DENSITY STUDY OF LOW AND LOWER INCOME SETTLEMENTS IN KARACHI

By Arif Hasan Asiya Sadiq Suneela Ahmed (15 August 2009)

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BACKGROUND

There is a growing trend in Asian cities to demolish low income informal settlements and relocate their residents in six to eight storey apartment blocks. There is sufficient evidence to suggest that:

- low income groups are unhappy with the high-rise solutions for sociological reasons;
- the units are expensive to maintain and instalments for lease or ownership are more often than not unaffordable for the poor residents;
- residents cannot carry out any informal businesses in the apartments;
- the residents become poorer and some of them destitute. As a result, the majority of them sell their "possession" informally (if they can) at throw away prices and move back as renters to informal settlements in the city centre.

METHODOLOGY

- Interviews of groups were carried out in six randomly chosen low and lower middle income settlements and apartment complexes.
- Complaints of flat owners and house owners very different from each other.
- Involvement of the Urban Research and Design Cell at the Department of Architecture and Planning, NED University Karachi and the reasons for it.
- Choice of three settlements and one apartment complex for detailed study through analysis of laws and regulations; physical documentation; questionnaires of 10 per cent of the households regarding physical, social and economic conditions; and an analysis of the results leading to the preparation of a report and comparison of the four case studies, the rough matrices on environmental, housing, social, physical and new design proposals.
- Comparison of the chosen apartment block (10 years old) with a 35 years old apartment complex

- Physical documentation for each site has consisted of:
 - location plan in relation to the city and the immediate

neighbourhood;

- existing landuse;
- built-up density;
- volumetric analysis;
- sections to the site;
- documentation of houses; and
- photographs
- Redesigning of the settlements and apartment block on the basis of the analysis.
- Opinions of developers and prospective house owners.
- Discussions with the House Building Finance Corporation of the federal government for the development of a pilot project based on the study findings.

CASE STUDY ONE KHUDA-KI-BASTI 3

- Khuda-ki-Basti (KKB) is located 25 kilometres from the city centre and is spread over 40.8 acres (16.51 hectares).
- It is planned keeping in view KBCA regulations for the planning of townships.
- 49.26 per cent of the site consists of residential plots of 80 square yards (67 square metres) each; 1.85 per cent of the site is allocated for commercial plots; 6.51 per cent is allocated for amenities (including schools); 7.24 per cent for open spaces and parks; and 35.14 per cent for streets and roads.
- The total number of plots is 1,237. The land was provided at subsidised rates to the NGO Saiban who had the settlement planned as a plot scheme and developed a process through which only poor families could purchase a plot and be forced to live on it immediately. Repayment for the plot is in affordable instalments spread over seven years.
- The maximum permissible density as per KBCA regulations for the township is 500 persons per acre (1,285 persons per hectare) which works out to about 15 persons per residential unit.
- Currently the average number of persons per plot is 6.7 and the density is 203 persons per acre (555 persons per hectare).
- According to the byelaws construction can only be for ground plus two floors. Important findings of the analysis of the physical and social survey are given below.
- 65 per cent respondents were renters before they came to KKB. Now only 5 per cent are renters.
- 30 per cent of the respondents have businesses in their homes and an additional 65 per cent are interested in using their premises for income generation activities. As a result, 17 per cent of the respondents work from home although 68 per cent are artisans or day-wage labour. Meanwhile, all plots developed for commercial purposes have not yet been occupied.

CASE STUDY TWO

- Nawalane is situated in Lyari Town of Karachi which is over 250 years old. It is an informal settlement that was regularised in 1976. It is spread over 20.9 acres (8.4 hectares), has 769 plots and a density of 1,356 persons per acre (3,376 persons per hectare).
- Till 1976, when it was regularised, most of the houses were single or double storey. Today, the majority of them are ground plus two to ground plus four (and even ground plus five) and they continue to rise vertically.
- Parks and playgrounds are almost non-existent. However, there are parks in the neighbourhood of Nawalane.
- The settlement consists of houses on 38 to 300 square yards (31.38 to 100 square metres) and is served by 24 lanes.
- Nawalane can be spatially divided into two almost equal zones, "A" and "B". Zone "A" is in the south-east and has a majority of houses of ground plus three to ground plus four. Its density is around 4,480 persons per hectare. This is more than twice the maximum government prescribed density of 650 persons per acre (1,605 persons per hectare) for low income apartment complexes. The physical and social conditions in Zone "A" are degraded.

- The settlement is ethnically homogenous. The ancestors of all the residents migrated from Balochistan. All the respondents were born here except for four women who had come to the settlement as a result of marriage.
- The average family size of the respondents is 13.56 and at an average two families live on one plot. There are 6.36 children per nuclear family and as such space is required for playgrounds.
- Only 18.84 per cent of the population uses their homes for economic activity. This is because traditionally this is a working class area and does not have a tradition of entrepreneurship.
- The narrow roads prevent access of ambulances or fire engines into the locality and pose problems for the maintenance of sewage and electricity supply lines.

CASE STUDY THREE PAPOSH NAGAR

- Aurangabad in Paposh Nagar was created as a plot settlement in 1954 for migrants from India. At that time it was on the city fringe about seven kilometres from the city centre. Today, it is adjacent to the industrial area and to important health and education institutions.
- It was designed as 417 plots of 45 square yards (38.5 square metres) each. The houses consisted of one floor only. However, over time they have grown and many of them are now ground plus one to ground plus three structures.
- People have also increased the size of their plots by encroaching on the roads.
- As a result of these expansions, the average plot size is now 81.6 square yards (68.2 square metres). Household size is 6.7 persons and there are 1.5 households (10.05 persons) per house. As such, the density is 478 persons per acre (1,182 persons per hectare).
- Almost all families are extended families. 36.32 per cent of the male respondents and 54.05 per cent of female respondents were between the ages of 20 and 30. They claim that they are the dominant group in the settlement.
- This means an increase in population requiring new homes will take place in the next decade. 26.32 per cent of the respondents are male above the age of 60. They also claim that they are a sizeable group and it is because of them that the extended family system survives and functions.
- Ethnicity is one of the reasons for moving into this locality. The owners from whom they have purchased these houses have gone up in life and moved to better locations because of the improved education of their children and/or entreprenual skills.

CASE STUDY FOUR FAHAD APARTMENTS

- Fahad Apartments are different from the other three case studies as they are not a settlement consisting of houses on individual plots but a developer built apartment complex. They are located in an urban development suburban project designed by the Karachi Development Authority (KDA) on 26,000 acres (64,222 hectares).
- The apartment complex is built on 1.5 acres (0.60 hectare) and consists of 248 apartments and 56 shops. Each apartment has three rooms and a covered area of 81.6 square yards (68.2 square metres). The entire complex is a walk-up affair of ground plus four floors.
- The average household size is 5.72 persons per apartment which works out to a density of 942 persons per acre (2,329 persons per hectare). This far exceeds the maximum density of 650 persons per acre (1,605 persons per hectare) allowed by the KBCA regulations for low income apartment complexes.
 Obviously, the developer of Fahad Apartments has violated the rules.

- The housing unit in the apartments is also different from the other case studies. It has balconies, attached bathrooms (with glazed tiles) and "American kitchens". It projects a picture of a different culture and a different way of living. This is developer induced.
- The other major difference between Fahad Apartments and the other case studies is that amenities and health and education institutions are available to it in a planned manner in the neighbourhood.
- Unlike Nawalane and Paposh Nagar, Fahad Apartments are not ethnically homogenous since the apartments were offered for sale on the formal market.
- The Complex has been occupied for the last ten years.
- 60 per cent of the male respondents are between the ages of 20 and 29 and have recently got married. Thus, the three room apartment fulfils their requirements. They also feel that the majority of the residents are young people with not more than two to three children and that there are almost no older people living in the apartments. That is why the family size of the respondents is 5.7.
- The respondents have not thought of the housing related problems they will face once their children grow up and wish to get married. However, they feel that when the problem arises they will not be able to raise funds for the purchase of an apartment or a plot of land.
- 60 per cent of the respondents were previously living on rent in other parts of Karachi and 68 per cent chose to move to the apartments so that they could become owners of a place to live.

FAHAD APARTMENTS: COMPARISON WITH LABOUR SQUARE

- Unlike Fahad Apartments the number of persons per apartment is estimated by the residents interviewed as between 10 to 15 persons. When they moved in 1974, many were young married couples with one or two children. Now the children have grown up, got married and have children of their own. It is not possible for them, due to cash constraints and nonavailability of affordable loans, to purchase apartments or a plot of land for additional accommodation for all the children. Rentals and even land in katchi abadis, apart from the outer fringe of the city (where there is no infrastructure) is unaffordable.
- As long as the state agencies were involved in maintenance of the complexes, environmental conditions were better. The unions do not function. For them to function some state control is required.

Apartments have a higher annual maintenance cost than homes

- **KKB-3** : Rs 4,200 (US\$52.5) includes house improvement and additions
- **Nawalane** : Rs 5,000 (US\$62.5) includes house improvement and additions
- **Paposh Nagar**: Rs 7,574 (US\$94.6) includes house improvement and additions
- Fahad Apartments : Rs 7,572 (US\$94.65) maintenance costs only

Support organisation helps in creation of better and cheaper education. Percentage spent on children's education is

- **KKB** : 4% of income since a support organisation is present
- Nawalane: 22% of income. This is because of a large number of children
- Paposh Nagar : 18 % of income
- Fahad Apartments: 24% of income

<u>CONCEPTUAL REMODELLING</u> OF THE SETTLEMENTS

KHUDA-KI-BASTI – 3

- Density increased from 502 to 1,714 persons per hectare.
- KBCA recommended density 1,285 persons per hectare
- The plot size has been decreased from 80 square yards (67 square metres) to 56 square yards (47 square metres). This has been done because the requirements of the KKB residents can be fulfilled on a smaller plot. The dimensions of the plot have been changed so as to make the plot 13 feet x 39 feet (3.96 x 11.8 metres). As a result, a larger number of plots can be accommodated. After remodelling the number of plots has increased from 1,237 to 2,112.
- Residential and residential-cum-commercial landuse has been increased from 47.14 per cent to 55 per cent. This is in keeping with the maximum prescribed KBCA regulations.

- By combining road and open spaces, circulation areas have been reduced from 35.6 per cent to 23.5 per cent (KBCA minimum 22 per cent) and as a result commercial areas, parks, amenities and space for educational facilities have been increased from 1.85, 7.24, 2.86, 3.19 per cent to 5, 8, 4, 4.5 per cent respectively. This is a major improvement in the physical environment.
- The increase in the number of plots and the new dimensions also reduces the cost of the plot considerably. The Saiban cost of a plot was Rs 42,000 (US\$ 525). After remodelling the cost comes down to Rs 24,600 (US\$ 308). In addition, savings on infrastructure cost (water, sewage, road) per plot comes to Rs 5,965 (US\$ 74). This means a 44 per cent saving on infrastructure development. This remodelling makes KKB far more affordable.

NAWALANE

- Existing density 3,367 persons per hectare. Proposed density 3,214 persons per hectare. (This is 2.5 times higher than KBCA prescribed densities)
- The average size of a plot in Nawalane is 125 square yards (100 square metres). It varies between 38 to 300 square yards (25 to 251 square metres). Currently, there are 769 plots. These have been replaced by 1,000 plots of 56.33 square yard (47 square metres) each.
- Currently, there are 2.72 families (36.8 persons) living on each plot. Remodelling suggests two families or 27 persons on each plot. Housing plans developed for the settlement are ground plus three, with eight rooms.
- Landuse allocations have also been changed. By remodelling residential use has been reduced from 60.5 to 55 per cent which is prescribed by the KBCA regulations. Commercial, parks, amenities and space for educational institutions has been increased from 0.02. 0.12, 1.81, 2.32 per cent to 5, 10, 4, 4 per cent respectively.
- The existing circulation area in Nawalane is 19.6 per cent. It consists of narrow congested lanes. It has been increased to 22 per cent and wherever possible roads and open spaces have been combined so as to give the settlement a feeling of openness.

- Amenities have been grouped together around large open spaces and the fact that they will be single storey (may be double) as compared to the ground plus three floor houses, will increase the feeling of openness at these nodes.
- Commercial areas have been developed on the periphery road. Each commercial plot is also 56 square yards (47 square metres) and may have three floors of apartments above it.
- Sections through the site indicate that the ground plus four floor heights of the houses will not create a feeling of congestion.
- Ideally speaking the family size in remodelled Nawalane should be 13.4 with a building height of ground plus two and a half. This would give a density of 641 persons per acre (1,583 persons per hectare) and if the commercial units are added, the density increases to 672. Again, this is higher than the KBCA prescribed densities of 500 persons per acre for townships and 650 persons per acre for apartments.

PAPOSH NAGAR

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- Paposh Nagar currently has a density of 478 persons per acre (1,182 persons per hectare). The average plot size is 81.6 square yards (67.8 square metres) and the average number of persons per plot is 10.5. By following the principles applied to the remodelling of Nawalane, the number of plots has been increased from 714 to 777 and at 13.4 persons per house the density has been increased to 694 persons per acre (1,715 persons per hectare).
 - If the household size is reduced from 13.4 persons to the existing 10.5, the density decreases to 543 persons per acre (1,343 persons per hectare). If the commercial areas are added, then the density increases to 658 persons per acre (1,625 persons per hectare). This is higher than the KBCA maximum prescribed densities for apartment blocks.
- The remodelling of Paposh Nagar creates a pleasant non-congested settlement. The residential area has been reduced from 60.5 per cent to the KBCA prescribed 55 per cent. The commercial area, parks, amenities, spaces for educational institutions have been increased from 4, 4, 2.85, 2.60 per cent to 5, 10, 4, 4 per cent respectively. Road space has also been increased from 16.03 to 22 per cent. Sections through the site indicate that the ground plus four floor heights of the houses will not create a feeling of congestion.

FAHAD APARTMENTS

Plots for apartment complexes are built by developers with loan facilities. The developer maximises his profits. As such, the concept of incrementally increasing the house was considered difficult to apply to a developer built scheme. Therefore, developers were contacted and discussions held with them and with estate agents. As a result, a number of interesting alternatives were proposed by them. Two of these alternatives have been developed.

Proposal – 1:

The developers feel that if larger areas alongside the main roads are given to them on the ground floor for commercial purposes, they would be willing to build double-storey row houses on them on lots of 56.88 square yards (47.6 square metres). The residents could then add to these houses incrementally with two more floors. They also propose that for areas not facing the main roads, single-storey units should be built and on them row houses should be constructed. The single-storey units in this case would not be able to "grow". The results of this exercise are given below:

 Commercial units on ground floor 	:	42 number
 Residential units on ground floor (cannot grow) 	:	42 number
 Residential row houses built on top of ground 		
floor (can grow)	:	84 units

All the commercial and residential units will have a foot print of 56.88 square yards (47.6 square metres). The total number of units works out to 168. At 6 persons per unit the population works out 1,008. For Fahad Apartment, this gives us a density of 672 persons per acre (1,660 persons per hectare). This is higher than the KBCA prescribed density for apartment blocks. If the double-storey row houses add a floor to their homes, the density will be considerably increased.

Proposal – 2:

Another developer proposed option consists of dividing the plot into lots of 36.75 square yards (30.75 square metres). As a result, 152 plots are developed leaving considerable space for social activities. Built-up area is 77 per cent of the site. The developer plans to construct row housing with each unit consisting of ground plus one and a half floors. The owners can add an additional one and a half floor later on.

The developer built accommodation of 152 units will have a density of 608 persons per acre (1501.76 persons per hectare) at six persons per unit. This is higher than the maximum density of 600 persons per acre permissible by KBCA regulations for apartment complexes. If the additional floors are built, the density at a modest estimate would increase to 1,368 persons per acre (3,379 persons per hectare) at nine persons per unit.

The developer is happier with this model than with building apartments. He feels that he will get a better cliental (easier to deal with since they will be more affluent) and the cost of construction will be considerably reduced. Time period of construction will also decrease.

FINDINGS: SOCIO-ECONOMIC

- People want to own a place rather than rent, even if it is far away from their place of work.
- There is very little speculation in settlements where the population is homogenous.
- People build incrementally and therefore they prefer a plot of land to an apartment.
- Parents would like to accommodate the family of their sons with them since they are aware that they will not be able to purchase a place for them (after marriage) and the cost of rentals is high.
- In people's minds, a nuclear family is built around a kitchen and they would like to have the possibility of at least two kitchens in their house.
- The vast majority of respondents desired the possibility of doing some economic activity within their house.
- Research shows that densities higher than 3,000 persons per hectare promote social conflicts, complaints of promiscuity, father and the elder kids staying away from home (because of congestion) and family fragmentation – hence drugs and gangs.
- Very few families in old homogenous settlements move out. They try to accommodate new family formations within the settlement which causes further densification.
- In non-homogenous settlements the upwardly mobile move out and are usually replaced by outsiders who are richer than the majority population

• Apartments:

- Usually developer designed and built.
- Apartment plots are part of a much larger local government planned scheme which has shopping plazas, schools, health and shopping centre facilities which are developed either by the local government or the private sector.
- Those preferring a "richer" lifestyle opt for them.
- Attractive because of a loan facility and security.
- Apartments force a new way of living on people American style kitchens and toilets, French windows and balconies, formal sector health, education and shopping facilities in the neighbourhood.

• Disadvantages of Apartments:

- Can not use them for economic activities except for activities such as tuitions and beauty parlours.
- They cannot grow to accommodate newly married sons.
- Formal sector facilities are more expensive than informal sector activities in settlements.
- Apartment complexes and settlements densify overtime. In their initial stages the population is young with few grown up children.
- In the case of settlements where there is support from an organisation or a CBO; encroachments are prevented; access to service providers, NGOs and philanthropic organisations facilitated. This improves physical and social conditions and reduces the cost of social sector facilities.
- In the case of apartments, unions of apartment owners manage and maintain the complex. A study of the successes and failures of this is required.

FINDINGS: PHYSICAL PLANNING AND CONDITION

- People do not use the large open spaces provided by the byelaws. Instead they use the street as public space.
- In byelaws the street is planned for automobile use. Since there are no automobiles, the street is not used for this purpose.
- If streets are planned as public space, 20 percent more plots can be accommodated without lowering the percentage of space for social and recreational facilities.
- Long narrow plots (1 width x 3 depth) can reduce infrastructure costs by up to 40 percent.
- A 45-50 square metre plot with ground + 2 or 2-1/2 can provide comfortable living for two low income families.
 - Initially only 1 room toilet and kitchen needs to be constructed.
 - Alternatively the whole structure complete externally but unfinished internally except for wet areas can be constructed (without intermediate floors).
- It is difficult to accommodate incremental development schemes through developer programmes. There are two options:
 - Ground + 2-1/2 houses on 30 square metres.
 - Increase in commercial areas in the byelaws.
- KBCA density for settlements is 1,258 persons per hectare
 - Achievable: 3,214 with three families per plot or 27 persons (not desirable)
 - Ideal maximum 1,583 with two families per plot or 13.4 persons
- KBCA recommended density for low income apartments: 1,500 persons per hectare
 - Achievable 1,500 as houses ground + 2-1/2
 - Developer happier
 - Costs lower

GENERAL CONCLUSIONS

- The high-density-incremental-growth-individual-house model is suitable for new settlements and townships. Additional work on the planning of individual units and landuse, governance systems and financial requirements for the model need to be initiated.
- There are groups among the better-off poor who may prefer apartments. A better understanding of who they are and what they can afford is necessary.
- In incrementally growth, densities would require 20 years to achieve the targets they are planned for. A better understanding of the pros and cons of this reality needs to be investigated.
- Although the research deals with developer related concerns for the incremental housing model on apartment sites, it does not really offer a viable solution.
- Developer concerns need to be addressed.
- A study for the comparison of the Karachi situation and the KBCA regulations with other cities in Asia should be initiated.
- Study of further options and plot sizes to the ones that have been proposed should be carried out leading to the development of new zoning and density related regulations.
- The results of the study should be presented to the area communities and their feedback should be used for modifications if required.
- Financial and various informal tenure systems determine choices. A better understanding of them and how they influence the development of apartments and settlements is required.

KKB 3 LOCATION





KKB 3: EXISTING LANDUSE



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	RESIDENTIAL	40.27%
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	EMPTY PLOTS	1.85%
AME	NITIES	
	SCHOOLS (FORMAL - INALIEY EXCERNICED INDIVIDUALE ON CHIGANIZATIONE) SCHOOLS (INFORMAL - INDIVIDUALE IN A PRIMATE INTRODUCES)	3.19%
	MEDICAL FACILITIES	2.86%
	RELIGIOUS	
	PLANNED GREEN SPACES	7.24%
CIRC	ULATION	
h	PEDESTRIAN CIRCULATION VEHICULAR CIRCULATION	19,1%
	INDICATED TRAFFIC CARS, ROCOMINS, CYCLES, AND MOTOROPOLICS)	16.5%
1.1	VEHICULAR - PUBLIC TRANSPORT	
TOT	AL	100%

KKB 3: SECTIONS THROUGH SITE



KKB 3: TYPICAL HOUSES











FIRST FLOOR



ROW HOUSING 80 SQ.YARDS

KKB 3: TYPICAL HOUSES



OPEN SPACE BED ROOM 6 98° X K357 90° X 1/97 ħ, h 111.01 14.01 HATHROOM . PERTAB SING HOUSE

39.0"

RIFHAT MILL HOUSE

KKB 3: PHOTOGRAPHS




















LOCATION OF NAWALANE





NAWALANE: EXISTING LANDUSE





TOTAL RESIDENTIAL PLOTS: 609 TOTAL COMMERCIAL PLOTS: 1 UNITS EXISTING DENSITY 1350 PEOPLE PER ACRE

NAWALANE: SECTIONS THROUGH SITE





NAWALANE: SECTIONS THROUGH SITE



TRANSVERSE SECTION AA'



TRANSVERSE SECTION BB



NAWALANE: TYPICAL HOUSES







NAWALANE: TYPICAL HOUSES



NAWALANE: PHOTOGRAPHS















LOCATION OF PAPOSH NAGAR





PAPOSH NAGAR: EXISTING LANDUSE





PAPOSH NAGAR: SECTIONS THROUGH SITE







SECTION BB'

PAPOSH NAGAR: TYPICAL HOUSE 1

and a



FIRST FLOOR PLAN



SECOND FLOOR PLAN



SECTION AA'



SECTION B8'

PLANNING TYPE: ROW HOUSING -KDA PLANNING EVOLVED BY PEOPLE AREA OF PLOT: 66 SQ YARDS





PAPOSH NAGAR: TYPICAL HOUSE 2



GROUND FLOOR PLAN



ROOF PLAN





SECTION AA'



SECTION BB'



PLANNING TYPE: ROW HOUSING -KDA PLANNING EVOLVED BY PEOPLE AREA OF PLOT: 66 SO YARDS

PAPOSH NAGAR: PHOTOGRAPHS


















LOCATION OF FAHAD APARTMENTS



FAHAD APARTMENTS: EXISTING LANDUSE



FAHAD APARTMENTS: SECTIONS THROUGH COMPLEX





FAHAD APARTMENTS: TYPICAL APARTMENT





MAIN ROAD

FAHAD APARTMENTS: TYPICAL APARTMENT





FAHAD APARTMENTS: PHOTOGRAPHS















KKB 3: EXISTING LANDUSE



SCHE	EDULE OF LEGENDS		
	RESIDENTIAL	40.271	
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	COMMERCIAL accurate Hubble Controls Controls Controls and Subcontres Granes	1.85%	
	EMPTY PLOTS	1.85%	
AME	NITIES		
	SCHOOLS (FORMAL - INALIEY EXPERIENCED INDIVIDUE ON ORGANIZATIONE) SCHOOLS (INFORMAL - INALIENCE INN IT PRIVATE INDIVIDUES)	3.19%	
	MEDICAL FACILITIES	2.80%	
	RELIGIOUS		
	PLANNED GREEN SPACES	7.24%	
CIRC	ULATION		
	PEDESTRIAN CIRCULATION VEHICULAR CIRCULATION OCCUSIES BY HID ISTRAMAN	19,1%	
N	MOTORIZED TRAFFIC (CARS, RICKBARNS, CYCLES, AND MOTORCYCLES)	16.5%	
10 1	VEHICULAR - PUBLIC TRANSPORT		
TOT	TOTAL		

KKB 3: PROPOSED LANDUSE





PHASE 2 KHUDA KI BASTI 3

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* NOTE: AS FER RESEARCH RESULTS 1)THE RESIDENTIAL AND COMMERCIAL LANDUSE IN LOWER INCOME SETTLEMENTS IS NOT SEGGREGATED

21THE ROAD AND FARMAREAS IN LOWER INCOME SETTLEMENTS CAN BE COMBINED AS STREETS FORM THE FIRST LEVEL OF PUBLIC SPACE.

TOTAL:

197472.00 SQ.FT/ 165111 sq meters 40.8 ACRES/ 16.51 hectares 3.644 # (13X39) 56.3 SQ.yd (13X39)

EXISTING DENSITY: 203 PEOPLE PER ACRE PROPOSED DENSITY: 693 PEOPLE PER ACRE

NAWALANE: EXISTING LANDUSE





TOTAL RESIDENTIAL PLOTS: 609 TOTAL COMMERCIAL PLOTS: 1 UNITS EXISTING DENSITY 1354 PEOPLE PER ACRE

NAWALANE: PROPOSED LANDUSE



MEHRAB KHAN ESA KHAN ROAD, UC 11, NAWALANE LAYARI

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* NOTE AS HER RESEARCH RESLATS. 1.THE RESIDENTIAL AND CONDUCTION LANDUGE IN LOWER INCOME SETTLEMENTS IS NOT SESCRESURED.

21THE ROAD AND RAIN AREAS IN LOWER INCOME SETTLEMENTS GAN BE COMBINED AS STREETS FORM THE PROTILEVEL OF PUBLIC SPACE

TOTAL:

101155 SQ.FT/ 84579 sq melens 20.9 ACRES/ 8.4 HA

2,023 # (13,839)

PAPOSH NAGAR: EXISTING LANDUSE





PAPOSH NAGAR: PROPOSED LANDUSE



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890 208	800 325	101448	100

* NOTE: AS PER RESEARCH RESULTS:

1/THE RESIDENTIAL AND COMMERCIAL LANDUSE IN LOWER INCOME SETTLEMENTS IS NOT SEGGREGATED

2 ITHE ROAD AND PARK AREAS IN LOWER INCOME SETTLEMENTS CAN BE COMBINED AS STREETS FORM THE FIRST LEVEL OF PUBLIC SPACE.

TOTAL:

72600 SQ.YD/ 60702 square meters 15 ACRES/ 6.07 HA 1343.5 # (13X39)

EXISTING DENSITY 478 PEOPLE PER ACRE PROPOSED DENSITY 594 PEOPLE PER ACRE

Paposh Nagar Proposal 1



Paposh Nagar Proposal 2





Pointer 24°55'15.92" N

1046 ft

+ 00



Pointer 24°55'15.92" N 67°01'13.89" E elev 109 ft Streaming |||||||||| 100%

Eye alt 1046 ft





FAHAD APARTMENTS: EXISTING LANDUSE



FAHAD APARTMENTS: EXISTING LANDUSE





Fahad Square Proposal 1



Fahad Square Proposal 2





