating systems to achieve water temperatures of 65ºC. The necessary equipment does not generate noise and requires little maintenance but does require unobstructed view of the sun. Although the initial cost is currently high, solar water heating is now a legal requirement under the Energy Act 2006 as per Legal Notice No. 3 which came into force on 4 April, 2012, for all buildings where the hot water requirements are above 100 litres. Therefore, this should be incorporated into the designs.

7.2.6 Natural ventilation

a) Natural ventilation through internal streets and atriums

Natural ventilation should be used in preference to mechanical systems which can have high energy demand. Effective natural ventilation also lowers the internal temperature in the buildings and reduces the need for air conditioning which has high energy demand. Previously, air conditioning has used refrigerants that are more harmful to climate change.

Natural ventilation includes a variety of measures including cross ventilation where openings on opposite walls (or even adjacent walls) can draw air through the building, adequate openable window to floor area ratio etc. The designs should maximise the use of operable windows and natural ventilation and provide for dedicated engineered ventilation systems that operate independent of the buildings heating and cooling system.

Ventilation systems should be capable of effectively removing or treating indoor contaminants while providing adequate amounts of fresh clean make-up air to all occupants and all regions of the building. The blocks layout should allow for cross ventilation through the corridor and massing breaks.

7.2.7 Sustainable landscape design

a) Water efficient landscaping

Stunning gardens and beautiful lawns are possible without extensive watering. By applying the principles of xeriscaping, beautiful gardens can be achieved with minimal watering. Xeriscape landscaping is defined as quality landscaping that conserves water and protects the environment. It applies the following principles:

- Using of indigenous plants; indigenous plants adopt to the local climate and therefore require less maintenance
- Using of drought resistant plants; drought resistant plants reduces water needs compared to other species
- Mulching; mulches reduce evaporation by the sun and wind thus retaining water in the soil for longer. This reduces the need for frequent watering
- Use of an automatic and programmed irrigation system to increase efficiency and reduce water wastage
- Grouping of plants according to water needs; this reduces wastage as the irrigation schedule is programmed as per the needs of each area
- Use of rainwater harvesting and reclaimed water for general irrigation

b) Organic landscaping

Fertilisers and pesticides have recently come to play a big role in the creation of beautiful landscapes. However, they often result in air and water pollution. There are four major routes through which pesticides and fertilisers reach groundwater:

- They may drift outside of the intended area when sprayed
- They may percolate or leach through the soil
- They may be carried to the storm water drain as part of runoff
- They may be spilled

Air pollution occurs when particles are carried by wind to other areas, potentially contaminating them.

The use of fertilisers and pesticides may be avoided through the following ways:

- Enforcing a strict quality control on all planting material; all seeds, cuttings and seedlings to be free of weeds and disease to limit the use of pesticides
- Use of farmyard manure or compost manure instead of manufactured fertiliser.

c) Reducing the urban heat island

A significant impact of the built environment is the generation of a heat island, an area of increased ambient air temperature due to absorption and release of the sun's energy by buildings and other man-made structures. Heat islands are most common in urban areas where surfaces are comprised of synthetic materials. In particular, roofing and pavement absorb heat from the sun, especially when their capability to reflect solar radiation is poor.

Trees provide shade that reduces temperatures at the surface. In addition, the transpiration process in plants gives off water that evaporates and cools their surfaces and the surrounding air. The proposed design strives to achieve as much vegetated space as possible and provides shade trees along the walkways and driveway. This shall have a significant positive effect on the microclimate of the proposed development. Additionally, walkway paving materials specified shall be those with a high solar reflectance index (SRI) so as to reduce heat absorption

d) Storm water management

Buildings and other impermeable surfaces such as walkways inhibit storm water infiltration. It is therefore important to create ways through which to reduce the storm water generated by applying several green design technologies such as;

- Using punctuated paving patterns as much as possible to allow water percolation
- Introduction of rain gardens into the landscaped areas; rain gardens (also known as bio-retention areas) are landscaped areas that treat storm water runoff
- Use of three tier planting where possible to increase water infiltration duration.

e) Absorption of vehicular air pollution

Vehicles are a major source of air pollution as they emit, carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOC), and sulphur dioxide (SO_2) which, collectively, contribute in the formation of ozone. The proposed development could result in an increase in the vehicular traffic to the area and this shall result into more air pollution.

Vegetation acts as an air purifier and significantly reduces the quantities of these pollutants that are found in the air. Plants use CO_2 from the atmosphere during photosynthesis to form carbohydrates that are used in plant structure/function and return oxygen back into the atmosphere as a by-product. Plants also eliminate other gaseous pollutants through the stomata in the leaf surface by absorbing them with normal air components.

The design should propose vegetation with dense foliage to provide sufficient absorption surface area for the potential pollutants. In addition all driveways should have a boulevard of trees.

7.2.8 Open car parking

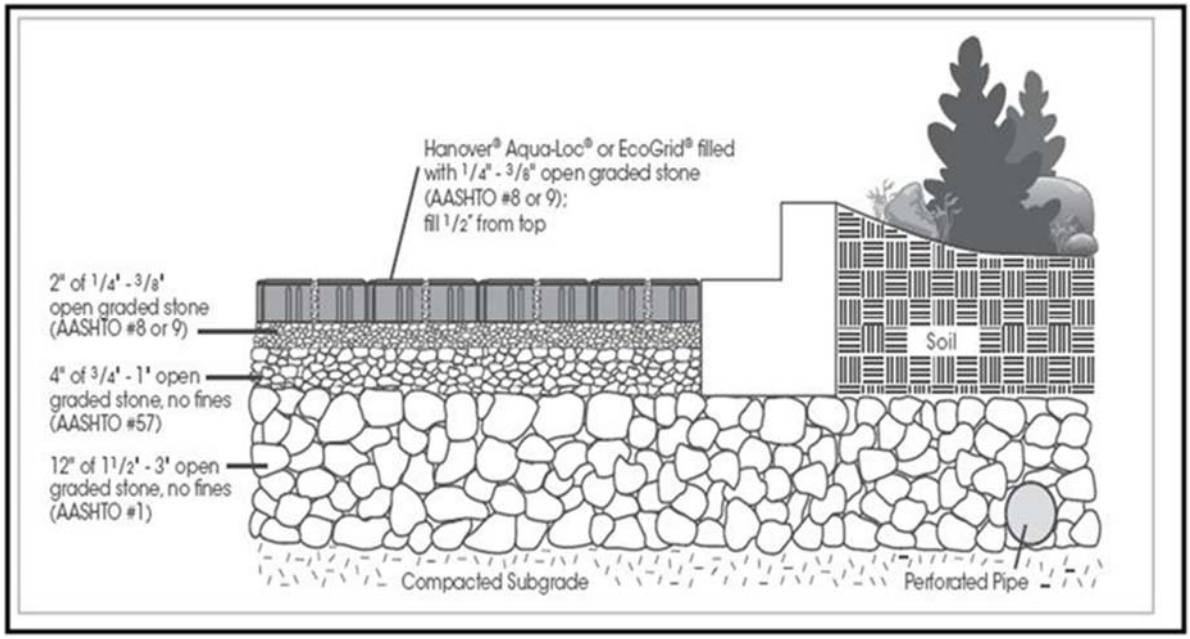
Open car parking spaces are proposed to be located in front of each of the blocks. The parking areas and associated access roads should be provided with 'ecogrid' paving and gravel for total percolation. The paving will provide for efficient storm water percolation back into the groundwater strata.

Figure 36: Permeable paving units

Source: Hanover Architectural Products Brochure

'*Ecogrid*' paving units are normally sized at 11 3/4" x 11 3/4" x 4", hence providing 39% open space for grass tuff or drainage aggregate. The large percentage of open space allows for water to permeate into the sub-soil.

Figure 37: Permeable paving units' pavement profile



Source: Hanover Architectural Products Brochure

7.2.9 Building materials

Low-cost housing projects are characterised by an increasing demand mainly due to urbanisation. The selection of building materials should meet the needs of local conditions to improve quality of life by building new structures and/or by improving existing ones. Sustainability with regards to urban housing intends to develop new approaches to manage human settlements and integrate energy and environmental issues. A balance of environmental, economic and social concerns with technical issues is required to achieve a sustainable housing project.

Research shows that up to 60% of the total cost of a low-income housing project is allocated to engineering design and construction materials. Moreover, walls constitute up to 50% of the total cost of materials and up to 45% of total construction time. Material origin, production techniques and labour requirements all have major impacts on the selection of wall building material. The analysis of particular local conditions will determine where materials are most suitable for their use.

Various studies show that a big variety of wall materials have been used in different building systems with traditional and modern construction methods, but only few of them (burnt bricks, hollow concrete blocks) have successfully been implemented in low-cost housing projects. Conventional materials (e.g. cement, steel, concrete) in low-cost houses constitute up to 98% of the materials used. Non-conventional materials (polymers, composites, recycled) have been left aside despite better thermal and condensation characteristics for local conditions. Alternative designs including use of non-conventional materials have also been left aside despite reduction of construction time of more than 50%.

a) Local materials usage

It is important to note that transportation becomes part of a product or building materials embodied energy. We have, therefore, specified use of locally harvested, mined and manufactured materials and products to support the regional economy and to reduce transportation, energy use and emissions.

Minimal use of non-renewable construction materials and other resources such as energy and water should be considered. This could be achieved through efficient engineering, design, planning and construction as well as effective recycling of construction debris coupled with maximised use of re-usable, renewable, sustainably managed, bio-based materials.

Human creativity and abundant labour force is perhaps the most valuable renewable resource. The best solution is not necessarily the one that requires the least amount of physical work.

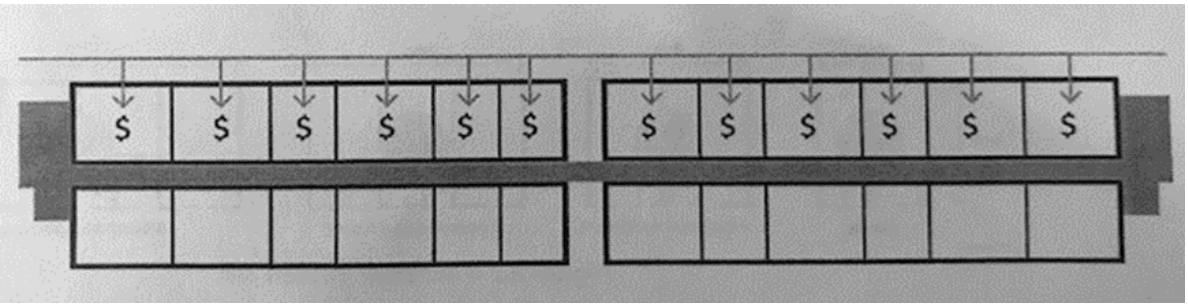
b) Low maintenance finishes

The buildings' envelope are intended to be aesthetically pleasing as well as contribute to better performance of the development. To achieve this, the materials have been chosen based on their performance weighed against low embodied energy count, hence locally produced versus imported and recyclability. This is to ideally keep the carbon footprint low.

7.2.10 Economic Sustainability

As a source of income of the tenants, ground floor bays facing the street will be utilised as stores as shown below:

Figure 38: Ground floor bays



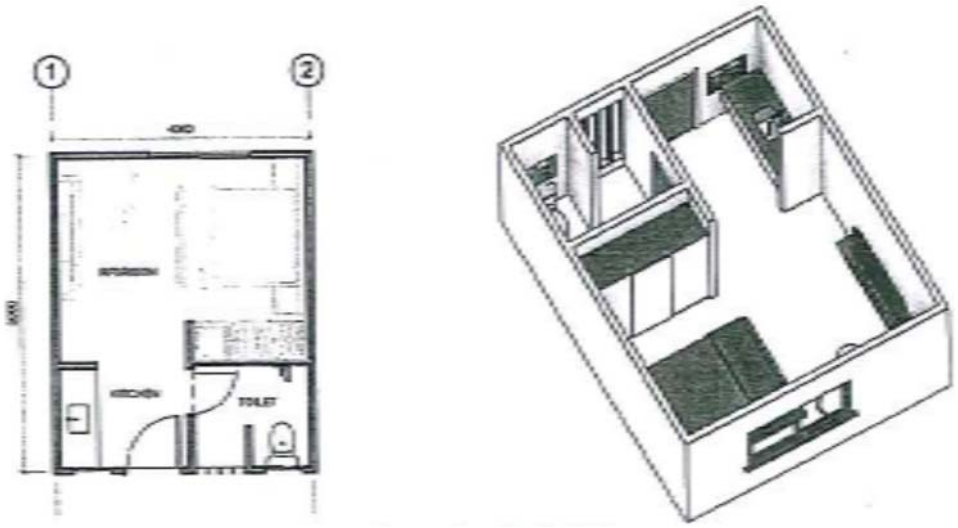
Source: DFGs – Building Design Guidelines

7.3 Unit typologies

Although majority of the surveyed respondents preferred a three bedroomed unit, the cost estimates presented in this report cover all typologies in all the 10 clusters. The following unit typologies and areas proposed in the DFGs have informed the housing unit designs and subsequently formed the basis of the cost estimates:

7.3.1 Studio

Figure 39: Studio unit



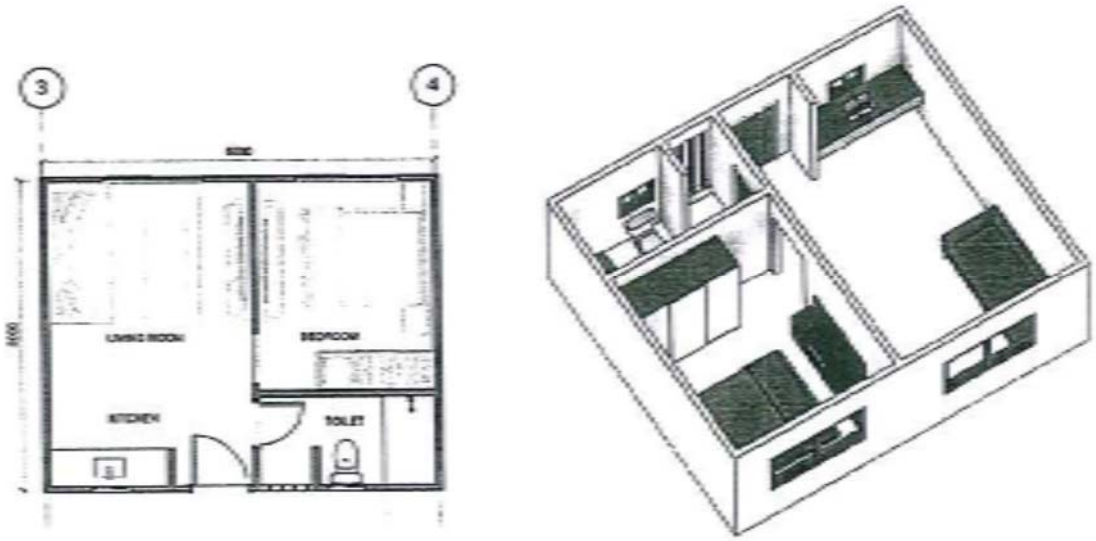
Source: DFGs – Building Design Guidelines

Table 31: Studio unit - room's area

Room	Area (sqm)
Bedroom	12.5
Kitchen	3.14
Bath	2.9
Total	**18.54**

7.3.2 One bedroom apartment

Figure 40: One bedroom unit



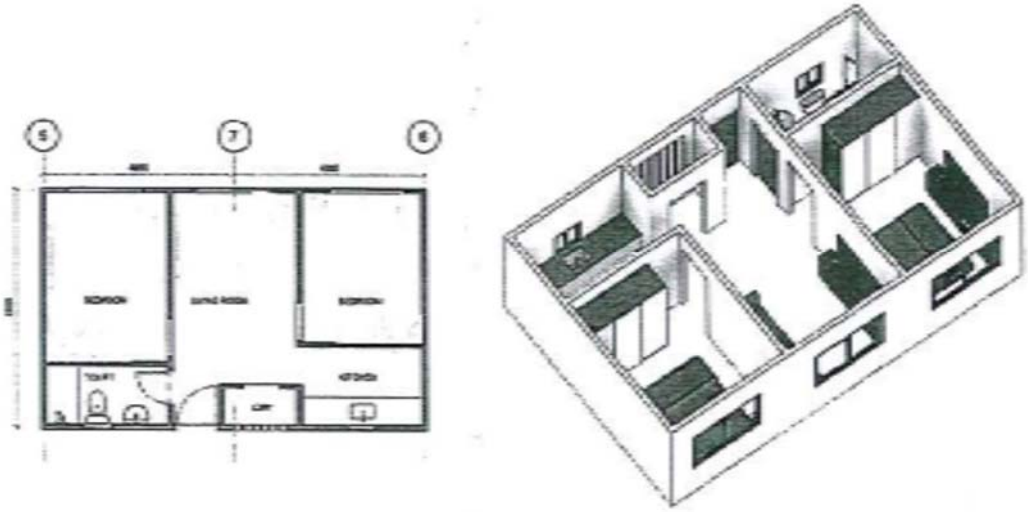
Source: DFGs – Building Design Guidelines

Table 32: One bedroom unit - room area

Room	Area(sqm)
Living/Dining	10.6
Bedroom	9.2
Kitchen	4.6
Bath	3.8
Total	**28.2**

7.3.3 Two bedroom apartment

Figure 41: Two bedroom apartment typology



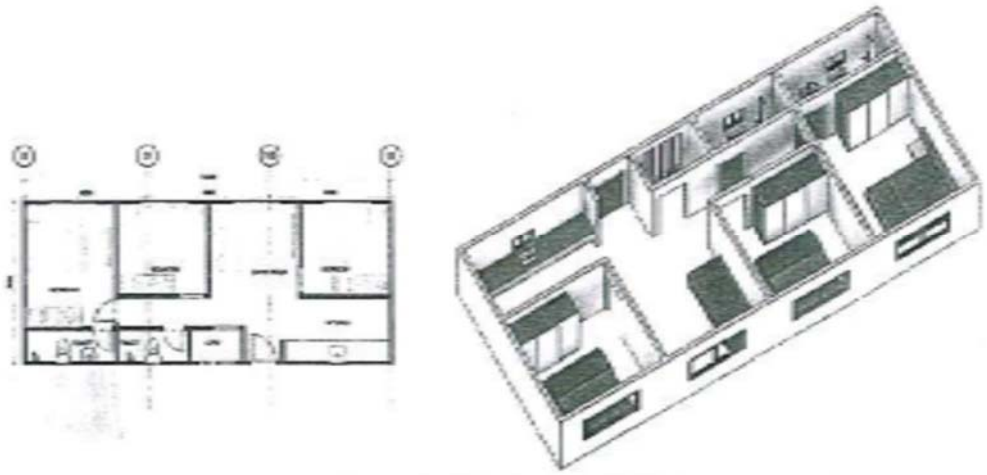
Source: DFGs – Building Design Guidelines

Table 33: Two bedroom unit – room area

Room	Area (Sqm)
Living/Dining	10.6
Bedroom 1	9.1
Bedroom 2	8.05
Kitchen	4.1
Laundry	1.05
Bath	3.14
Total	**36.04**

7.3.4 Three bedroom apartment

Figure 42: Three bedroom unit



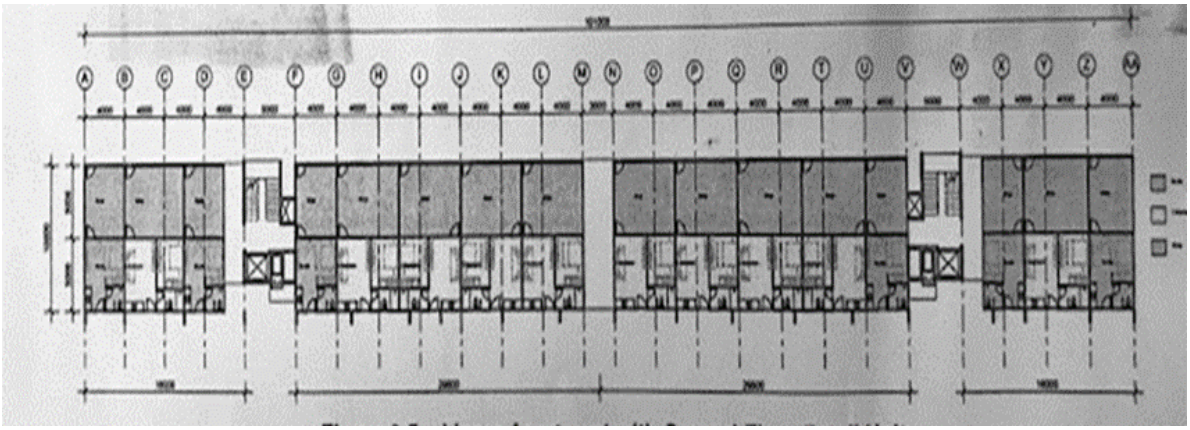
Source: DFGs – Building Design Guidelines

Table 34: Three bedroom unit – room area

Room	Areas (sqm)
Living	8.55
Bedroom 1	11.1
Bedroom 2	8.2
Bedroom 3	8.3
Kitchen/Dining	7.4
Laundry	1.6
Bath 1	2.8
Bath 2	2.2
Total	**50.15**

7.3.5 Linear apartment with ground floor retail unit

Figure 43: Linear apartment with ground floor retail unit

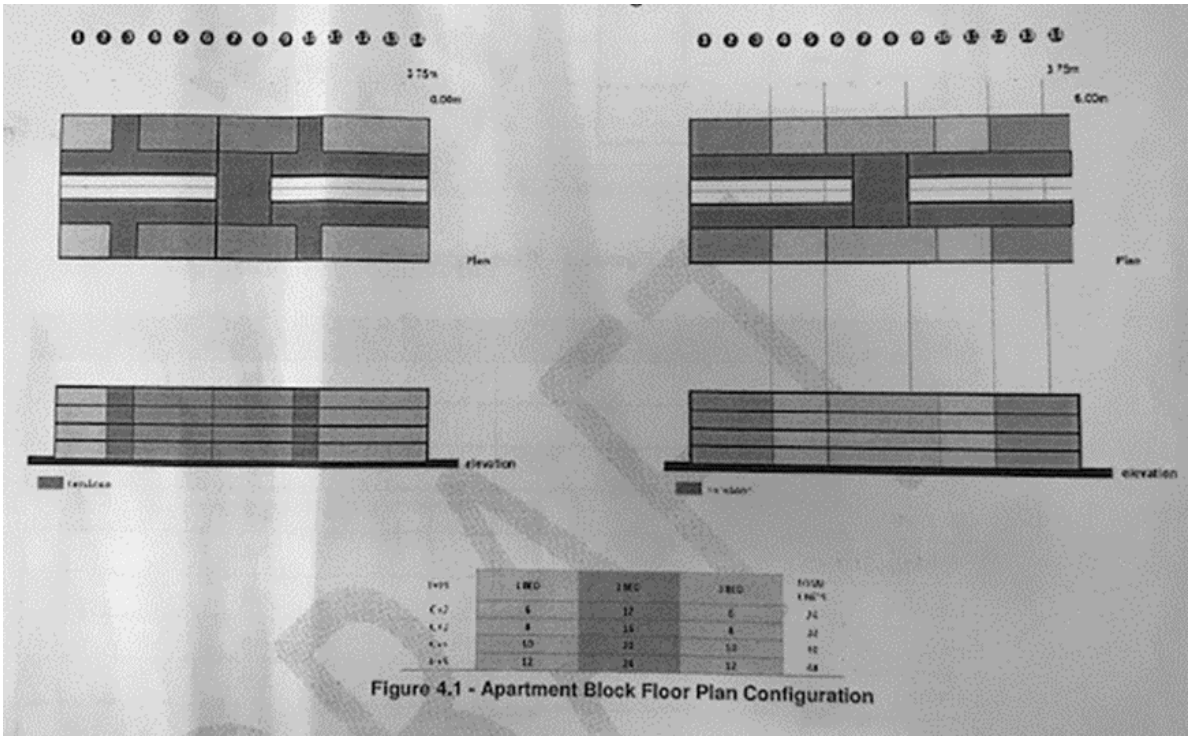


Source: DFGs – Building Design Guidelines

7.4 Typical floor plans

7.4.1 Apartment block floor plan configuration

Figure 44: Apartment block floor plan configuration

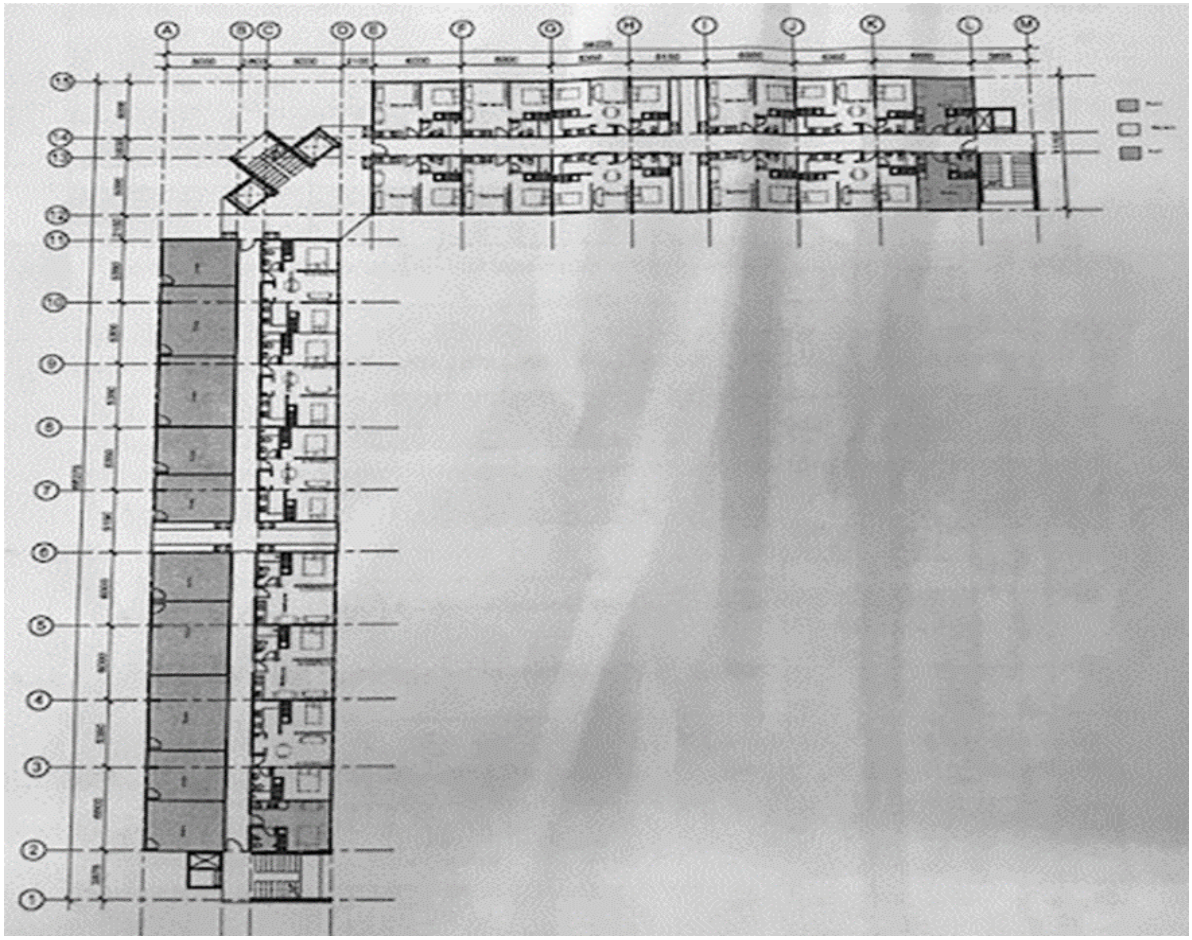


Source: DFGs – Building Design Guidelines

7.4.2 Typical floor plan configuration

7.4.2.1 L-Shaped typical ground floor plan with retail units

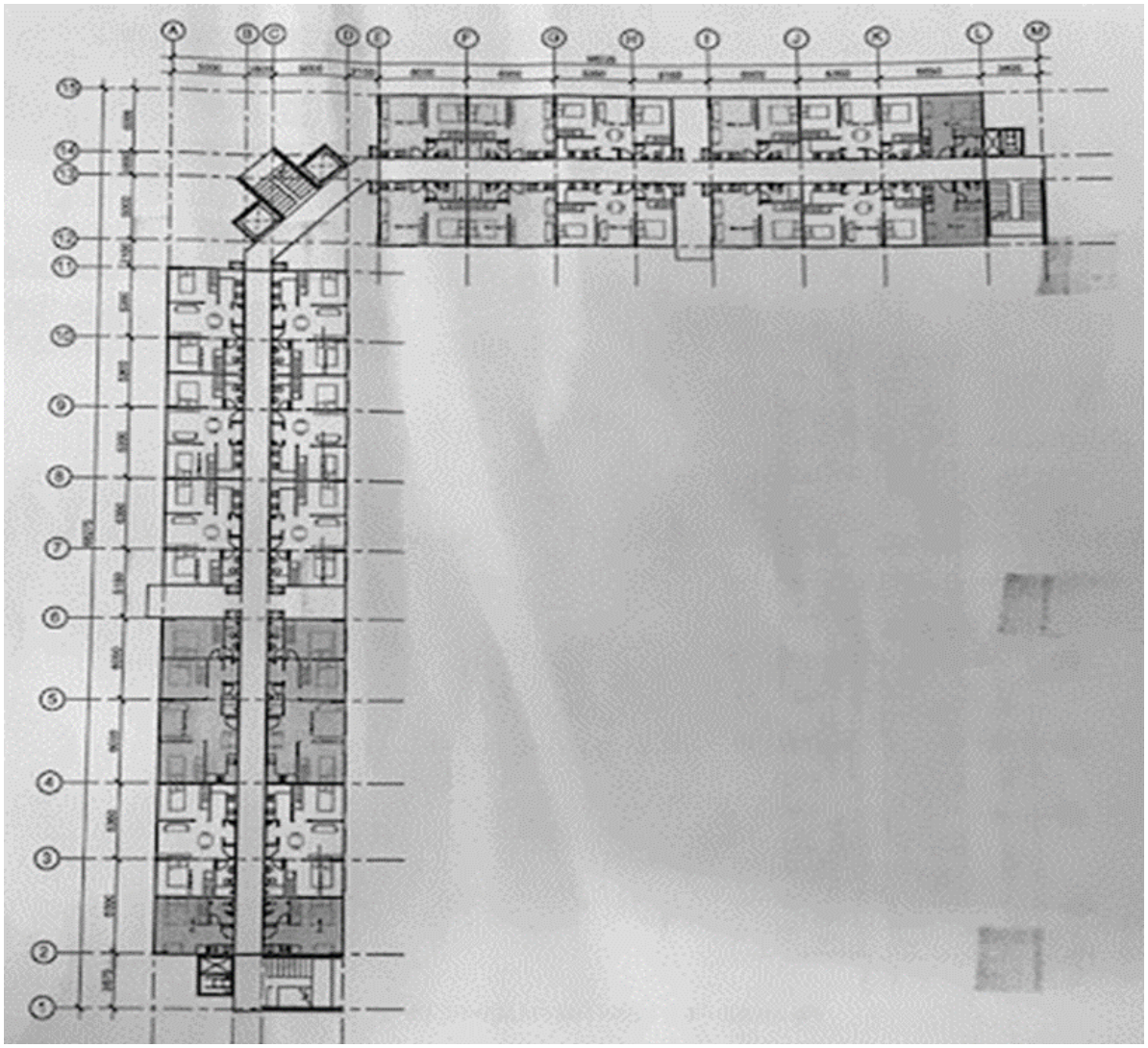
Figure 45: L-Shaped typical ground floor plan with retail units



Source: DFGs – Building Design Guidelines

7.4.2.2 L-Shaped typical floor plan

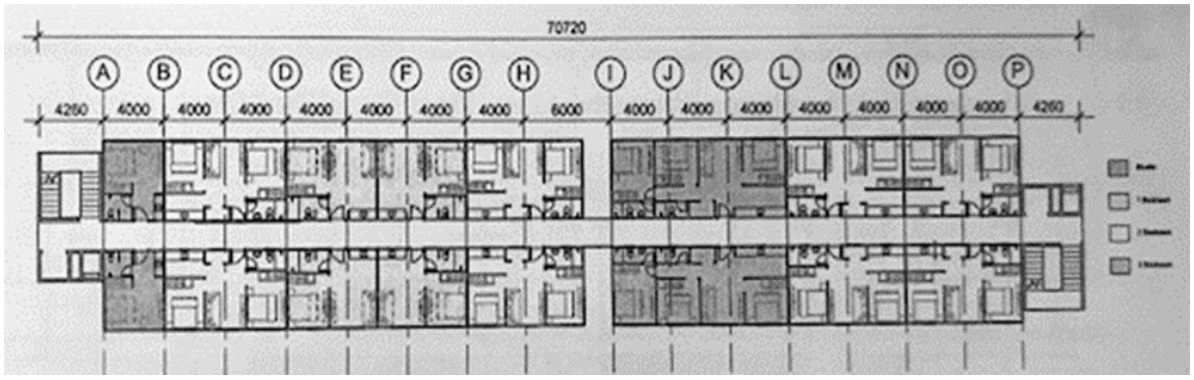
Figure 46: L shaped typical floor plan



Source: DFGs – Building Design Guidelines

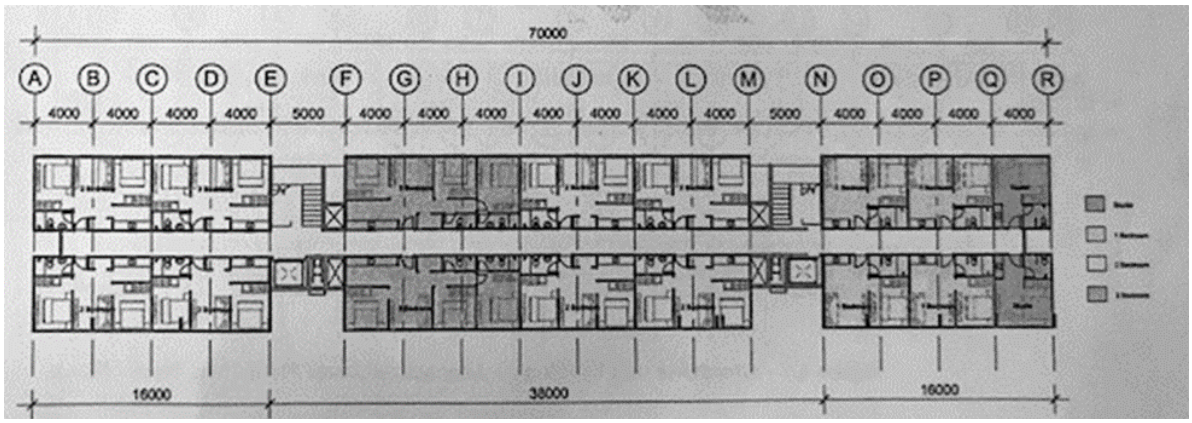
7.4.2.3 Affordable housing unit typology

Figure 47: Linear floor plan option 1



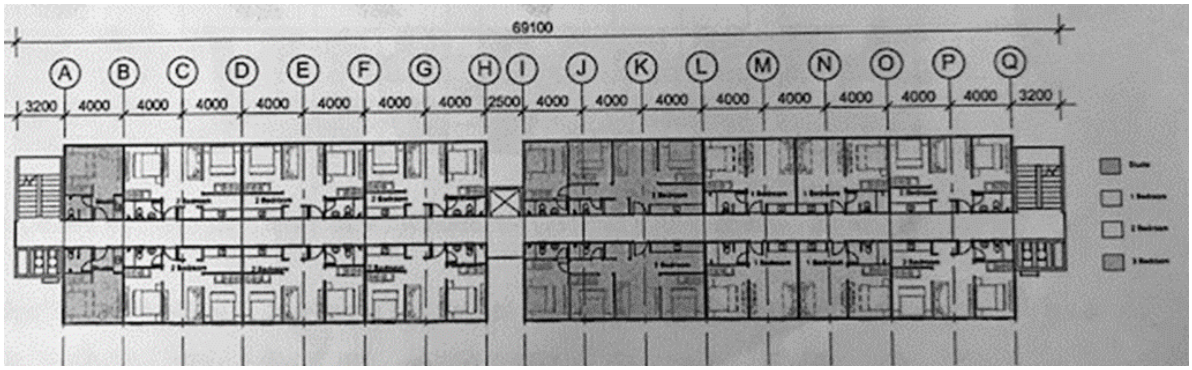
Source: DFGs – Building Design Guidelines

Figure 48: Linear floor plan option 2



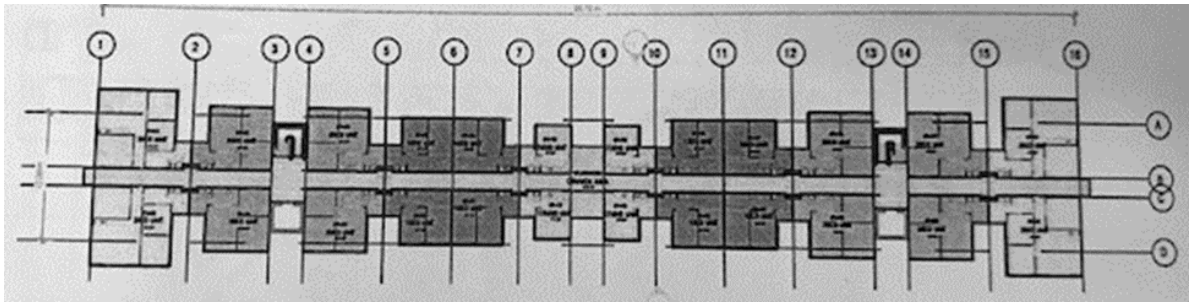
Source: DFGs – Building Design Guidelines

Figure 49: Linear floor plan option 3



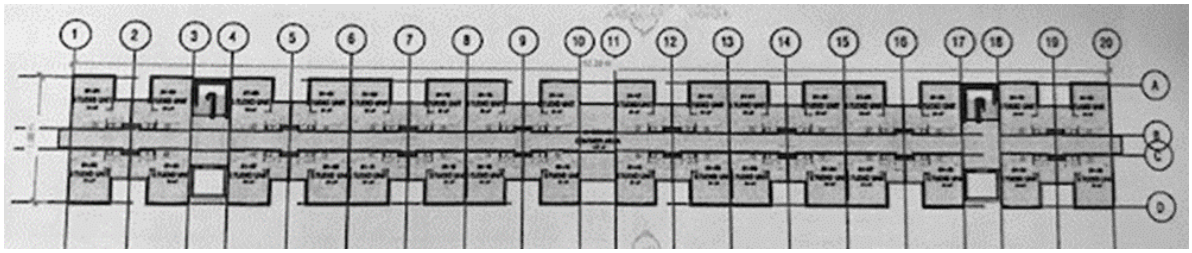
Source: DFGs – Building Design Guidelines

Figure 50: Alternative linear floor plan - mixed block



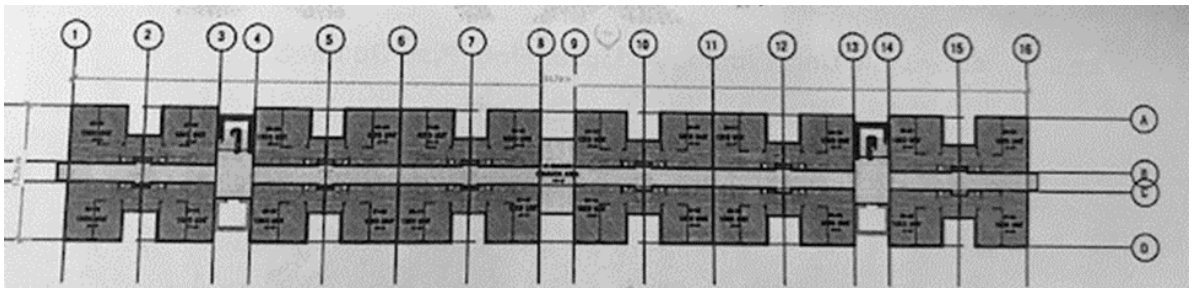
Source: DFGs – Building Design Guidelines

Figure 51: Alternative linear floor plan - studio block



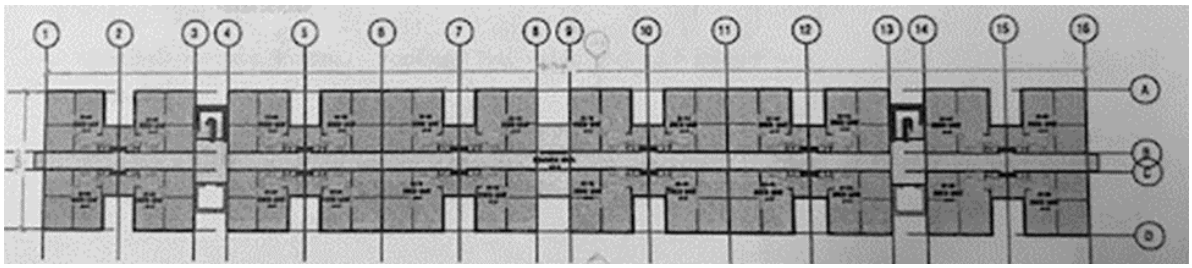
Source: DFGs – Building Design Guidelines

Figure 52: Alternative linear floor plan – one bedroom block



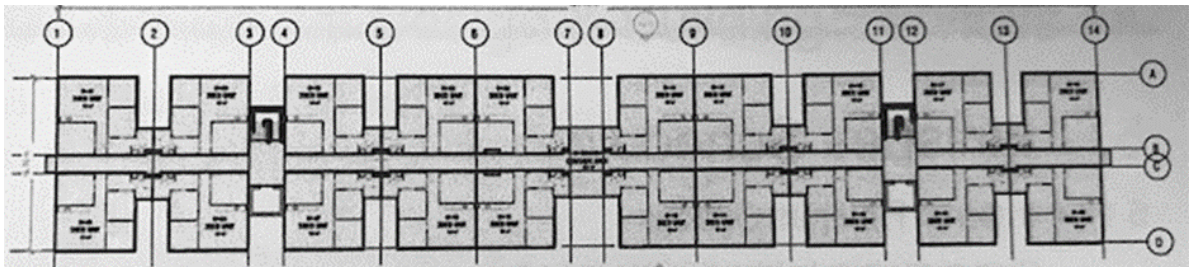
Source: DFGs – Building Design Guidelines

Figure 53: Alternative linear floor plan – two bedroom block



Source: DFGs – Building Design Guidelines

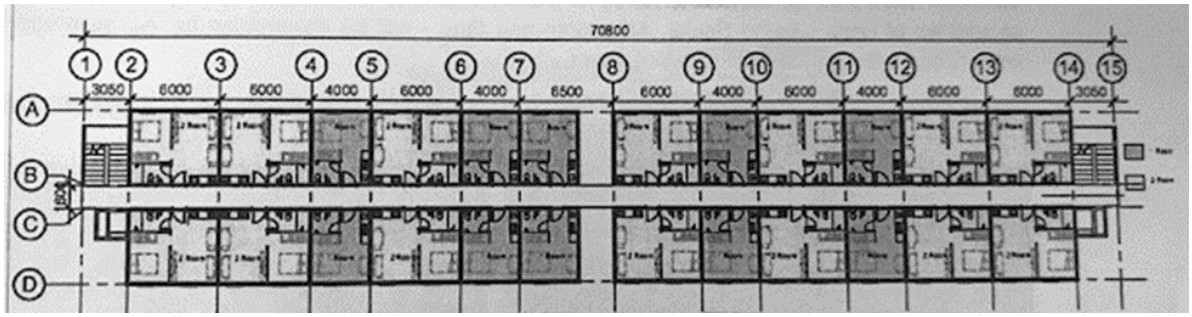
Figure 54: Alternative linear floor plan – three bedroom block



Source: DFGs – Building Design Guidelines

7.4.2.4 Social housing unit typology

Figure 55: Linear floor plan configuration 1 and 2 room units



Source: DFGs – Building Design Guidelines

7.5 Building material selection

The selection of building materials can promote better quality of structures, faster construction solutions and foster new economic development. This selection will have to deal with "appropriateness" and "adequacy" within energy efficiency and environmental approaches for local conditions (social, economic, financial, institutional, environmental, etc.). In line with these concepts, the materials proposed to be utilised for construction of the AHP are shown below:

The materials proposed to be utilised for construction of the AHP are shown below:

Table 35: Proposed construction material

Component/structure	Building materials
Foundation	• Roller compacted hardcore fill treated with gladiator insecticide to manufacturers specifications • 1000 gauge polythene damp proof membrane laid on well compacted hardcore fill • Reinforced concrete (RC) • Steel • Cement • Sand • Aggregate
Damp proof course	• Bitumen based damp proof courses • Damp proof membranes: 1000 - gauge plastic sheeting
Floor	• Reinforced concrete (RC) slab • Finishes: Ceramic tiles
Walls	• Natural grey stone 200mm thick for walls under ground floor slab /load bearing walls • Natural machine dressed/concrete blocks 150mm/100mm thick for internal partition walls
Slabs, beams and columns	• Reinforced concrete (RC)
Staircase	• Reinforced concrete (RC)
Joinery/timber works,	• Locally availble blockboards
Doors	• Flush doors internal • Steel casement external
Windows	• Steel casement
Roof	• RC concrete

Source: KPMG analysis

7.6 Finishes options

Transportation is part of a product or building finishes cost including energy. Therefore, finishes manufactured locally, products that support the regional economy and those that reduce transportation, energy use and emissions should be adopted. Recommended minimum standards for internal finishes for the AHP include:

- Tiles for floors
- Plaster and paint for walls
- Plaster and paint on RC soffits (underside of slabs) of ceiling

Recommended minimum standards for external finishes for the AHP:

- Key pointing for walls
- Precast interlocking tiles on waterproofed roof surface.

7.7 Materials availability in counties

From the Survey data collected from the counties, KPMG has established that different clusters use different materials for construction specifically with respect to the walling elements.

Table 36: Construction material available and used in various clusters

Region / Element	1	2	3	4	5	6	7	8	9	10
Substructures	Murram & red soil			Red soil	Murram & red soil	Murram & rock	Red soil		Murram soil	Murram & red soil
Walling	Coral stone	Masonry blocks						Brick wall	Masonry blocks	
Roofing & cover	Flat roof slabs									
Windows	Mild steel casement									
Doors	Mild steel door & flush door									
Floor finishes	Ceramic tiles									
Wall finishes	Plaster & paint									
Joinery	Veneered block-boards									

Source: KPMG Survey and analysis

7.8 Structural engineering

In this study, an efficient analytical model for the dynamic analysis of medium height buildings structural frame system (3-D space frame structures) has been envisaged based on the proposed architectural designs. The basic objective is to produce an efficient structural system, capable of resisting specified applied loads without failure during its intended lifecycle. The following design principles have been applied:

a) Standardised construction system
b) Use of local / regional materials
c) Use of well proven building techniques
d) Consideration of climatic design aspects
e) Structural design with respect to earthquake sensitivity where necessary
f) Easy maintenance considerations.

7.8.1 Structural framework & in-fill

The structural system adopted is based on a reinforced concrete column/beam framework with solid slabs. The main elements of this are:

a) Typical floor slabs are designed as solid concrete slabs on main down stand beams and secondary beams
b) Vertical loads are transferred to foundations through slabs, beams and columns
c) Foundations are designed as individual pads and combined footings
d) Block in-fill with traditional stone
e) Mix of off-site and on-site construction methods.

7.8.2 Other proposed interventions

In addition to efficient structural system, other infill material interventions can be employed to manage costs. These include:

- Reduce wet work trades on site which accelerates the overall programme thereby saving on time related costs
- Create factory conditions for increased quality thereby reducing on remedial work/rework
- Adopt just in time principles when placing orders for offsite fabrications
- Standardisation principles reflected in design such as optimal space vis-a-vis design efficiency

7.9 Building and cost estimates

7.9.1 Rates and prices

7.9.1.1 Basic rates

The rates have been developed mainly from unit prices of materials collected from the developer's Survey conducted in across the country. The cost of labour, equipment, contractor's overheads and profit was then added to the unit price of material to form the basic rate for the item.

The main differences in rates for different regions/ clusters were as a result of:

a) Differences in prevailing socio-economic activities – Prevailing economic activities determine a people's buying and spending power as well as the cost of living which directly determine cost of labour and doing business. The cost of construction per sqm for cluster 10 (Nairobi and Kiambu) was found to be significantly higher than that of cluster 8 (Bungoma, Busia, Kakamega and Vihiga).

b) Underlying geological structure – This determines availability of naturally occurring materials as well as the nature of foundations. It should be noted that different underlying geological

structure affects the nature and type of building foundations as well as extent of excavations for foundations. Typically, the cost of construction per sqm for cluster 4 (Embu, Kirinyaga, Meru, Murang'a, Nyeri and Tharaka Nithi) is significantly lower than cluster 6 (Elgeyo Marakwet, Samburu and Turkana) owing to availability of naturally occurring construction materials such as masonry blocks in cluster 4.

The above and other clustering indicators with lesser implications on the rates are discussed in Annexure I of this report.

In areas where Survey data collated was inconsistent or inaccurate, historical cost data was used in developing the estimates. This cost data has been combined with other supplemental information available such as:

- Actual construction project cost information from other completed or ongoing projects
- Published cost estimating data
- Construction cost indexes
- Manufacturer's catalogue information including price information.

7.9.1.2 Unit rate composition

The unit prices used in our estimates have factored in the unit prices for material, labour, and equipment, overhead and profit.

7.9.2 Estimating

7.9.2.1 Historical bid based estimating considerations

In preparing the estimates, KPMG considered bids received for like items on recent projects (within the last three years) built under similar conditions that fairly represent the contractor's cost plus a reasonable profit.

The following factors were considered in deciding whether it is appropriate for a historical rate or price to be applied to a new estimate:

- Direct costs (labour, plant and materials)
- Onsite overheads (indirect costs)
- Offsite overheads and profit
- Market conditions
- Age of data
- Similarity of work items
- Changes in technology, methodology, materials, plant and machinery.

The average of the lowest bids received on previous projects in similar locations was used for benchmarking, factored for project conditions and cost indices, as a basis for the anticipated minimum overall cost for current projects.

7.9.2.2 Estimating unique items

For items of work that have little or no historical data to aid in establishing unit prices, information was gathered from suppliers and an appropriate overhead and profit added to the estimated cost.

7.9.2.3 Unit price estimating

Each cluster's estimate has been divided into 11 discrete work items, and a "unit price" has been allocated for each item to give a cost per Square Metre (sqm). The overall cost per sqm is then multiplied by the total built up area of units proposed per cluster to find the total construction cost of the anticipated housing projects.

The discrete work items identified include:

a) Substructures
b) Reinforced concrete frame
c) Walling
d) Roofing structure, cover & rainwater goods
e) Windows

f) Doors
g) Floor finishes
h) Wall finishes
i) Joinery fittings
j) Mechanical & electrical installations
k) External works (foul water drainage, parking & driveways, storm water, basic landscaping)
l) Preliminaries.

The unit cost per sqm for each cluster is summarised in the table below.

Table 37: Unit construction cost per sqm for each cluster

Cluster	1	2	3	4	5	6	7	8	9	10
County	Mombasa	Kwale Taita Taveta Kilifi Lamu	Isiolo Mandera Tana River Wajir Garissa Marsabit	Embu Kirinyaga Meru Murang'a Nyeri Tharaka Nithi	Kajiado Machakos Kitui Makueni Laikipia	Elgeyo Marakwet Samburu Turkana	Bomet Nakuru Nandi Trans Nzoia Uasin Gishu Kericho	Bungoma Busia Kakamega Vihiga	Homa Bay Kisumu Migori Siaya Kisii Nyamira	Nairobi Kiambu
Typologies	**Ksh**									
3 bedrooms	45,975	46,250	55,671	48,229	50,055	56,579	49,045	45,832	48,172	50,198
2 bedrooms	47,354	49,455	57,342	49,956	51,557	58,276	50,516	46,958	49,617	51,704
1 bedroom	48,733	50,896	59,012	51,123	53,058	59,974	51,987	48,582	51,062	53,210
Bedsitter	50,113	52,336	60,682	52,570	54,560	61,671	53,459	49,957	52,508	54,716
Single unit	36,779	38,748	45,019	38,870	40,426	45,741	39,596	36,942	38,929	40,555
Double unit	35,818	37,740	43,853	37,843	39,370	44,591	38,559	35,981	37,920	39,499

Source: KPMG Survey and analysis

Table 38: Construction cost per unit typology for each cluster

Typology	Construction cost per cluster (Ksh)										Average cost (Ksh)
	1	2	3	4	5	6	7	8	9	10	
3 bedrooms (50.15m^2)	2,305,636	2,319,432	2,791,919	2,418,696	2,510,255	2,837,430	2,459,584	2,298,469	2,415,829	2,517,422	2,487,467
2 bedrooms (36.04m^2)	1,706,639	1,782,369	2,066,588	1,800,406	1,858,099	2,100,275	1,820,592	1,692,348	1,788,205	1,863,404	1,847,893
1 bedroom (28.2m^2)	1,374,278	1,435,260	1,664,129	1,441,668	1,496,242	1,691,255	1,466,039	1,370,007	1,439,959	1,500,514	1,487,935
Bedsitter (18.54m^2)	929,086	970,313	1,125,040	974,645	1,011,540	1,143,380	991,121	926,198	973,490	1,014,428	1,005,924
Single unit (14m^2)	514,908	542,478	630,262	544,179	565,967	640,376	554,339	517,189	544,999	567,768	562,247
Double unit (21m^2)	752,171	792,537	920,911	794,712	826,780	936,412	809,733	755,593	796,318	829,481	821,465

Source: KPMG Survey and analysis

The detailed cost per square metre for each region is presented in Appendix II of this report.

7.9.3 Preliminaries

Preliminaries are an important and significant component of any cost estimate. They include items/costs that are required to run and manage the physical works both fixed and/or time-related. These include but are not limited to:

- Site establishment, operation (e.g. time-related costs like site sheds, phones or photocopying), site disestablishment (i.e. general demobilisation from the site after the project is complete) and clean-up
- Site management (non-manual labour)
- Bonds and insurances taken by the contractor
- Permits if not already obtained (e.g. building permits)
- The cost of preparing and maintaining quality, health and safety, security, temporary erosion and sediment control, temporary traffic management plans
- Preparation of work schedules and reports.

A 5% cost of the sqm cost has been applied on each regional cost to cover for the above preliminaries.

7.9.4 Contingency

The contingency mark-up encompasses the planning level contingency and contractor contingency. The planning level contingency accounts for the uncertainty of the cost estimate due to the basic level of design development appropriate at the planning level. On the other hand, the contractor contingency allows for uncertainty in the final contract cost due to market conditions at the time the project is bid and for potential changes to the project during the construction stage (change orders).

The management of the contingency is critical to the success of the project and should be monitored on a continuous basis. It is important to note that the contingency fund is included in the construction budget to address risks and unforeseen events that may occur during a project. Contingency is risk dependent and, therefore, not a budget allowance. A contingency amount of 7% of the sqm cost has been factored on the overall rate of construction for each region.

7.9.5 Value Added Tax (VAT) and other levies

The unit rates include VAT at the prevailing rate of 16%.

It should be noted that to attain cheaper construction, the Government should take bold steps to reduce VAT on locally manufactured materials, levies such as cess (local taxes) charged on locally available materials including sand and masonry blocks as well as import duties on main imported construction materials such as steel, cement and paints. It should also be noted that the benefits of reduced rating will only be fully realised where a VAT registered contractor undertakes the work. Where work is undertaken by a non-VAT-registered contractor, it will not be possible to recover the VAT paid on the purchase of materials.

7.9.6 Market conditions

Construction market conditions tend to follow the overall economy. In times of recession or slow economy, prices tend to drop because demand is down. Conversely, in times of economic boom, prices tend to rise as a result of increased demand.

The costs provided have taken account of the current (quarter 2 of 2018) weak market conditions being experienced.

7.9.7 Risk

Risk is always a significant factor in determining a project's cost. Any transfer of risk to a contractor will likely result in a higher price for the work. Stringent work requirements, liquidated damages, excessive retention and extreme bonding requirements indirectly affect a project's risk and cost.

7.9.8 Conclusion and recommendations

The development of new urban residential areas is an organisational and technical challenge and all stakeholders must be involved in planning. The Government must facilitate the establishment of

sustainable communities. Cost-effective and alternative construction technologies, which apart from reducing construction cost by reducing the quantity of building materials through improved and innovative techniques, can play a great role in providing better housing and protecting the environment.

This report recommends adoption of cost effective, innovative and environment-friendly housing technologies under the AHP as below:

i. Design interventions

- Reduction of unit sizes by using design guidelines as opposed to building codes
- Using passive design principles of green buildings therefore reducing sustainability costs
- Using green building principles that reduce operations and maintenance costs
- Use of locally available materials for construction, therefore reducing the building costs by saving on transportation costs
- Use of modular design principles hence standardise building components thereby maximising in terms of structure and utilities

ii. Cost interventions

These have been grouped in three categories:

a) Those that have direct impact on the construction cost (CAPEX) and whose cost implications can be deduced at budgeting stage. An example is the reduced VAT on all VATable building components. This has been seen to substantially bring the costs down as illustrated in the table below where a zero VAT scenario has been show :

Table 39: Effect of zero rating VAT on the per sqm construction costs

TYPOLOGY	SINGLE ROOM UNIT (14 sqm)		DOUBLE ROOM UNIT (21 sqm)		BEDSITTER UNIT (18.54 sqm)		ONE BEDROOM UNIT (28.2 sqm)		TWO BEDROOM UNIT (36.04 sqm)		THREE BEDROOM UNIT (50.15 sqm)	
	With VAT (Ksh)	Without VAT (Ksh)	With VAT (Ksh)	Without VAT (Ksh)	With VAT (Ksh)	Without VAT (Ksh)	With VAT (Ksh)	Without VAT (Ksh)	With VAT (Ksh)	Without VAT (Ksh)	With VAT (Ksh)	Without VAT (Ksh)
Region 1	514,908	443,886	752,171	648,423	929,086	800,936	1,374,278	1,184,723	1,706,639	1,471,241	2,305,636	1,987,617
Region 2	542,478	467,654	792,537	683,221	970,313	836,477	1,435,260	1,237,293	1,782,369	1,536,525	2,319,432	1,999,511
Region 3	630,262	543,329	920,911	793,889	1,125,040	969,862	1,664,129	1,434,594	2,066,588	1,781,541	2,791,919	2,406,827
Region 4	544,179	469,120	794,713	685,097	974,645	840,211	1,441,668	1,242,817	1,800,406	1,552,074	2,418,696	2,085,083
Region 5	565,967	487,903	826,780	712,741	1,011,540	872,017	1,496,242	1,289,864	1,858,099	1,601,809	2,510,255	2,164,013
Region 6	640,376	552,048	936,412	807,252	1,143,380	985,672	1,691,255	1,457,979	2,100,275	1,810,582	2,837,430	2,446,060
Region 7	554,339	809,733	809,733	698,046	991,121	854,415	1,466,039	1,263,827	1,820,592	1,569,476	2,459,584	2,120,331
Region 8	517,189	445,852	755,593	651,373	926,198	798,447	1,370,007	1,181,040	1,692,348	1,458,921	2,298,469	1,981,439
Region 9	544,999	469,827	796,318	686,481	973,490	839,215	1,439,959	1,241,344	1,788,205	1,541,556	2,415,829	2,082,611
Region 10	567,768	489,455	829,481	715,070	1,014,428	874,507	1,500,514	1,293,546	1,863,404	1,606,383	2,517,422	2,170,191

Source: KPMG Survey and analysis

b) Those that have an indirect impact on the construction cost and whose cost implication cannot be deduced at budgeting stage but are known to create an enabling environment hence lowering construction costs. These include:

   i. Zero rating of importation duties on construction equipment
   ii. Fewer statutory approvals without compromising standards

c) Those that require multi-sectoral interventions to lower construction costs. These include:

   i. Incorporation into the Building Code of new/modern building technologies that are known to reduce costs such as bamboo, recycled waste material
   ii. Subsidising of production costs of new/modern building materials and technologies that are known to reduce costs such as expanded polystyrene panels
   iii. Lowering of energy tariffs which have a direct impact on manufacture of construction materials.

7.9.9 Review of regulatory framework

To adopt the design interventions proposed, national laws as well as codes governing building construction will need to be reviewed to suit new functional/performance requirements which are geared towards minimising costs and accepting emerging technologies. New regulations will need to be entrenched and applied in the provisions of DFGs and the designs review and approval process. The following applicable National Codes and Standards requires amendment:

i. The 1968 Code

The Kenya Building Code (Building) order 1968 and the Local Government (adoptive By-laws) Local Government (Adoptive) Building By-Laws 1968 should be reviewed to accommodate reduced spatial provisions for habitable rooms.

ii. The physical planning rules

The physical planning (building and development) (Control) rules, 1998 the Physical Planning Act would require revision to accommodate new densities as a response to population growth and rapid urbanisation.

iii. Environmental Management & Coordination Act

Regarding entitlement to a clean and healthy environment, this law requires that any on-going project be subjected to an environment audit in accordance with the provisions of the Act. This Act should be enhanced to incorporate best practices for green buildings and sustainable construction.

iv. Energy Act 2006

Energy Act 2006 as per Legal Notice No. 3 which came into force on 4 April, 2012, addresses renewable energies, energy efficiency and conservation. This regulation shall require enforcement to the letter to realise maximum efficiency gains.

8 Key interventions to encourage the private sector to engage in development of affordable housing

Successful delivery of a project of such magnitude will require the involvement of both the private and public sector actors with each playing various key roles. Private sector participation in the real estate market has been skewed to benefit the middle to high end income earners as this segment offers the highest returns. In order to stimulate private sector participation in the low cost affordable housing project, the Government will need to create an enabling environment that will benefit these players. Key interventions to consider include:

Table 40: Proposed incentives and interventions

No.	Incentive	Intervention
1	**Serviced land for housing development –** There is limited supply of serviced land particularly in urban areas which has resulted in high cost of land for real estate development. Cost of land is estimated at 30% of the total development cost. Further, lack of requisite infrastructure on the available land, necessitates additional investment by the housing developers. These associated construction costs incurred by the developers are then passed on to the end user through marked up house prices	– Establishment of a land bank – The Government should consider availing serviced land for housing development – Subsidised cost of land for affordable housing development – Undertaking of land swaps
2	**Extend tax breaks to low cost housing developers –** The government has extended reduced tax rates for housing developers putting up at least 100 low-cost housing units in order to promote housing development	– The Government should consider lowering the 100 annual housing units threshold to less than 50 units in order to encourage participation by both the large and small scale developers – Extend tax holidays and rebates for low cost housing developers
3	**Reduce cost of construction material –** Access to low cost construction material will encourage participation from private developers in the development of low cost housing as lower construction costs will result in better margins	– Amend the VAT Act to effect reduced rating of construction material and equipment used in the construction of affordable housing – Centralising of procurement of key construction input material either through the Government or a private entity. This will enable participating housing developers to enjoy significant discounts resulting from economies of scale and better negotiated rates of construction inputs – Robust and efficient procurement system
4	**Access to developer financing –** Housing development projects are capital intensive and majority of the housing developers do not have the capacity to fully finance their projects entirely out of their pockets. Consequently, developers have resulted to seeking financing from either banks or non-bank financial institutions. However, the current borrowing rates (excluding	– Consider capping, at a single digit, interest rates on borrowings associated with construction of the affordable housing units – Support affordable housing developers access project financing through signing corporate guarantees with financial institutions extending loans to developers. This will encourage banks to support affordable housing development without the risk of default.

No.	Incentive	Intervention
	administration fees) in Kenya is high at 13.5%	
5	**Accelerate approval of construction plans –** A major bottleneck limiting the supply of housing units by the various developers is delays experienced in the approval of housing development plans by the relevant authorities. The approval process is prolonged and expensive due to the many institutions involved. A rationalised approval process will ensure redundancies in approval are fewer thus resulting in faster turnaround times. This could significantly impact on the developers' ability to reach scale within stipulated timelines	– Streamline the approval process – Digitising various steps of the approval process – Establish a one stop approval centre at both the national and county level – Facilitate low cost housing developers to obtain approvals – Reduced level of approval levies
6	**Clear frameworks governing implementation of PPPs for development of low cost housing –** PPPs between the Government and private developers do not always offer favourable terms for both parties. Particularly, there exists no clarity on revenue share and project timelines which results in extended periods of capital lock-up for the private developers. As a result, developers are reluctant to engage with the Government on such projects	– Review the framework governing PPPs with an aim to facilitate seamless execution of such agreements within stipulated timelines – Transparency in stakeholder engagements – Transparent procurement process – Zero tolerance to corruption
7	**Access to home-buyer financing –** A key hindrance to home ownership is the lack of funding to finance the purchase. The credit industry is dominated by banks who are not necessarily within reach of the low income earners. The government should provide support to the low income earners to facilitate their access to credit	– Continually sensitise the public on the housing project, mortgages – Partner with banks to extend mortgage loans to low income earners – Waiver of stamp duty for first time home owners under the affordable housing project – Create a country housing fund managed by local banks from which the banks can onward lend to low income earners at low interest rates – Extend long-term loans at subsidised mortgage rates to home buyers – The Government should support and encourage savings with SACCOs and Cooperatives. This will enable low income earners to save towards ownership of the affordable housing units – Extend mortgage tax relief to low income earners – Offer home buyers the option to purchase the homes via a tenant purchase scheme with favourable terms
8	**Active stakeholder engagement –** Successful delivery of the project will require input from various private and public stakeholders. Satisfying external stakeholders is crucial to fulfilling the project's objectives whereas satisfying	– Stakeholder training – Involve and avail necessary project details with all stakeholder – Conduct public participation forums

No.	Incentive	Intervention
	internal stakeholders is crucial to winning their commitment for the provision of efficient and quality services	

9 Project implementation risks

Identification of project risks is a key element in successfully delivering on any projects. The earlier the project risks can be identified, the earlier measures can be put in place to mitigate potential effects on the project. Below are key project implementations risks identified and proposed mitigation strategies.

Table 41: Project risks and proposed mitigations

No.	Identified risks	Proposed mitigation strategies
Government related risks		
1.	**Design, construction and commissioning risk:** Risk that the project fails to meet the design and construction standards agreed upon	– Agree upon the bare minimum required construction standards – Ensure approval of all housing designs before commencement of construction – Provision of a construction performance security to ensure enforcement of standards
2.	**Demand risk:** The risk that the actual housing demand is lower than that projected	– Undertake a comprehensive market study on each location to accurately inform demand – Ensure that the housing units are competitively priced and within reach of the target market – Ensure housing units supplied address the varied needs with respect to design, size and location
3.	**Legal & regulatory risk:** Risk that Government regulations do not favour participation of the private sector	– Clearly define the role of each County Government, National Government and other Government agencies involved in the AHP – Ensure all the different ministries of the Government that are involved in realisation of the project work together to facilitate smooth completion of the process – Government should closely monitor regulations to ensure they are appropriately enforced and that new regulations do not prevent the private sector from fulfilling its obligations – Require the private sector to adopt new regulations in a manner that minimises delays
4.	**Project operations and maintenance risk:** Risk that the project will not be operated and maintained in accordance to the agreed terms	– Draw a performance contract that clearly outline project operations and maintenance standards – Require provision of a performance bond and exercise the bond in the event of default – Impose penalties for failing to meet the required performance standards
5.	**Land risk:** The risk that the required land to undertake the project in not available as well as insecurity of tenure	– Conduct due diligence on identified sites and complete acquisition of the land prior to tendering for construction – Government should remain committed to delivering of adequate and approved land for development

No.	Identified risks	Proposed mitigation strategies
		– Fast track the processing and issuance of land titles – Full automation and digitisation of the land registry to ensure ease of access to accurate land information
6.	**Stakeholder support risk:** The risk that key stakeholders including the Government, Government agencies and the private sector players fail to support the project	– Ensure stakeholder buy-in right from the project onset – Ensure accountability by all project partners – Government should closely monitor project progress and respond assertively to arising challenges that might impede delivery
7.	**Resettlement risks:** The risk that the public is agitated as a result of resettlement to new dwellings	– Ensure public involvement and buy-in from the project onset – Full disclosure and dissemination of project progress information – Incentivise low income earners to own homes thus encouraging them to adopt the project
8.	**Force majeure risk:** Risk that an unforeseeable event occurs and impedes the construction and/or operation and maintenance of the project as agreed upon	– Require purchase and maintenance of an insurance cover over the duration of the project development – Clearly identify and define force majeure events and allocate roles and responsibilities should such events occur
9.	**Resource risk:** The risk that there is insufficient local skilled labour, technical knowhow and construction material production to deliver the project	– Government should consider setting up a training centre in each county for upgrading workers skills particularly acquainting them to ABMTs – Encourage growth of local construction materials manufacturing industries – Encourage entry of new participants into the manufacturing of construction materials
10.	**Governance risk:** The risk that the project objectives are not advanced as a result of transitioning from one Government to the next	– Government should put in place measures to ensure that ongoing projects are completed before others can be commenced – Ensure proper handover of projects from one administration to the next
11.	**Corruption risk:** The risk that there exists vulnerabilities within the systems or processes which might enable or facilitate corrupt practices	– Independent third party monitoring of project related transactions – Open tendering process – Transparency in stakeholder dealings – Reporting on compliance to tax as a mandatory requirement
12.	**Poor planning:** The risk that the project is not considered holistically and therefore does not encompass provision of key utilities and services	– Partner with other Ministries such as Ministry of Education, Health and Sports as they offer critical services that go hand in hand with housing
Developer related risks		
13.	**Design, construction and commissioning risk:** Risk that the project fails to meet the design and construction standards agreed upon	– Agree upon the bare minimum required construction standards – Ensure approval of all housing designs before commencement of construction

No.	Identified risks	Proposed mitigation strategies
		– Provision of a construction performance security to ensure enforcement of standards
14.	**Financial risk:** Risk that the project is not sufficiently funded	– Guarantees be issued by the Government to financiers to de-risk housing developers thus enabling them access financing – Financial close as a condition precedent to commencement of construction – Following completion of construction, Government could purchase the housing units for cash thus allowing developers to recycle their capital into construction of more units – Require bid bonds to be in place and hold these until project is fully complete
15.	**Inflation and foreign exchange risk:** Risk that the project financials will be adversely affected by inflation	– Ensure project costs include price escalation
16.	**Subcontractor risk:** The risk that sub-contractors do not perform in line with expectations	– Conduct a thorough due-diligence on principal subcontractors – Conditions for replacement should be clear – Contract provision should include private partners to take liability for work carried out by the sub-contractor
17.	**Force majeure risk:** Risk that an unforeseeable event occurs and impedes the construction and/or operation and maintenance of the project as agreed upon	– Require purchase and maintenance of an insurance cover over the duration of the project development – Clearly identify and define force majeure events and allocate roles and responsibilities should such events occur
18.	**Resource risk:** The risk that there is insufficient local skilled labour, technical knowhow and construction material production to deliver the project	– Support growth of local construction materials manufacturing industries – Support entry of new participants into the manufacturing of construction materials
19.	**Corruption risk:** The risk that there exists vulnerabilities within the systems or processes which might enable or facilitate corrupt practices	– Independent third party monitoring of project related transactions – Open tendering process – Transparency in stakeholder dealings – Reporting on compliance to tax as a mandatory requirement
20.	**Procurement risk:** The risk of failures in the procurement process which could result in business loses and Project disruption	– Proper vetting of suppliers in the identification stage –
Home buyers related risks		
21.	**Housing allocation risk:** The risk that the developed housing units do not benefit the intended beneficiary owing to misallocation	– Setup an end user verification system – Involve the community members in the allocation process
22.	**Supply risk:** The risk that the actual housing supply is lower than that projected	– Encourage participation of the private sector in the supply of the projected targets – Government should avail adequate serviced land for housing development – Fast track the building approvals processes
Financiers risks		

No.	Identified risks	Proposed mitigation strategies
23.	**Insolvency risk:** The risk the debt drawn down to finance project activities cannot be repaid	– Conduct proper due diligence on the project partners – Step-in rights to benefit the funders

10 Appendix

10.1 Appendix I – Clustering approach

In the analysis of the county data collected during the Survey exercise, the 47 counties were grouped into clusters for ease of analysis and as a basis of developing the financial model for the programme. An assessment to identify correlation between counties in meeting housing needs for their population informed how counties were clustered. To facilitate this, KPMG identified key indicators against which the counties were assessed and consequently grouped. Identified indicators included:

c) Prevailing economic activities of the counties
d) Geographical proximity
e) Climatic conditions
f) Terrain/ topographical/ physical features
g) Cultural idiosyncrasies
h) Level of urbanisation

10.1.1 Prevailing socio-economic activities of the counties[18]

The socio-economic profile and hence the social fabric of Kenya's counties is heterogeneous. Besides highlighting the wide disparities in the distribution of poverty across Kenya, there exists a link between county poverty rates and other variables such as access to social services, urbanisation and infrastructure development.

Kenya's 47 County Governments came into existence following the March 2013 general elections. Transfer of staff and functions from around 280 decentralised district administrations and 175 local authorities was largely completed in January 2014 when counties took over management of payroll for all their staff.

Table 42: County Gross Domestic Product (GDP) - 2013

	Rank	County	GDP (USD)
Highest	1	Nairobi	3.4 bn
	2	Kiambu	3.0 bn
	3	Nakuru	2.3 bn
	4	Nyeri	1.0 bn
	5	Kilifi	1.0 bn
Lowest	1	Tharaka Nithi	109 mn
	2	Elgeyo Marakwet	108 mn
	3	Samburu	67 mn
	4	Lamu	58 mn
	5	Isiolo	56 mn

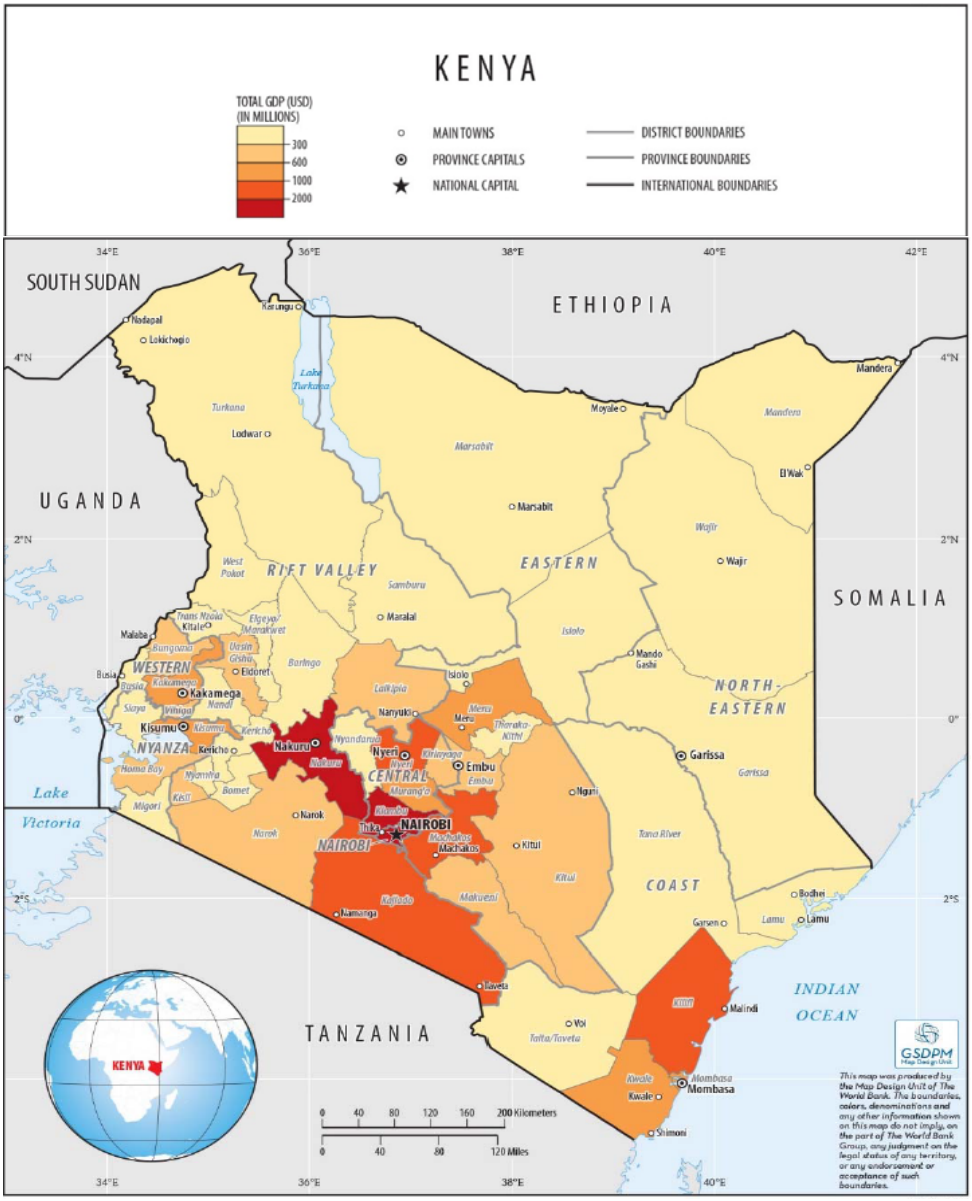
Source: World Bank

Nairobi and Mombasa have zero agricultural GDP because the 2009 census classified these counties as 100% urban.

Prevailing economic activities determine a people's buying and spending power as well as the cost of living which directly determine cost of labour. As such, cost of labour in counties with higher GDP is higher than those with lower GDP.

[18] http://documents.worldbank.org/curated/en/912151468188369841/pdf/WPS7461.pdf

Figure 56: Estimated county GDP, Kenya



Source: WDI (2014) and NGDC (2014)

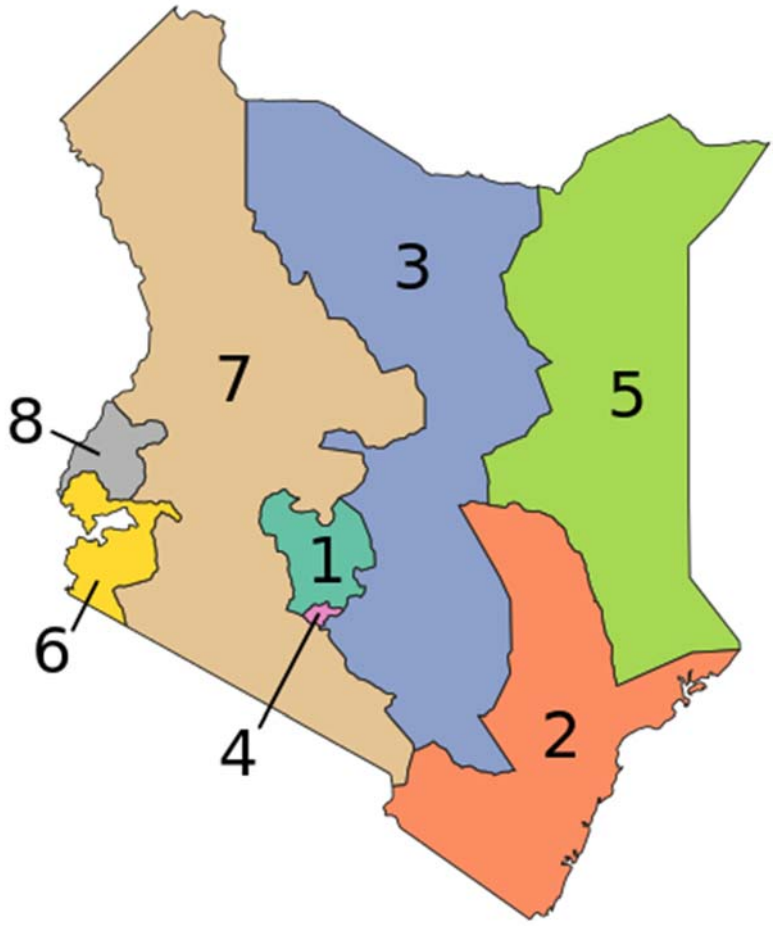
10.1.2 Geographical proximity[19]

Under its old constitution, Kenya comprised eight (8) provinces, each headed by a Provincial Commissioner. The provinces were subdivided into 69 districts as at the time of the 1999 population and housing census. Under the Kenya Constitution of 2010, and subsequent integration of the provincial administration with a new system of counties, provinces were to be scrapped and the 46 districts in existence in 1992 turned into counties with elected governments and subdivisions below that re-organised as 290 sub-counties(one for every constituency in Kenya's National Assembly). The City of Nairobi, which enjoyed the status of a full administrative province, became a county.

Geographical proximity has guided in clustering counties using old administrative provincial boundaries which had characteristically grouped administrative districts with similar terrain, climatic conditions, economic activities and ethnic background. People and material movement within neighbouring localities result to similar pricing conditions for goods and services.

[19] https://en.wikipedia.org/wiki/Subdivisions_of_Kenya

Figure 57: Former provinces of Kenya



1. Central
2. Coast
3. Eastern
4. Nairobi
5. North Eastern
6. Nyanza
7. Rift Valley
8. Western

Source: https://commons.wikimedia.org/w/index.php?curid=8799511

10.1.3 Climatic conditions[20]

The climate of Kenya varies by location, from mostly cool every day, to always warm/hot. The climate along the coast is tropical. This means rainfall and temperatures are higher throughout the year. At the coastal cities, Mombasa, Lamu and Malindi, the air changes from cool to hot almost every day.

The further inside Kenya, the more arid the climate becomes. An arid climate is nearly devoid of rainfall, and temperature swings widely according to the general time of the day/night. For many areas of Kenya, the daytime temperature rises about 12 °C almost every day.

Elevation is the major factor in temperature levels, with the higher areas, on average being11 °C cooler between day or night. The many cities over a kilometre in elevation have temperature swings from roughly 10 to 26 °C. Nairobi, at 1,798 metre (m), ranges from 9 – 27 °C and Kitale, at 1,825 m, ranges from 11 – 28 °C. At night, heavy clothes or blankets are needed, in the highlands, when the temperature drops to about 10 – 12 °C.

At lower altitudes, the increased temperature is like day and night. Hence, the overnight low temperatures near sea level are nearly the same as the high temperatures of the elevated Kenyan highlands. However, locations along the Indian Ocean have more moderate temperatures, being a few degrees cooler in the daytime, such as at Mombasa.

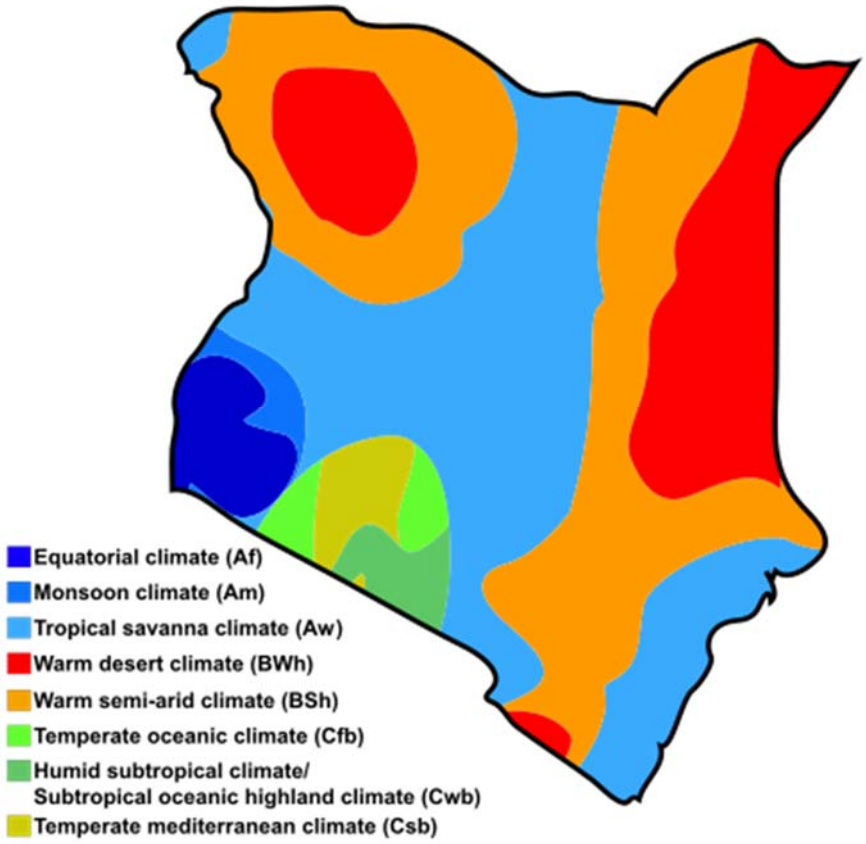
There are slight seasonal variations in temperature with the winter months being 4 degrees cooler. Although Kenya is centred at the equator, it shares the seasons of the southern hemisphere with the warmest summer months in December to March and the coolest winter months in June to August. On

[20] https://en.wikipedia.org/wiki/Geography_of_Kenya

the high mountains, such as Mount Kenya, Mount Elgon and Kilimanjaro, the weather can become bitterly cold for most of the year. Some snowfall occurs on the highest mountains.

Different climatic zones have different functional requirements for sheltering against different weather elements. An example is different materials combination for a hot & humid climate in comparison to cold and rainy mountainous climate. As such, construction costs vary in response to the materials selection criteria to suit different climatic zones.

Figure 58: Climatic classification of Kenya



Source: https://commons.wikimedia.org/w/index.php?curid=47085364

10.1.4 Terrain/ topographical/ physical features[21]

10.1.4.1 Physical features

The geography of Kenya is diverse, varying amongst Kenya's 47 counties. Kenya has a coastline on the Indian Ocean, which contains swamps of East African mangroves. Inland broad plains and numerous hills are plentiful.

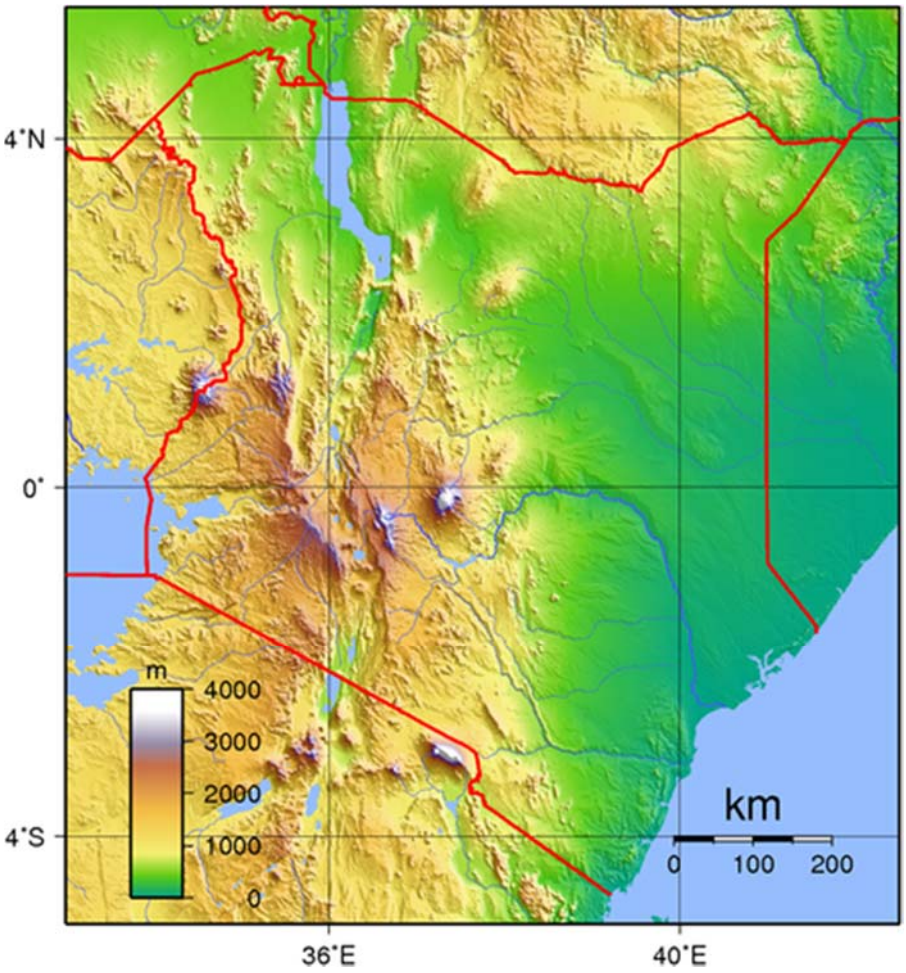
Central and Western Kenya is characterised by the Kenyan Rift Valley with the Central Province being home to the highest mountain, Mount Kenya and Mount Elgon in Western Kenya on the border between Kenya and Uganda. The Kakamega Forest in western Kenya is a relic of an East African rainforest. Much bigger is the Mau Forest, the largest forest complex in East Africa.

10.1.4.2 Terrain

Kenya's terrain is composed of low plains that rise into central highlands bisected by the Great Rift Valley. There is also a fertile plateau in the west of the country.

[21] https://en.wikipedia.org/wiki/Geography_of_Kenya

Figure 59: Topography of Kenya



Source: https://commons.wikimedia.org/w/index.php?curid=2252397

10.1.4.3 Geology

Much of the western two-thirds of the country consists of the Pliocene – Pleistocene volcanics deposited on Precambrian basement rocks. The southeast corner of the country is underlain by sediments of the Karoo system of Permian to late Triassic age and a strip of Jurassic age sediments along the coast in the Mombasa area. The Anza trough is a North West – South East trending Jurassic rift extending from the Indian Ocean coast to the Sudan northwest of Lake Turkana. The Anza Rift resulted from the break–up of Gondwana.

The geological composition in different localities determine availability of naturally occurring construction materials such as masonry blocks and sand. It also affects the nature and type of building foundations as well as extent of excavations for foundations. Availability of naturally occurring construction materials and cost of foundations has a direct implication on construction costs. As such, counties with similar geological characteristics have been grouped together.

Figure 60: Satellite image of Kenya showing geological distribution

Source: https://commons.wikimedia.org/w/index.php?curid=946626

10.1.5 Cultural variances[22]

Kenya has a very diverse population that includes most major ethnic, racial and linguistic groups found in Africa. It is inhabited primarily by Bantu and Nilotic populations, with some Cushitic-speaking ethnic minorities in the north.

10.1.5.1 Bantu people

Bantu are the single largest population type in Kenya. The term Bantu denotes widely dispersed but related people that speak south – central Niger – Congo languages. Originally from west and central Africa, Bantu began a millennium-long series of migration referred to as the Bantu expansion that first brought them to southeast Africa about 2,000 years ago.

Most Bantu are farmers. Some of the prominent Bantu groups in Kenya include the Kikuyu, the Kamba, the Luhya, the Kisii, the Meru and the Mijikenda. The Swahili people are descended from Mijikenda Bantu people that intermarried with Arab and Persian immigrants.

The Bantu were sedentary communities in pre-colonial Kenya that consisted of subsistence farmers and fisherfolk. The settlements of these communities were tied to the location of their farm land and/ or to the water bodies where they undertook their economic activities. Some communities among these groups also practiced migration due to the economic activities they undertook. These included long-distance traders like the Kamba.

10.1.5.2 Nilotic people

Nilotes are the second-largest group of people in Kenya. They speak Nilo-Saharan languages and came to southeast Africa through South Sudan. Most Nilotes in Kenya are herdsmen, and they have a fearsome reputation as warriors and cattle-rustlers. The most prominent of these groups include the Luo, the Maasai, the Samburu, the Turkana and the Kalenjin. As with the Bantu, the Nilotes have

[22] https://en.wikipedia.org/wiki/Demographics_of_Kenya

adopted many customs and practices from the Cushitic groups, including the age set system of social organisation, circumcision and vocabulary terms, hence variations in cultural practices.

Pastoral nomadic communities developed systems for adaptation to weather and climate changes on their livelihood by migrating to areas with adequate water and pasture. Some communities like the Maasai travel long distances across present day national boundaries (Kenya and Tanzania) within the Rift Valley system. Some communities such as the Pokot identified areas that were protected as dry season grazing ground.

In terms of housing, this culture allowed for ownership of homes where the women and children lived throughout the year but the migrating herders developed temporary shelter in the grazing areas. The land tenure in the main settlements could be defined by family and clan but the land tenure in the grazing areas was communal so one could set camp within this area but the family head would not necessarily claim ownership of the temporary home.

10.1.5.3 Cushitic people

Cushitic people form a small minority of Kenya's population. They speak languages belonging to the Afro-asiatic family and originally came from Ethiopia and Somalia in north-eastern Africa. Most are herdsmen hence grouped as pastoral communities. Cushitic people are concentrated in the northern most part of the North Eastern Province, which borders Somalia.

10.1.5.4 Arabs

Arabs form a small but historically important minority ethnic group in Kenya. They are principally concentrated along the coast in cities such as Mombasa. A Muslim community, they primarily came from Oman and Hadhramautin Yemen, and are engaged in trade.

10.1.5.5 Asians

Kenyan Asians are descended from South Asian migrants. Significant Asian migration to Kenya began between 1896 and 1901 when some 32,000 indentured labourers were recruited from British India to build the Kenya-Uganda Railway. The majority of Kenyan Asians hail from the Gujarat and Punjab started of India. The community grew significantly during the colonial period.

Asians are principally concentrated in the business sector. In 2017, they were officially recognised at the 44th tribe of Kenya.

10.1.5.6 Europeans

Europeans in Kenya are primarily the descendants of British migrants during the colonial period. Many are of aristocratic descent.

Old administrative provincial boundaries had characteristic ethnic, racial and linguistic groupings with similar cultural backgrounds. Urban centres have however evolved to comprise cosmopolitan communities such Asians, Arabs and Europeans who have continued to significantly influence the local social-economic and political environments, affecting cost of construction labour and materials in a similar manner as GDP.

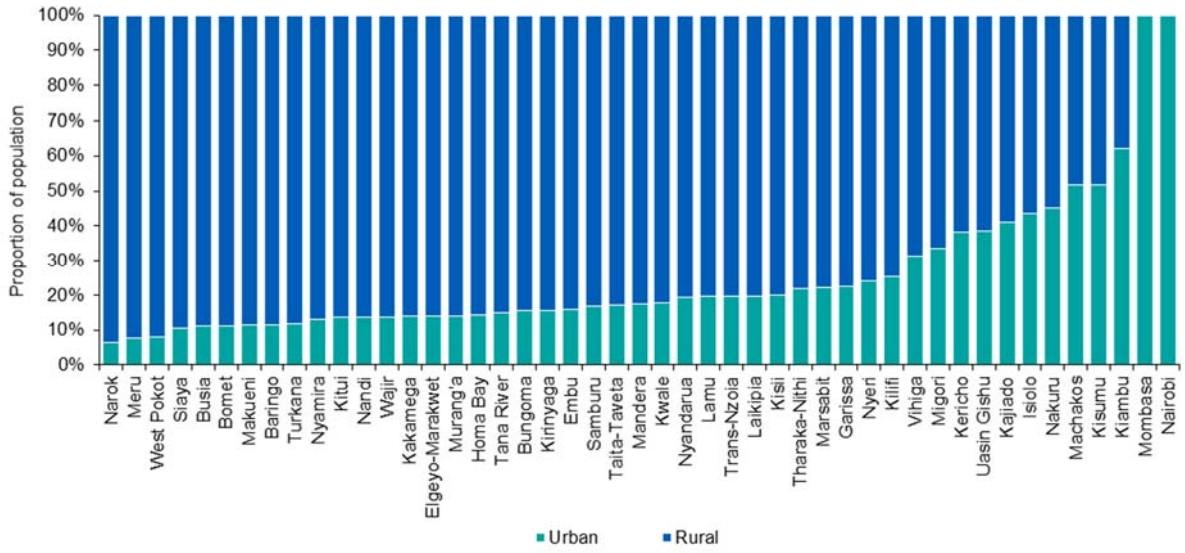
10.1.6 Level of urbanisation[23]

While Kenya is urbanising rapidly, much faster than the overall population growth rate, most counties are still predominantly rural. Based on the 2009 population and housing census, only five counties have more than 50% of their population residing in urban areas. Majority of counties have at least 80% of their populations residing in rural areas.

Level of urbanisation, infrastructure development and access to social services has a direct correlation between county poverty rates and other variables such as people's buying and spending power as well as the cost of living which directly determine cost of labour. Highly urbanised counties have been grouped together and vice versa for rural counties.

[23] http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1335471959878/Kenya_County_Fact_Sheets_Dec2011.pdf

Figure 61: Urbanisation levels by county



Source: KNBS and KPMG analysis

KPMG then conducted a detailed analysis of each county which included tracking the progress of these indicators at county level over time. Below is a summary of the county clustering exercise:

Figure 62: County clustering rationale

Cluster	Clustering correlation Indicators	Counties
1	• GDP – 600 million – 1 billion USD • Coastal region • Jurassic age sediments • Coastal climate • Highly urbanised (100% urbanised) • Cosmopolitan with Swahili / Arabic influence	• Mombasa
2	• GDP – 0 – 1 billion USD • Coastal region • Jurassic age sediments • Coastal climate • Rural (20-30% urbanised) • Indigenous Bantu with Swahili influence	• Kilifi • Kwale • Lamu • Taita Taveta
3	• GDP – 0 – 300 million USD • Eastern and North Eastern region • Gondwana • Semi - arid to warm desert • Rural (10 - 20% urbanised except Isiolo 45% urbanised) • Indigenous nomadic Cushitic except Tana River that has Bantu (Pokomo) influence	• Garissa • Isiolo • Mandera • Marsabit • Tana River • Wajir
4	• GDP – 300 million – 2 billion USD • Central Highlands region • Pleistocene volcanics • Tropical savannah climate	• Embu • Kirinyaga • Meru • Murang'a

Cluster	Clustering correlation Indicators	Counties
	• Rural (15 - 25% urbanised except for Meru 8% urbanised) • Indigenous Bantu	• Nyandarua • Nyeri • Tharaka Nithi •
5	• GDP – Laikipia, Makueni & Kitui 300 – 600 million USD, Kajiado & Machakos 1 – 2 billion USD • Lower Eastern & Lower Rift Valley region • Pleistocene volcanics/ Karoo/ Gondwana • Semi- Arid climate • Rural (10 - 20% urbanised except for Machakos and Kajiado 40 - 55% urbanised) • Indigenous Bantu except Laikipia with Nilotic influence and Kajiado with Indigenous Nilotes	• Kajiado • Kitui • Laikipia • Machakos • Makueni
6	• GDP – 0 – 300 million USD • Rift valley region • Jurassic rift / Gondwana • Arid climate • Rural (8 - 16% urbanised) • Indigenous Nilotes	• Baringo • Elgeyo Marakwet • Samburu • Turkana • West Pokot
7	• GDP – 0 – 600 million USD except Nakuru with above 2 billion USD • Rift Valley region • Jurassic rift / Gondwana • Tropical savannah climate • Rural (7 - 20% urbanised Nakuru, Kericho and Uasin Gishu 35 - 45% urbanised) • Indigenous Nilotes with Bantu influence	• Bomet • Kericho • Nakuru • Nandi • Narok • Trans Nzoia • Uasin Gishu
8	• GDP – 0 – 600 million USD except Kakamega 600 million – 1 billion USD • Western region • Pleistocene volcanics • Tropical savannah climate • Rural (12 - 15% urbanised except Vihiga 33% urbanised) • Indigenous Bantus	• Bungoma • Busia • Kakamega • Vihiga
9	• GDP – 0 – 600 million USD except Kisumu 600 million – 1 billion USD • Lake region • Pleistocene volcanics • Tropical savannah climate • Rural (11 - 22% urbanised except Migori 35% and Kisumu 54% urbanised) • Indigenous Nilotes and Bantu	• Homa Bay • Kisii • Kisumu • Migori • Nyamira • Siaya
10	• GDP – Above 2 billion USD • Central highlands region • Pleistocene volcanics • Tropical savannah climate	• Nairobi • Kiambu

Cluster	Clustering correlation Indicators	Counties
	• Highly urbanised with Nairobi 100% and Kiambu 65% urbanised • Cosmopolitan	

Source: KPMG analysis

10.2 Appendix II - Suitable county land identified per site for the AHP

Cluster	County	Project sites	Acres per site	Land title status
1	Mombasa	Khadija estate	9.14	×
		Miritini	179.00	
		Changamwe estate	24.34	
		Tudor	21.99	
		Mzizima	1.24	
		Buxton	2.36	
		Likoni customs	10.21	
		Likoni flats	15.91	
		Nyerere	1.64	
	Total		**265.83**	
2	Kilifi	Kilifi	-	●
		Sub total	-	
	Kwale	Kwale	-	●
		Sub total	-	
	Lamu	Lamu	-	●
		Sub total	-	
	Taita Taveta	Wundanyi	8.90	○
		Taveta	-	
		Sub total	8.90	
	Total		**8.90**	
3	Garissa	Garissa	123.55	○
		Sub total	123.55	
	Isiolo	Isiolo	30.00	○
		Sub total	30.00	
	Mandera	Mandera	25.00	○
		Sub total	25.00	
	Marsabit	Marsabit	-	●
		Sub total	-	
	Tana River	Tana River	-	●
		Sub total	-	
	Wajir	Wajir	-	●
		Sub total	-	
	Total		178.55	
4	Embu	Embu	-	●
		Sub total	-	
	Kirinyaga	Kirinyaga 1	63.73	○
		Kirinyaga 2	254.00	
		Sub total	317.73	
	Meru	Meru	4.90	○
		Sub total	4.90	
	Murang'a	Murang'a	-	●
		Sub total	-	
	Nyandarua	Nyandarua	13.40	○
		Sub total	13.40	
	Nyeri	Nyeri 1	3.28	×
		Nyeri 2	4.21	
		Sub total	7.49	
	Tharaka Nithi	Ndagani	18.31	○
		Chuka - works	4.69	
		Chuka - airstrip	2.15	
		Chiokeagoga	10.20	
		Sub total	35.36	
	Total		**378.88**	
5	Kajiado	Kajiado	-	●
		Sub total	-	
	Kitui	Kitui	-	●
		Sub total	-	

	Laikipia	Laikipia	5.40	
		Sub total	5.40	✓
	Machakos	Machakos 1	0.50	
		Sub total	0.50	○
	Makueni	Makueni	10.00	
		Sub total	10.00	○
	Total		**15.90**	
6	Baringo	Baringo 1	10.63	✓
		Baringo 2	1.68	
		Baringo 3	1.68	
		Baringo 4	3.95	●
		Baringo 5	6.18	
		Sub total	24.12	
	Elgeyo Marakwet	Elgeyo Marakwet	-	
		Sub total	-	●
	Samburu	Samburu	4.94	
		Sub total	4.94	○
	Turkana	Turkana	40.00	
		Sub total	40.00	○
	West Pokot	West Pokot 1	6.45	
		West Pokot 2	27.00	×
		Sub total	33.45	
	Total		**102.51**	
7	Bomet	Bomet	5.00	
		Sotik	2.00	○
		Sub total	7.00	
	Kericho	Kericho	10.01	
		Sub total	10.01	○
	Nakuru	Nakuru 1	34.00	
		Nakuru 2	30.00	○
		Sub total	64.00	
	Nandi	Nandi 1	2.00	
		Nandi 2	50.00	×
		Sub total	52.00	
	Narok	Narok 1	5.86	
		Narok 2	0.47	
		Narok 3	8.25	
		Narok 4	2.47	
		Narok 5	0.67	×
		Narok 6	0.40	
		Narok 7	1.04	
		Narok 8	6.42	
		Sub total	25.58	
	Trans Nzoia	Mumias	2.62	
		Masaba 96 houses	5.19	○
		Sub total	7.81	
	Uasin Gishu	Uasin Gishu 1	15.67	
		Uasin Gishu 2	4.09	✓
		Sub total	19.76	
	Total		**186.15**	
8	Bungoma	Bungoma	32.00	
		Sub total	32.00	✓
	Busia	Busia 1	15.38	
		Busia 2	2.50	
		Busia 3	2.00	○
		Sub total	19.88	
	Kakamega	Kakamega 1	7.66	
		Kakamega 2	5.68	○
		Sub total	13.34	
	Vihiga	Vihiga	5.26	✓

		Sub total	5.26	
	Total		**70.48**	
9	Homa Bay	Homa Bay 1	11.76	○
		Homa Bay 2	3.06	
		Sub total	14.83	
	Kisii	Kisii	10.00	●
		Sub total	10.00	
	Kisumu	Kibuye	5.00	×
		Lumumba	6.42	
		Ondiek	0.32	
		Mosque	7.61	
		Argwings	3.43	
		Milimani	5.16	
		Sub total	27.96	
	Migori	Migori	20.00	×
		Sub total	20.00	
	Nyamira	Nyamira 1	17.30	○
		Nyamira 2	2.00	
		Sub total	19.30	
	Siaya	Siaya 1	2.40	○
		Siaya 2	13.84	
		Siaya 3	4.60	
		Sub total	20.84	
	Total		112.92	
10	Kiambu	Kiambu	50.00	×
		Sub total	50.00	
	Nairobi	Pangani	5.20	×
		Jevanjee/bachelors	8.80	
		Old Ngara	4.40	
		New Ngara	4.12	
		Ngong Rd Phase 1 & 2	25.00	
		Uhuru	5.00	
		Suna Road	5.00	
		Maringo	121.08	
		Bahati	123.55	
		Shauri Moyo	155.68	
		Jericho	103.78	
		Lumumba	98.84	
		Ngorofani	42.01	
		Bondeni	9.88	
		Ziwani	29.65	
		Sub total	742.00	
	Total		792.00	
Total land available from counties			**2,112.11**	

Source: KPMG survey and analysis

Key:

✓ *Title available and provided to KPMG for due diligence*

× *Title available but not provided to KPMG by the county*

○ *Title not available*

● *No land identified by county for the programme*

10.3 Appendix III: Land titles search report

County: Bungoma	**Title number:** E. Bukusu/S. Kanduyi/1082
Property section: Title number E. Bukusu/S. Kanduyi/1082 is a freehold property measuring approximately thirty two (32.0) acres	**Proprietorship:** Sarah Hersi Moghe, Asha Hersi Moghe D/O Hersi, Mohamed S/O Hersi (Trust for Abdi S/O Hersi, M. Mohamed S/O Hersi, Ahmed S/O Hersi, Fatuma D/O Hersi, Amina D/O Hersi, Asha D/O Hersi) are listed as the registered proprietors of the Property and a Land Certificate was issued to Hersi Sarah Moghe on 4th May, 1975. We wish to highlight the fact that the registered proprietor on the search conducted on title number E. Bukusu/S. Kanduyi/1082 and the copy of the title deed provided to us differ. We are seeking to have the same rectified and shall revert substantively on the same.
Encumbrances: There are no encumbrances or pending applications on title number E. Bukusu/S. Kanduyi/1082	**Restrictions:** There are no restrictions on title number E. Bukusu/S. Kanduyi/1082
Special conditions: There are no special conditions on title number E. Bukusu/S. Kanduyi/1082	**Use of property:** The use of property under title number E. Bukusu/S. Kanduyi/1082 has not been indicated on the search obtained

County: Bungoma	**Title number:** W. Bukusu/N. Nyanga/3571
Property section: Title number W. Bukusu/N. Nyanga/3571 is a freehold property measuring approximately zero decimal eight zero (0.80) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number W. Bukusu/N. Nyanga/3571 and a title deed was issued in its name on 20th August, 2015
Encumbrances: There are no encumbrances or pending applications on title number W. Bukusu/N. Nyanga/3571	**Restrictions:** There are no restrictions on title number W. Bukusu/N. Nyanga/3571
Special conditions: There are no special conditions on title number W. Bukusu/N. Nyanga/3571	**Use of property:** The use of property under title number W. Bukusu/N. Nyanga/3571 has not been indicated on the search obtained

County: Bungoma	**Title number:** W. Bukusu/N. Nyanga/3573
Property section: Title number W. Bukusu/N. Nyanga/3573 is a freehold property measuring approximately zero decimal six one (0.61) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number W. Bukusu/ N. Nyanga/ 3573 and a title deed was issued in its name on 2nd September, 2015
Encumbrances: There are no encumbrances or pending applications on title number W. Bukusu/ N. Nyanga/ 3573	**Restrictions:** There are no restrictions on title number W. Bukusu/N. Nyanga/3573
Special conditions: There are no special conditions on title number W. Bukusu/N. Nyanga/3573	**Use of property:** The use of property under title number W. Bukusu/N. Nyanga/3573 has not been indicated on the search obtained

County: Bungoma	**Title number:** W. Bukusu/N. Nyanga/3575
Property section: Title number W. Bukusu/N. Nyanga/3575 is a freehold property measuring approximately zero decimal six one (0.61) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number W. Bukusu/N. Nyanga/3575 and a title deed was issued in its name on 2nd September, 2015
Encumbrances: There are no encumbrances or pending applications on title number W. Bukusu/N. Nyanga/3575	**Restrictions:** There are no restrictions on title number W. Bukusu/N. Nyanga/3575
Special conditions: There are no special conditions on title number W. Bukusu/N. Nyanga/3575	**Use of property:** The use of property under title number W. Bukusu/N. Nyanga/3575 has not been indicated on the search obtained

County: Bungoma	**Title number:** W. Bukusu/N. Nyanga/3577
Property section: Title number W. Bukusu/N. Nyanga/3577 is a freehold property measuring approximately zero decimal eight one (0.81) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number W. Bukusu/N. Nyanga/3577 and a title deed was issued in its name on 11th August, 2015
Encumbrances: There are no encumbrances or pending applications on title number W. Bukusu/N. Nyanga/3577	**Restrictions:** There are no restrictions on title number W. Bukusu/N. Nyanga/3577
Special conditions: There are no special conditions on title number W. Bukusu/ N. Nyanga/ 3577	**Use of property:** The use of property under title number W. Bukusu/ N. Nyanga/ 3577 has not been indicated on the search obtained

County: Bungoma	**Title number:** Malakisi/Township/113
Property section: Title number Malakisi/Township/113 is a freehold property measuring approximately zero decimal four three (0.43) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/113
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/113	**Restrictions:** There are no restrictions on title number Malakisi/Township/113
Special conditions: There are no special conditions on title number Malakisi/Township/113	**Use of property:** Property under title number Malakisi/Township/113 is reserved for public works offices

County: Bungoma	**Title number:** Malakisi/Township/114
Property section: Title number Malakisi/Township/114 is a freehold property measuring approximately zero decimal four five (0.45) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/114 and a title deed was issued in its name on 10th May, 2017
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/114	**Restrictions:** There are no restrictions on title number Malakisi/Township/114
Special conditions: There are no special conditions on title number Malakisi/Township/114	**Use of property:** Property under title number Malakisi/Township/114 is reserved for a public park

County: Bungoma	**Title number:** Malakisi/Township/135
Property section: Title number Malakisi/Township/135 is a freehold property measuring approximately zero decimal six (0.6) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/135 and a title deed was issued in its name on 10th May, 2017
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/135	**Restrictions:** There are no restrictions on title number Malakisi/Township/135
Special conditions: There are no special conditions on title number Malakisi/Township/135	**Use of property:** Property under title number Malakisi/Township/135 is reserved for a Malakisi Market Centre

County: Bungoma	**Title number:** Malakisi/Township/170
Property section: Title number Malakisi/Township/170 is a freehold property measuring approximately zero decimal zero three (0.03) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/170 and a title deed was issued in its name on 4th July, 2017
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/170	**Restrictions:** There are no restrictions on title number Malakisi/Township/170
Special conditions: There are no special conditions on title number Malakisi/Township/170	**Use of property:** Property under title number Malakisi/Township/170 is reserved for a public borehole

County: Bungoma	**Title number:** Malakisi/Township/246
Property section: Title number Malakisi/Township/246 is a freehold property measuring approximately one decimal eight seven (1.87) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/246
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/246	**Restrictions:** There are no restrictions on title number Malakisi/Township/246
Special conditions: There are no special conditions on title number Malakisi/Township/246	**Use of property:** Property under title number Malakisi/Township/246 is reserved for government offices

County: Bungoma	**Title number:** Malakisi/Township/379
Property section: Title number Malakisi/Township/379 is a freehold property measuring approximately zero decimal zero four (0.04) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/379 and a title deed was issued in its name on 10th May, 2017
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/379	**Restrictions:** There are no restrictions on title number Malakisi/Township/379
Special conditions: There are no special conditions on title number Malakisi/Township/379	**Use of property:** Property under title number Malakisi/Township/379 is reserved for use by the Ministry of Water

County: Bungoma	**Title number:** Malakisi/Township/394
Property section: Title number Malakisi/Township/394 is a freehold property measuring approximately zero decimal zero five (0.05) hectares	**Proprietorship:** 2 searches were conducted on title number Malakisi/Township/394 • In the search conducted on 21st September, 2018, Jackton Nyapola Ondiko is recorded as the registered proprietor of the property on 31st August, 2007 and a Title Deed was issued to him on 19th January, 2018 • In the search conducted on 27th September, 2018, The County Government of Bungoma is recorded as the registered proprietor of the property on 10th May, 2017 and a title deed issued in its name the same day
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/394	**Restrictions:** There are no restrictions on title number Malakisi/Township/394
Special conditions: There are no special conditions on title number Malakisi/Township/394	**Use of property:** In the search conducted on 21st September, 2018, the use of title number Malakisi/Township/394 has not been indicated while in the search conducted on 27th September, 2018, the use of the property is reserved for the/a soya beans factory

County: Bungoma	**Title number:** Malakisi/Township/411
Property section: Title number Malakisi/Township/411 is a freehold property measuring approximately zero decimal zero one (0.01) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Malakisi/Township/411 and a title deed was issued in its name on 10th May, 2017
Encumbrances: There are no encumbrances or pending applications on title number Malakisi/Township/411	**Restrictions:** There are no restrictions on title number Malakisi/Township/411
Special conditions: There are no special conditions on title number Malakisi/Township/411	**Use of property:** Property under title number Malakisi/Township/411 is reserved for Malaba/Malakisi Co-op union

County: Bungoma	**Title number:** Bokoli/Bokoli/2052
Property section: Title number Bokoli/Bokoli/2052 is a freehold property measuring approximately three decimal two zero (3.20) hectares	**Proprietorship:** The County Government of Bungoma is the registered proprietor of title number Bokoli/Bokoli/2052 and a title deed was issued in its name on 2nd April, 2015
Encumbrances: There are no encumbrances or pending applications on title number Bokoli/Bokoli/2052	**Restrictions:** There are no restrictions on title number Bokoli/Bokoli/2052
Special conditions: There are no special conditions on title number Bokoli/Bokoli/2052	**Use of property:** Property under title number Bokoli/Bokoli/2052 has not been indicated in the search we obtained

County: Laikipia	**Land reference number:** 2787/9/XV
Property section: Property contained in Grant Number I.R. 15907 that is to say Land Reference Number 2787/9/XV is a leasehold property measuring approximately five decimal four zero (5.40) acres	**Proprietorship:** Aberdare County Council is the registered proprietor of Land Reference Number 2787/9/XV and holds the property for a term of ninety nine (99) years from 1st November, 1949 subject to the payment in advance on the 1st day of January in each year of the annual rent of a peppercorn (if demanded)
Encumbrances: There are no encumbrances or pending applications on Land Reference Number 2787/9/XV	**Restrictions:** There are no restrictions on Land Reference Number 2787/9/XV
Special conditions: Grant Number I.R. 15907 was issued to Aberdare County Council (the "Grantee") was issued subject to the following special conditions: a) The Grantee shall erect complete for occupation within thirty-six months of the commencement of the term buildings of approved design on proper foundations constructed of stone or burnt-brick or concrete with roofing of tiles or other permanent materials approved by the Commissioner of Lands and shall maintain the same (including the external paint work) in good and substantial tenantable repair and condition. b) The land and buildings shall only be used for a yard stores and labour lines. c) The Grantee shall not subdivide the land. d) The Grantee shall not sell transfer sublet or charge the land or any part thereof except with the prior consent in writing of the Governor. e) The Grantee shall construct at its own expense all roads and drains and sewers serving or adjoining the land. f) The Grantee shall pay such rates taxes charges duties assessments or outgoings of whatever description as may be imposed charged or assessed by any government or local authority upon the land or the buildings erected thereon including any contribution or other sum paid by the Governor in lieu thereof.	**Use of property:** The use of Land Reference Number 2787/9/XV is reserved for yard stores and labour lines

g) The Governor or such person or authority as may be appointed for the purpose shall have the right to enter upon the land and lay and have access to water mains service pipes and drains telephone or telegraph wires and electric mains of all descriptions whether overhead or underground and the Grantee shall not erect any building in such a way as to cover or interfere with any existing alignments of main or service pipes or telephone or telegraph wires and electric mains.	

10.4 Appendix IV: Sqm costings per region

Figure 63: Cluster 1 construction costs

CLUSTER 1 COST PER SQM (KSH)														
County: Mombasa														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,265	73,710	5,265	110,565	6,377	118,220	6,201	174,868	6,026	217,159	5,850	293,378	Based on 6 levels of above ground structures and generally favourable murram & red soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,075	85,050	6,075	127,575	7,358	136,408	7,155	201,771	6,953	250,568	6,750	338,513	Class 25 concrete used
1.3	Walling		1,350	18,900	1,350	28,350	1,635	30,313	1,590	44,838	1,545	55,682	1,500	75,225	Infill coral stone walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,268	31,752	2,142	44,982	2,747	50,926	2,671	75,328	2,596	93,545	2,520	126,378	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,390	33,453	2,257	47,392	2,894	53,654	2,814	79,363	2,735	98,557	2,655	133,148	Ceramic tiled floors
1.8	Wall finishes		864	12,096	864	18,144	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		972	13,608	972	20,412	1,962	36,375	1,908	53,806	1,854	66,818	1,800	90,270	Assumes construction with blockboards
1.10	Mechanical & electrical installations		3,150	44,100	2,925	61,425	4,905	90,939	4,770	134,514	4,635	167,045	4,500	225,675	Basic plumbing drainage & electrical fittings
1.11	External works		1,985	27,783	1,874	39,359	2,403	44,560	2,776	78,287	2,883	103,902	2,970	148,946	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		-	-	-	-	1,324	24,553	849	23,943	640	23,052	450	22,568	
	SUBTOTAL		25,736	360,297	25,063	526,318	35,065	650,111	34,100	961,626	33,135	1,194,189	32,170	1,613,326	
1.13	Add: Preliminaries	5%	1,287	18,015	1,253	26,316	1,753	32,506	1,705	48,081	1,657	59,709	1,609	80,666	
1.14	Add: Contingencies	7%	1,801	25,221	1,754	36,842	2,455	45,508	2,387	67,314	2,319	83,593	2,252	112,933	
	SUBTOTAL		28,824	403,533	28,070	589,476	39,273	728,124	38,192	1,077,021	37,111	1,337,492	36,030	1,806,925	
1.15	Add: Professional Fees	10%	2,882	40,353	2,807	58,948	3,927	72,812	3,819	107,702	3,711	133,749	3,603	180,692	
	TOTAL VAT EXCLUSIVE		**31,706**	**443,886**	**30,877**	**648,423**	**43,200**	**800,936**	**42,011**	**1,184,723**	**40,822**	**1,471,241**	**39,633**	**1,987,617**	
1.16	Add: VAT	16%	5,073	71,022	4,940	103,748	6,912	128,150	6,722	189,556	6,532	235,399	6,341	318,019	
	TOTAL COST VAT INCLUSIVE		**36,779**	**514,908**	**35,818**	**752,171**	**50,113**	**929,086**	**48,733**	**1,374,278**	**47,354**	**1,706,639**	**45,975**	**2,305,636**	

Source: KPMG Survey and analysis

Figure 64: Cluster 2 construction costs

CLUSTER 2 COST PER SQM (KSH)														
Counties: Kwale, Taita Taveta, Kilifi, Lamu														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,558	77,805	5,558	116,708	6,731	124,788	6,546	184,583	6,360	229,223	6,175	309,676	Based on 5 levels of above ground structures and generally favourable murram & red soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,413	89,775	6,413	134,663	7,766	143,986	7,553	212,981	7,339	264,489	7,125	357,319	Class 25 concrete used
1.3	Walling		1,350	18,900	1,350	28,350	1,635	30,313	1,590	44,838	1,545	55,682	1,500	75,225	Infill masonry walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,394	33,516	2,261	47,481	2,899	53,755	2,820	79,513	2,740	98,742	2,660	133,399	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,522	35,312	2,382	50,025	3,055	56,635	2,971	83,772	2,887	104,032	2,803	140,545	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery Fittings		1,080	15,120	1,080	22,680	1,962	36,375	1,908	53,806	1,854	66,818	1,800	90,270	Assumes construction with blockboards
1.1	Mechanical & electrical installations		3,325	46,550	3,088	64,838	5,178	95,991	5,035	141,987	4,893	176,326	4,750	238,213	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,095	29,327	1,978	41,546	2,537	47,036	2,930	82,636	3,043	109,675	1,900	95,285	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		-	-	-	-	1,398	25,918	896	25,274	675	24,333	475	23,821	
	SUBTOTAL		27,114	379,589	26,408	554,563	36,621	678,958	35,613	1,004,296	34,605	1,247,180	32,363	1,622,979	
1.13	Add: Preliminaries	5%	1,356	18,979	1,320	27,728	1,831	33,948	1,781	50,215	1,730	62,359	1,618	81,149	
1.14	Add: Contingencies	7%	1,898	26,571	1,849	38,819	2,563	47,527	2,493	70,301	2,422	87,303	2,265	113,609	
	SUBTOTAL		30,367	425,140	29,577	621,110	41,016	760,433	39,887	1,124,812	38,758	1,396,841	36,246	1,817,737	
1.15	Add: Professional Fees	10%	3,037	42,514	2,958	62,111	4,102	76,043	3,989	112,481	3,876	139,684	3,625	181,774	
	TOTAL VAT EXCLUSIVE		**33,404**	**467,654**	**32,534**	**683,221**	**45,117**	**836,477**	**43,876**	**1,237,293**	**42,634**	**1,536,525**	**39,871**	**1,999,511**	

Source: KPMG Survey and analysis

Figure 65: Cluster 3 construction costs

CLUSTER 3 COST PER SQM (KSH)														
Counties: Isiolo, Mandera, Tana River, Wajir, Garissa, Marsabit														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		6,435	90,090	6,435	135,135	7,794	144,491	7,579	213,728	7,365	265,417	7,150	358,573	Based on 6 levels of above ground structures and murram & sandy soils for substructures construction that require deep foundations
1.2	Reinforced concrete frame		7,425	103,950	7,425	155,925	8,993	166,721	8,745	246,609	8,498	306,250	8,250	413,738	Class 25 concrete used
1.3	Walling		1,814	25,389	1,814	38,084	2,196	40,720	2,136	60,232	2,075	74,799	2,015	101,052	Infill masonry walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,970	41,580	2,805	58,905	3,597	66,688	3,498	98,644	3,399	122,500	3,300	165,495	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,921	40,887	2,758	57,923	3,537	65,577	3,440	97,000	3,342	120,458	3,245	162,737	Ceramic tiled floors
1.8	Wall finishes		1,056	14,784	1,056	22,176	1,918	35,567	1,866	52,610	1,813	65,333	1,760	88,264	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,188	16,632	1,188	24,948	2,158	40,013	2,099	59,186	2,039	73,500	1,980	99,297	Assumes construction with blockboards
1.10	Mechanical & electrical installations		3,850	53,900	3,575	75,075	5,995	111,147	5,830	164,406	5,665	204,167	5,500	275,825	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,426	33,957	2,291	48,106	2,938	54,462	3,393	95,684	3,524	126,992	3,630	182,045	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		-	-	-	-	1,619	30,010	1,038	29,264	782	28,175	550	27,583	
	SUBTOTAL		31,501	441,014	30,685	644,390	42,461	787,226	41,292	1,164,443	40,124	1,446,056	38,955	1,953,593	
1.13	Add: Preliminaries	5%	1,575	22,051	1,534	32,220	2,123	39,361	2,065	58,222	2,006	72,303	1,948	97,680	
1.14	Add: Contingencies	7%	2,205	30,871	2,148	45,107	2,972	55,106	2,890	81,511	2,809	101,224	2,727	136,752	
	SUBTOTAL		35,281	493,936	34,367	721,717	47,556	881,693	46,247	1,304,176	44,938	1,619,583	43,630	2,188,024	
1.15	Add: Professional Fees	10%	3,528	49,394	3,437	72,172	4,756	88,169	4,625	130,418	4,494	161,958	4,363	218,802	
	TOTAL VAT EXCLUSIVE		**38,809**	**543,329**	**37,804**	**793,889**	**52,312**	**969,862**	**50,872**	**1,434,594**	**49,432**	**1,781,541**	**47,993**	**2,406,827**	
1.16	Add: VAT	16%	6,209	86,933	6,049	127,022	8,370	155,178	8,140	229,535	7,909	285,047	7,679	385,092	
	TOTAL COST VAT INCLUSIVE		**45,019**	**630,262**	**43,853**	**920,911**	**60,682**	**1,125,040**	**59,012**	**1,664,129**	**57,342**	**2,066,588**	**55,671**	**2,791,919**	

Source: KPMG Survey and analysis

Figure 66: Cluster 4 construction costs

CLUSTER 4 COST PER SQM (KSH)														
Counties: Embu, Kirinyaga, Meru, Murang'a, Nyeri, Tharaka Nithi														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,558	77,805	5,558	116,708	6,731	124,788	6,546	184,583	6,360	229,223	6,175	309,676	Based on 6 levels of above ground structures and generally favourable red soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,413	89,775	6,413	134,663	7,766	143,986	7,553	212,981	7,339	264,489	7,125	357,319	Class 25 concrete used
1.3	Walling		1,260	17,640	1,260	26,460	1,526	28,292	1,484	41,849	1,442	51,970	1,400	70,210	Infill masonry walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,394	33,516	2,261	47,481	2,899	53,755	2,820	79,513	2,740	98,742	2,660	133,399	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,522	35,312	2,382	50,025	3,055	56,635	2,971	83,772	2,887	104,032	2,803	140,545	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,080	15,120	1,080	22,680	1,962	36,375	1,908	53,806	1,854	66,818	1,800	90,270	Assumes construction with blockboards
1.1	Mechanical & electrical installations		3,500	49,000	3,250	68,250	5,450	101,043	5,300	149,460	5,150	185,606	5,000	250,750	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,095	29,327	1,978	41,546	2,537	47,036	2,930	82,636	3,239	116,728	3,135	157,220	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		-	-	-	-	1,398	25,918	896	25,274	675	24,333	475	23,821	
	SUBTOTAL		27,199	380,779	26,480	556,085	36,785	681,990	35,772	1,008,780	34,956	1,259,801	33,748	1,692,437	
1.13	Add: Preliminaries	5%	1,360	19,039	1,324	27,804	1,839	34,099	1,789	50,439	1,748	62,990	1,687	84,622	
1.14	Add: Contingencies	7%	1,904	26,655	1,854	38,926	2,575	47,739	2,504	70,615	2,447	88,186	2,362	118,471	
	SUBTOTAL		30,462	426,472	29,658	622,815	41,199	763,828	40,065	1,129,834	39,150	1,410,977	37,797	1,895,530	
1.15	Add: Professional Fees	10%	3,046	42,647	2,966	62,282	4,120	76,383	4,007	112,983	3,915	141,098	3,780	189,553	
	TOTAL VAT EXCLUSIVE		**33,509**	**469,120**	**32,624**	**685,097**	**45,319**	**840,211**	**44,072**	**1,242,817**	**43,065**	**1,552,074**	**41,577**	**2,085,083**	
1.16	Add: VAT	16%	5,361	75,059	5,220	109,616	7,251	134,434	7,051	198,851	6,890	248,332	6,652	333,613	
	TOTAL COST VAT INCLUSIVE		**38,870**	**544,179**	**37,843**	**794,713**	**52,570**	**974,645**	**51,123**	**1,441,668**	**49,956**	**1,800,406**	**48,229**	**2,418,696**	

Source: KPMG Survey and analysis

Figure 67: Cluster 5 construction costs

CLUSTER 5 COST PER SQM (KSH)														
Counties: Kajiado, Machakos, Kitui, Makueni, Laikipia														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,850	81,900	5,850	122,850	7,085	131,356	6,890	194,298	6,695	241,288	6,500	325,975	Based on 6 levels of above ground structures and murram & red soils for substructures construction that require deep foundations
1.2	Reinforced concrete frame		6,750	94,500	6,750	141,750	8,175	151,565	7,950	224,190	7,725	278,409	7,500	376,125	Class 25 concrete used
1.3	Walling		1,350	18,900	1,350	28,350	1,635	30,313	1,590	44,838	1,545	55,682	1,500	75,225	Infill masonry walling, 200mm thick
1.4	Roofing Structure, cover & rain water goods		2,520	35,280	2,380	49,980	3,052	56,584	2,968	83,698	2,884	103,939	2,800	140,420	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,655	37,170	2,508	52,658	3,216	59,615	3,127	88,181	3,039	109,508	2,950	147,943	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,080	15,120	1,080	22,680	1,962	36,375	1,908	53,806	1,854	66,818	1,800	90,270	Assumes construction with blockboards
1.10	Mechanical & electrical installations		3,500	49,000	3,250	68,250	5,450	101,043	5,300	149,460	5,150	185,606	5,000	250,750	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,205	30,870	2,083	43,733	2,671	49,511	3,085	86,986	3,203	115,447	3,300	165,495	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		-	-	-	-	1,472	27,282	943	26,604	711	25,614	500	25,075	
	SUBTOTAL		28,288	396,025	27,549	578,524	38,177	707,806	37,127	1,046,967	36,076	1,300,170	35,025	1,756,504	
1.13	Add: Preliminaries	5%	1,414	19,801	1,377	28,926	1,909	35,390	1,856	52,348	1,804	65,009	1,751	87,825	
1.14	Add: Contingencies	7%	1,980	27,722	1,928	40,497	2,672	49,546	2,599	73,288	2,525	91,012	2,452	122,955	
	SUBTOTAL		31,682	443,548	30,855	647,947	42,759	792,743	41,582	1,172,603	40,405	1,456,190	39,228	1,967,284	
1.15	Add: Professional Fees	10%	3,168	44,355	3,085	64,795	4,276	79,274	4,158	117,260	4,040	145,619	3,923	196,728	
	TOTAL VAT EXCLUSIVE		**34,850**	**487,903**	**33,940**	**712,741**	**47,034**	**872,017**	**45,740**	**1,289,864**	**44,445**	**1,601,809**	**43,151**	**2,164,013**	
1.16	Add: VAT	16%	5,576	78,064	5,430	114,039	7,525	139,523	7,318	206,378	7,111	256,290	6,904	346,242	
	TOTAL COST VAT INCLUSIVE		**40,426**	**565,967**	**39,370**	**826,780**	**54,560**	**1,011,540**	**53,058**	**1,496,242**	**51,557**	**1,858,099**	**50,055**	**2,510,255**	

Source: KPMG Survey and analysis

Figure 68: Cluster 6 construction costs

CLUSTER 6 COST PER SQM (KSH)														
Counties: Elgeyo Marakwet, Samburu, Turkana														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		7,020	98,280	7,020	147,420	8,502	157,627	8,268	233,158	8,034	289,545	7,800	391,170	Based on 6 levels of above ground structures and murram & rock for substructures construction that make foundations expensive to construct
1.2	Reinforced concrete frame		7,425	103,950	7,425	155,925	8,993	166,721	8,745	246,609	8,498	306,250	8,250	413,738	Class 25 concrete used
1.3	Walling		1,800	25,200	1,800	37,800	2,180	40,417	2,120	59,784	2,060	74,242	2,000	100,300	Infill masonry walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,772	38,808	2,618	54,978	3,357	62,242	3,265	92,067	3,172	114,333	3,080	154,462	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,921	40,887	2,758	57,923	3,537	65,577	3,440	97,000	3,342	120,458	3,245	162,737	Ceramic tiled floors
1.8	Wall finishes		1,056	14,784	1,056	22,176	1,918	35,567	1,866	52,610	1,813	65,333	1,760	88,264	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,320	18,480	1,320	27,720	2,398	44,459	2,332	65,762	2,266	81,667	2,200	110,330	Assumes construction with blockboards
1.10	Mechanical & electrical Installations		3,850	53,900	3,575	75,075	5,995	111,147	5,830	164,406	5,665	204,167	5,500	275,825	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,426	33,957	2,291	48,106	2,938	54,462	3,393	95,684	3,524	126,992	3,630	182,045	For foul water drainage, paved areas, storm water drainage and landscaping
1.12	Parking		-	-	-	-	1,619	30,010	1,038	29,264	782	28,175	550	27,583	
	SUBTOTAL		32,007	448,091	31,202	655,237	43,153	800,058	41,965	1,183,424	40,778	1,469,628	39,590	1,985,439	
1.13	Add: Preliminaries	5%	1,600	22,405	1,560	32,762	2,158	40,003	2,098	59,171	2,039	73,481	1,980	99,272	
1.14	Add: Contingencies	7%	2,240	31,366	2,184	45,867	3,021	56,004	2,938	82,840	2,854	102,874	2,771	138,981	
	SUBTOTAL		35,847	501,862	34,946	733,865	48,331	896,065	47,001	1,325,435	45,671	1,645,984	44,341	2,223,691	
1.15	Add: Professional Fees	10%	3,585	50,186	3,495	73,387	4,833	89,607	4,700	132,544	4,567	164,598	4,434	222,369	
	TOTAL VAT EXCLUSIVE		**39,432**	**552,048**	**38,441**	**807,252**	**53,165**	**985,672**	**51,701**	**1,457,979**	**50,238**	**1,810,582**	**48,775**	**2,446,060**	
1.16	Add: VAT	16%	6,309	88,328	6,150	129,160	8,506	157,708	8,272	233,277	8,038	289,693	7,804	391,370	
	TOTAL COST VAT INCLUSIVE		**45,741**	**640,376**	**44,591**	**936,412**	**61,671**	**1,143,380**	**59,974**	**1,691,255**	**58,276**	**2,100,275**	**56,579**	**2,837,430**	

Source: KPMG Survey and analysis

Figure 69: Cluster 7 construction costs

CLUSTER 7 COST PER SQM (KSH)														
Counties: Bomet, Nakuru, Nandi, Trans Nzoia, Uasin Gishu, Kericho														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,733	80,262	5,733	120,393	6,943	128,729	6,752	190,412	6,561	236,462	6,370	319,456	Based on 5 levels of above ground structures and generally favourable red soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,615	92,610	6,615	138,915	8,012	148,533	7,791	219,706	7,571	272,841	7,350	368,603	Class 25 concrete used
1.3	Walling		1,260	17,640	1,260	26,460	1,526	28,292	1,484	41,849	1,442	51,970	1,400	70,210	Infill masonry walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,470	34,574	2,332	48,980	2,991	55,452	2,909	82,024	2,826	101,861	2,744	137,612	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,602	36,427	2,457	51,604	3,151	58,423	3,064	86,418	2,978	107,317	2,891	144,984	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,058	14,818	1,058	22,226	1,923	35,648	1,870	52,729	1,817	65,482	1,764	88,465	Assumes construction with blockboards
1.1	Mechanical & electrical installations		3,430	48,020	3,185	66,885	5,341	99,022	5,194	146,471	5,047	181,894	4,900	245,735	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,161	30,253	2,041	42,858	2,617	48,521	3,023	85,246	3,139	113,138	3,234	162,185	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		-	-	-	-	1,442	26,736	925	26,072	696	25,101	490	24,574	
	SUBTOTAL		27,706	387,888	26,981	566,596	37,407	693,519	36,377	1,025,834	35,348	1,273,925	34,318	1,721,048	
1.13	Add: Preliminaries	5%	1,385	19,394	1,349	28,330	1,870	34,676	1,819	51,292	1,767	63,696	1,716	86,052	
1.14	Add: Contingencies	7%	1,939	27,152	1,889	39,662	2,618	48,546	2,546	71,808	2,474	89,175	2,402	120,473	
	SUBTOTAL		31,031	434,435	30,218	634,587	41,895	776,741	40,742	1,148,934	39,589	1,426,796	38,436	1,927,573	
1.15	Add: Professional Fees	10%	3,103	43,443	3,022	63,459	4,190	77,674	4,074	114,893	3,959	142,680	3,844	192,757	
	TOTAL VAT EXCLUSIVE		**34,134**	**477,878**	**33,240**	**698,046**	**46,085**	**854,415**	**44,817**	**1,263,827**	**43,548**	**1,569,476**	**42,280**	**2,120,331**	
1.16	Add: VAT	16%	5,461	76,461	5,318	111,687	7,374	136,706	7,171	202,212	6,968	251,116	6,765	339,253	
	TOTAL COST VAT INCLUSIVE		**39,596**	**554,339**	**38,559**	**809,733**	**53,459**	**991,121**	**51,987**	**1,466,039**	**50,516**	**1,820,592**	**49,045**	**2,459,584**	

Source: KPMG Survey and analysis

Figure 70: Cluster 8 construction cost

CLUSTER 8 COST PER SQM (KSH)														
Counties: Bungoma, Busia, Kakamega, Vihiga														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,265	73,710	5,265	110,565	6,377	118,220	6,201	174,868	5,851	210,871	5,850	293,378	Based on 6 levels of above ground structures and generally favourable red soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,075	85,050	6,075	127,575	7,358	136,408	7,155	201,771	6,953	250,568	6,750	338,513	Class 25 concrete used
1.3	Walling		1,260	17,640	1,260	26,460	1,526	28,292	1,484	41,849	1,442	51,970	1,400	70,210	Infill brick walling, 150mm thick
1.4	Roofing structure, cover & rain water goods		2,268	31,752	2,142	44,982	2,747	50,926	2,671	75,328	2,596	93,545	2,520	126,378	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,390	33,453	2,257	47,392	2,894	53,654	2,814	79,363	2,735	98,557	2,655	133,148	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,080	15,120	1,080	22,680	1,962	36,375	1,908	53,806	1,854	66,818	1,800	90,270	Assumes construction with blockboards
1.10	Mechanical & electrical installations		3,150	44,100	2,925	61,425	4,905	90,939	4,770	134,514	4,635	167,045	4,500	225,675	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		1,985	27,783	1,874	39,359	2,403	44,560	2,776	78,287	2,883	103,902	2,970	148,946	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		0	0	0	0	1,324	24,553	849	23,943	640	23,052	450	22,568	
	SUBTOTAL		25,850	361,893	25,177	528,712	34,956	648,090	33,994	958,636	32,858	1,184,189	32,070	1,608,311	
1.13	Add: Preliminaries	5%	1,292	18,095	1,259	26,436	1,748	32,404	1,700	47,932	1,643	59,209	1,604	80,416	
1.14	Add: Contingencies	7%	1,809	25,333	1,762	37,010	2,447	45,366	2,380	67,105	2,300	82,893	2,245	112,582	
	SUBTOTAL		28,951	405,320	28,198	592,157	39,151	725,861	38,074	1,073,673	36,801	1,326,292	35,918	1,801,308	
1.15	Add: Professional Fees	10%	2,895	40,532	2,820	59,216	3,915	72,586	3,807	107,367	3,680	132,629	3,592	180,131	
	TOTAL VAT EXCLUSIVE		**31,847**	**445,852**	**31,018**	**651,373**	**43,066**	**798,447**	**41,881**	**1,181,040**	**40,481**	**1,458,921**	**39,510**	**1,981,439**	
1.16	Add: VAT	16%	5,095	71,336	4,963	104,220	6,891	127,751	6,701	188,966	6,477	233,427	6,322	317,030	
	TOTAL COST VAT INCLUSIVE		**36,942**	**517,189**	**35,981**	**755,593**	**49,957**	**926,198**	**48,582**	**1,370,007**	**46,957**	**1,692,348**	**45,832**	**2,298,469**	

Source: KPMG Survey and analysis

Figure 71: Cluster 9 construction costs

CLUSTER 9 COST PER SQM (KSH)														
Counties: Homa Bay, Kisumu, Migori, Siaya, Kisii, Nyamira														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,558	77,805	5,558	116,708	6,731	124,788	6,546	184,583	6,360	229,223	6,175	309,676	Based on 6 levels of above ground structures and generally favourable murram soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,413	89,775	6,413	134,663	7,766	143,986	7,553	212,981	7,339	264,489	7,125	357,319	Class 25 concrete used
1.3	Walling		1,530	21,420	1,530	32,130	1,853	34,355	1,802	50,816	1,751	63,106	1,700	85,255	Infill masonry block walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,394	33,516	2,261	47,481	2,899	53,755	2,820	79,513	2,740	98,742	2,660	133,399	A flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,522	35,312	2,382	50,025	3,055	56,635	2,971	83,772	2,887	104,032	2,803	140,545	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,026	14,364	1,026	21,546	1,864	34,557	1,813	51,115	1,761	63,477	1,710	85,757	Assumes construction with blockboards
1.10	Mechanical & electrical installations		3,325	46,550	3,088	64,838	5,178	95,991	5,035	141,987	4,893	176,326	4,750	238,213	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,095	29,327	1,978	41,546	2,537	47,036	2,930	82,636	3,043	109,675	3,135	157,220	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		0	0	0	0	1,398	25,918	896	25,274	675	24,333	475	23,821	
	SUBTOTAL		27,240	381,353	26,534	557,209	36,741	681,181	35,730	1,007,585	34,719	1,251,263	33,708	1,690,431	
1.13	Add: Preliminaries	5%	1,362	19,068	1,327	27,860	1,837	34,059	1,786	50,379	1,736	62,563	1,685	84,522	
1.14	Add: Contingencies	7%	1,907	26,695	1,857	39,005	2,572	47,683	2,501	70,531	2,430	87,588	2,360	118,330	
	SUBTOTAL		30,508	427,115	29,718	624,074	41,150	762,923	40,018	1,128,495	38,885	1,401,414	37,752	1,893,283	
1.15	Add: Professional Fees	10%	3,051	42,712	2,972	62,407	4,115	76,292	4,002	112,849	3,888	140,141	3,775	189,328	
	TOTAL VAT EXCLUSIVE		**33,559**	**469,827**	**32,690**	**686,481**	**45,265**	**839,215**	**44,019**	**1,241,344**	**42,773**	**1,541,556**	**41,528**	**2,082,611**	
1.16	Add: VAT	16%	5,369	75,172	5,230	109,837	7,242	134,274	7,043	198,615	6,844	246,649	6,644	333,218	
	TOTAL COST VAT INCLUSIVE		**38,929**	**544,999**	**37,920**	**796,318**	**52,508**	**973,490**	**51,062**	**1,439,959**	**49,617**	**1,788,205**	**48,172**	**2,415,829**	

Source: KPMG Survey and analysis

Figure 72: Cluster 10 construction costs

CLUSTER 10 COST PER SQM (KSH)														
Counties: Nairobi, Kiambu														
Item	Description		Single room unit		Double room unit		Bedsitter unit		One bedroom unit		Two bedroom unit		Three bedroom unit		Assumptions
	Unit area in sqm		14		21		19		28		36		50		
			Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	Cost per sqm	Total cost per unit	
1.1	Substructures		5,850	81,900	5,850	122,850	7,085	131,356	6,890	194,298	6,695	241,288	6,500	325,975	Based on 5 levels of above ground structures and generally favourable murram & red soils for substructures construction that do not require deep foundations
1.2	Reinforced concrete frame		6,750	94,500	6,750	141,750	8,175	151,565	7,950	224,190	7,725	278,409	7,500	376,125	Class 25 concrete used
1.3	Walling		1,440	20,160	1,440	30,240	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Infill masonry walling, 200mm thick
1.4	Roofing structure, cover & rain water goods		2,520	35,280	2,380	49,980	3,052	56,584	2,968	83,698	2,884	103,939	2,800	140,420	Assumes a flat roof slab with waterproofing membrane and interlocking tiles
1.5	Windows		698	9,765	659	13,834	845	15,662	822	23,166	798	28,769	775	38,866	Mild steel casement windows with clear glazing and paintwork
1.6	Doors		720	10,080	680	14,280	872	16,167	848	23,914	824	29,697	800	40,120	1 No. mild steel door and internal flush doors
1.7	Floor finishes		2,655	37,170	2,508	52,658	3,216	59,615	3,127	88,181	3,039	109,508	2,950	147,943	Ceramic tiled floors
1.8	Wall finishes		960	13,440	960	20,160	1,744	32,334	1,696	47,827	1,648	59,394	1,600	80,240	Plaster & painted walls internally and key pointing to external walls
1.9	Joinery fittings		1,080	15,120	1,080	22,680	1,962	36,375	1,908	53,806	1,854	66,818	1,800	90,270	Assumes construction with blockboards
1.10	Mechanical & electrical installations		3,500	49,000	3,250	68,250	5,450	101,043	5,300	149,460	5,150	185,606	5,000	250,750	Basic Plumbing Drainage & Electrical Fittings
1.11	External works		2,205	30,870	2,083	43,733	2,671	49,511	3,085	86,986	3,203	115,447	3,300	165,495	For foul water drainage, paved areas, storm water drainage and landscaping only
1.12	Parking		0	0	0	0	1,472	27,282	943	26,604	711	25,614	500	25,075	
	SUBTOTAL		28,378	397,285	27,639	580,414	38,286	709,827	37,233	1,049,957	36,179	1,303,882	35,125	1,761,519	
1.13	Add: Preliminaries	5%	1,419	19,864	1,382	29,021	1,914	35,491	1,862	52,498	1,809	65,194	1,756	88,076	
1.14	Add: Contingencies	7%	1,986	27,810	1,935	40,629	2,680	49,688	2,606	73,497	2,533	91,272	2,459	123,306	
	SUBTOTAL		31,783	444,959	30,955	650,063	42,881	795,006	41,700	1,175,951	40,520	1,460,348	39,340	1,972,901	
1.15	Add: Professional Fees	10%	3,178	44,496	3,096	65,006	4,288	79,501	4,170	117,595	4,052	146,035	3,934	197,290	
	TOTAL VAT EXCLUSIVE		**34,961**	**489,455**	**34,051**	**715,070**	**47,169**	**874,507**	**45,870**	**1,293,546**	**44,572**	**1,606,383**	**43,274**	**2,170,191**	
1.16	Add: VAT	16%	5,594	78,313	5,448	114,411	7,547	139,921	7,339	206,967	7,132	257,021	6,924	347,231	
	TOTAL COST VAT INCLUSIVE		**40,555**	**567,768**	**39,499**	**829,481**	**54,716**	**1,014,428**	**53,210**	**1,500,514**	**51,704**	**1,863,404**	**50,198**	**2,517,422**	

Source: KPMG Survey and analysis

10.5 Appendix V: List of stakeholders interviewed

No.	Name of representative	Designation	Organisation	Address
1	Patrick Bucha	Secretary - Housing Department	MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
2	Jane Mwangi	Director - Housing Department	MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
3	Rachel Maina		MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
4	Eunice Muli		MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
5	Ezekiel Chege	Assistant Director of Housing	MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
6	Qs.Charles Sikuku	Director - Slum Upgrading Department	MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
7	Nora Matindi	Deputy Director of Housing	MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
8	Margaret Njuki	Chief Compliance Officer	National Environment Management Authority	Eland House, Popo Road Off Mombasa Road, Nairobi
9	James T Gatungu	Director - Production Statistics Directorate	Kenya National Bureau of Statistics	Herufi House Lt Tumbo Lane, Nairobi
10	Isaac Ndegwa		Kenya National Bureau of Statistics	Herufi House Lt Tumbo Lane, Nairobi
11	Simon Opondo		MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
12	James Wahome		MoTIHUD - SDHUD	Ardhi House, 1st Ngong Avenue Nairobi
13	Prof. Paul Maurice Syagga	Chief Executive Officer	Syagga and Associates Limited	Jalada Place, 2nd Floor Ngong Road, Nairobi
14	Muddy Ramrakha	Board Treasurer - Head of Finance Committee	Kenya Green Building Society	Park Place Business Center, 2nd Parklands Limuru Rd, Nairobi
15	Zoravar Singh	Director	iJenga	Suite 5B, Rivaan center, Muguga Green Westlands, Nairobi
16	Prof. Muhammad Swazuri	Chairman	National Lands Commission	Ardhi House, 1st Ngong Avenue Nairobi
17	Samson Kasanga	Senior Deputy Director	Ministry of Energy	Ministry of Energy, Nyayo House Kenyatta Avenue, Nairobi

No.	Name of representative	Designation	Organisation	Address
18	Enoch Mwita	Trade Development Manager	Department for International Development	British High Commission Upper Hill, Nairobi
19	Rubbina Karrun	Cities Adviser	UK Department For International Development	22 Whitehall London
20	Yolanda Chakava	Infrastructure Adviser	Department for International Development	British High Commission Upper Hill, Nairobi
21	Naison Mutizwa-Mangiza	Director - Regional Office for Africa	UN-HABITAT	UN complex Gigiri, Nairobi
22	Stephen Ireri	Head of Mortgages	Equity Bank	Equity Centre, 4th Floor Hospital Road, Upper Hill, Nairobi
23	Eppie Oluoch	Board Chair	Marketing & Social Research Association	103 Manyani East Road, Off James Gichuru Road Nairobi
24	Susan Kahinga Chege	Associate Director	Pan African Research Services Limited	Rhapta Heights on Rhapta road Nairobi
25	Jane Nzomo	Managing Director	Consumer Options	International House, 6th Floor Mama Ngina Street, Nairobi
26	Jared Osoro	Director - Centre for Research on Financial Markets and Policy	Kenya Bankers Association	International House, 13th Floor Mama Ngina Street, Nairobi
27	David Muriithi	Research Fellow - Centre for Research on Financial Markets and Policy	Kenya Bankers Association	International House, 13th Floor Mama Ngina Street, Nairobi
28	Kiplangat Josea		Kenya Bankers Association	International House, 13th Floor Mama Ngina Street, Nairobi
29	Chris Chege	Head of Mortgages	Co-operative Bank of Kenya	CIC Plaza, 3rd Floor Upper Hill, Nairobi
30	Johnson Denge	Senior Manager, Regional Markets	Cytonn Investments	The Chancery, 6th Floor Nairobi
31	Paul Wythe	Chief Operating Officer - Properties	Phatisa	Longonot Place, 7th Floor Kijabe Street, Nairobi
32	Okomboli Ong'ong'a	Senior Fund Partner - Properties	Phatisa	Longonot Place, 7th Floor Kijabe Street, Nairobi
33	Duncan Onyango	East Africa Director	Acumen	Cape Office Park, 1st Floor Nairobi
34	Qs. David Mathu	Ag. Gneral Manager - Construction Research and Capacity Building	National Construction Authority	KCB Towers, 9th Floor Upper Hill, Nairobi
35	Samson	Lawyer	National Construction Authority	KCB Towers, 9th Floor Upper Hill, Nairobi
36	Arch. Stephen Mwilu	Manager - Regional Offices	National Construction Authority	KCB Towers, 9th Floor Upper Hill, Nairobi
37	Christopher		National Construction Authority	KCB Towers, 9th Floor Upper Hill, Nairobi

No.	Name of representative	Designation	Organisation	Address
38	Thurwa		National Construction Authority	KCB Towers, 9th Floor Upper Hill, Nairobi
39	Hon. Alex Kilowua	CECM Roads, Transport, Public Works, Housing & Energy	County Government of Kajiado	
40	Kecia Rust	Executive Director	Centre for Affordable Housing Finance	158 Jan Smuts Avenue Building, Second Floor - West Wing, Johannesburg, South Africa
41	Kevin Akiki Asembo	Director - Projects	Trident Estates	Fortis towers - 10th floor, Woodvale Grove Westlands, Nairobi
42	Kevin Kihara	Managing Director	Earthview	KAPS House, Kindaruma Road Kilimani, Nairobi
43	John Rogers	Managing Director - Project Management	MML Turner & Townsend	The Courtyard, General Mathenge Drive Westlands, Nairobi
44	Eric Nyadimo	Managing Director	Oakar Services	KUSCCO Centre, Kilimanjaro road Upper Hill, Nairobi
45	Davendra Dabasia	Director	Mace	London EC2M 6XB United Kingdom
46	Chris Coulson	Managing Director	Garden City	Garden City Ruaraka
47	Alexander Sarac	Partner	Bryan Cave Leighton Paisner LLP	Al Sila Tower, ADGM Square United Arab Emirates
48	Sheila Cadogan		Mahmoud & Gitau Advocates	Africa Alliance of YMCA Building Statehouse Crescent, Nairobi
49	Dennis Kwena	Adviser - Private Sector Development	Department for International Development	British High Commission Upper Hill Road, Nairobi
50	Mairura Omwenga	Chairman	Town and County Planners Association of Kenya	Block 2, White Court, Galana Road, Kilimani Nairobi
51	Gikonyo Gitonga	Chair - Lands & Physical Planning Sector Board	KEPSA	5th floor, Shelter Afrique Building Mamlaka Road, Nairobi
52	Elias Ngotho	Business Development Director	CITICC (AFRICA) HOLDING LTD	House No. 3, off Lenana Court Lenana Rd, Nairobi
53	Julius Coredo	Head of Program Operations	Habitat for Humanity	197 Lenana Place Lenana Road, Nairobi
54	Edna Riechi	Advocacy Specialist	Habitat for Humanity	197 Lenana Place Lenana Road, Nairobi
55	Plan. Charles Osengo	Honorary Treasurer	Kenya Institute of Planners	NSSF Building, Block A Community, Nairobi
56	Okoth Kim	Executive Officer	Kenya Institute of Planners	NSSF Building, Block A Community, Nairobi
57	Hirji Seyani	Director	Seyani Brothers & Co. (K) Ltd	The Oval, Jalaram Road Westlands, Nairobi

No.	Name of representative	Designation	Organisation	Address
58	Michael Kosuri	Cost Estimator	Seyani Brothers & Co. (K) Ltd	The Oval, Jalaram Road Westlands, Nairobi
59	Qs. George Ngure	Project Manager	Seyani Brothers & Co. (K) Ltd	The Oval, Jalaram Road Westlands, Nairobi
60	Engineer Mwaniki		Water Resource Authority	10th Floor NHIF Building Ngong Road, Nairobi
61	George Laboso	Head of Mortgages	Barclays Bank of Kenya Limited	Mortgage Centre, Queensway Branch - 1st Floor Mama Ngina Street, Nairobi
62	Martin Muchemi	Business Development Manager, Mortgage Lending	Barclays Bank of Kenya Limited	Mortgage Centre, Queensway Branch - 1st Floor Mama Ngina Street, Nairobi
63	Jacob Mwangi	Chief Executive Officer	The Architectural Association of Kenya	Blue Violet Plaza, Kamburu Drive Off Ngong Road, Nairobi
64	Emma Miloyo	President	The Architectural Association of Kenya	Blue Violet Plaza, Kamburu Drive Off Ngong Road, Nairobi
65	Diana Lee - Smith	Associate	Mazingira Institute	No. 43 Prof. Saitoti Road Nairobi
66	Pauline Kahiga - Waititu	Chief Officer - Urban Renewal, Housing & Project Management	Nairobi County Government	City Hall Annex Nairobi
67	Marion Rono	Director Housing	Nairobi County Government	City Hall Annex Nairobi
68	David Mutiso	Private consultant	Consultant	22 Plums Lane , Off Ojijo Road Parklands, Nairobi
69	Hamisi Omar		National Social Security Fund	NSSF Building, Block A Community, Nairobi
70	Josephine Mutiso		National Social Security Fund	NSSF Building, Block A Community, Nairobi
71	Sophie Koimur		National Social Security Fund	NSSF Building, Block A Community, Nairobi
72	Peter Muiruri	Property Development Manager	National Social Security Fund	NSSF Building, Block A Community, Nairobi
73	Jospeh Kimote	General Manager Strategy, Research & Development	National Social Security Fund	NSSF Building, Block A Community, Nairobi
74	Sam Muturi	Director - Mortgage Business	Kenya Commercial Bank	Lonrho House, 18 Floor Standard street, Nairobi
75	George Pande	Strategy and Product Development Manager	Kenya Commercial Bank	Lonrho House, 18 Floor Standard street, Nairobi

KPMG

11 Sign off

We confirm that the contents of this Supply Report meet the requirements of the scope of the Contract.

KPMG Representative:

Name Sheel Gill

Signature

Witness

Name James Woodward

Signature

Principal Secretary

Name Charles Hinga Mwaura

Signature

Witness

Name CLIVE AKORA

Signature

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING & URBAN DEVELOPMENT
STATE DEPT. FOR HOUSING AND URBAN DEVELOPMENT
RECEIVED
17 DEC 2018
DIRECTOR OF HOUSING
P.O. BOX 30119-00100, NAIROBI