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Planned Residential Neighbourhood Development in Kathmandu Valley: Community Building OR Provision of Physical Infrastructure?

Bijaya K. Shrestha, Ph. D.

Head of Department, Post Graduate Department of Urban Design and Conservation, Khwopa Engineering College, Purbanchal University, Bhaktapur, email: bkshrestha@hotmail.com

Abstract

Though public sector initiated residential neighbourhood through site and services scheme and land pooling technique differs from the private sector implemented housing project in the Kathmandu Valley, nonetheless, both of them have common denominator – more successful in provision of physical infrastructure with little consideration of community building. Poor neighbourhood environment in such planned areas is due to the combination of absence of urban design approach in master plan and building construction as well as reflection of ineffective existing development control and poor capability of the concerned agencies. To reverse this trend, linking community to the built environment through mixed land use, provision of social and emergency amenities and formulation of planning standards and urban design guidelines for master layout plan and individual building construction and them strict implementation is essential.

Key words

Residential neighbourhood, Community, Infrastructure, Design guidelines, etc.

Background and Overview

The rapid pace of urbanization of the Kathmandu Valley is greatly increasing the demand for new shelters, infrastructure provisions, employment opportunities and social and emergency services. Though the government has acted lately through the implementation of different land development techniques (site and services, guided land development and land pooling), formation of Kathmandu Valley Town Development Committee and Ministry of Housing and Physical Planning (in 1988 and now converted into Ministry of Physical Planning and Construction), formulation of National Building Code and Joint Apartment Act including participation of private sector in housing development, housing loan, and so on, its efforts have proved to be inadequate and ineffective. As a result, the rate of haphazard urban growth has increased many folds than that of the planned developments, implemented by both government and private sectors. Nonetheless, these limited efforts of land development and planned residential areas through different techniques, initiated from the mid seventies under the Town Planning Implementation Act 1973 are yet to be reviewed not only to identify the shortcomings in their planning process but also to propose policy and guidelines for new neighbourhood design. Against this background, this paper aims to analyse the three different planned residential precincts developed under different techniques on a comparative basis with threefold objectives. First, it studies numerous literatures on theories of residential neighbourhood to develop a theoretical framework for a good residential neighbourhood. Second, it compares and contrasts the three case studies of residential neighbourhoods within the established theoretical framework and relates them to the inhabitants' responses. Finally, it draws a conclusion and proposes some key recommendations for future residential development.

Theoretical Framework of a Good Residential Neighbourhood

After the emergence of urban design profession in the 1960's, not only have the spirit, values and virtues of residential neighbourhood been rediscovered but also incorporation of resident's participation and introduction of advocacy planning has been advanced leading to the formation of 'New Urbanism,' which advocates a balanced mix of human activities (dwelling, shopping, working, schooling, worshipping, recreating, etc.) within a walking distance (five minutes walk or radius of a quarter of mile) in neighbourhood planning with formation of pub-

lic spaces and fine network of interconnecting streets (Duany and Zyberk, 1994). Others have sought for achievement of diverse, lively, safer and convenient public realm through mixed land use, high density and compact urban fabric including provisions of local employment and public transport system to gain local identity, community value and sense of place (Lennard and Lennard, 1995; Roseland, 1998). An effective neighbourhood comprising a clear, complete, and consistent political and administrative entity, therefore, should provide basic necessities of life and society – a small grocery shop, a local park and playground, a meeting place either in the elementary school or in a recreation centre that also houses community activities, a fire station and a post office including the police precinct.

The socio-cultural perspective of theory of neighbourhood focuses on community building. As neighbourhood provides a place for inhabitants to raise children, to satisfy the socialising needs of people and to develop intimate friendships, it fosters community and civic pride (Von, 1978), enhances the 'sense of security and belonging' and finally connects the individual to the society through its support and facilities (Bartuska, 1994). Geographical proximity (locality), social completeness or cohesion (social criterion) (Davis, 1949) including sharing of the basic condition of a common life (community sentiment) are essential to form a community (MacIver and Page, 1955), which is influenced by size, density and heterogeneity (Wirth, 1964). Therefore, a community requires (a) a set of households, relatively concentrated in a delimited geographical area; (b) a substantial degree of integrated social interaction by the residents; and (iii) a sense of common membership, of belonging together. Finally, neighbourhood community can be perceived by characteristics and views of the inhabitants (micro-level approach) and formal organisation and institution that looks the community within a greater context (macro-level approach) (Downs, 1981).

Individual experience, cultural background, social setting together with the physical condition determines the relationships between human experience and behaviour and built form (Proshansky, 1970) and shapes the residential life. The notion of 'culture' as – a system of shared meanings (Greetz, 1973; Hall, 1966) and public standardised values of a community (Douglas, 1966) – creates values and norms embedded into people behaviour, which shape the spaces and use them in everyday life (Coolen and Ozaki, 2004). After reviewing numerous literatures on different aspects of residential neighbourhood, a theoretical framework for a good residential neighbourhood is developed with three interrelated components of (a) Residential neighbourhood as *Place*: Size and shape of the neighbourhood, Street network and open space hierarchy, Architectural meaning, (b) Residential neighbourhood as *People*: Opportunity for socialisation and Social network and institution, and (c) Residential neighbourhood as *Meaning* (linking people to place): Sense of place (and community) and Daily activities and cultural functions.

Comparative Study of the Planned Residential Developments

Three planned residential developments namely Kuleswore Housing Project (KHP), Gongabu Land-pooling Project (GLP) and Sunrise Home (SRH), differ in physical layout and site context, population density, land use and neighbourhood community are selected for the comparative study (Table 1).

Table 1. Comparison of contextual parameters of the selected residential neighbourhoods

Particular	KHP	GLP	SRH
Location	Kuleswore - KMC, Ward No. 14 (Urban area)	Gongabu –KMC, Ward No. 29 (Peripheral area)	Balkumari – LSMC, Ward No. 9 (Peripheral area)
Project type	Site and services	Land pooling	Private housing
Planning area	522 Ropani (26.5 ha.)	280 Ropani (14.2 ha)	45 Ropani (2.3 ha)
Development period	1977 – 1987	1988 –1996	2002 - now
Development agency	Government	Government	Private Sector

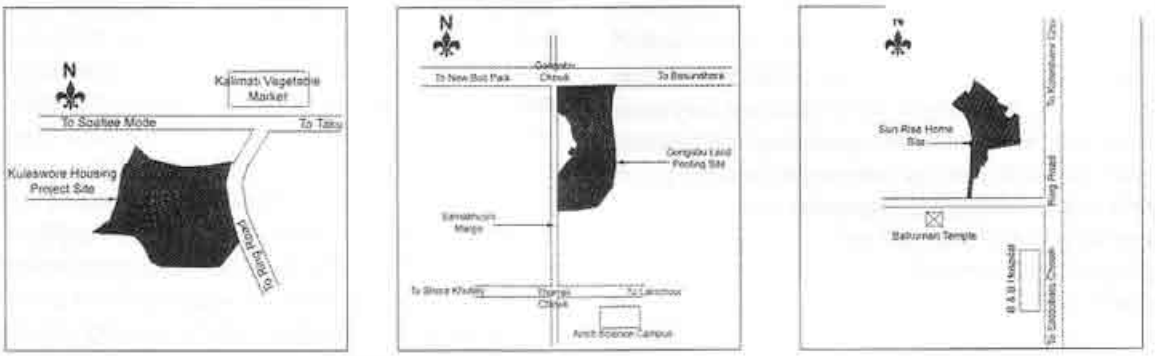
Source: Department of Housing & Urban Development, no date; Department of Urban Development & Building Construction, 2003; Kathmandu Metropolitan City, 2001; Oriental Construction & Development Co. Pvt. Ltd, no date

Located on the urban area of Kathmandu Metropolitan RCity's (KMC) ward no. 14, Kuleswore Housing Project was the government's first 'Site and Services Project' to house the civil servants. Gongabu Land-pooling Project situated on the northern peripheral area of KMC's ward no. 29 was also planned by the government through 'Land Pooling' technique with objectives to control haphazard urban growth and to ensure basic services and social amenities in the developed area (Figure 1). Initiated by the private sector after the enactment of the

'Joint Apartment Ownership Act -2054 BS' Sunrise Home is an ongoing housing project (targeted for upper middle and high economic status group) located on the peripheral area of Lalitpur Sub-metropolitan City's (LSMC) ward no. 9.

developed land, Compared to SRH, KHP and GLP have respectively eleven and half times and more than six times larger lands. However, SRH is two and half times denser than that of KHP and GLP.

Fig. 1. Location plans of the case study residential neighborhoods



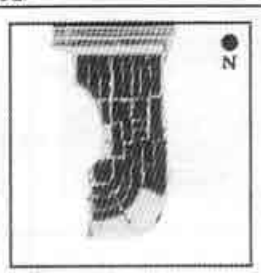
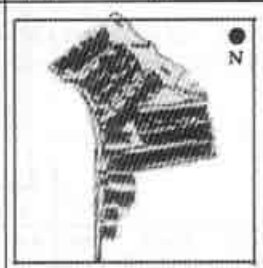
Residential Neighbourhood as Place

Size, scale and integration with the surrounding areas

If a population range of 500 to 10,000 inhabitants or minimum of 150 dwelling units (considered enough to sustain local retail outlets and an elementary school) is the base for an effective neighbourhood (Gans, 1962), then SRH comprising 164 units with total population[1] of 820 can be considered as the smallest neighbourhood while KHP and GLP are respectively five times and two and half times larger residential areas (Table 2). Similarly, in terms of

Small urban blocks (no longer than 90-135M) increase physical and visual permeability (Bentley et. al., 1985), provide more street frontages and junctions, allow development of diverse land use and building types. Average urban blocks of KHP are five times bigger than that of SRH and are arbitrary oriented in all directions. Both GLP and SRH have slim and elongated urban blocks but with opposite orientation (Table 2). Though clear boundaries in residential neighbourhood are necessary to establish and sustain identity whereas integration in terms of street layout, urban blocks, population density and land use with

Table 2. Comparative study of physical aspect of the case study neighbourhoods

Particular	KHP	GLP	SRH
Urban fabrics	 KHP	 GLP	 SRH
Total developed area	522 Rop. (26.5 ha) *(11.5 X SRH)*	280 Rop. (14.2 ha) *(6.2 X SRH)*	45 Rop. (2.3 ha) *(1X SRH)*
Total no. of urban blocks	21[1]	26	9
Average urban block size	24.85 Rop. *(5 X SRH)*	10.77 Rop. *(2.1 X SRH)*	5 Rop. *(1X SRH)*
Total no. of plots	842 *(5.13 X SRH)*	406 *(2.5 X SRH)*	164 units *(1X SRH)*
Average plot nos. pe r urban block	40	16	18
Population density (person per hac.)	159 ppha *(1.1 X GLP)*	143 ppha *(1 X GLP)*	356 ppha *(2.5 X GLP)*
Urban block orientation	Arbitrary (all direction)	East-West (mainly)	North-South (mainly)

the surrounding existing areas results in smooth transportation, orientation and views, the three planned neighbourhoods do not have clear identifiable centres and edges and their geometrical shaped urban block, plot size and street layout do not match with the surrounding haphazardly (and spontaneously) growth residential and commercial areas.

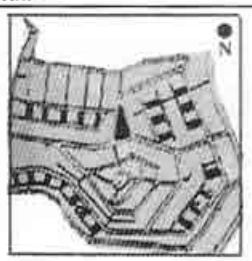
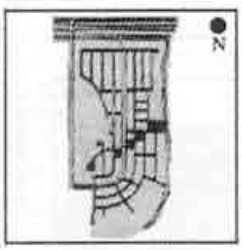
The large neighbourhood size of KHP compared to GLP and SRH is further supported by the residents' views,[3] as majority of the respondents (62%) think their neighbourhood is of big size, while similar percentage of inhabitants of GLP and SRH feel that their neighbourhoods are of appropriate size and scale. Surprisingly, none of the residents living at KHP and GLP and only insignificant percentage of inhabitants of SRH are in the opinion that their neighbourhoods are of small size. However, majority of the inhabitants feel urban blocks at KHP and GLP are of normal size while they are small at SRH.

Street and open space hierarchy

Having symbolic, ceremonial and political roles, streets and open spaces are not only physical spaces for movements of people and goods but they are also venues for multiple activities – socialisation and participation, exchange of services, enjoying, watching and so on (Jacobs, 1993; Gehl, 1987). They can be evaluated on the basis of physical parameter, micro-climate criteria, amenities and activities associated with them (Heng and Chan, 2000).

As the street layout and open space allocation at KHP and GLP are guided by the pre-determined plot sizes with little consideration of surrounding built form, they have not only created variety of urban blocks with invisible and confusing alternative routes to travel from one point to another but also formed unscientific street junctions' design, difficult to turn emergency vehicles. Absence of 'sense of enclosure' (due to variations in setback, height and architectural character of the buildings of the both sides of the same streets), lack of identifiable activity nodes or any prominent structure at the street junctions combined with absence of sidewalks and other basic amenities such as dustbin, benches, plantation, street lamps and so on have converted these streets into 'pedestrian unfriendly' places. Walking in the neighbourhood is monotonous, boring and confusing and danger at night particularly for women. Compared to the 20-25% of the recommended circulation area for housing projects (Caminos and Goethert, 1978), areas allocated for the streets (14.3 -17.5%) in these cases are inadequate (Table 3).

In the case of SRH – six cul-de-sacs linking to the main street which connects the whole neighbourhood to the outer public road - are neat and clean, in good condition with street width to building height ratio within the desirable limit (H/W = 1:2). As the outsiders are restricted through a gate keeper in the main gate, such streets are generally monotonous without human activities.

Particular	KHP	GLP	SRH
Open space hierarchy and street patterns	 KHP	 GLP	 SRH
Open space area allocation (%)	4.4	5.2	4
Area occupied by street (%)	14.3	17.5	15.0
Street width (M)	2-3-4-5-7.5	4-6-8	5
No. of street junctions	40	51	7
Street width to building height ratio (approx.)	1: 1.3	1: 1.7	1: 2
Source: Modified from – Department of Housing & Urban Development, no date; Department of Urban Development & Building Construction, 2003; Kathmandu Metropolitan City, 2001; Oriental Construction & Development Co. Pvt. Ltd., no date			

Planning and design of open spaces in these three case study neighbourhoods are not satisfactory due to numerous reasons. First, the amount of open spaces allocated (between 4-5%) is far less to fulfil the various needs of different age groups - passive quiet area for adult, safe and private area for women, recreation and playing field for youngster and children (Table 3). Second, the shape and location of these spaces are inappropriate and inconvenient. In fact, spaces of irregular shape and size left over after plotting of the serviced lands and street layout at the best location, are kept as open space. The open spaces of KHP (a triangular plot roughly at the middle and tiny rectangular plots on the peripheral areas) and GLP (five different small rectangular plots below the hi-tension electric line) are of little use not only because of their fragmented nature but also due to vehicular streets encircling them. Similarly, the isolated corner plot below the hi-tension electric line, surrounded by parking lots developed as a Children Park at SRH can never be a meaningful place.

Though fair condition of street with vehicular access to each house, low vehicular traffic and hence low air and noise pollutions have made the streets 'convenient' for majority of residents of KHP (62%) and SRH (100%), significant number of people of GLP (32%) find the streets of their neighbourhoods 'inconvenient' due to conflict of vehicular and pedestrian traffics, bad condition of street and practice of disposing households and construction wastes on the streets. Regarding urban open spaces, majority of the community in all the cases are aware of the usefulness of them in their daily lives. However, significant number of residents of KHP (62%) and GLP (50%) realise that the existing open spaces in their residential areas are insufficient and non-functional due to poor location, irregular size and shape and absence of basic amenities (Figure 2). Even in the case of SRH, forty three percent of the respondents are not satisfied with the allocated amount of open space.

Architectural meaning

Architecture is not limited to layout of interior spaces of buildings but it has also public face and community dimension. Layout of building on the plot and its architectural characters defines the housing density, helps the formation of public space and expresses the socio-economic status of the inhabitants. However, these attributes have got little attention in preparing master plans. First, the layout of building on the plot with setback from all the sides – pavilion type – at KHP and GLP has resulted in lower density with formation of fragmented open spaces between the two buildings, which is hardly useful other than for lighting and ventilating building units, whereas the layout of building in row on the plot with street in front and a minimum setback on the back – row housing type – at SRH has allowed moderate level of density (Table 4). Second, variation in design of the transition spaces between the street and the individual private houses has created a chaotic landscape at KHP and GLP. Third, newly constructed buildings with different architectural design and detailing, material and technology used are difficult to relate with the existing surrounding houses. Interesting design of individual unit with uniform building set back at SRH has failed to produce legible residential landscape due to repetition of the standard unit in a row on both sides of the streets without any reference point. Dwelling units of SRH, mostly of two to three storey high though oriented to North South axis, are climatically ineffective as almost all the rooms have one side window only with many spaces (dining hall, family lounge or staircase hall) without direct light and ventilation.

While asking for overall performance of buildings in the neighbourhood, majority of the respondents of KHP (71.4%) and SRH (64.3%) think that the buildings in their neighbourhoods are good, whereas eighty percent of the respondents of GLP guess that they have just 'average' (neither good nor bad) buildings in their community. None

Fig. 2. Comparative study of residents' responses (in percentage) on the use of street network and open space

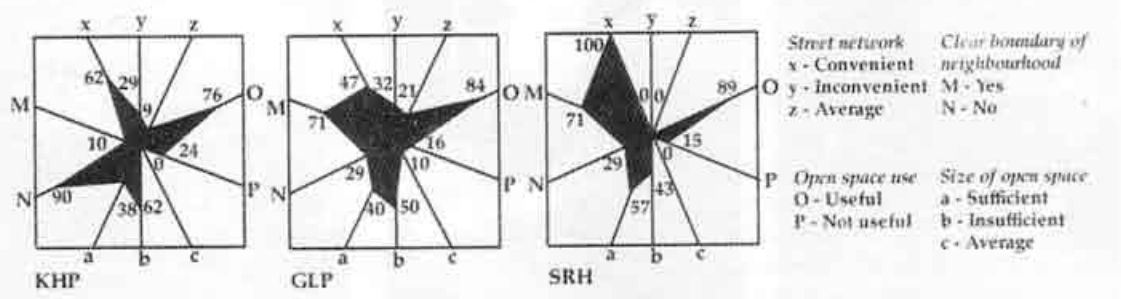


Table 4. Comparative study of characteristics of housing

Particular	KHP	GLP	SRH
Building and site relationship	 KHP (Pavilion type)	 GLP (Pavilion type)	 SRH (Row housing type)
Building layout on plot	Pavilion type	Pavilion type	Row housing type
Orientation	Arbitrary (in all directions)	Arbitrary but mostly on East - West axis	Mostly on North-South axis
Building type	Detached/individual bungalow type	Detached/individual bungalow type	Mostly attached in row
Building storey	3-4 storey	3-4 storey	2-3 storey
Light & ventilation	Mainly four sides but two for fronting street	Mainly four sides but two for fronting street	Only two sides

of the inhabitants in these three cases has the idea of existence of bad buildings in the neighbourhoods.

Residential Neighbourhood for People

While thinking residential neighbourhood for 'people' the key issue is the neighbouring – developing close friendships, borrowing the odd item or the casual contact in the street. It means feeling of home, security and social support and has considerable significance in resident's everyday lives. Though people socialise both in and outside the neighbourhood, nonetheless, local ties among the neighbours for elderly people and those outside the labour force in particular and for contemporary city dwellers in general is essential, as most people live in narrow 'gemeinschaft' world of neighbourhood and kin (Pahl, 1991). Thus opportunity for interaction among the residents, social networking and community institution are essential to strengthen local ties and feeling of belonging and ownership.

Opportunity for socialisation

Basically three types of activities – community facility and social amenity (schools, health centre, recreation centre, community building and so on), streets and open spaces and temple complex and cultural function – facilitate socialisation among different age groups. However, minimum opportunity exists for interaction in these case study neighbourhoods. The reasons are numerous. First, except for the allocation of few percentage of land for open spaces, no provisions of community facility and social amenities have been provided at KHP and GLP, allowing them to run in residential buildings on ad-hoc basis in the subsequent years. Second, absence of well defined semi-public (and semi-private) spaces in the transition from public street to private building, together with failure of individual building in producing meaningful spaces between the houses and streetfront (due to arbitrary orientation of house, high boundary wall on the property line and variation in building setback) at KHP and GLP has greatly reduced the scopes of interaction, indi-

Photo 1. Comparison of streetscape for socialisation in the case study neighbourhoods

KHP

GLP

SRH

vidual relaxation, social mixing and assistance among the neighbours. The situation is not different at SRH, where individual units are directly linked from the street without any semi-private spaces and facilities around which neighbouring relationships might develop. Third, the existing street layout and open space design offers little opportunity to attract residents and to engage them for multiple activities. Located away from daily pedestrian movement network, poor physical and visual permeability combined with absence of basic amenities such as benches, street lamp, plantation and vegetation all have discouraged people of using these spaces (Photo 1).

More than half of the inhabitants of KHP (57.1%) do not find any suitable place (or facility) for building friendship with other members of the community, whereas the remaining respondents meet their fellow neighbours either at community buildings (community based organisations or ward office) or on the street and open spaces. Nearly one third of the interviewees of GLP visit the community facility (swimming pool) whereas another one third interact their neighbours on the streets and open spaces; the reaming one third visit nowhere to socialise (Figure 3). It is only the case of SRH, where more than half of the respondents visit the shopping complex and interact with their neighbours. However, in all the cases, the frequency of interaction is of casual type on monthly (or weekly) basis. Finally, all the neighbourhoods lack comfortable children play area, as mentioned by majority of the interviewees in each case.

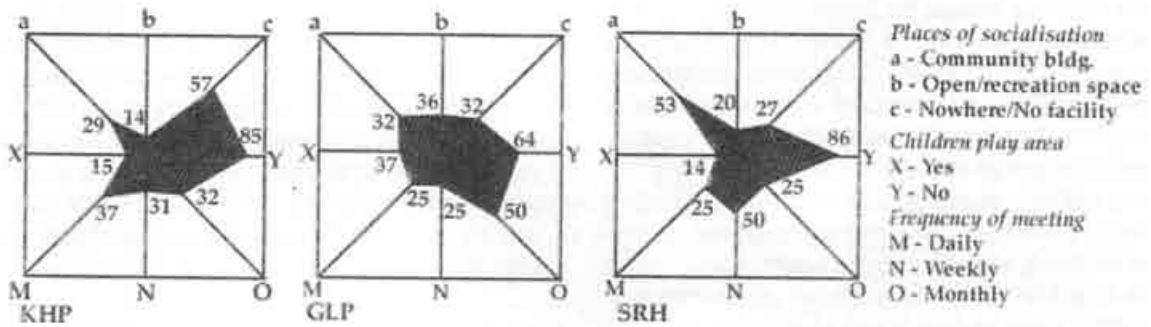
and community support in the newly planned residential neighbourhood on the virgin land. Despite establishments of numerous such institutions (Kuleswore Club, Kuleswore Housing Family Welfare Organisation, Self-help Community Committee, etc. at KHP and Housing Area Improvement Committee at GLP), they are unable to bring social support and strengthen community network due to poor financial and managerial capabilities, low community participation and little support from parental or governmental organisations. The community committee of SRH is basically concerned with the issues of house maintenance and infrastructure services rather than building social network.

Nearly three fourth in the case of GLP and half of the respondents of the remaining neighbourhoods take part 'occasionally' on the programs organised by the local ward office and social institution. About one third of the community of KHP and SRH frequently visit the ward office mainly for their person works. In all the cases, most of the activities organised by social institutions (and ward office) are related to either sports, cleaning of the local area or celebration of New Year, Deepawali festival, and so on.

Residential Neighbourhood as Meaning – Linking People to Place

Culture – shared meanings and shared conceptual maps – links the community to the physical built environment so that each member of the neighbourhood develops a strong sentiment with the urban settings, understands the

Fig. 3. Comparative study of residents' responses (in percentages) on places of socialisation, frequency of meeting and available of



Social network and community institution

Social network refers to the various persons with whom an individual maintains significant relationship including relatives, friends, fellow workers and neighbours whereas social support is the quality of the relationship – the advice, encouragement and assistance of all kinds that the social network provides to individual. Local Community Based Organisations (CBO) including 'Ward Office' can play a crucial role in building social network

other members of the community, and finally feels the sense of belonging to the neighbourhood culture.

Sense of place and community

Distinctive features of the neighbourhoods become significant to local inhabitants over time and this relationship between the material and mental results into human experience that can be remembered, shared and communicated to become social. Numerous site features such as

higher topography, background mountain views, 'Samakhushi' and 'Manohara' rivers are not considered in preparation of master plans. Moreover, few entry points to the neighbourhoods, long unconnected blocks without cross passage, confusing street layout without any reference point and absence of landmark structure are the characters of residential environments at KHP and GLP, which are difficult to map mentally. Narrow long blocks with identical building units, connected by cul-de-sacs with surface parking of SRH also do not offer legible setting. Though changing colour of flowers and plants on the street-side trees and celebration of local festivals and events in public spaces around the religious structures stimulate residents' perceptions in daily activities and provide the clue of passage of time, such is not the case in all the three planned neighbourhoods. In the absence of movement, communication and socialisation, the task of achieving sense of place and building sense of community is too difficult. The social cost of development is very high but the quality of life is low in these residential areas.

Daily activities and cultural functions

Provision of resources in terms of services and social amenities and performance of daily activities as well as cultural functions in a safe and secure environment helps to link the community with the built environment. Failure to allocate common land uses (primary school, health post, cultural outlets and so on - except allocation of minimum spaces for open spaces and a grocery shop at SRH) combined with lack of significant religious structures (and places associated with them) have not only failed to achieve the task of taking responsibility and develop the feeling of ownership of community properties but have also reduced the beliefs and faiths on cultural activities among the residents. Inadequate infrastructure provision and poor service deliver affects perceptions of the area in the minds of residents and ultimately develops negative attitudes and behaviour towards the neighbourhood environment and other residents. Residents of KHP and GLP are dissatisfied with insufficient and irregular supply of water, lack of foot path and dilapidated condition of the streets, and poor drainage system, whereas inhabitants of SRH are mainly concerned with the non-availability of telephone lines. In such situation, the question of socialising among the neighbours and sharing of experience, beliefs and values with them is of little relevant. Moreover, numerous features of KHP and GLP – single residential function domination land use, confusing and disorganised street patterns with disconnection from the houses through gates and walls, absence of street lamps and furniture, empty lots and group of young men hanging out on the street corners all have promoted a strong sense of insecurity.

Conclusions and Recommendations

The government implemented planned residential neighbourhoods have limited efforts in layout of physical infrastructure (mainly road network and drainage system) and development of regular plot size with vehicular access. The government's concerned line agencies provide infrastructure services such as electricity and telephone, water supply, etc., whereas the individual land owner constructs the building and decides its use based on the existing building bylaws (though there exists few clauses of building setback, height restriction and so on for these planned areas). Guided by economic rate of return rather than by community design principles, the private sector developed residential neighbourhood though comprehensive (with integration of land development and building construction) is also limited to high quality infrastructure provision with poor community environment. In the case of SRH, people buy houses (or flats) alongwith the 'lifestyle' provided by the housing estate, as individual house owners have no control over changing building fabrics and the surrounding landscape.

In all the cases, the needs of identification of distinct features of the site and its contextual study for integration with the surrounding areas, layout of well defined hierarchy of interconnected short streets and open spaces for multiple-functions, continuity of architectural meaning all to achieve legible urban setting and desirable density level, to create socialisation and recreation spaces, and finally to build community in the neighbourhood, are out of vision. On the other hand, residents in these neighbourhoods though generally satisfy with vehicular access to each house (and plot) and good building condition, are more concerned with the services of daily needed activities (insufficient water supply, lack of children play area, and so on). The frequency of socialisation and institutional capability to strengthen social networking and community support including overall sense of community and feeling of neighbourhood belonging is low. Some key recommendations in the form of planning and design guidelines for future healthy residential neighbourhoods are given below.

(a) Identify the natural and historical features of the site that have collective meanings and then, incorporate them in preparing master plan by juxtaposing street and open space network with building design and detailing;
(b) Design individual buildings that not only respect the traditional architectural vocabulary, but also response to the climate and immediate surrounding buildings and the streets thereby complementing to residential environment;

(c) Develop community based institutions at local level that enhance the social network and community support;

(d) Develop a clearly defined spatial hierarchy of spaces: public space – semi public space –semi private space – private space – where residents can socialise, work and relax. Also create functional and human scale spaces for different age groups of the society, which can be used at different times in a variety of ways, thus producing a livelier and safer public realm;

(e) Promote activities or events where residents can learn the customs and traditions as well as gain the unifying values and beliefs thereby strengthening community ties and mutual dependencies; and

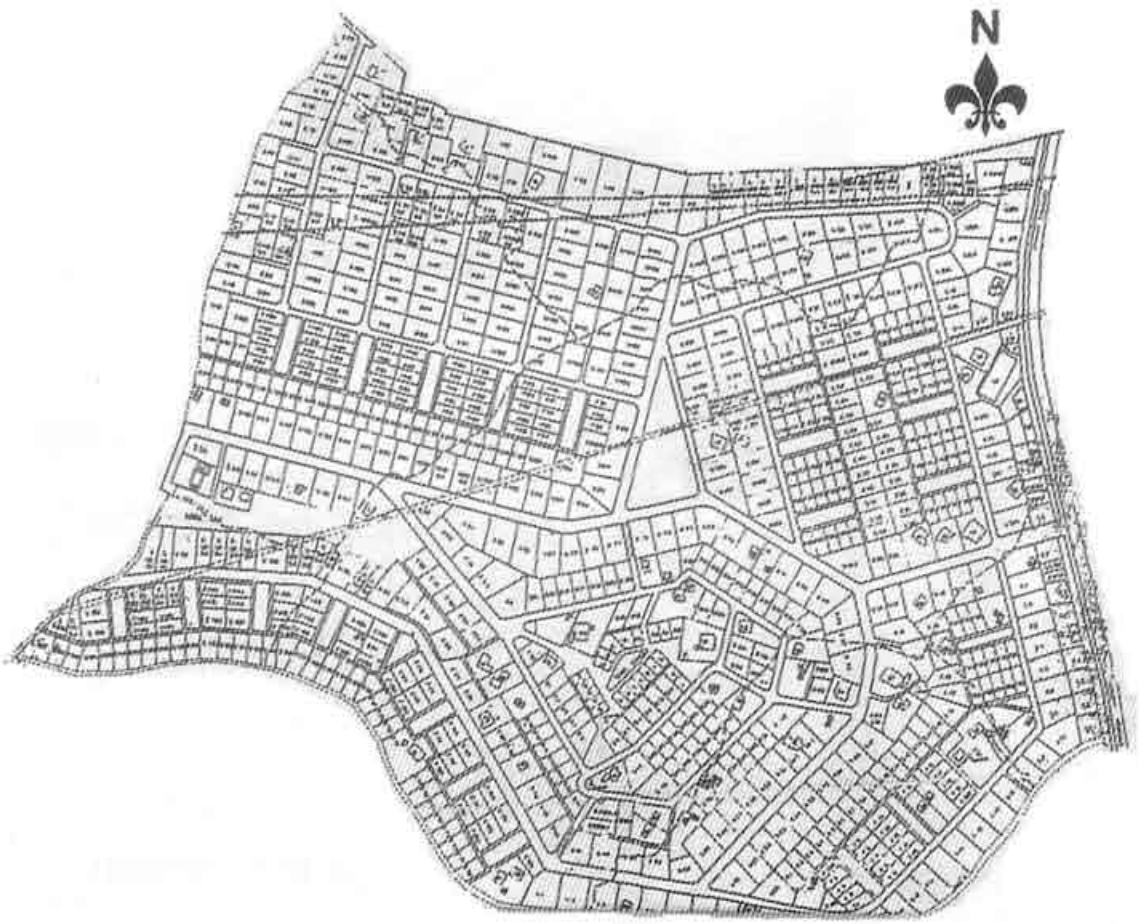
(f) Ensure the provisions of social, emergency and community amenities in appropriate location both in terms of quality and quantity so that the inhabitants can not only perform conveniently and comfortably their daily activities but also able to celebrate rituals and festivals in a safe and secure environment.

End Note

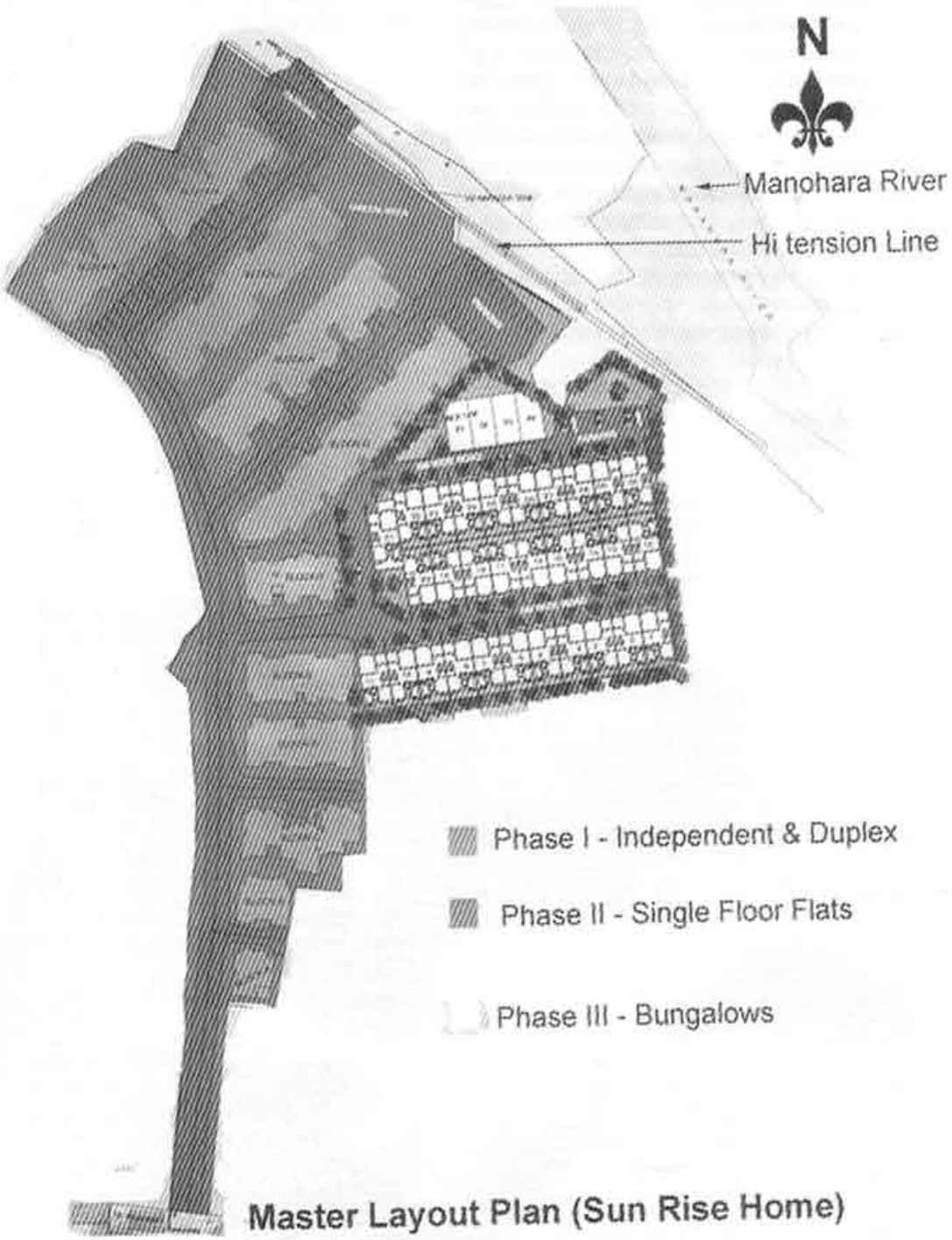
[1] An average size of 5 members per household is assumed.

[2] Few blocks subdivided by pedestrian paths are not considered.

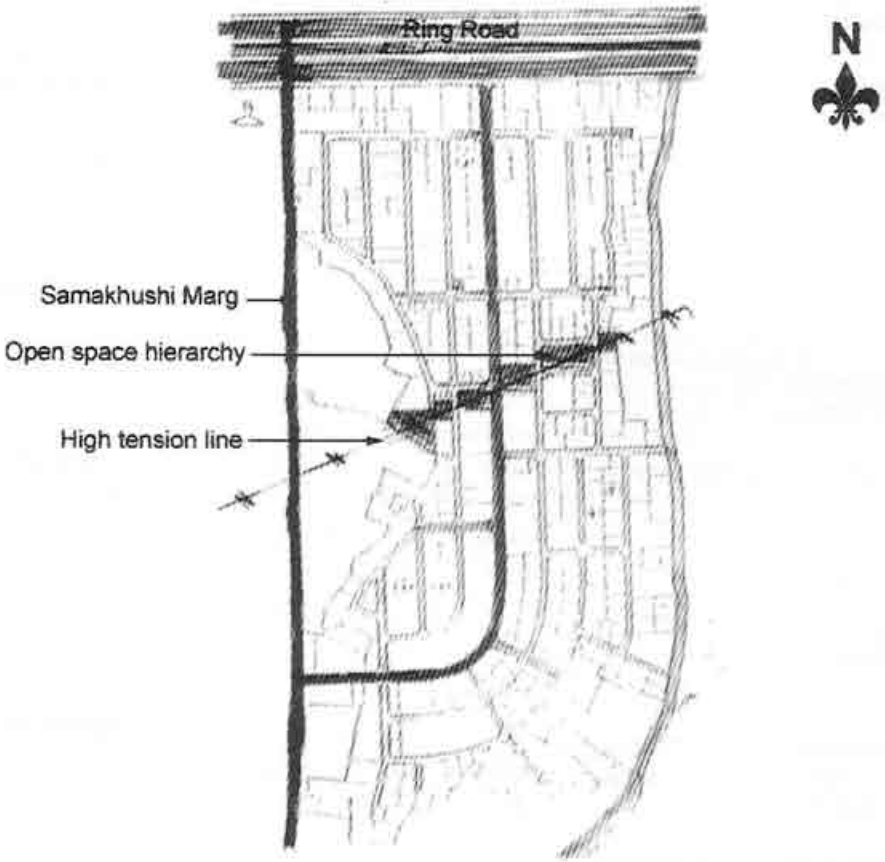
[3] A resident survey with a 29 item questionnaire focusing on different aspects of neighbourhood is conducted to altogether 25 households of different location in each study area. The responses vary from ninety to hundred percentages. As all the interviewees did not fill up (or answer) all the questions, the percentage is calculated based on the total responded numbers.



Master Layout Plan (Kuleswore Housing Project)



Master Layout Plan (Sun Rise Home)



Master Layout Plan (Gongabu Land Pooling)

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