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# PROPOSAL FOR A LAND READJUSTMENT SCHEME

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A PART OF JOCV ACTIVITIES IN NEPAL

SULD TEAM MARCH. 1992

#### Message

The Japan International Cooperation agency (JICA) in Nepal gives positive support to the Japan Oversees Cooperation volunteers (JOCV) working in Nepal. Altogether five hundred and seventeen volunteers have worked in Nepal till Jan, 1992. During this period the JOCV volunteers with the help of Nepalese people have completed many successful works, which have played an important role in the development of friendship and amity between the people of Nepal and Japan.

The idea of conducting this study was conceived by twovolunteers(a town planner and a senior surveyor), as the part of their activities in Nepal to explore whether the Land Readjustment Program can serve as a viable alternative for the better land use of Kathmandu. The study also aims to identify the future potential of the Land Readjustment Program for the planned Urban Development of Nepal and this report is the accomplishment of their studies.

I hope that the landowners of the study area will adopt the Land Readjustment Program, and will be very happy if the plan is implemented and becomes a model for future planning in Nepal.

Finally, I would like to express my sincere gratitude to all the people, both Nepalese and Japanese who have helped the JOCV volunteers for making this study a success.

Hauter

(Ikuo Kameda) Resident Representative of JICA in Nepal March, 1992

#### Message

The population growth rate of the urban areas of Nepal is extensively high. This has resulted in many problems in urban areas, which has risen in proportion to the population growth. The continuous emergence of degrading urban settlements is also due to the planning activity not being able to cope with the population growth, due to which, Settlements have also emerged in areas which are not equipped with infrastructure network. The installation of infrastructure network in such areas in future would also be a problematic. Hence, in order to speed up the planning process, the feasibility study on Land Readjustment so called kukakuseire in Japan has been done, in which, the area is planned and equipped with infrastructure facilities by sharing certain amount of land.

The study team feels that the Land Readjustment is a feasible technique in Nepal. It's experience in Land Readjustment is for the first time. Hence H.M.G. Nepal should co-operate with Japan Government (which has an extensive experience in Land Readjustment) in future for the proper and speedy application of Land Readjustment in Nepal.

Finally, I would like to thank all the landowners and the concerned D.H.U.D. staff for their kind co-operation. Lastly, but not the least, I wish to express my sincere gratitute to all the study team members for their extensive effort without which the study would have been incomplete.

(Terushige Amida) Team Leader

#### Message

The fast growing urban areas of Nepal have experienced problems related to planning and environmental degradation. Although, H.M.G. Nepal has been involved for the planned development of such areas but has not been able to keep pace with the rate of urban growth. The private developers, other actor involved in land development for housing, has not been environmental conscious and aware of future congestion and hence have been developing areas only with some sort of access facility. Future installation of infrastructure facility in such areas have shown too many problems and is expensive.

The idea of conducting a feasibility study on Land Readjustment was conceived during our frequent discussion with two J.O.C.V. volunteers who made us aware of the fact that Land Readjustment (similar to Land Pooling) has been done through the formation of landowner's co-operative in Japan. Hence, the idea behind the study is to check whether the Land Readjustment can be feasible in Nepal through the landowner's committee.

Our experience during the study revealed the fact that Land Readjustment is quite feasible in Nepal where finance & land management has been the major burden in the land development for housing and Land Readjustment avoids both.

Finally, we would like to express our sincere gratitude to J.I.C.A. for supporting us without which the study wouldn't have been possible. Special thank also goes to two J.O.C.V. volunteers (Mr. Terushige Amida & Mr. Ryosaku Maida) for taking keen interest in the proper development of residential areas of Nepal.

(Rajesh Shrestha) Representative, Study Team Members

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### I. INTRODUCTION

The study was conducted through the grant funded by Japan International Co-operation Agency (JICA) as a part of JOCV activities in Nepal. The main purpose of the study was to investigate the scope of Land Readjustment Program for the urban housing. The objectives of the study were to,

- a. Identify the most suitable form of land development program from the existing programs for the planned urban development of Kathmandu.
- b. Identify various issues in executing land development programme.
- c. Identify potential area for the Land Readjustment programme in Kathmandu.

The report is divided into two parts. Part I deals with various approaches in urban land development adopted by HMG, Nepal and part II specifically is a project proposal for a Land Readjustment programme in Kathmandu.

The study team consisted of following persons.

1.	Mr. Terushige Amida	Team Leader Town Planner, JDCV
2.	Mr. Ryosaku Maeda	Senior Surveyor, JOCV (Returned to Japan on 5 <sup>th</sup> Dec. 1991)
з.	Mr. Rajesh Shrestha	Architect/Planner
4.	Mr. Iswar Làl Joshi	Architect/Planner
5.	Mr. Arjun Bhakta Joshi	Engineer/Planner
6.	Mr. Ravi Shrestha	Adm./Mgmt.officer

We are very much thankful to Mr. Suman Ratna Tuladhar for his cooperation.

Lastly, but not the least, we wish to express our gratitude to Mr. Devendra Nath Gongal for his casual guidance and the Department of Housing and Urban Development for its cooperation.

The study commenced in oct - 1991 and completed in March 1992.

SULD Team

### II. <u>ABSTRACT</u>

National census conducted in 1991 indicated a population growth rate of 2.1 percent during decade 1981-1991, thus, population reaching a figure of 18,462,081. However, the population growth rate of 4.4% (average) in urban areas is more than the growth rate of national population. The higher growth rate in urban population is due to the migration of rural population in search for better facilities and available job opportunities. The 1991 census shows 9.1 percent of the national population staying in urban areas which was 6.2 percent in 1981 and 4 percent in 1971. This continuous rise in urban growth rate demands more land for urban use for residential purpose.

The modern concept of planning "plotted development" started since 1976 in Nepal but exploration of various residential land development techniques started only after the formation of M.H.P.P. in 1988. In addition, prior to 1988, H.M.G. undertaking agency was the only agent formally involved in land development programs. The demand for housing plots is very high in Kathmandu whereas government agencies are not able to cope with this demand. However, informal land developers providing housing plots irrespective of the infrastructure facilities and proper access are very active. This lead to the emergence of urban slums like Baneswore. Settlements like these not only have problems within themselves but also have created problems which effect the entire valley.

Land development techniques for housing like Site and Service, Guided Land Development and Land Pooling were practiced to develop proper residential areas. However, their degree of success varies in different schemes. The success of each of the above mentioned programs would depend upon the proper identification of the appropriate technique with reference to the land value, landowners psychology etc.

The first part (Part I) of the report deals with various land development and housing programs with an overview of the existing institutional and legal framework and reviews each of the existing programs to identify the most suitable technique for developing land for residential purpose in the fast growing urban areas like Kathmandu.

The second part (Part II) of the report investigates the future potential of Land Readjustment program in Kathmandu through the implementation of the pilot project.

# III. LIST OF ABBREVIATIONS

CDO	-	Chief District Officer
DHUD		Department Of Housing & Urban Development
DWSS		Department of Water Supply & Sewerage
DBHUD		Department of Building, Housing & Urban Development
DOR		Department of Road
GLD	_	Guided Land Development
GTZ	<u> </u>	German Technical Co-operation
HMG	-	His Majesty's Government of Nepal
HMC	_	Housing Management & Construction Company
JICA	-	Japan International Co-operation Agency
KVUDPP	-	Kathmandu Valley Urban Development Plans & Programs
KVDA		Kathmandu Valley Development Authority
KVTDC	_	Kathmandu Valley Town Development Committee
LP	-	Land Pooling
мнрр	—	Ministry of Housing & Physical Planning
MLD	<b></b> ·	Ministry of Local Development
NEA		Nepal Electricity Authority
NPC	-	National Planning Commission
NWSC		Nepal Water Supply Corporation
NTC	-	Nepal Telecommunication Corporation
NLDC	-	Nepal Land Development Company
NUDPS		Nepal Urban Development Policy Study
RDW	-	Right of Way
SULD	*	Study on Urban Land Development
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SWMRMC		Solid Waste Management and Resource Mobilization Centre
SSNAPR	<u> </u>	Shelter Sector Needs Assessment and Policy Review
TDFB	-	Town Development Fund Board
TDC	-	Town Development Committee
UNÇHS	_	United Nations Centre for Human Settlements (Habitat)
WSSC	-	Water Supply & Sewerage Corporation.

PART - I

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REVIEN OF VARIOUS LAND DEVELOPMENT

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- 1. URBAN PLANNING IN NEPAL
- 1.1 Issues in Urban Planning

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- I.I.I Urban Migration I.I.2 Urban Growth I.I.3 Land Development
- 1.2 Projects and Programs Undertaken
- 1.3 Institutional Setup & Legal Framework

### 1. URBAN PLANNING IN NEPAL

### 1.1 ISSUES IN URBAN PLANNING

### 1.1.1 URBAN MIGRATION

The normal trend of migration in Nepal is migration from hills to the plains and specially in urban areas, one half of whom are found in urban centres. Among the migrants surveyed 41.5% reside in urban areas, 32.7% and 25.8% in northern and southern rural areas respectively.\*

The principal urban destination of the migrants include Kathmandu urban areas and the Terai towns. The flow of migrants from rural to urban areas is shown in table 1. Analysing the migration figures of various urban areas Kathmandu clearly bypasses others. Several factors play key role in this. Some of the main factors are listed below.

- a. Better employment opportunities.
- b. Main Administrative and Commercial Centre.
- c. Country Capital.
- d. Only area with direct access to the Third World.
- Only area properly equipped with Medical and Institutional Facilities.

Migration is regarded as a factor creating positive impact in the economic development of the area experiencing in migration. However, with H.M.G. unable to take timely measures, it has created serious problems in such areas. Some of the key issues and results of in-migration in Kathmandu are listed below.

- a. Demand more than supply.
- b. Urban congestion and environmental degradation.
- c. Social impact.
- d. Urban Growth.

Demand for housing in urban areas and especially Kathmandu is more than supply. This in combination with the constant increasing population growth rate are the main cause for the price escalation of the housing plots, having repercussion on the affordibility by majority of the income percentile for housing plots. This will not only lead to the emergence of squatter settlements and urban slums but will eventually force out poor from urban areas as illustrated in Fig. 1.

\* Source - Nepal Urban Development Policy Study.

Table 1. Migration in urban areas of Nepal - 1986

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Migration stream	Migrants (%)	
Village to town	81.32	
Town to town	16.86	
Not stated	1.82	
 Total %	100.00	

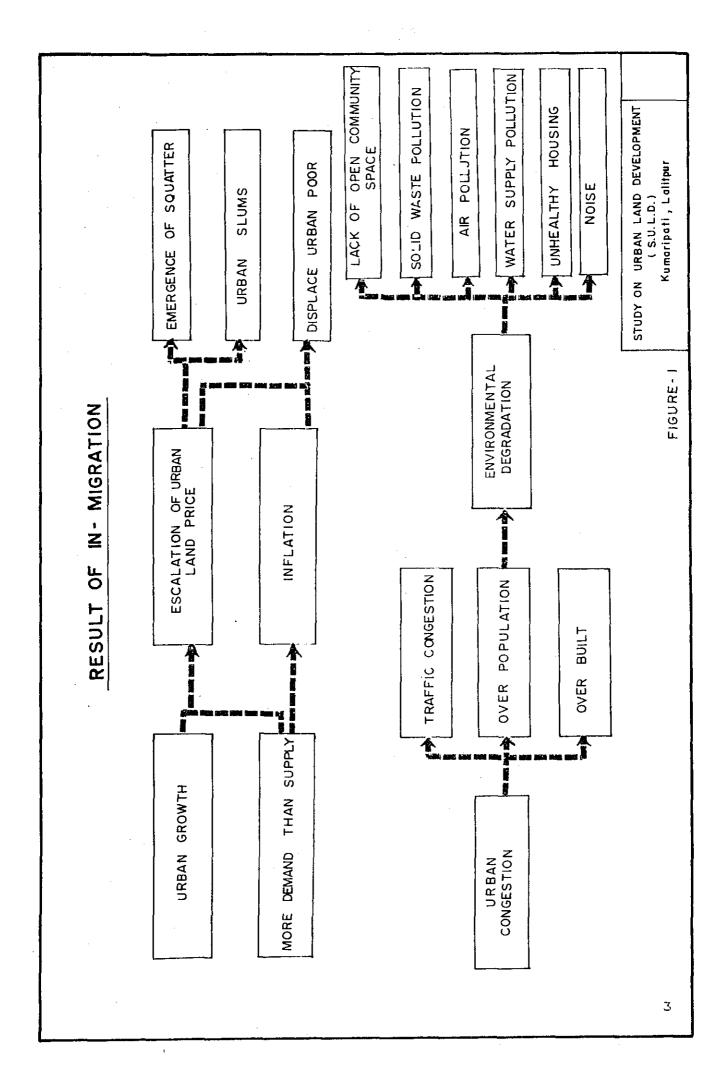
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### 1.1.2 URBAN GROWTH

"Nepal is one of the least urbanized countries in the world with 33 municipalities having an estimated at 157 million inhabitants or about 9% of the total population" (Land for shelter, Aug. 1991). However, the rate of urbanization is increasing substantially in relation to the pace of development.

By the end of Rana Regime, Nepal had only 10 urban centres, five of which were located in Kathmandu Valley and the remaining in the Terai. Various towns of the valley comprised 83% of the urban population of the country. The remaining urban centres were commercial, industrial and administrative centres along the southern Indian border.

However, since 1971, Terai Towns has witnessed the most pronounced and rapid urbanization. By comparison the urban centres of Kathmandu Valley have grown at much slower pace over 1971-1981 period. 'Nepal Urban Development Policy Study' points out that by 1981 over 50% of Nepal's urban population was concentrated in Terai and inner Terai, while the valley's share of national urban population had declined to 38%. However, interms of total population, Kathmandu urban areas have witnessed a dramatic increase with the figure reaching 6,88,921 by the year 2001(refer table 2). Interms of share of urban population with respect to national population, 1971 showed 4%, which rose to 6.2% by 1981 & at present (1991) 9.11% of the national population reside in urban areas thus showing the constant increase in urban total.\*

Overall, the designated urban population is increasing at about 5% annually, which would total up to 3.2 million by the year 2002, representing 13% of the nation's total population. In addition, more settlements will most probably be classified as urban areas further increasing the urban total.

Towns and cities in Nepal are converting agriculture land into urban use at rapid pace to accommodate the increased urban population. K.V.U.D.P.P.points out the increased in urban land from 5 to 11 percent of the valley area. Most of this has occurred due to expansion of Greater Kathmandu especially to north and north west of the core area. Expansion has also occurred along radial routes, notably the roads to Bhaktapur, Thankot and Godavari.

Urban expansion in the valley between 1971 and 1981 was on well drained elevated tar lands and areas adjacent to ring

\* Source: TRN

S.No	ł Area	1	Population				ulation Growt	h 
		1971 (census) (		1991 (census)	2001 (Estimate)		• • • •	(2001/1991
1	: Kathmandu	150402	235160	414264	688921	1.564	1.762	1.663
2	Lalitpur	59049	79875	117203	165256	1.352	1.467	:   1.4
3	Bhaktapur	40112	48472	61122	75485	1.208	1.261	1.23
	i 1 1			1     	1 2 4 1		L 3 1 1	• 1 1
				, 1 1 1	: : :	- 1 - 	t 6 1	-     
				1	1 1		1 6	ł

Table 2. Urban Population Growth: Kathamndu, Lalitpur and Bhaktapur.

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road like Balaju, Maharajgunj, Jawalakhel etc. Development since 1981 has occurred on well drained land in urban fringes and centrally located undeveloped low lying agriculture pockets along the banks of rivers; Bagmati, Bishnumati and Dhobí Khola. The urban expansion of Kathmandu relative to time is shown in plan 1.

The predominant landuse in these expansion areas is residential. K.V.U.D.P.P. points out the increase in residential area from 861 Ha to 1936 Ha during the period 1971-81 which further rose to reach the figure of 2974 Ha. by 1991. However, other landuses (except open space and recreational areas) have shown a very nominal increase in this period. In contrast, openspaces and recreational areas have decreased from 255 Ha. to 143 Ha. during the period 1971-1991. The comparative study of areas occupied by various landuse with reference to time is shown in table 3.

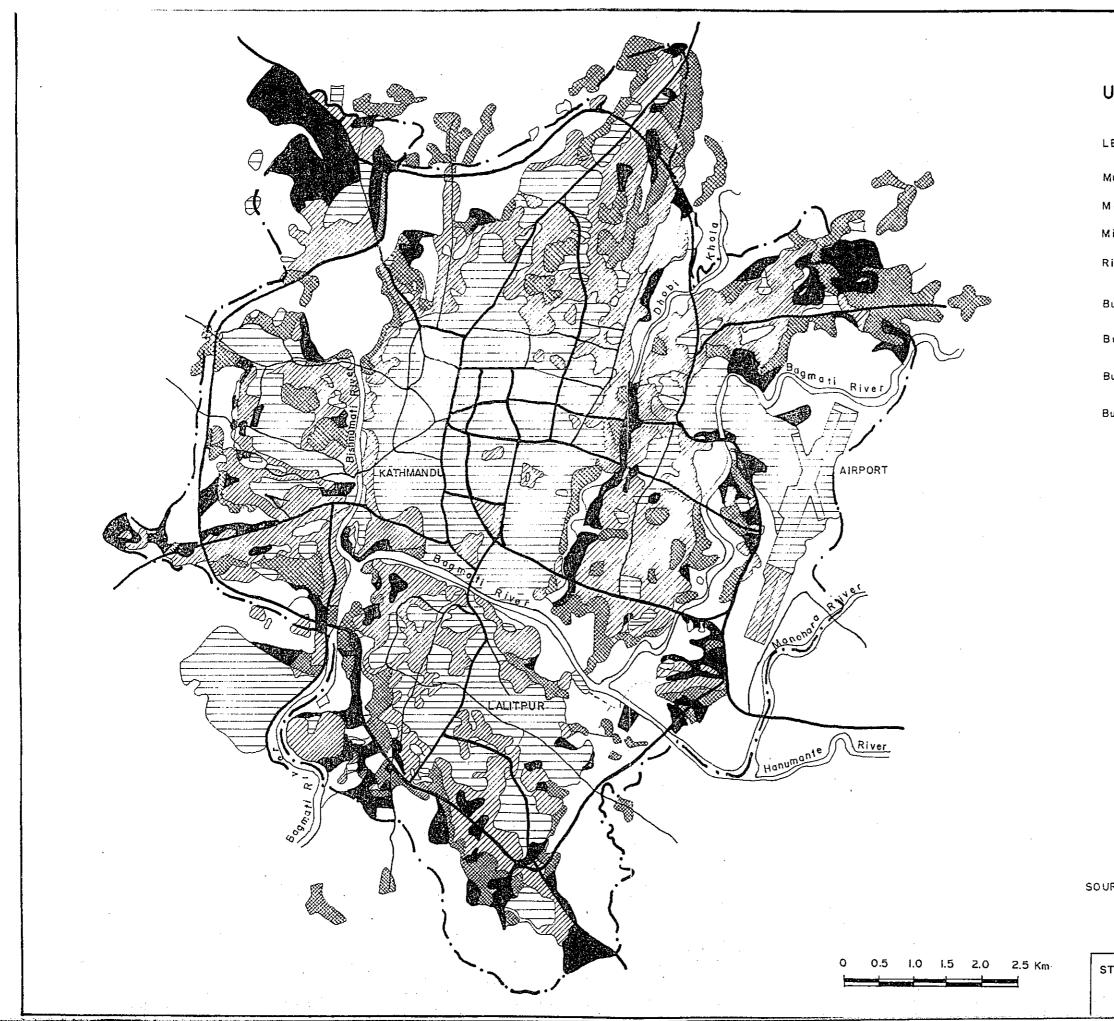
### 1.1.3 LAND DEVELOPMENT (RESIDENTIAL)

Traditional settlement pattern continued until 1950, which were compact, generally located on tar lands and preserving alluvial flood plains for agricultural use. However, development since then has been just reverse; scattered and respective of the topography and soil condition. The nature of settlement pattern before and after 1950 is clearly evident from the study of urban densities in table 4. The average density of urban development in Greater Kathmandu between 1971 and 1981 was of the order of 40 to 50 persons/ha, whilst, the overall city urban densities of the city core areas. The gross density of various areas of Kathmandu is shown in plan 2.

The total housing stock in 1971 as conducted by the department of Housing and Physical Planning was 27,210 for Kathmandu and Lalitpur Municipality. This figure has escalated upto 61,236 by the year 1990, considering 2% depreciation of the housing stock (for replacing old housing stock).\* As the urban core areas were already saturated, most of these developments occurred in urban expansion areas.

H.M.G. initiated Land Development and Housing projects could provide only 1424 housing plots in Kathmandu through two housing schemes named Kuleswor and Galfutar, till 1990 whereas the actual supply of housing plots during this period was 34,026. The net balance was supplied by the private developers and brokers through the informal land market. The areas developed through informal land market

**\*** Source : K.V.U.D.P.P



JRBAN EXPANS	ION (1971-1989)
EGEND	
Aunicipal Boundary	······
lajor Roads	
linor Roads	<u></u>
livers & Streams	
Built up Area 1971 .	
Built up Area 1981	
Built up Area 1987	
Built up Area 1989	

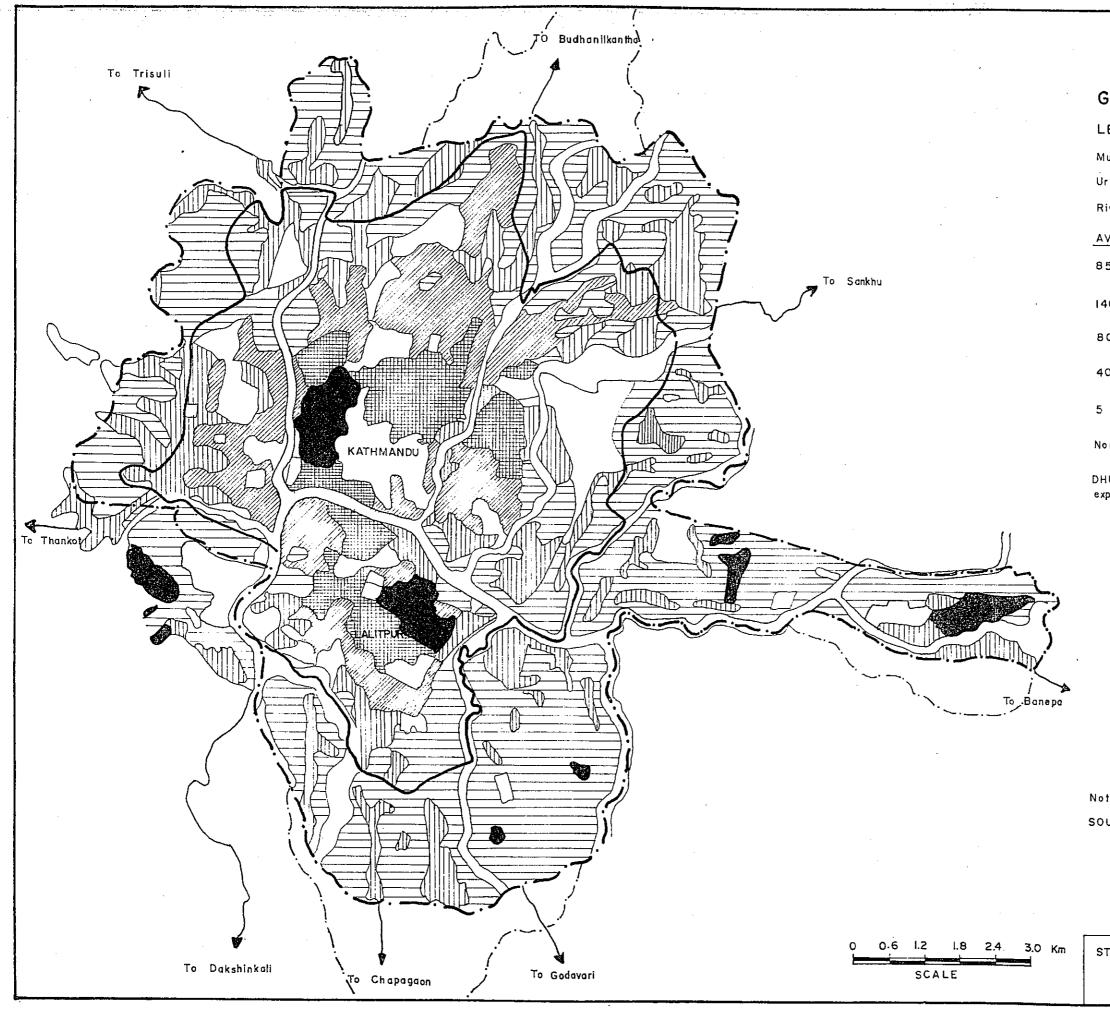
SOURCE: HMG/ADB (1991)

PLAN - 1

STUDY ON URBAN LAND DEVELOPMENT (S.U.L.D.) Kumaripati, Lalitpur



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GROSS DENSITY	1990
EGEND	
unicipal Boundary	
rban Expansion Area	
iver Green Belt	$\approx$
VERAGE GROSS DENSITY	
50 ppha Core	
10 ppha Zone I	
Oppha Zone 2	
Oppha Zone 3	
ppha Zone 4	
on Residential	
IUD Additional to pansion Area	
	-
te: ppha = Persons per	
URCE: HMG/ADB (1991)	
PLAN-2	8
TUDY ON URBAN LAND DEVE	
( S. U. L.D. ) Kumaripati, Lalitpur	N

# Table 3. Greater Kathmandu Land use with time

S.No	Use	1971			1981		1991	Percent	Change p	er Annum.
	·	На	X		%	На	%	1971-81	1981-91	1971-91
1	Residential	861	14	1,936		2,974	45	8	4	6
2	Institutional	285	5	413	7	413	ь	4	0	2
3	Residential cum Com.	7	Ú	11	Û	20	Û	5	ь	6
4	Service/commercial	23	0	54	1	46	1	9	-2	4
5	Open space/Recreational	255	4	245	4	143	2	Û	-5	-3
6	Industrial use	26	0	99 ·	2	112	2	14	1	8
7	Police/Hilitary	49	ł	144	2	194	3	11	2	7
8	Road	112	2	275	4	330	5	9	2	6
9	Airport	75	1	115	2	215	j	4	7	5
10	Forest	61	1	ói	1	63	i	Ú	0	0
11	Agricultural land	4,271	58	2,731	43	1,734	27	- 4	-4	-4
12	River	241	4	241	4	241	4	0	0	0
				6,325						

Source : KVUDPP

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Density	Average Existing Net Residential Density
	(Person/Ha)
Core	850
1	140
2	80
3	40
4   4	5
• • •	

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# Tabel 4. Densities of Various Areas of Kathmandu

Source: KVUDPP

show total absence of planning controls and lack of thought for the site selection. Hence, majority of housing plots in such settlements have a problem of motorable access, basic services and social amenities. Moreover, these areas donot seem to have provision for future installation of service networks.

Due to such shortcomings of the prevailing informal land supply mechanism, there exist number of problems in such settlements. Some of the key issues and the problems existing in old and new settlements are briefed below.

- a. Kathmandu urban core areas have density as high as 850 persons/hect. With exception to the core areas the densities of other urban areas of Kathmandu are very low ranging form 5 to 140 persons/hectare. The highly dense core areas have resulted in urban congestion and environmental degradation.
- b. The high density of the core areas have also resulted in inadequate and nonfunctioning of the infrastructure network. Potable Water has become a universal problem in all core areas where as sewer line face the problem of frequent overflow.
- c. The urban migration and the rapid pace of urbanization are the main cause for the fragmentation of traditional communities. Hence, urban elements which were for community purpose & maintained by the community have seized to function and maintained. Instead, these have become a source of environmental pollution and health hazard.
- d. The highly dense urban cores result in urban congestion. This along with the deteriorating urban structures and degrading urban services are the main causes of transformation of urban cores into urban slums.
- e. Development of most of the new settlements in unplanned manner is more of an organic natured with narrow winding lanes resulting in congestion. In most of such settlements developments have occurred only along the lanes thus leaving inaccessible blank land parcels leading to sprawl development.
- f. New settlements are developing in unplanned and uncoordinated manner with very little effort for community services. These settlements not only lack infrastructural networks at present but are also developing in hapazard manner with no consideration for future installation of infrastructural networks.

g. Lack of proper zoning in new settlements has resulted in mixed landuse with light industries existing in the middle of residential areas. Industries like garments, metal works etc. are the main source of noise and solid waste pollution, power fluctuations etc in residential areas.

"Land development and conservation scheme" prepared by D.H.U.D. in 1988 defined the green belts and the flood plains in Kathmandu valley within which development was prohibited to maintain the ecological balance & preverse fertile land for agricultural use. Due to the frequent resistance from the landowners, H.M.G. was unable to implement this landuse plan. This, in addition to the unplanned development of new settlements is bound to create number of problems some of which are mentioned below.

- a. The sprawl development of residential areas not only increases the cost of infrastructural network but also results in loss of agricultural land. " If urban development continues at the prevailing density increase (overtime) considerable more land than is necessary will be required to accommodate future needs" K.V.U.D.P.P.. Kathmandu Valley Urban Land Policy Study has predicted that unless drastic actions are taken, approximately 60% of the entire valley will have been urbanized by year 2020.
- b. Due to the constant transformation of agricultural land into builtup areas, the traffic & industrial air pollution and government unable to retain green belts, Kathmandu Valley has started to act as a green house. Indications of degrading climatic performance of the valley are alredy evident.
- c. Lack of sewer lines in newly developed areas and discharge of untreated industrial waste has resulted in shallow ground water and river pollution. Although, core areas and few new developed areas are equipped with sewer system, but the effluent is hardly treated before discharging into river, resulting in river pollution.
- d. The leakage of water supply mains and distribution system and the location of these, are the main cause of water pollution, due to siphoning of waste water or sewer into the supply line.

This along with III are the main causes for the frequent out break of water borne diseases.

e. Narrow and organic natured lanes created in new settlements either by G.L.D. programs or private developers will form traffic bottlenecks in future as the density increases. In addition, installing infrastructural mains in such areas will be extremaly expensive.

### 1.2 PROJECTS AND PROGRAMS UNDERTAKEN

Urban Planning in the modern sense was started in Nepal in the early fifties. Rajbiraj can be considered as the first new town to be planned and implemented. Then from late fifties to early sixties two new towns were planned and implemented: Bharatpur in the central terai and Mahendranagar in the Far Wester Terai. However, both the planning and implementation aspect in the building of these towns were weak due to two main reasons.

The UN assistance to Nepal in Town Planning started in 1962. With this, town planning activities started to gain momentum. A new legislation "Town Development Act 1963" ( the 1963 act) was formulated and promulgated. The contribution of UN experts and consultants in the field of planning were significant at this time and the Kathmandu Valley Development Plan 1969 was prepared by the Department of Housing, Building and Physical Planning in 1969. The adoption of regional planning reflected in the National Development Policy in the fourth five-year plan (1970-75) should be considered as starting point of modern urban planning in Nepal.

In 1972 the country was divided into four development regions and the regional centres were to be developed as modern urban areas. However, in 1982 the Western region was further divided into two separate regions, considering the geographical coverage area and the disparities existing in the Far Western Development Region. So since 1982 there are five development regions in Nepal with regional centres as modern urban areas.

The strategies of national development is formulated by the National Planning Commission in collaboration with the ministries and departments in five year plans. The explicit Urbanization Policy was formulated by the NPC only in its Seventh Plan (1985-1990), recognizing the importance of the urban centres in national economy. The objectives of the Seventh Plan for Urban Development was:

 To develop a well conceived and properly managed urban development plan for the country.

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- 2. To create opportunities for productive employment and increased income side by side with the urban growth.
- To use urbanization to supplement rural development efforts.

Policies formulated based on these objectives tried to strengthen the local governments in formulating and implementation of urban development plans, promoting nonfarm employment generation in urban place in response to rapid population and labour force growth, formulating long and short term investment programs on the basis of available resources and capability within urban areas, strategic use of urban development programs to support rural developments. The policies also gave special attention to encourage self financing urban development and the mobilization of local financial resources, economic and urban environmental problems associated with the urbanization process and to the efforts in attracting investment from the private sector for urban development.

The Department of Housing and Urban Development, DHUD, under the Ministry of Housing and Physical Planning, MHPP, has adopted two basic goals as a means of realizing the objectives of the Seventh Plan. These goals are:

- Fulfillment of the basic shelter needs by the year 2000.
- Promotion of the planned development of urban areas to check haphazard urban growth, to accommodate growing urban population and to complement rural development.

The DHUD has formulated its strategies to meet these goals which is to establish an urban development framework through the integration of infrastructure with land use plans and the identification of economic growth activities to support urban development; promotion of institutional support activities by the establishment of financial and technical institution; positive government intervention to implement land development projects, strengthening of institutional linkage and providing support to initiatives of local municipalities in urban development.

The MHPP's programs may by grouped into five categories:

- 1. Urban Planning Programs
- 2. Urban Housing Programs
- 3. Rural Planning Programs
- 4. Rural Housing Programs
- 5. Policy and institutional Support for Planning and Housing.

### 1. Urban Planning Programs

These basically consist of land development programs of sites and services carried out by DHUD and TDC's. Examples of programs are Kathmandu, Lalitpur, Lahan, Biratnagar and Damak. Financing for these projects are provided through the revolving fund of MHPP. Another type of Land Development Program is the Guided Land Development, GLD, which is undertaken with extensive collaboration with local landowners and residents. The GLD has been undertaken mostly in Kathmandu and Lalitpur. For Kathmandu GLD's were carried out in four wards in FY 88/89 and additional five wards in FY 89/90 in Lalitpur five wards and three wards and respectively. GLD programs have also been undertaken in Birendranagar, Pokhara, Bahaktapur, Biratnagar, Nepalgunj and Birgunj. Land Pooling is another type of Land Development Program. This is a comparatively new approach in Nepal. Gongabu (12.5 hectares) is an example of Land pooling in Nepal.

Under the Urban Planning program physical development plans for municipalities, district headquarters and emerging township are also prepared. This involves the preparation of base maps for these urban centres. The DHUD with the help of Management Support for Urban Development (MSUD) was to prepare structure plans for thirty three municipalities, responding to the rapid growth of economically strategic locations, programs have been made for the development of newly emerging Towns. The main focus of these efforts have been on Kohalpur in Mid-Western Region, Attaria in the Far Western Region, Manthali in the central Region and Bharatpur in the Western Region.

### 2. Urban Housing Program

These are basically the same as Land Development Programme and consist of Site and Services Projects. Involvement of private land development and housing companies in the future is envisaged. Making available long term housing credit to low and middle income families is also envisaged.

### 3. <u>Rural Planning Program</u>

This program was made under the Basic Needs Program. The Cluster (Compact) Settlement Development Program is the development of concentrated settlement areas instead of existing widely dispersed rural settlement where it is difficult to provide basic services efficiently. The CSDP was started in FY 1988/1989 with the aim of implementing pilot programs in all 14 zones of the country. Gorushinge, Khajura, Lalijhad and Chia Kaman were selected for the implementation of CSDP in FY 88/89.

Another Rural Planning Programme is the village Block Development Program (VBDP). The objectives of this programme are consolidation of village blocks through improvement infrastructure and housing and of process participation establishment σf Ьу beneficiaries in actions to meet their interests. This program envisages the titling of land ownership in 18,800 ha.) and 17,000 village blocks (covering complement the land titling program by introducing physical improvement programs. A Royal Directive has been issued in this respect and to expedite the programs of distributing land title certificates. The department of survey is collecting data on the areas of land requiring regularization of title.

Another program known as Service Centres was formulated by the MHPP to provide more equitable distribution of resources and to increase the pace of development under this program the MHPP related 17 ILakas for the preparation of Service Centre Structure Plan. These were selected on basis of their basic accessibility, convenient location and availability of land wit the objectives of making better access to markets for rural population as well as to observe a part of surplus rural population and promote the development of compact settlement within the service centre. This program is still to be implemented.

establishing Market The program for Towns were considered very important for both rural and urban development. Its main objective was to strengthen rural/urban linkage by providing a market for farmers to sell their surplus products and in this way provides incentive to produce more. These Market Towns are even more important since almost all cash crops are marketed through these towns. They develop links in food distribution system and work as processing centres. They also become centres for off farm employment. So far only case studies have been made of existing market town like Lamahi, Ghorahi, Tulsipur and Salyan and workshop held on this topic. However, follow up works and studies of existing market towns in other points of the country is yet to be done. There is also no clear cut definition of Market Towns so far.

### 4. Rural Housing Programs

This program encourages low income rural families to improve their housing thus seeks to improve the living conditions of the rural population. Grants and technical assistance are made available for the provision of low cost sanitation, roofing, ventilation, etc. Technical assistance is also provided through the district offices of DHUD. It is envisaged in this program to channel funds as grants to targeted households through local users Committees. Such Home Improvement Programs were Undertaken in two districts -Baglung and Rasuwa in FY 88/89. In Baglung low cost sanitation for 250 households, and fiberglass W.C. pans were to be provided as a grant under this program. In Rasuwa a grant of NRs. 200,000 and 100 W.C. pans have been provided.

### 5. Policy and Institutional Support for Urban Sector

Policy and Technical Support for the Urban Sector Project financed by the UNDP and executed through the UN Centre for Human Settlements (Habitat) and MHPP is a program under this category. This assistance program focuses on the housing sector and aims to develop national shelter policy and strategy, preparation of **national** training needs assessment and strategy in this sector, formulation of national building codes and by laws, preparation of epicenter and seismic maps of Nepal, development of new building materials and earthquake resistant building techniques, etc.

### 1.3 Institutional Setup and Legal Framework

There are various ministries, agencies, departments and corporation at the central, regional and local levels that are involved in the formulation of plans for Urban development and its implementation in Nepal. These institutions maybe broadly classified into three groups:

- 1. Multisectorial and Administrative institutions
- 2. Sectorial Agencies

3. Public and Private Land/Housing Companies

Multisectorial and Administrative institutions

a) <u>The National Planning Commission</u> (NPC) is chaired by the Prime Minister and is responsible for the preparation of annual and five year plans. The NPC consists of members and a secretariat with a vice chairman heading the day to day work. The members of the NPC have responsibilities of functional sectors, one of which is Urban Development and Housing and program targets for annual and multi year planning with the help of HMG ministries. The NPC also conducts periodic reviews of development policies, develops guiding policies as well as monitors and evaluates the progress of development works.

### b) <u>Ministry of Housing and Physical Planning (MHPP)</u>

The establishment of separate Ministry responsible for Housing and Physical Planning under the above name in 1988 reflects the importance given to Housing and Urban Planning by this time in Nepal. The MHPP is organized in two major units:

a) Housing, Resettlement and Urban Development andb) Water supply, Sewerage and Sanitation.

The Housing, Resettlement and Urban Development branch, which include the Kathmandu Valley Development. Authority, The Nepal Resettlement Company, The Building Department and the Department of Housing and Urban Development, is primarily concerned with policies and programs relating to Urban Development and housing, and co-ordination of physical planning and its implementation. The Water Supply, Sewerage and Sanitation branch, which include the Nepal Water Supply Corporation, the Solid Waste Management and Resource Mobilization Centre, and the Department of Water supply and Sewerage, is responsible for policies and programs related to its sectors.

### c) <u>Department of Housing and Urban Development (DHUD)</u>

The DHUD is an agency within the MHPP which is responsible for the primarily coordination and implementation of housing, urban planning and physical development works. This department undertakes programs and execution of projects which are assigned by MHPP. DHUD is also responsible for the initiation of housing and Urban Development programs. There are two division in the department: Urban Development and Housing. The responsibility of the Housing Division is to formulate and implement different types of housing programs and projects in urban and rural areas, whereas the Urban Development Division provides assistance to local municipalities and Town Development Committees on land use planning, general town planning and town extension schemes. The five regional offices of the department provide technical assistance and planning co-ordination for localities.

The Urban Development Division is organized into four sections:

- a) Urban Planning Implementation
- b) Special Programs and Basic Services
- c) Urban Resources Mobilization and
- d) Funds and Material Grant Management

The Urban Development Division is a coordinating centre between the municipalities and other line agencies. The Urban Development division also provides technical guidance and municipal finance and administration.

### d) Ministry of Local Development (MLD)

MLD monitors, supervises and supports local governments (municipalities and Town and Village Development Committees) as a central government agency. MLD is also a lead ministry for integrated rural development projects and it provides assistance for the management, financial planning and general administration of local governments. There are four division in the ministry:

- 1) Urban and Local Development
- 2) Training
- 3) Co-ordination and planning
- 4) Personnel and Fiscal

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# e) <u>District Development Committees</u>

With the establishment of the multiparty system in Nepal after the peoples movement the District Development Committees replaced the District Panchayats, In the Panchyat Systems Towns were legally subordinated to the Districts and Districts had the authority to approve or reject plans and investment programs of the Towns. Due to this there were some friction between the number of larger and powerful Towns and the Districts in which they were located.

The District Development Committees were formed in an ad-hoc basis soon after the fall of Panchayat System. So it is yet to be seen how these issues are going to be addressed when the new legal and administration system will be formulated for local governments.

# f) <u>Municipalities</u>

There are 33 municipalities in Nepal. The representatives of wards, the Vice-Mayor and the Mayor together constitute the Town Assembly which acts as the local legislative body. Each municipality also has an administrative branch. In the panchayat system the head this administrative branch used of to be a civil servant deputed from the ministry. Since the advent of the multiparty system, the municipalities have been functioning in ad-hoc basis. The elections for the post of Mayor and Vice-Mayor have not yet been held so the municipalities are headed by civil servants deputed by the Ministry of Local Development. The municipalities have a wide range of responsibilities including urban planning and provision of municipal services. The municipalities prepare their town development plans, acquire land for development purpose, coordinate with the government agencies and regulate building construction activities. Up to the present time the towns have weak technical capacity and only very limited authority to act without the support and approval of HMG agencies, even though the towns have various source of tax and non-tax revenue.

# g) <u>Town Development Fund Board (TDFB)</u>

The TDFB has been created by HMG in 1989 to provide financial and technical support to the municipalities. These supports are provided in the way of loans and grants to the municipalities for the improvement of infrastructure and revenue generating projects and for the consultancy services of these projects which contribute in the overall urban development. The TDFB grants long term loans at low interest rates to the qualifying municipalities for the above mentioned projects. Grants are usually provided to the municipalities for planning and implementation σf demonstration projects, health education programs, improvements to tax record systems and preparation of project plans or feasibility studies. Grant funds have provided to the TDFB by GTZ, the German been Development Agency. Loan funds are provided by the World Bank (IDA) through an approximate US \$ 10 million credit. The secretary of MHPP is the chairman of TDFB, 12 members represent the MLD, the ministry of Finance Municipalities, DHUD, Nepal Rastra Bank, another financial institution and the executive director of the TDFB. UNCHS (Habitat) is initially providing technical assistance to the TDFB for a period of three years which started in 1990.

#### h) Town Development Committees (TDC's)

The Town Development Committees are formed in Urban areas. Fifty percent of the TDC's members are public representative and social workers (refer fig. 2). HMG can create Town Development Committees in any specific area under this act and so far twenty six TDC has been created in various municipalities excluding the municipalities of the valley where there are Town Development Communities. The TDC's main function are to prepare town plans for land use and development, to undertake appropriate land development programs such as Guided Land Development or Land Pooling, to develop and implement plans for historic and environmental preservation and to assist in providing infrastructure necessary for town development. The TDC also have power to stop or demolish construction which do not comply with the committees regulation or to impose a ban on construction for up to two years on the land located within the town plan area within the jurisdiction of the TDC. Many of the TDC's functions overlap those of the municipalities.

### i) Chief District Officer (CDO)

The chief District officer is the principal local law enforcement official. Since the abolition of the post of the zonal commissioner soon after the advent of multiparty system the role of CDO has been enhanced. The C.D.O. is appointed by the government. He doesn't usually get involved in development programs but has a key role in land acquisition through expropriation on behalf of the development agencies. The CDO also can play an important role in the enforcement of urban development and building regulations.

# j) Kathmandu Valley Town Development Committee (KVTDC)

Kathmandu valley needs special attention due to geopraphy as well as its unique cultural heritage. Also, there are conflicts in the valley between urban and rural land uses and there is a need to protect the environment and cultural heritage of the valley. Considering these factors the KVTDC was established in 1976. The KVTDC is a planning and coordinating as well as an implementing agency. It coordinates the works of many agencies and has power to establish and implement land use plans and to formulate and carry out different of projects. The KVTDC also promotes types environmental protection by regulating development and the use of natural resources. It also has power to undertake different land development programs.

#### Sectoral Agencies

# a) <u>Department of Water Supply and Sewerage (DWSS)</u>

The department of Water Supply and Sewerage is the agency of HMG responsible for the planning and development of Water Supply and Sewerage in all areas except the municipalities. With the creation of Nepal Water Supply Corporation and the assignment of the responsibilities in the field of water supply and sewerage of all the municipalities, the DWSS has shifted its coverage to the non-municipal urban centres and has focused its attention on rural areas.

# b) Nepal Water Supply Corporation (NWSC)

The 1989 "Nepal Water Supply Corporation Act" replaced the water supply and sewerage corporation (WSSC) by NWSC so NWSC inherited the responsibilities of its predecessor, but has expanded its responsibilities and will be responsible for water supply and sanitation in all municipalities, whereas the WSSC served only 14 municipalities. The new Act has given greater autonomy to the corporation so it is expected that the corporation will be more independent and financially viable than the WSSC because the new act has empowered the corporation to set its rate on break even basis which in the case of WSSC was not the policy.

## c) <u>Department of Roads (DOR)</u>

The Department Of Roads under the Ministry of Works and Transportation is responsible for the construction, maintenance and operation of national roads. The planning and design of the roads are done by central design section. The regional offices of DOR in the five development regions, headed by a regional engineer is responsible for new constructions. The zonal office below the regional office is responsible for maintenance and administration and the district office is responsible for the day to day maintenance and operation.

### d) Nepal Electricity Authority (NEA)

The Nepal Electricity Authority is an agency that generates, transmits, distributes and maintains electrical supply in Nepal. NEA is involved in the most aspects of power supply except in major construction projects like the Karnali, Marnsyandi and Pancheswari, which are tended by external support organization and are controlled by independent boards under the ministry of water resources.

#### e) Nepal Telecommunication Corporation (NTC)

Since its establishment in 1975 the NTC has grown rapidly. NTC's primary responsibility is to provides efficient and economical telecommunication services. It is responsible for the planning and installment local, intercity and international telephone lines as well as telex and fax operating systems.

# f) <u>Solid Waste Management and Resource Mobilization Centre</u> (SWMRMC)

This institution was established with the intention to improve the collection and disposal of solid waste by establishing a waste management system based on high degree of resource recovery. The SWMRMC which is under the Ministry of Housing and Physical Planning has a status similar to a government owned corporate body with more commercial flexibity and less government control. The activities of the SWMRC at present covers only the areas of greater Kathmandu. From the beginning of its establishment the SWMRC has been assisted by the Federal Republic of Germany through GTZ.

# Public-Private Land/Housing Development companies

## a) Housing Management and Construction Company (HMC)

HMC was established in 1985 with the main objectives to develop land for housing by mobilizing private sector resources and executing "Site and Services" and other housing programs. HMC is a joint venture private and public company, the share ownership of which is - 30 percent government and public sector corporations and 70 percent private investors. The total issued share is NRs. 20 millions and the authorized share is NRs. 100 million. The chairman of HMC is from the private sector. So far the HMG's major effort has been the preparation of a detailed study and plan for a sites and services at Kisipiri near Thankot in Kathmandu. the plan of this project was to provide 1,800 plots of different sizes accommodating more than 12,000 inhabitants.

#### b) <u>Nepal Land Development Company</u> (NLDC)

With the objective of undertaking residential and commercial real estate development NLDC was established in 1989 as public private joint venture. the ownership shares of NLDC is 25 present, 50 percent and 25 percent for the government corporation, private investors and government financial institutions respectively. The Board of NLDC is chaired by the Secretary of MHPP and is represented by the various shareholding groups.

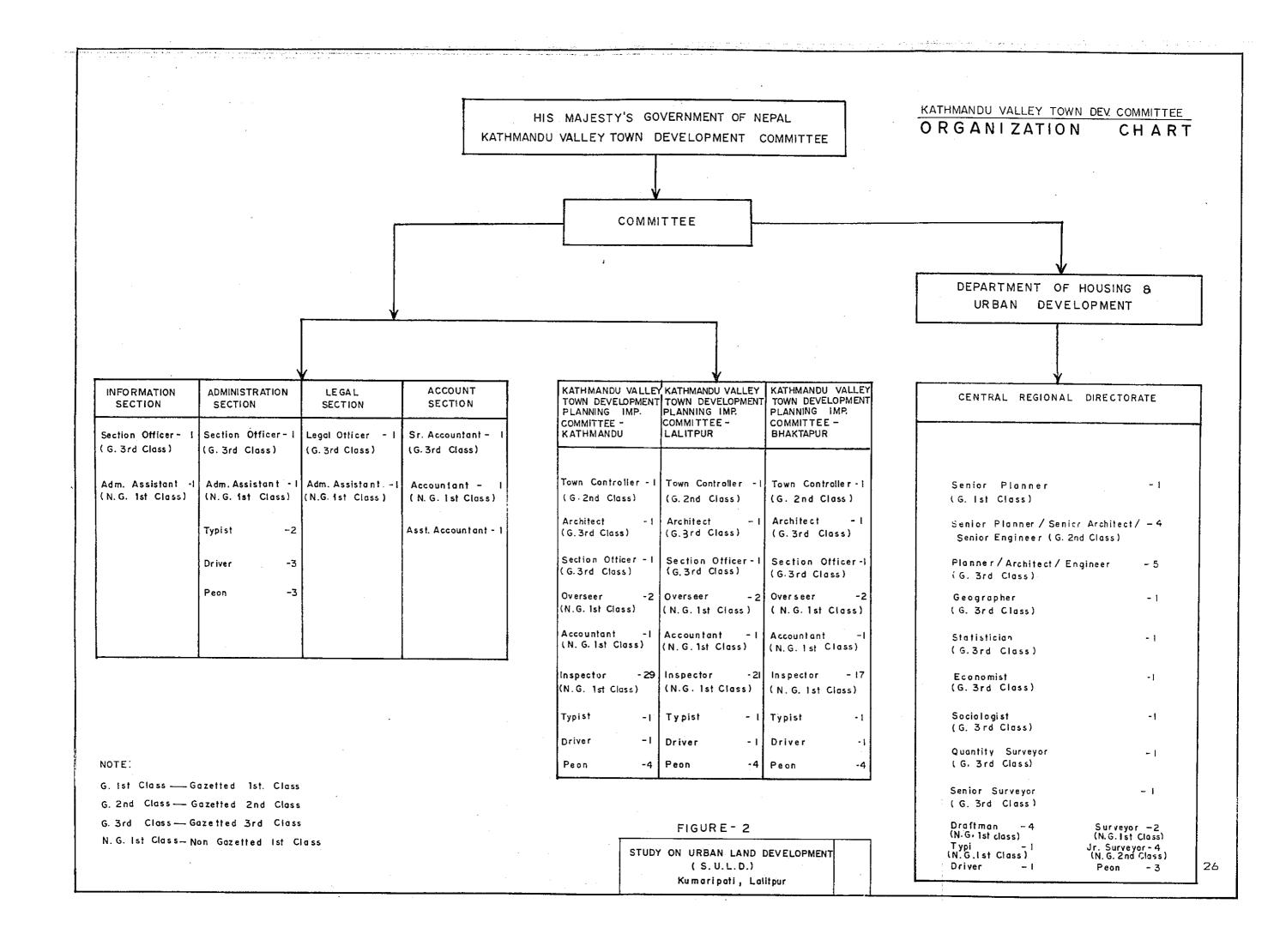
#### Legal Framework

The legal framework for Urban Planning in Nepal is provided by the Town Development Committee Acts 1963, Town Development Plan Act 1973, Regional Development Execution Act 1956 and Town Development Implementation Act 1976, However, Urban Planning is also influenced by the Land Reform Legislation with Land Act 1964, Municipality Act 1991, Guthi Corporation Act 1976, and Land Rules 1964. The constitution of Nepal (2047 B.S) guarantees the right of Nepalese citizens to acquire, use and sell property including land but the state has the limited right to tax the properly, limit the quantity, etc. Current law limits the amount of urban land to 25 ropanis (or approximately 0.84 hectares) that can be owned by one household.

A very broad power has been provided by these Acts for land acquisition. However, the compensation rate for these acquisition is quite vague and the procedures of land acquisition is also very complicated and involves many agencies, committees and in some cases the cabinet.

Some Acts have also been formulated for the specific development need of some areas. Kathmandu Valley Development Authority Act 2045 B.S was formulated in view of the special need of the Kathmandu Valley only. Ancient Monument protection Act 2013 B.S. has been provided to protect the rich cultural heritage of Nepal. The Pashupati Area Development Trust Act 2044 B.S. has been primarily enacted for the preservation and development of the Pashupatinath temple complex and its surrounding area in a planned manner.

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1.	Chief District Officer (C.D.O.)	-	Chairman
2.	Local Development Officer (L.D.O.)	-	Member
3.	H.M.G nominated social worker/ Public representative (6-7 nos)	_	Member
4.	Chief - District Watersupply Office	_	Member
5.	Chief - District Land Revenue Office	-	Member
5.	Executive Secretary - Local Municipality	-	Member
7.	Chief - Department of Building, Housing and Urban Development	-	Member Secretary

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- 2. LAND DEVELOPMENT & HOUSING PROGRAM
  - 2.1 Site & Service Program
  - 2.2 Guided Land Development Program
  - 2.3 Land Pooling Program

2.4 Comparative Study

### 2. LAND DEVELOPMENT AND HOUSING PROGRAMS

With the aim of developing planned urban settlement, land development activity for housing started in 1969 with a site and service program, for developing planned residential area in Kathmandu. It was only after the publication of Master Plan for Kathmandu Valley in 1976 that more of suchprojects were formulated for the development of growing towns all over Nepal. However, most of these programs were neither started nor completed and some which were completed also faced number of problems and obstacles at various stages.

As mentioned in 3.2, Guided Land Development program and Land Pooling started in 1988 and areas were designated to execute pilot projects. These projects also faced number of problems and obstacles from the inception stage till the implementation stage. The land development and housing programs carried out in Kathmandu valley are shown in plan 3.

#### SHORTCOMINGS AND PROBLEMS

Some of the shortcomings and problems common to all land development and housing programs are listed below.

1. The success of any land development and housing program relies in the public participation and in motivating the public to participate in such programs; local leaders, landowner and the local brokers can play a crucial role.

However, with all three groups mentioned above looking for only individual benefit rather than community benefit, most of the land development & housing programs have come to stand still after certain stage of implementation.

 Lack of precise and updated base and cadastral map create problems at various stages of land development & housing program.

G.L.D. schemes are planned on cadastral maps which are quarter a century old and hence, this will definitely create problems in implementation stage, especially in urban areas where actual situation on the site has totally differed form the situation on the map.

Due to the imprecise cadastral map, it happens very often that the actual land amount on site differs from the land shown on the map/land ownership paper. If the actual land on site becomes less than the land on map/paper, implementation stage is either prolonged or held up. Gongabu Land Pooling project faced this problem.

3. Except in few housing and land development projects developed by the government, the cost of installation of water, electricity and sewage (main network cost) are not charged to the customers in Nepal. However, due to the land purchase at historical price the average plot price in such areas become still lower than the market value of the raw land.

With private developers coming into picture and H.M.G. no more able to purchase land below the market rate, the average plot price of the planned areas will definitely escalate. Hence, formal land developers will not be able to provide plots at competetive price compare to the plots provided by the private sectors without infrastructure networks.

4. Land development program instigate the land value to increase in geometric progression thus land becoming unaffordable by the majority of the income percentile.

Moreover, this will eventually result in displacing the low income group by the rich due to higher plot prices. Hence, an attempt in providing shelter to one section of the society may result in deserting the other.

5. Nepal lacks a proper institutional setup and legal framework to provide loan for developing land for residential purpose.

All land development & housing activity require financial support. Even in a program which is based on self financing principal like Land Pooling, a short term loan is required at the initial stage.

Although, Nepal Housing Development Finance Company has been established to provide loan for housing activities but it has only started to provide loan to individuals for building houses. However, it's role in motivating and promoting private developer is yet to be seen.

6. Most of the land development programs outside Kathmandu valley donot have effective and responsible implementing agency.

A Town Development Committee formed under the chairmanship of C.D.O. (refer fig.3) is responsible for acquiring land and implementation of the schemes prepared by D.H.U.D., under the supervision of the District Engineer of DBHUD section. As the main

responsibility of C.D.D is to maintain law and order situation of the district, land development projects do not get much attention and hence key issues and problems are most of the time overlooked. Also, T.D.C lacks enough personals, experts & technical manpower and logistic support to carry out such programs.

7. The imposition of moratorium on building and subdivision activities in various areas for several years (Lahan more than 10 yrs. Damak yrs.) for the planning purpose without any development work, acquiring land at below market rate, cases of the bureaucratic exploitation of land development program etc are some of the reasons due to which public have lost faith on government land development and housing projects.

This loss of faith, could be very dangerous in replicating land development & housing projects in future as public will hesitate to co-operate.

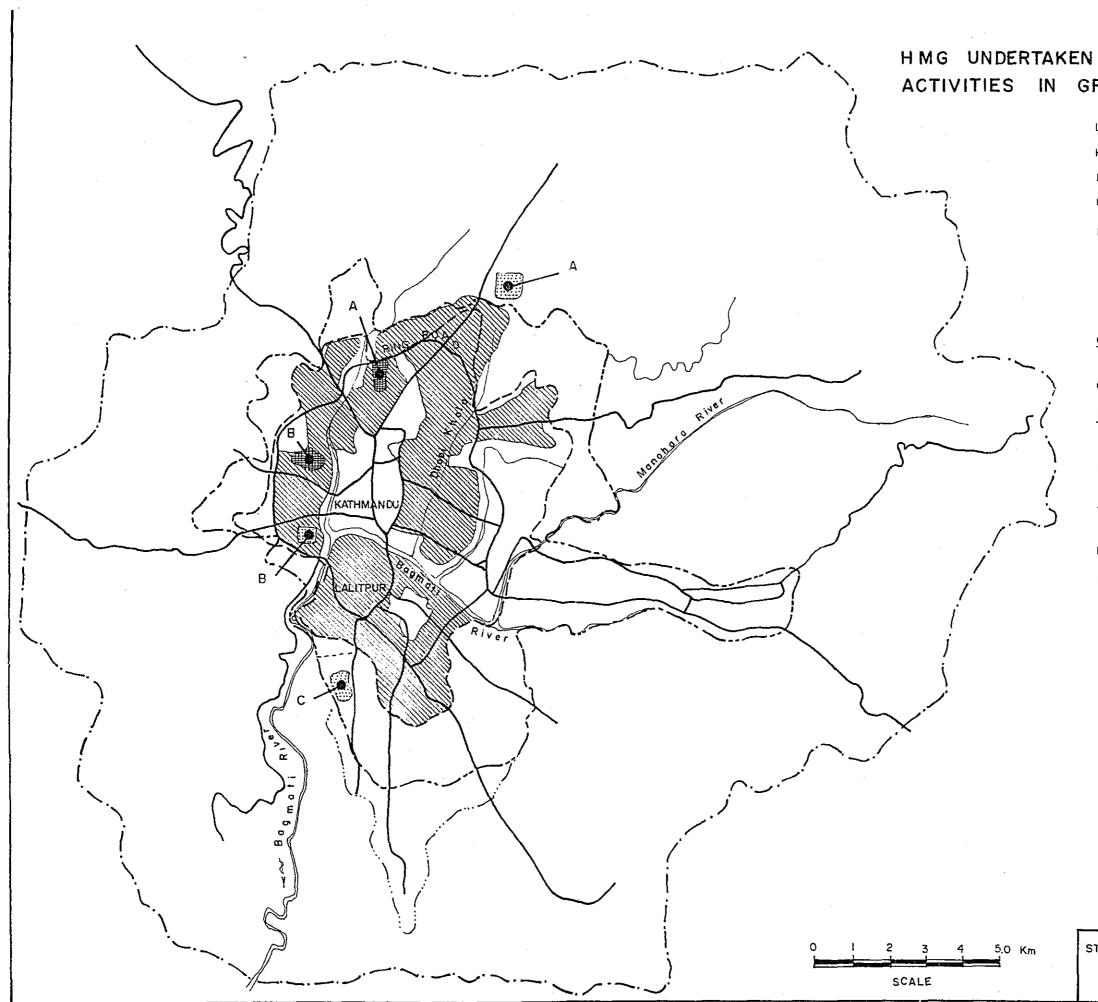
 Lack of interagency co-ordination have resulted in project delays.

Various government agencies directly involved in land development & housing activities like Nepal Electricity Authority, Road Department, Water Supply Corporation, Nepal Telecommunication Corporation, Land Revenue Office and the project implementing agency have to coordinate among each other to plan their yearly activity, identify priority zone and budget allocation. Due to lack of co-ordination majority of the land development & housing activities have experienced delays.

One of such examples is the proposed settlement program in Attaria where, in the area planned for residential development by D.H.U.D, N.E.A. has installed 15 KV electric substation.

 Lack of seriousness and the limited management capability of the public sector employees result in inadequate project preparation and project costing thus causing project delay and over expenses.

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LAND DEVELOPME	NT
REATER KATHMAND	
LEGEND: Kathmandu Valley Boundary	
Expansion Area River & Streams Roads (Surfaced) Roads (Unsurfaced) GUIDED LAND DEVELOPMENT	
Ward Covered by GLD Projects <u>LAND POOLING</u> Gongabu Land Pooling	
Dallu Land Pooling <u>SITE AND SERVICES</u> Galfutar Site & Service	B
Kuleswor Site & Service Salbu Site & Service	B C
PLAN - 3	31
TUDY ON URBAN LAND DEVELOP (S.U.L.D.) Kumaripati, Lalitpur	

#### 2.1 SITE & SERVICES PROGRAM

H.M.G. Nepal's effort in land development for residential purpose under was initiated with site & service scheme in 1969 to develop Kalimati - Tahachal area for the residential purpose, which too didn't materialize.

## 2.1.1 IMPLEMENTATION METHODOLOGY

Government undertaken site and service project initiates with the selection of an area ideal for site and service application, which is followed by the land acquisition process.

Land is acquired at the predefined rate without any relation to the market value. However, in Lahan, attempts are being made to fix the land acquisiting rate with the mutual apreement between the landowners and the implementing agency.

Site and service scheme is then prepared with all public utilities, notably open spaces, community spaces, commercial spaces etc. In addition, service plan is prepared incorporating road network, water and sewerline, electricity network etc., which is then submitted for the government approval.

After the completion of engineering design of infrastructure main work and cost estimation, plot marketing strategy is formulated. With the government approval, the agency implements the scheme by demarcation of road, spaces for public utilities and serviced plots etc. Plot sale is done

#### Note

The term site & service refers to the process of assembling raw land and convert it into fully serviced plots before selling it to the beneficiaries with or without any subsidy. There are many variants to site & service projects, each with it's own objective. Some of the main types are; subsidized site & service project, resettlement projects, core housing & site & service, public site & service project etc. Public site & service project may have the potential in providing land affordable by all section of the society.

However, this would be only possible by attracting right beneficiaries, so that it prevents land speculation. Also, site & service projects are very risky in successful implementation to achieve project goals due to the limited management capabilities in public sector and political & bureaucratic interference. Simultaneously with other operations once the scheme is approved by the government.

## 2.1.2 SHORTCOMINGS AND PROBLEMS

Land development for residential purpose was mainly in the form of site and service program before the formation of M.H.P.P.. Although, number of projects were proposed in several growing towns, some had to be abandoned while some were never initiated. Several implemented projects also faced number of problems. Some of the shortcomings and problems in public site & service projects in addition to the shortcomings mentioned in 4.0.1 is briefed below.

- 1. Instead of providing cheap plots to the poor, public site and service projects have displaced the poor and subsidized rich due to tendency of selling plots at historical price.
- With exception to few (Kuleswor housing project, Kohalpur site & service project) most of the site and service projects didnot have plot marketing strategy.

In most of the government undertaken site & service projects all plots were sold at once irrespective to their location, due to which the rising land value of the prime plots were benefitted by the plot holders rather than the project office.

Kuleswor housing project also shows, a lack of proper strategy as only the plots along the main road were withheld. However, in Kohalpur site and service scheme, an attempt has been made at the initial stage to withhold the prime plots and auction it later.

3. Land owners are likely to object the site and service schemes in future, if the present trend of acquiring land continues irrespective of the market value.

In the past, most of the government site and service projects have been acquiring land at predefined rate which is normally below the market rate.

- 4. Experience in most of the site & service projects show that plots have been purchased merely for speculative purpose. There seem to be very little success in attracting beneficiaries with immediate housing need. The result is, such project areas are hardly developed even after several years of project completion.
- 5. The ever happening tenant and landowner's conflict for the individuals share (legally a tenant is entitled for only 25%, however they demend upto 50%) before the sale of any land, have delayed the land acquisition process. This delay if not recovered in other stages

will definitely escalate the project expenses with time.

6. With the current H.M.G. policy and public sector management capability, future government undertaken site and service project will run into project deficit unless drastic measures are taken.

Till date, site and service projects have not shown any deficit as the land is acquired below market rate and hence over expenses caused due to inappropriate policies and limited management capability werenot evident. But under the current political system, any project in future will have to pay the existing market rate to acquire land unless lanowners agree & hence project deficit is very likely.

H.M.G. Nepal's experience in successful implementation of Site and Service has been very disappointing. However, reviewing the advantages and disadvantages of Site & Services program, it can undoubtly be the best approach of land development if property managed. The advantages & disadvantages of site & service program are listed below.

## 2.1.3 Advantages

- Successfully implemented site & service project will result in the settlements with all infrastructural facilities and the spaces for public and community use.
- 2. Existing legislation allows the government to acquire land for the public purpose.
- 3. Project benefit can be mobilized as per project goal. It can either be shared among the larger community by providing cheap plots or can form a revolving fund to finance other projects. Incase of private developer it will act as an investment to finance other projects.
- 4. Private developer will be very much interested in developing the area through site & service project provided they have easy access to land & donot face too many problems in acquiring land & access to road.
- 5. Low income families can be accommodated within the project area with some subsidy.

## 2.1.4 Disadvantages

- The implementing agency will have to cope with the problems related to land management. (refer 4.1.2.5)
- H.M.G. has been using downpayments as a working capital in most of the site & service projects which in future is very unlikely to happen. Hence, replication of such projects in future may require huge amount of investment.
- 3. Experience in site & service project illustrates the failure in attracting the real beneficiaries with immediate housing need as well as beneficiaries with limited budget. Subsidies supposed to be for poor are often benefitted by rich and in most cases plots are purchased merely for speculative purpose.
- 4. Landowners in urban fringes where the land value is increasing dramatically may be reluctant to sell land for site and service project and are likely to prefer other forms of land development program like land pooling.
- 5. Due to delays caused at various stages either by land management or other bureaucratic procedures, the project may run into deficit.

With the official publication of the Master Plan of Kathmandu Valley in 1976, H.M.G. launched number of site & service projects, namely Kuleswor, Galfutar and Dallu housing project. Among these, although, Kuleswor & Galfutar faced too many problems and was delayed but both were completed. However, Dallu scheme ran into so many problems that it was almost abandoned. Recently, attempts are being made to convert it into land pooling scheme.

In late 1970's and early 1980's number of town extension programs based on site & service concept, were initiated outside Kathmandu by the local town development committees with the limited support form the government. With the formation of M.H.P.P. in 1988 a revolving fund of Rs. 50 million was setup to finance such schemes in several towns. The projects benefitted from this, in a form of loan were the schemes in Bharatpur, Lahan, Dhulikhel & Jaleswar. Among these, Lahan & Jaleswor were site & service projects. Detail of the site & service projects carried out in Kathmandu with their salient features are briefed in annex 1.

## 2.2 GUIDED LAND DEVELOPMENT PROGRAM

Most of the land development activities in the urban areas and particularly in Greater Kathmandu have been in the form of Guided Land Development Program (G.L.D.) for the past few years. This program in Nepal, was initiated after the formation of MHPP in 1988.

#### 2.2.1 IMPLEMENTATION METHODOLOGY (adopted in Kathmandu)

With the selection of area for G.L.D application, the official notification of the intent to apply G.L.D. along with the imposition of a moratorium on building and subdivision activities is carried out. The Local Land Development Action Group is then formed from among the landowners after which the preliminary layout plan (showing access roads, subdivision map showing blocks, spaces for open space and community use etc.) is prepared. The prepared map is then discussed with the Local Land Development Action Group which is then given a final shape incorporating Action Group's comment. With the approval from the Action Group the scheme is than forwarded for the government approval.

Completion of government approval is followed by the budgetary approval to provide financial assistance for the implementation of G.L.D program, after which the implementation process starts by laying out access roads on the site by Action Group with the guidance of technical unit. Areas of public and community facilities is demarcated and the imposed moratorium is lifted. Installation of technical infrastructure like water lines, electricity and storm water drainage is done by sharing the cost.

#### <u>Note:</u>

G.L.D concept, was formulated in Jakarta in 1970, for the development of urban fringes. It was devised as a technique to enable the government to guide the haphazard development of private land around Jakarta.

G.L.D. (as applied in Nepal) is a process in which landowners participate in the land development process by voluntary contribution of the part of their land as per prior agreed upon layout plan for road & other public facilities. With G.L.D., the government becomes a facilitator and provides a technical support & guide the community in achieving better living environment by adopting certain planning norms and standards. For the success of G.L.D. project, its very necessary to construct roads, drains, water & electricity lines prior to issuing any permission for private construction.

## 2.2.2 SHORTCOMINGS AND PROBLEMS

G.L.D as a concept could be of a great success, since planning is carried out with the participation of landowners. However, the way it has been implemented in Nepal, has created number of problems. Some of the shortcomings and problems related to G.L.D. programs apart from the problems mentioned in 4.0.1 have been briefed below.

 G.L.D. Schemes have not been able to introduce sufficient access roads.

G.L.D areas in Kathmandu have not properly developed, leaving inaccessible and undeveloped interior land parcels, resulting in sprawl development. This lack of proper densification of urban areas will lead to the escalation in the infrastructural cost.

2. G.L.D. schemes donot produce efficient road network.

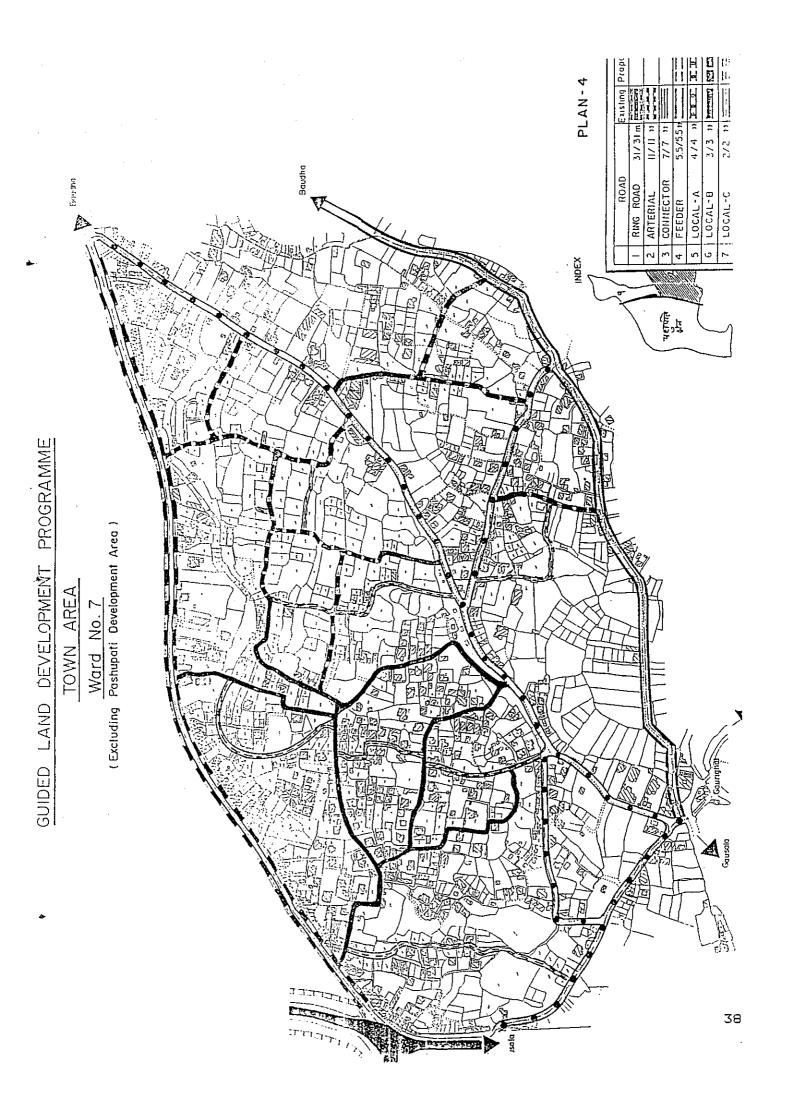
In G.L.D. schemes, roads tend to follow existing paths and lanes which in most of the case follow irregular boundry lines of the land parcels. This has hence produced irregular and inefficient road network (refer plan 4).

3. Development pace in G.L.D. areas are comparatively slow.

With exception to the public initiative areas, the implementation procedure followed in most of the G.L.D. areas are only limited to road demarcation on site. No other development work, which include road and onsite infrastructure development, has been carried out even after 3 to 4 yrs of G.L.D. implementation. Even in public initiative areas development work has been only limited to road construction. This lack of onsite infrastructure has slowed the development pace in such areas.

4. Plot buyers donot benefit of the increased land value.

G.L.D. applied areas show the increase in land value. This increase for the plots with new access road or wide road is 2 to 4 times whereas there have been cases of tenfold increase\*. The increase is in an anticipation of plot being ascessible by wide motorable road & with offsite infrastructure facilities. However, these facilities are not available in most of the G.L.D. areas as mentioned above. \* Source : S.S.N.A.P.R.



5. G.L.D. schemes may ultimately result in urban congestion.

G.L.D. process involves intense local landowners participation by contributing part of their land for public use. With experience of most of the G.L.D. areas, (Baneswor ward 10, Bhaktapur etc.) where people have requested to decrease the road width, G.L.D. schemes may produce only congested settlements with narrow lanes and without any spaces for public and community purpose.

6. In present G.L.D. projects, road network donot take infrastructure network into consideration.

Due to hapahazard development of G.L.D. settlements, it might be difficult, if not impossible, to provide basic infrastructures like drinking water and sewer mains at the later stage too.

 With H.M.G. Nepal unable to take proper measures, G.L.D. implementation in some areas have come to stand still.

Landowners located at the access road take off point into G.L.D. area from the existing main road, are against the voluntary contribution of land. Although, there have been cases of such owners getting convinced by inner landowners but in some cases such owners have been demanding for compensation. Also, small farmers who tend to lose all or most of his land on road has also been demanding for compensation.

H.M.G. in such cases has neither been able to provide compensation nor been able to forcefully acquire land.

- 8. There have been cases of irregularities at the stage of road demarcation in the site resulting in unequal land contribution by the landowners facing each other for the same road. Such cases happening frequently will demoralize the public from G.L.D. schemes.
- 9. With G.L.D. application in most of the areas in Kathmandu the land speculation may become rampant even in semi rural area which lie in urban fringes in anticipation of urban sprawl.

The realization of planning needs in growing urban areas have forced the replication of G.L.D program in Kathmandu without careful study of it's advantages & disadvantage. This has resulted in misuse of G.L.D. concept, by applying in areas which are not suitable for G.L.D. application. The advantages & disadvantage of G.L.D. program under the prevailing Nepalese condition has been reviewed below.

# 2.2.3 ADVANTAGES

- a. G.L.D avoids the major problems related to land management since it dosenot require any land acquisition and public land is made available by voluntary contribution.
- b. The Town Development Act 2045 provides the legal provision for Guided Land Development application.
- c. G.L.D. agency donot have any financial burden to pay for the land to be used for roads and other public utilities.
- d. The properly implemented G.L.D program as per the concept would facilitate in planned development of urban fringes. Infact, it opens up the inaccessible urban fringes for urban use.
- e. As the landowners benefit from the increased land value after G.L.D. application, landowners response for G.L.D is positive. There have been cases where landowners themselves have come forward for the implementation of this program.

#### 2.2.4 Disadvantages

- a. The program produces dramatic land price increase in the area, which will result in disappearance of cheap plots. Hence, the program may be unable to attract the real beneficiaries with limited resources.
- b. Project benefit (financial) is shared mostly among few land owners & brokers who have an idea of the program, rather than larger community.
- c. Precise and updated base and cadastral maps are required.
- d. Private developers would be least interested in adopting the program, since there is no scope for return.
- e. The program requires generous contribution of land from landowners. Experience show people willing to contribute only minimum amount of land which will hence result in congested settlement.

G.L.D. is suitable for areas in the urban fringe which lacks access roads but is in proximity to main road and also has a future potential for urban development. However, in Nepal it has also been used in fully developed residential area with blind land parcels. The idea of G.L.D. application in such area was to accelerate the rate of densification by providing access to blind parcels. This is hence, more of Guided Land Improvement in charactor rather than Guided Land Development.

G.L.D. has been successful only in providing land for road network to open up undeveloped areas for development, which too government is unable to construct due to lack of finance. No consideration has been made in any of the scheme for the future provision of infrastructure (technical & social).

The program in Kathmandu was first initiated in ward no 4,5,10 and part of ward no 3 in Maharajgunj. Later it was extended to seven additional wards (6,7,9,16,29,33 and remaining portion of ward 3). Similarly, with successful application in Satdobato area in Lalitpur, it was also extended in other areas of Lalitpur. The program has also been implemented in Bhaktapur and in outlying town municipalities.

#### 2.3 LAND POOLING PROGRAM

Land Pooling (L.P) is relatively a new technique in Nepal. It has been widely used in Japan, South Korea, Taiwan and some cities in Australia and Canada.

#### 2.3.1 IMPLEMENTATION METHODOLOGY

In a typical Land Pooling project, the implementing agency selects the area in the urban fringe ripe for development and prepares a service plan incorporating road network, water and sewer network, electrical network etc. together with the replotting plan and the financial plan showing the project benefits, individual share of project benefits and land to be contributed for the public utilities and project expense. After negotiation, the scheme is endorsed by the majority of the landowners and submitted to the government for the final approval (incase the implementing agency is the government).

With the government's approval, the agency implements the scheme by demarcating streets, spaces for public utilities and serviced plots on the site. Some of the serviced plots are kept by the agency while the remaining plots are returned to the owners in proportionate to their original land. The plots kept by the agency is utilized to repay the loan taken at the initial stage as well as to recover the cost of technical & social infrastructure.

<u>Note:</u>

\_\_\_\_\_

Land Pooling is a technique of urban planning and land management to secure more economic and rationalized use of urban land and infrastructure. In Land Pooling projects, separate, small and irregular land parcels existing in the urban fringes are consolidated after the approval from the landowners for their unified planning to create well serviced as well as settlements equipped with public facilities. Land Pooling is based on self-financing principal, in which, the entire cost of project is recovered from the increased land value through the sale of some of the replotted, developed and serviced land. Due to the landowners getting direct benefit of the increased land value, they normally do not object to this scheme.

#### 2.3.2 SHORTCOMINGS AND PROBLEMS

Though the concept of L.P. sounds as a positive land management technique, yet under the condition prevailing in Nepal it's implementation could confront number of problems. Some of the shortcomings and the problems in the land pooling scheme apart from the problems mentioned in 4.0.1 are listed below.

 Due to disproportionate escalation of urban land prices, the subdivision of larger plots accelerates, resulting in smaller plots and more land owners. Since the individual land holding becomes less in smaller plots, normally landowners object to share their land for the project. Also, with number of landowners getting higher dealing with landowners becomes difficult.

However, with too many larger plots, plots may be holded just for speculative purpose.

 Tenants of smaller plots are likely to be restricted from their source of living.

The area of the returned plot get's reduced in L.P area and in case of Gongabu Land Pooling Project this reduction varies from 14 to 46%. This, however, doesn't effect the tenant of larger plots even if the owner sells it. Infact, they are likely to benefit provided they start a samll business with the funds obtained due to higher land value.

But in smaller plots the tenant's share become extremely less, not enough to start other business.

 Lack of co-operation from landowners may lead to implementation delays or project failure.

For the success of Land Pooling projects landowners cooperation is extensively required. However, some landowners may object to certain basic issues like, surrending their share of land to recover the cost of infrastructure or the location of new plot etc. With majority of landowners objecting to such issues the implementation stage will face serious delay or even project failure.

4. Due to the bureaucratic delays, lack of dedication and motivation in the government employees leading to inadequate project costing and preparation, inadequate information dissemination about the merits of the project and the time required for replotting and negotiating with landowners etc., the market price of the plot continues to escalate leading landowners to expect higher share and forcing reiterative costing exercises.

- 5. Even a slight negligence of the officials may lead to the unequal sharing of land for project expenses. This would be in two types of sharing as mentioned below.
  - Land which has to be shared with reference to the existing site condition. The amount of land to be shared for road network and gravelling will be unequal in ratio, depending upon the access condition and proposed road network.
  - Land which has to be shared irrespective of site condition. The amount of land to be shared for onsite infrastructure development except road and open spaces would be equal in ratio.

Though unequal sharing may be in minute scale but it causes dissatisfaction among landowners due to the constant rise in the market value of the land, which in a long run may hamper the future replication of the Land Pooling schemes.

6. Difficulty in identifying the actual landowners.

It is very difficult to find the actual landowners as land transaction takes place several times before the area is developed. Even if the actual landowners are found, they are not available when needed.

Land Pooling concept was first carried out in Nepal in ward no 29 of Kathmandu on 284 ropanis of land at Gongabu in 1988 (refer annex 2). However, a concept similar to land pooling had already been carried out in three places in Pokhara, to mention, two linear projects one in Chipledhunga and the other Nagdhunga -Khahare project. The experience gained in executing these two projects led to making of many refinements in the formulation of third project, Bhairabasthan bus station in 1981.

A very grand and optimistic project was envisaged on 750 ropanis of land in Balkhu in 1988 which didnot materialize. Recently in June 1991, BTDC (Bhaktapur Town Development Committee) has also initiated a L.P scheme on 150 ropanis of land in Kamal Binayak. Landowners of Dallu have proposed to convert site & service scheme into land pooling scheme. This preference of land pooling scheme over other form of land development program could be due to it's various advantages as briefed below.

# 2.3.3 <u>Advantages</u>

- a. It is a process to avoid the major problems connected with land management since it requires no land acquisition.
- b. Legislation of Nepal also allows the government to deduct a percentage of the total land to pay for infrastructure.
- c. A well planned and properly implemented L.P. scheme will create a settlement which incorporates all infrastructural facilities and areas for public & community purposes at no cost to the L.P. agency.
- d. Some of the land retained by the government to recover the infrastructural cost & other project expenses could be targeted to lower income families.
- e. With the successful implementation of some demonstration projects within the given timeframe and information dissemination about the project concept, the landowners themselves would come forward for technical help.
- f. Since the concept is based on self-financing principal, there would be no financial burden for the L.P. agency.
- g. With government agency as a controlling body and developing norms & standards for L.P. scheme, urban areas created by private developers through L.P. concept will also produce good standard settlements.

# 2.3.4 Disadvantages

- a. To conduct L.P. schemes, an updated land record system and precise and updated base and cadastral maps are required.
- b. Lack of effort by L.P. agency in incorporating low income group could result in displacing lower income families by rich, which is very likely to happen in the areas developed by private developers.

- c. Lots of time & effort will be required for the proper information dissemination and convincing people, as people tend to think of land acquisition prior to any government land development programme for housing.
- d. It's really a matter of doubt whether and H.M.G. agency will be able to act as an efficient and active controlling body without which L.P. schemes developed by private developers or landowners co-operative could be a disaster.
- e. Project benefit will be shared by landowners only rather than large community.

#### 2.4 COMPARATIVE STUDY

H.M.G. and town municipalities are the only agencies involved in the formal land development in Nepal for housing. Although, informally private sectors are also involved, which has been meeting most of the demand for urban land but they have not been able to produce healthy environment.

However, in view of the demand for the urban land for housing and H.M.G. & municipalities unability to keep pace with this demand, private sector's involvement become essential as formal land developers so that they can play a major role in producing future well planned settlements.

To ensure private sectors participation in formal land development and in view of H.M.G. and municipality's experience in implementing the land development programs successfully, it is essential to assess the existing land development program to identify the most efficient and practical way of land development for housing. The assessment of the programs should be mainly with reference to the criteria mentioned below. This has also been tabulated in table 5.

- a) Achieving the objective of land development program.
- b) Practicality of the program in implementation.
- c) Financially and economically feasibility of the program.
- d) Developer's interest.
- e) Only existing programs to be considered as public are already aware of it and planner are exposed to it.

## a. <u>Achieving the objective of L.D.P.</u>

The prime objective of any land development program is to create a well planned and properly serviced settlements. Land pooling and G.L.D. rely on a voluntary contributions by landowners, to achieve this objective whereas in site and service program such settlements are created prior to selling plots.

Past experience in this reguard has been quite against G.L.D. programs as it tends to produce congestion but in favour of site & service schemes, if successful, whereas land pooling areas are yet to be experienced. However, with reference to public opinion on land pooling scheme, majority seems to be in favour of the contribution for road and infrastructural mains but not for other community facilities.

# b. Practicality of the Program in Implementation

Practicality of the program can be subdivided, with reference to the issues that will have to be tackled, as listed below.

- i) Magnitude of problems related to land management.
- Magnitude of problems related to bureaucratic procedure.
- iii) Degree of landowners co-operation/ participation required.
- iv) Legal provision for the application.

There seems to exist legal provision for the application of all-three forms of land development program. Land Pooling and G.L.D. program seem to avoid the problems related to land management but both the programs require intense landowners participation. However, site and service programs have experienced extensive land management problems with few cases of even abandoning such projects. But with the completion of land acquisition process, the problems related to land management also terminates in a site & service scheme.

# c. Financial feasibility of the Program

Financial feasibility of the program can effect both the future beneficiary as well as a developer/ implementing agency. For the future beneficiary this directly relates to the affordable plot price where as for a developer it shows the amount of investment required and the net return. In general, site and service programs produce affordable plots by majority of the income percentile where as with the application of G.L.D. or Land Pooling, the land value escalates serving only few higher income percentile.

With reference to the investment required to conduct various land development programs, Land Pooling becomes the most viable program as it only requires small amount of working capital. Site and Service, requires maximum amount of investment from land acquisition to infrastructure development and management cost. G.L.D, however, omits the investment related to land, as land required is contributed voluntarily.

#### d. Developer's Interest

Public developers (H.M.G. & municipalities) are service oriented and hence will be interested in all form of land development programs which produces well planned settlements with healthy environment. However, due to limited resourses in public sector, preference would be given for programs which involve minimum financial burden like Land Pooling and G.L.D.

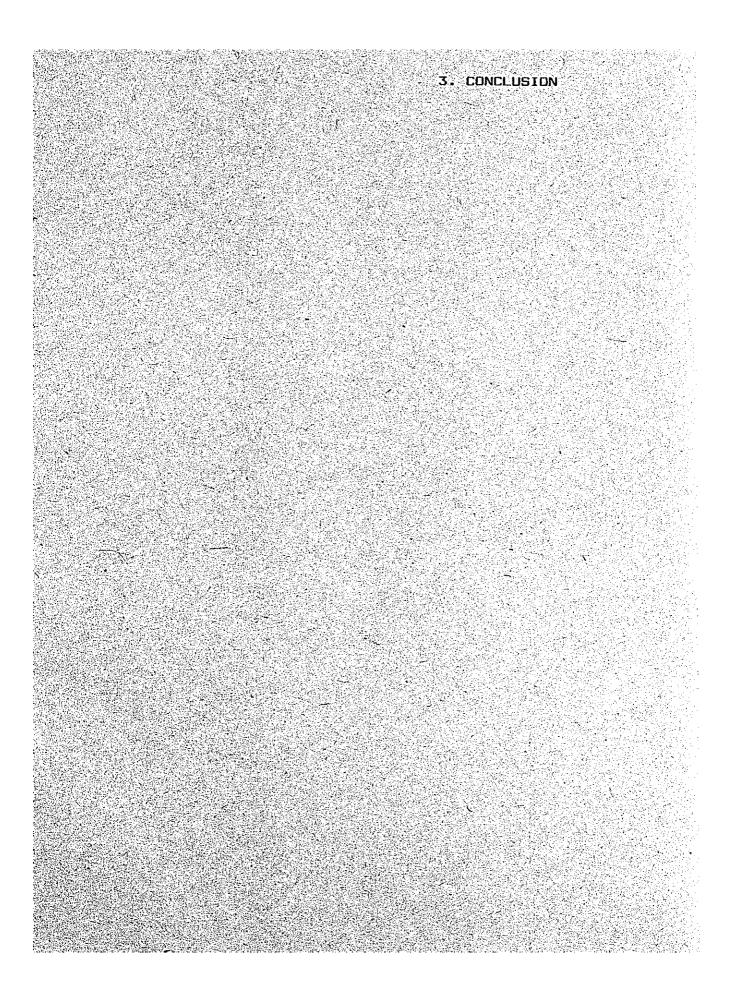
Private developers are always looking for financial gain. At present, Land Pooling agent has been continuing as receiving cost reimbursement only. G.L.D. doesn't even have this provision. Hence, in present context, private developers will only be interseted in site and service programme.

# Table 5 Comparative study of the key Issues with reference to Various Land Development Programs

No.	Key Issues	Site & Service	Suided land dev.	¦Land Pooling/Redjustmen
	Contribution to	Very effective	Partly effective	effective on site
_	; Problems related to lland management	, Miximum ,	, Ninimum ,	: Considerable amount
2	(Affordable Plots !	(Effective if (successfu)	: Negative effect	: ¦Kegative effect ¦
4	Well serviced plots		Can be marginally Affective	; Can be effective
	'Financially self  sustainabilty 	-	Considerable amount of finance required	: [Small amount of loan [required ]
	, Degree of Government Lintervention		: Required to some Textent	Not at all
	Legal provision for application	Yes	i IYes I	i  Yes 
	' Benefitted party ' (Financially)	:  Implementing/ financing  party 	:  Landowner & local  brokers 	:  Landowners   
9	: Degree of landowners :co-operation required :	-		¦ ¦M≥xiœuœ throughout the ¦project span ¦
	; Private developers interest in adopting	, Maximum		; Can adopt with slight Modification
11	Past experience	i Not so successful	i  Not so successful	; [yet to be experienced

49

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#### 3. <u>CONCLUSION</u>

The most suitable way of developing land for the urban purpose would depend upon the land value of the area. The most feasible and preferred way of developing land with respect to the project area is briefed below.

#### Site and Service Program

In the growing towns like Kathmandu, where the demand for the urban land is continuously growing and land value is very high, there exist a limited scope of developing areas with site and service program. However, in areas where site and service is still possible, priority should be given to develop the area through such schemes.

With government rarely capable of launching and sustaining site and service programs and few private developers unable to resolve the problems related to land and access management, public-private participation should be a successful alternative. In such program, government's participation could be mainly at the initial stage in acquiring land and then turn over to developers for servicing, subdivision and sale. The project benefits could then be shared as per prior agreed upon agreement.

#### Guided Land Development Program

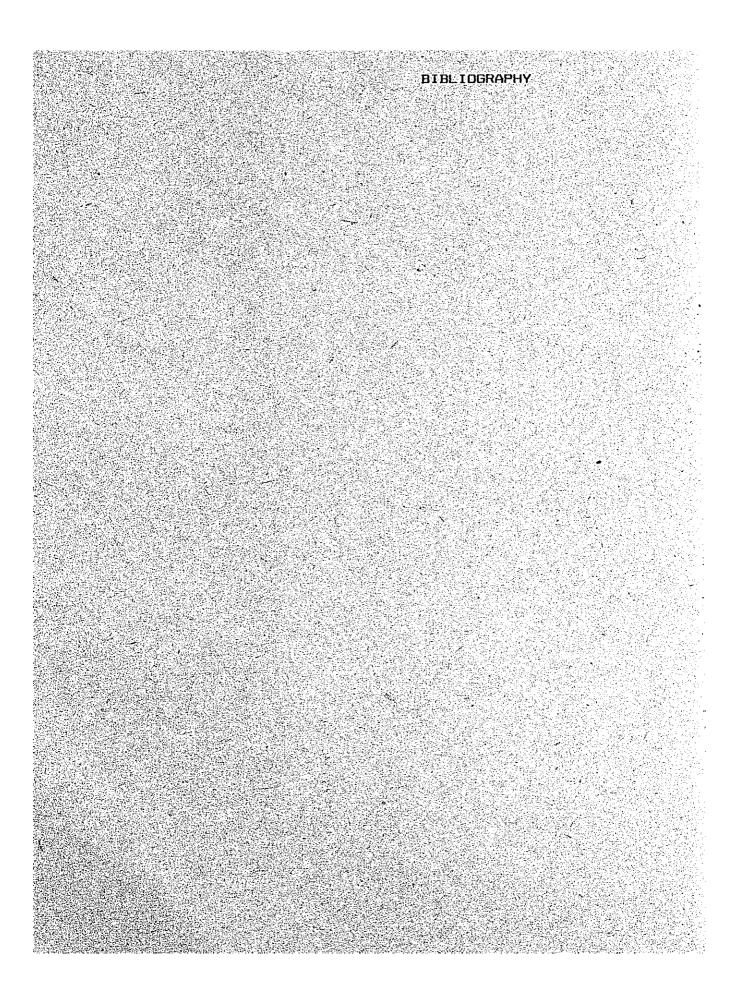
Guided land development program has recently become wide spread in Nepal. The form of G.L.D. applied is more of an upgrading program to improve the local road network and hence isnot sufficient in producing efficient settlement. The proposed G.L.D. areas in Greater Kathmandu will result in huge congested settlement with narrow lanes and without public and community utilities. Hence, the present form of G.L.D. should only be used in areas as an extension to site and service program or to urban fringes which has public utilities in vicinity so that such areas also share public & community facility of the adjacent area.

G.L.D. areas require government funding to develop road and infrastructural network. This could be recovered from the landowners which hasnot yet been practised in Nepal by the government.

#### Land Readjustment Program

Land Readjustment Program is most positive land management technique for the areas where land value is escalating dramatically. However, the form of Land Readjustment (commonly known as land pooling in Nepal) implemented in Nepal restricts the L/R agency to an agent receiving costreimbursement only. Hence, it's application could be restricted to landowners associations and government agencies. With slight modification as briefed below, private developers could also be attracted in replicating such schemes.

- a. Land Readjustment agency should be brought into the picture as an profit sharing partner. This partner status would motivate private developers as well, whereas government agencies could utilize this share in the form of land for low income housing.
- b. In the Land Readjustment project practised in Nepal, project expenses are recovered through the sale of developed plots. However, in most of the areas ripe for urban expansion, land has been fragmented extensively with majority of the plots ranging from 6 to 10 anas. In such cases landowners hesitate to contribute land except for the road whereas they are willing to support the program through financial input. Hence, alternatives has to be worked out as per landowners preference to recover the project expense. Some of the viable alternatives are listed below.
  - a. Land sharing.
  - b. Financial contribution.
  - c. Combination of Land & Finance.



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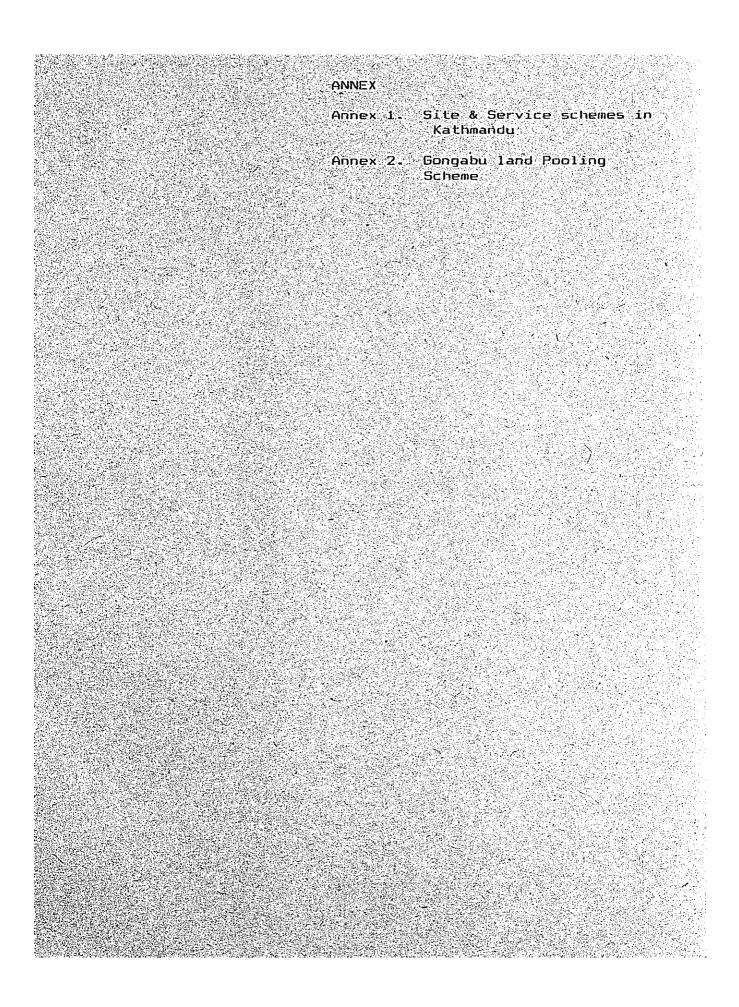
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Annex 1. Site and Service Schemes in Kathmandu

#### Kuleswor Housing Project

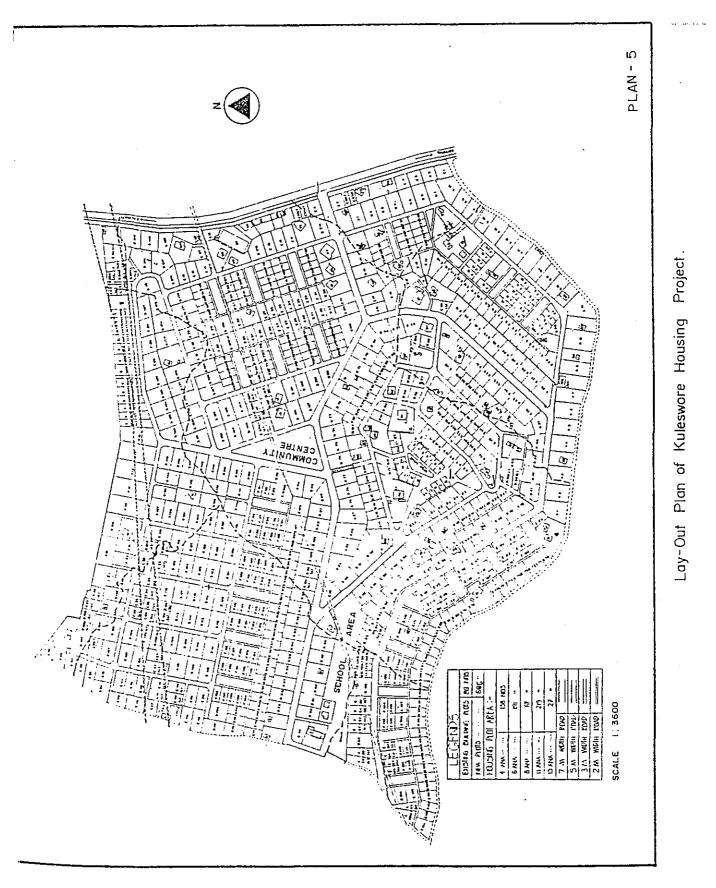
Kuleswor Housing Project was envisaged by Kathmandu Valley Town Development Planning Team in 1976 and was launched by Kathmandu Valley Town Development Committee (T.D.C.) in 1977. The Project area is located, as proposed in the Physical Development Plan for Kathmandu Valley 1969, in the south west of Kathmandu city core, on the way from Kalimati to Kiritpur and covers an area of 26.5 hectares (521 ropanies). The objective of the project was to provide well serviced plots for civil servants who have no means to provide proper housing for themselves and their families. The servant encompasses all categories of employees not necessarily only low-income people.

In addition to the well serviced plots, the project also provides spaces for community and social infrastructure (school) public and recreational spaces (market, parks etc.) refer plan 5. The breakup of project's landuse is given below.

S.No	Landuse	Area (Ropani)	Perrcen age	Saleable Plot Nos
1 2 3 4 5 6	Residential Residential cum Com. Commercial Roads and Paths Public Green Public Facilities	404 3 73 23 6	79.50 .60 .60 14.00 4.40 1.20	810 22 9
7	Other Seleable Total	9 521	1.70	841

The plot sizes ranges from 4 anna (128 Sq.m) to 15 anna (480 Sq.m) which was sold for NRs 32,004 and NRs 228,460 respectively in 1989-90. KVTDC obtained loan from Provident Fund to pay compensation for the acquired land whereas the remaining project cost came from the plot sale.

The project experienced serious delays and faced number of problems. The review of the project showed certain shortcomings as mentioned below.



- a. Kuleswor Housing Project was not geared towards meeting the housing problems of Kathmandu as the project only provided 841 housing plots in the time frame of 12 years.
- b. In addition, the project was not able to identify the real beneficiaries with the immediate housing needs since approximately only 40-50% of the plots are built on.
- c. The project failed to provide housing plots for low income. Due to the inappropriate distribution criteria, middle and higher income people took advantage at the cost of poor.
- d. The project ran into too many problems due to inexperienced project planners and managers. Even, the landowners were unsatisfied on the compensation rate, which they claimed was lower than the market value.
- e. Except few plots on the main 'road, attempts were not made to withold prime plots to generate extra income.
- f. The project was basically an income transfer from original landowners to present plot holders.

## <u>Dallu Housing Project</u>

Dallu Housing Project was envisaged along with Kuleswor Housing Project by Kathmandu Valley Town Development Planning Team in 1976 with the objective "to relieve the national housing deficiency" but with no definite target group. The project was envisaged in 380 ropanis of land to create 475 plots of different sizes. It ran into too many problems with main problem being of land acquisition, since the landowners were not willing to handover their land. The project office later had tried for the forceful acquisition. It is also said that the funds of Dallu Housing Project was diverted to execute Galfutar Housing Scheme. It was hence frozen for several years but recently attempts are being made to turn it into land pooling scheme, with 40% of the land deducted for the roads & infrastructural mains.

## Galfutar Housing Project

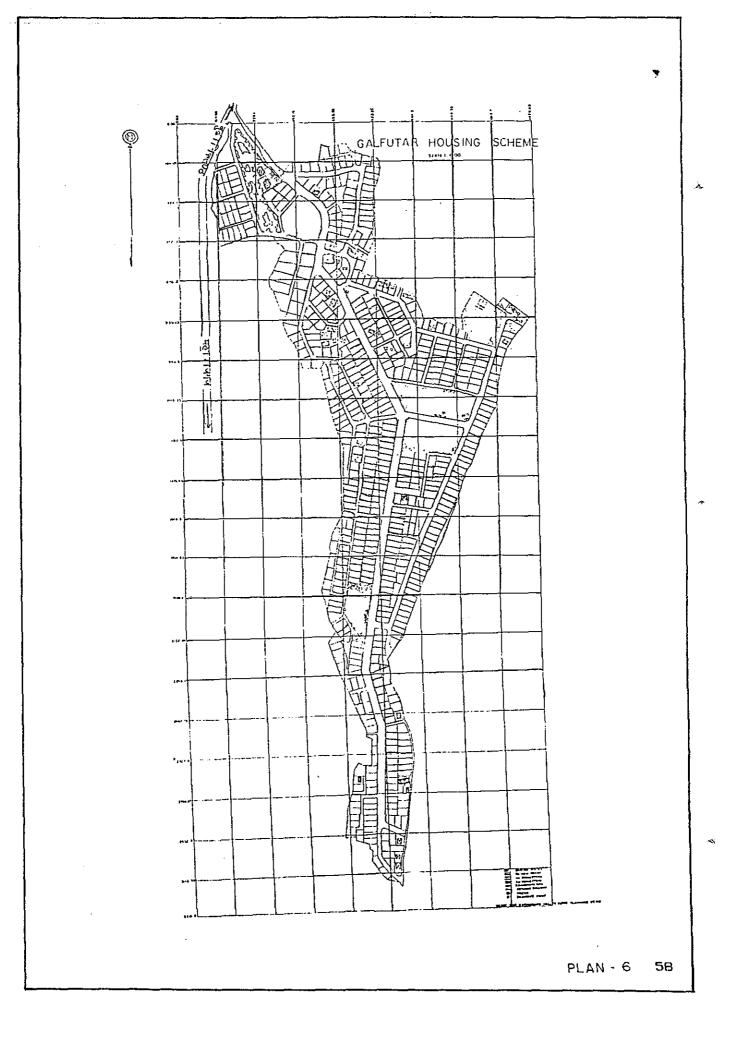
Galfutar Housing Project was conceived in 1982 on 213 ropanis of land, to be implemented through Kathmandu Valley Town Development Committee. The project area is located to the north of Kathmandu city core on the way from Maharajgunj to Budanilkantha.

The main objective of the project was to provide well serviced plots, with no definite target group, on a first come first serve basis. In addition to the serviced plots of 4 anna (128 Sq.m) each, the project also has a provision for spaces for community activities (public park, hall etc.) and social infrastructure (primary school, health post etc.)as shown in plan 6. The detail breakup of the landuse is given below.

S.No	Landuse	Area (Ropani)	Percentage	Saleable Plot Nos
1 2 3 4 5 6 7	Residential Residential cum Com. Commercial Roads and Paths Public Green Public Facilities Other Saleable	121 5 3 54 23 3 4	56.80 2.35 1.40 25.36 10.80 1.41 1.88	581 21 14
	Total	213	100%	616

The market price of the plot was NRs 18,000 for the residential areas whereas the plots in the market area were sold by bids. The project expenses were covered through the plot sale but initially a loan was obtained from the revolving fund as the working capital.

As Kuleswor, even Galfutar Housing Project experienced serious delays since the project spanned from 1982 to 1991 and showed similar shortcoming as in Kuleswor. A visit on the Gulfutar Housing Project area showed only about 20-30% of the plots were built on.



#### Annex. 2 Gongabu Land Pooling Scheme

As mentioned in 4.3, Gongabu project was proposed as a pilot project in Land Pooling program to be implemented through Kathmandu Valley Town Development Committee (K.V.T.D.C.) in 1988. The project area covers 350 ropanis of land surrounded by road on east, west and north (north being ring road) whereas Samakhusi river flows on south. The implementation of the project started in Dec. 1991.

The Adopted Methodology in sequence

- Official decision taken to implement land pooling in Gongabu.
- b. Management Subcommittee formed under the chairmanship of zonal commissioner which in changed political scenario was chaired by Additional Secretary of M.H.P.P.
- c. Information about the project to landowners and collection of landownership certificate through official notice in "Gorkhapatra."
- Preparation of topographical map of the project area through local consultancy.
- e. Area analysis with respect to survey & landownership paper showed difference in the land area. Hence, the office requested Survey Maintenance Section to conduct a resurvey.
- f. Formation of landowners committee comprising 11 members.
- g. Analysis of existing condition of the project area.
- h. Preparation of alternative L.P schemes. Discussion with landowners. Finalization of the scheme (refer plan 7 for final scheme).
- i. Formation of Redistribution Criteria.
- j. Calculation of individual's share of land to be contributed & net returning plot size.
- k. Government approval for the implementation.
- Execution on site, starting with road demarcation, plot demarcation, construction of gravel road etc.

m. Redistribution of plot to landowners & sell of service plot to repay the working capital.

This has also been shown in the form of flow chart in fig. 4.

## Plot Subdivision

The plot subdivision was done in view of the existing land parcel size and the future demand. As majority of land parcels were 8 anna plots which in future will turn into 4 and plots, taking 4 anna as the plot size the ratio of frontage to depth was taken as 1:1.5. Considering landowners request for the plot subdivision even upto 2 or 3 and and the minimum area required for the standard plot size, plots to be returned were worked out in the multiple of 4 and plots measuring 9m x 14m.

### Road Network

Three type of roads were introduced with reference to the future traffic condition, once the area becomes fully developed. The primary road measure Bm in width and connects the service track of ring road to the metalled road of the city through the project area. Secondary roads are 6m wide where as access lanes are 4m in width.

## Public Participation (Problems & Solutions)

The discussion with landowners at various stages, especially in forming redistribution criteria and scheme preparation, identified many problems. The problems indentified during such discussion are listed below.

- Difference in market value of raw land with respect to their location within the project area and landowners demand the share of land to be contributed for road, public utilities & infrastructure cost with respect to the land value rather than area.
- Owners of the land with motorable access donot seem to be interested.
- 3. Landowners were interested in contributing land just for road & to recover the cost of infrastructural network. However they donot seem to be interested to contribute land for public utilities.
- Landowners insisted to locate their newplot in the location of their original land.

- 5. Tenant and landowner conflict on the issue of sharing land. As per legal provision, tenants and landowners share of land would be 1:3. However tenants demand for equal share.
- Due to financial constraints to build the house, most of the landowners requested for the further subdivision of a newplot even upto 2 or 3 annas.
- Too smaller plots like one anna or one & half anna hinder in achieving either standard or uniform block size or well proportioned plot.

Solution to some problems were proposed by the landowners them selves whereas some were solved through the compromise. The solutions proposed in the process are as below.

- Land to be shared for the road was worked out with reference to the existing and proposed road width whereas for public utilities and infrastructure cost the contribution was maintained at 5% of the land area.
- Owneres of land with motorable road & uninterested were convinced by the project office & other landowners to co-operate in the communal benefit work.
- 3. As a provision of public utilities in the project area, 5% land has been allotted for the public open space. No other community or public spaces has been provided. This can be seen as compromise between the landowners and the project office.
- 4. New plots have been located as far as possible in the earlier location, if not, within the radius of 30m from the location of raw land parcel. However, extreme small plots have been grouped together irrespective to their earlier location.
- 5. The project hasn't yet experienced the problem of landowner & tenant conflict. However, this problem is likely to arise after the implementation stage.
- 6. Minimum plot size provided by the project is 5m X 14m with the plot area of 70 Sq.m which is 2 anna. Hence, owners requesting for further subdivision can get land in the multiple of 2 ana.
- 7. Too smaller plots like one or one and half anna has been grouped together irrespective to their earlier location. These plots have been allotted by subdividing some of the corner plots which the project office retained to recover the project expenses.

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#### Redistribution Criteria

The redistribution criteria formulated by the project office faced lot of comments during the discussion with landowners. These were later redrafted through the joint effort of the planning officials and landowners committee.

The percentage to be deducted from the individual land for the service plot and public utilities were worked out in detail as below.

- a. Open Space 5% from individual''s plot area.
- b. Service plot 5% ,, ,, ,,
- c. Circulation Area. Varies from 4 to 36%

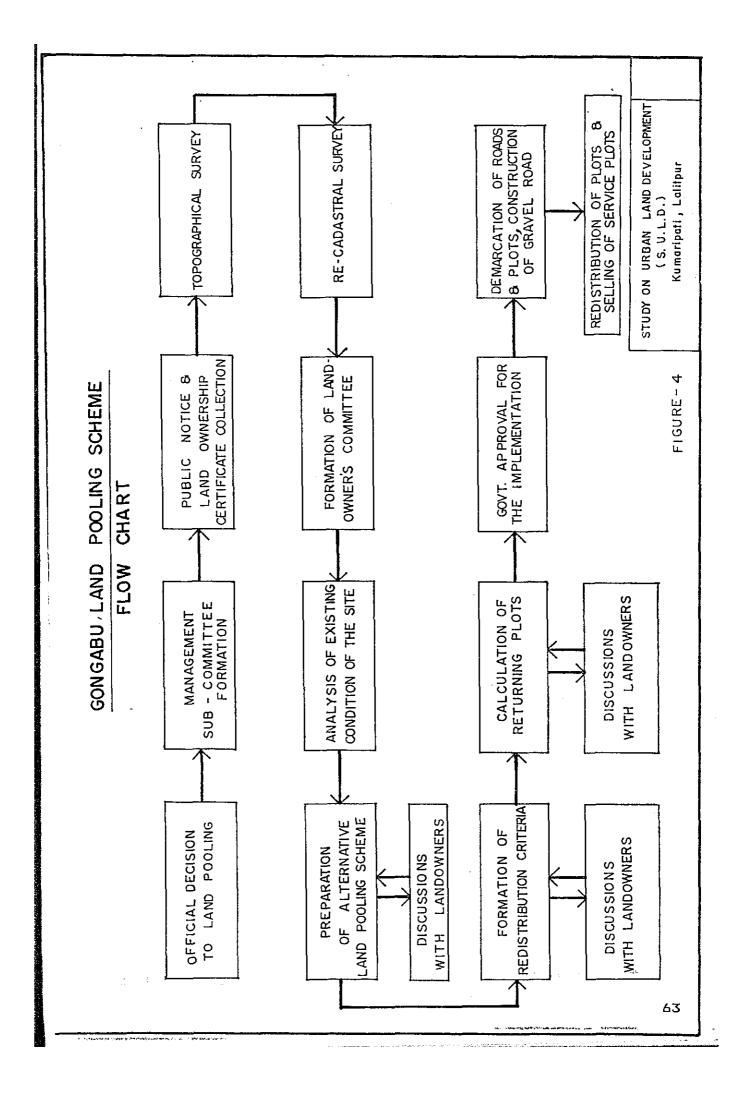
Percentage Deduction for Road Area.

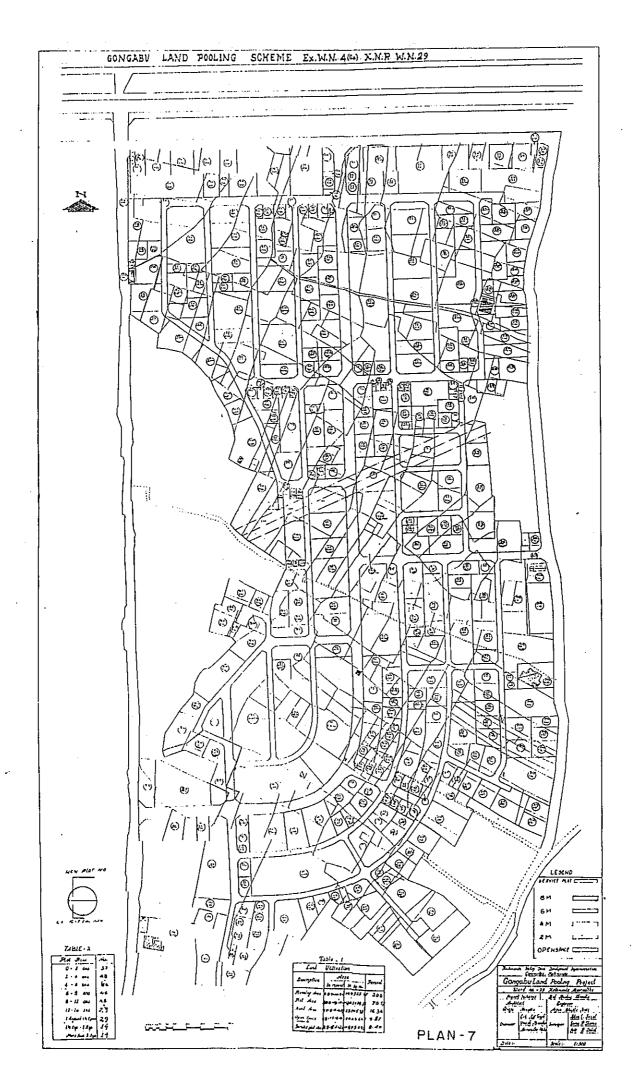
Group	Description	Width of existing	Width of proposed road		Remarks	
		road	4m	Ъm	Bm	
Α.	Metalled road on west	7m	×	×	4%	
в.	Service track on north	Бm	×	×	7%	
с.	Gravel road on east	5m	×	4%	11%	
D.	Trail road	lm	11%	18%	25%	
Ε.	Canal	1m	11%	18%	25%	
F.	Without access	0	15%	22%	29%	
G.	Under high tension line	0	22%	29%	36%	

One of the positive outcome of the redrafted redistribution creteria was, it provided the returned plots in the multiple of 4 anna and in the original location or around 30 m radius. Only in extermely small plots like on anna and one and half anna, these were grouped together irrespective of their earlier location. This process followed in Gangabu Land Pooling project is more of a Land Readjustment than Land Pooling.

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PART - 1/I PROJECT PROPOSAL FOR The Land Readjustment Program 語詞 

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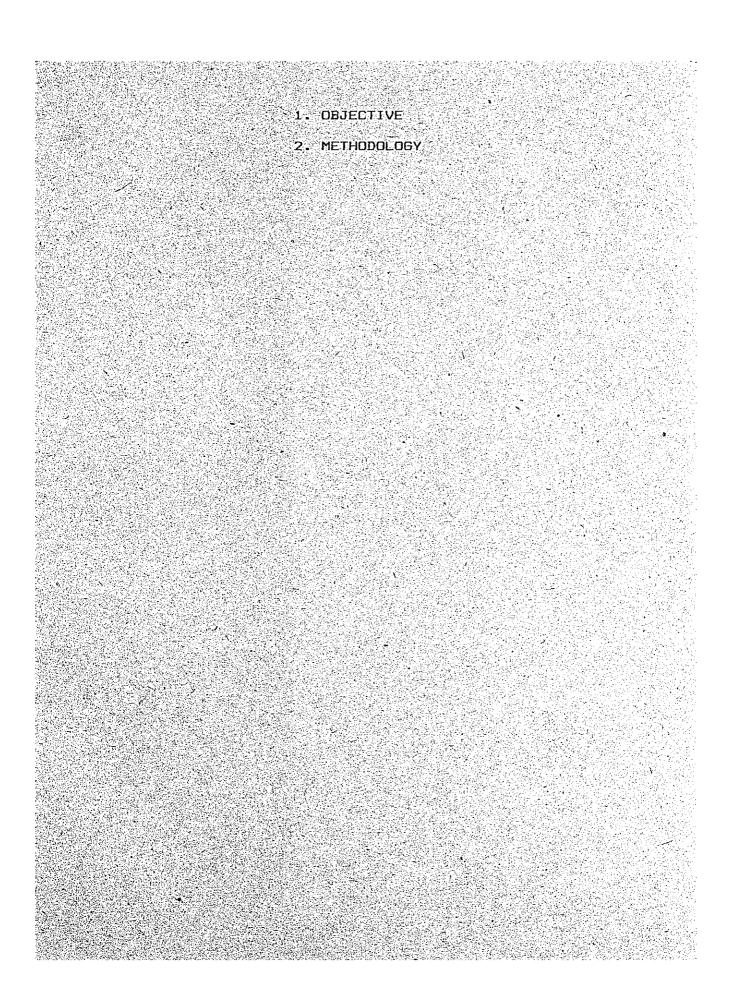
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### 1. OBJECTIVE

The analysis of various land development program suggest that for the fast growing urban areas, Land Readjustment program seems to be the most viable land development technique for developing residential areas. Hence, this proposal on Land Readjustment scheme aims to investigate the future potential of Land Readjustment in Kathmandu. The objective of the proposal is to,

- Create public awareness on the land development program which is less contraversial, financially self sustainable, can be implemented in partially developed areas as well as is most suitable for the planned development of the fast growing urban areas.
- Strengthen and consolidate the conception of planning by the people for the people.
- Motivate the landowners to form a co-operative and create planned settlements.

The study team aims to achieve these objectives through implementation of a pilot project. This proposal on Land Readjustment scheme has tried to:

- indentify the various obstacles and problems in conducting Land Readjustment scheme.
- Explore the degree of co-operation that would be available from the landowners & their interest in executing such projects.
- Formulate a plan and programme and prepare the cost estimate of the pilot project.

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## 2. METHODOLOGY

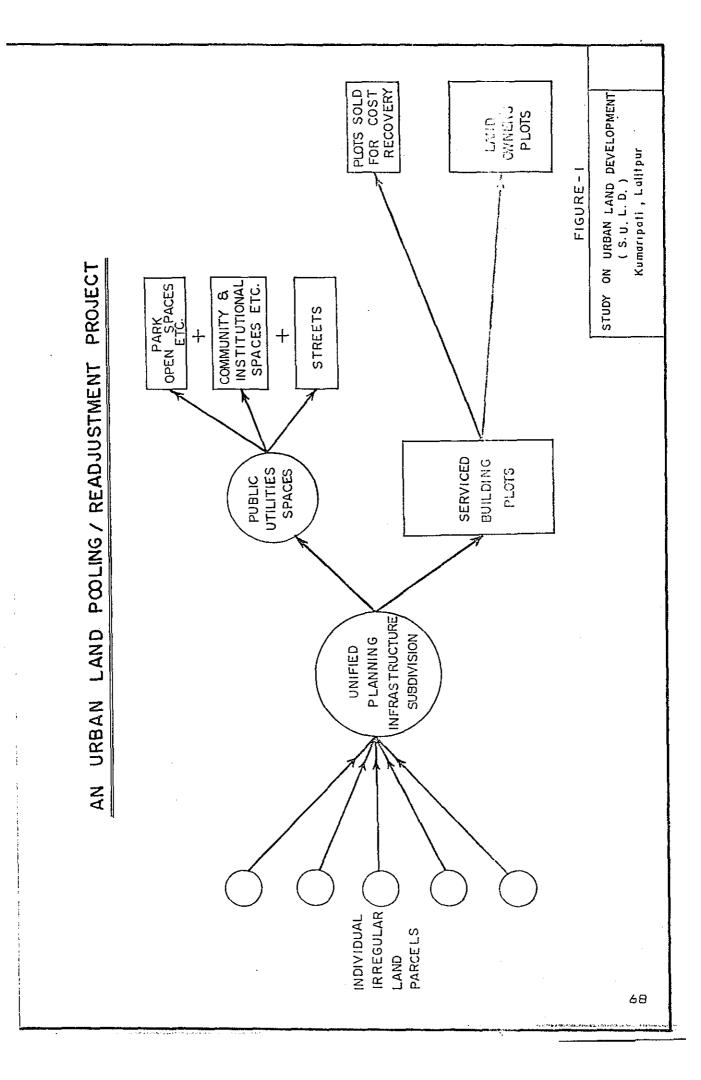
Land Readjustment is a technique by which separate & irregular land parcels are assembled for the unified planning to convert it into serviced building plots and other community facilities as shown by fig 1. The whole process is base on a principle of relocating the returned plot in the location of the orgininal land parcel.

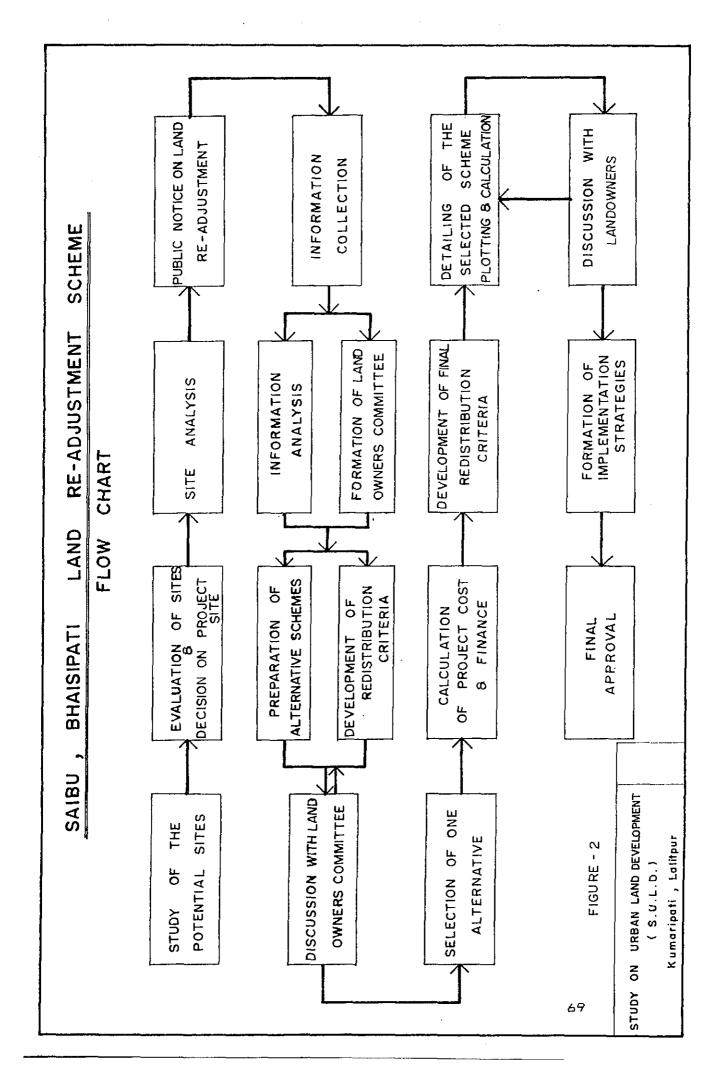
Public participation is the key factor and hence entire operation is based on the landowner's participation and cooperation. The methodology that has been adopted is 'to draw conclusion for the entire operation from the analysis of landowner's opinion, site conditions and other related information'. The role of study team was nothing more than that of coordination and technical intervention. The adopted methodology in sequence is as followings.

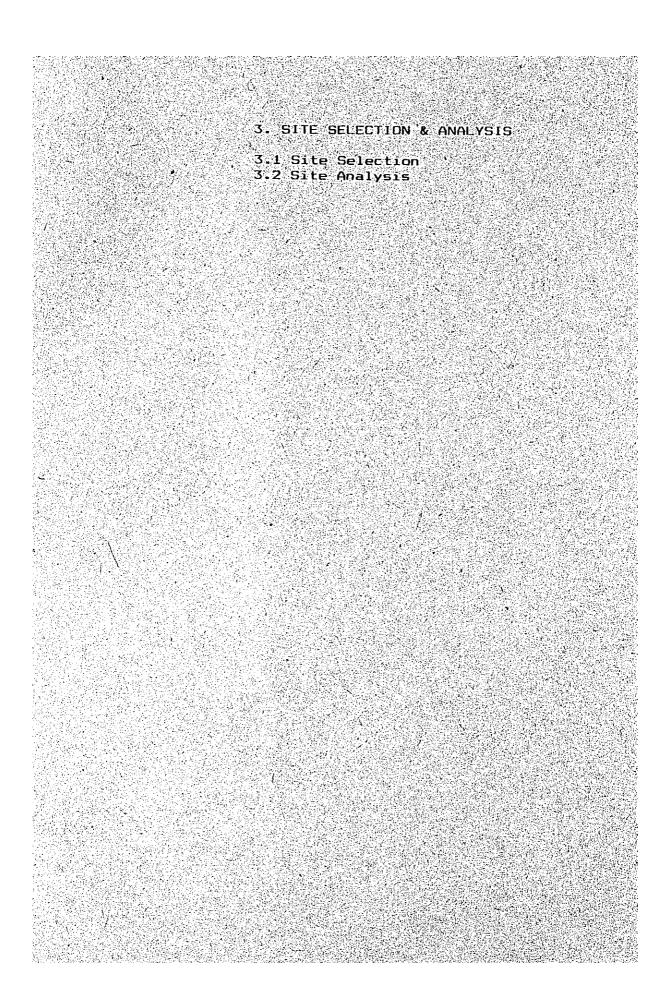
- a. Study of few potential sites for the implementation of Land Readjustment program.
- b. Evaluation of sites and finalization of the project site.
- c. Detail analysis of the selected site.
- d. Informing landowners of the selected site about the community planning through the notice in 'Gorkhapatra'(a newspaper with maximum number of circulation).
- e. Collection and analysis of information on land, landowners opinion and infrastructure development.
- Formation of landowners committee comprising 7 representative.
- g. Preparation of alternative schemes and redistribution criteria. Discussion with landowner's committee. Selection of one alternative for the final design.
- Calculation of project cost and finance and workout the cash flow.
- i. Development of final redistribution criteria.
- j. Detail workout of final scheme which includes calculation of individual returning plot and detailing of each block into individual plots.
- k. Discussion of detail scheme with the landowners.

- 1. Formation of implementation strategy which includes scheduling of various implementation operations and formation of implementation unit.
- m. Presentation of the final scheme for the approval by the landowners.

The entire operation has also been shown in the form of flow chart in fig 2.







## 3. SITE SELECTION & ANALYSIS

## 3.1 SITE SELECTION

In selecting the project site, following criteria were considered.

- a. The land should fall within the area proposed by D.H.U.D. as urban expansion boundary and should be in confirmity with the landuse of Kathmandu Valley.
- b. Off-site infrastructure should be available, particularly water, powersupply and road.
- c. The area should be in confirmity with the existing growth trend of residential area.
- d. Diversity with reference to the location.

Six sites were selected with reference to the above criteria (as indicated in Plan 1), three of which were in Lalitpur, one in Kathmandu and two in Bhaktapur.

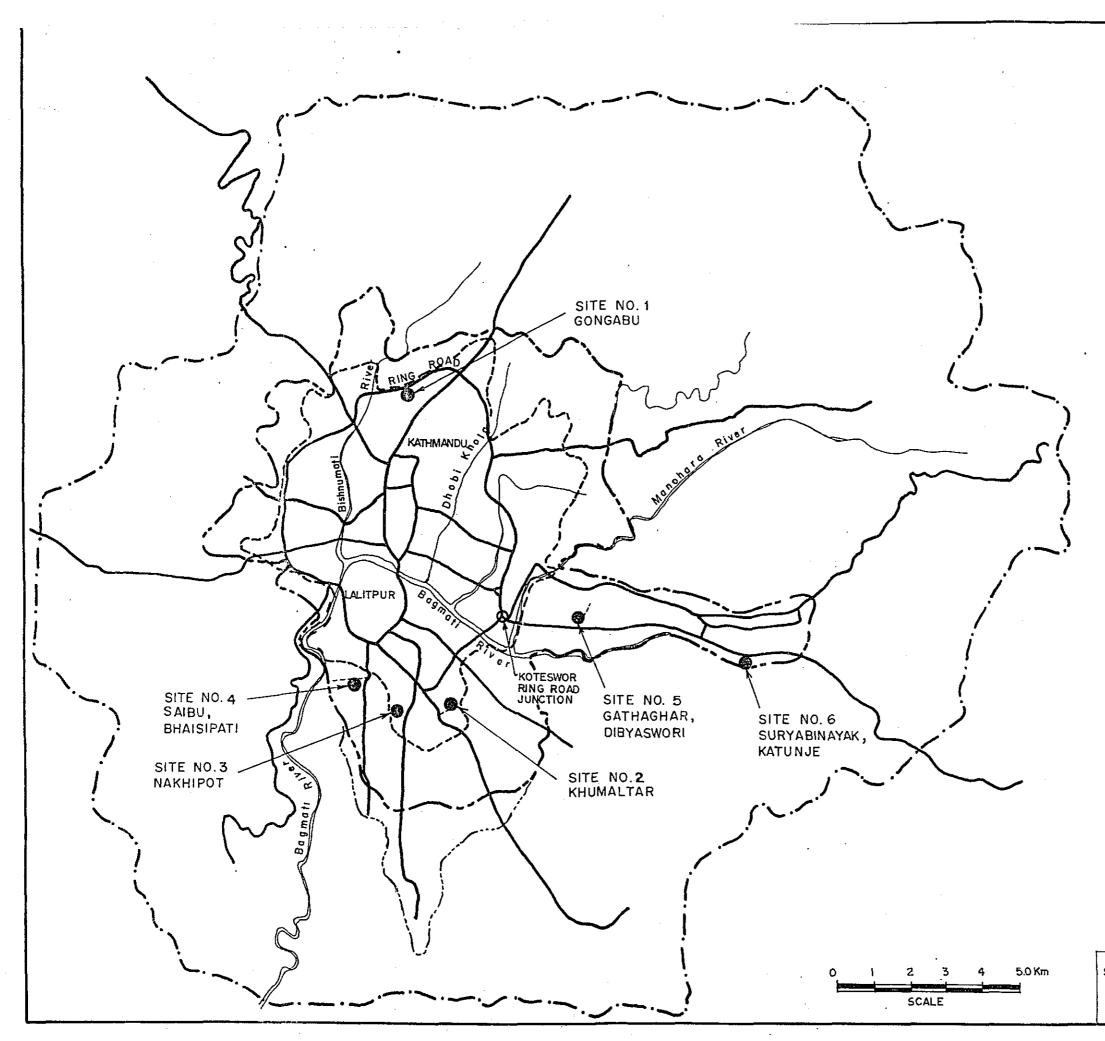
Detail information on each site as collected through the 'Site Information Collection Form'(annex 1) is briefed below accompanied with individual plan.

## <u>Gongabu</u>

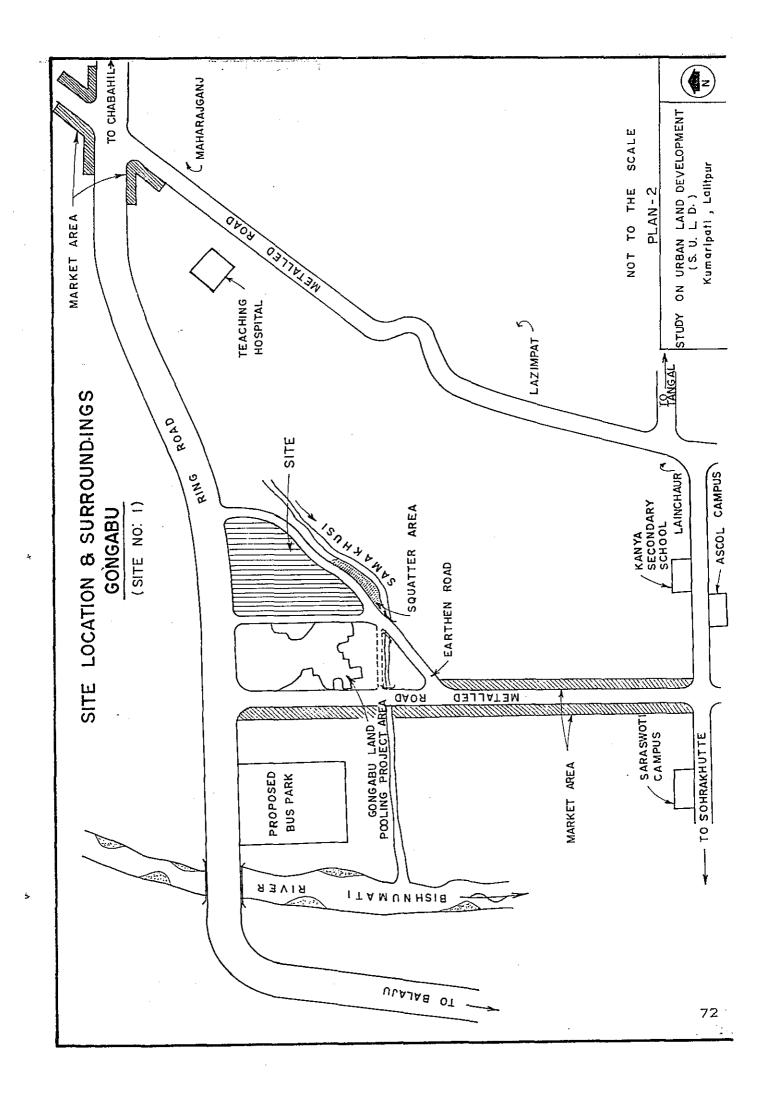
The area is located in the north of Kathmandu city core within the ringroad and adjacent to government undertaken Gongabu Land Pooling Scheme (refer plan 2). It covers 210 ropanis of land currently holded by 200 landowner with majority of plot size larger than one ropani (509 Sq.m). It is surrounded by road on all sides differing in nature, water supply mainworks of 300 mm diameter is located in the western gravel road.

Topographically, the site is absolutely flat but is a lowland relative to the surrounding and hence may have a problem of water logging unless proper water outlets are designed. The average land value of the raw land varies with the location of the land parcel with respect to the road, ranging from 5 to 12 lakhs per ropani, part of which may not be hence affordable by the middle income as well, after planning.

The area has a very good potential interms of plot sale as already part of the area is builtup & the remaining is rapidly converting into builtup from agriculture.



LOCATION PLAN	N OF SITES
LEGEND :	
	D712 186 A
Kothmondu Valley Bound Municipal Boundary	
Municipal Boundary	
Urban Expansion Bound	• <u></u> • •
DHUD Additional to Expansion Area	
River & Streams	
Roads ( Surfaced )	<del></del>
Roads (Unsurtaced)	
•	
	· .
PLAN I	71
STUDY ON URBAN LAND (S.U.L.D.)	DEVELOPMENT
Kumaripati , Lali	



## <u>Khumaltar</u>

The area is located in Patan towards southeast of Patan city core outside the ringroad (refer plan 3). The site area covers 102 ropanis of land holded by 169 owners and most of the land parcels are larger than 12 annas (382 sq.m). The nearest metalled road is a road connecting Godavari to Patan which is approximately 200 m far from the site and connects the site via earthen road. Water supply mainline of 80 mm diameter and the electrical mains is located in the metalled road.

The site topography is the combination of flat and steep slope and hence, the site development cost will be relatively higher. Present market value of raw land varies from 6 to 8 lakhs which would be even higher after planning. Collection of public opinion in the site showed positive only for road and infrastructure development, with people willing to share land for road and pay for infrastructural development. However, some facilities like high school, health post and convenient shopping is already available in the vicinity.

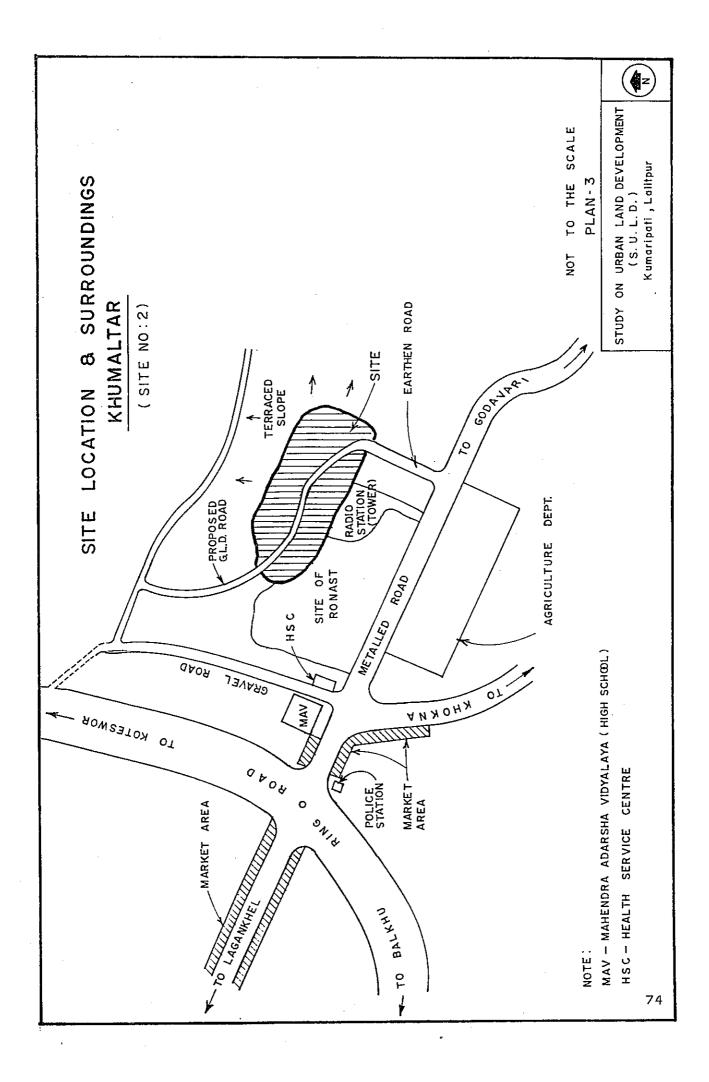
The present landuse is mixed, with partly developing as residential area and the remaining in agricultural use. The landuse of the surrounding area is residential and institutional. Hence, the area if developed properly will have a good potential for residential development.

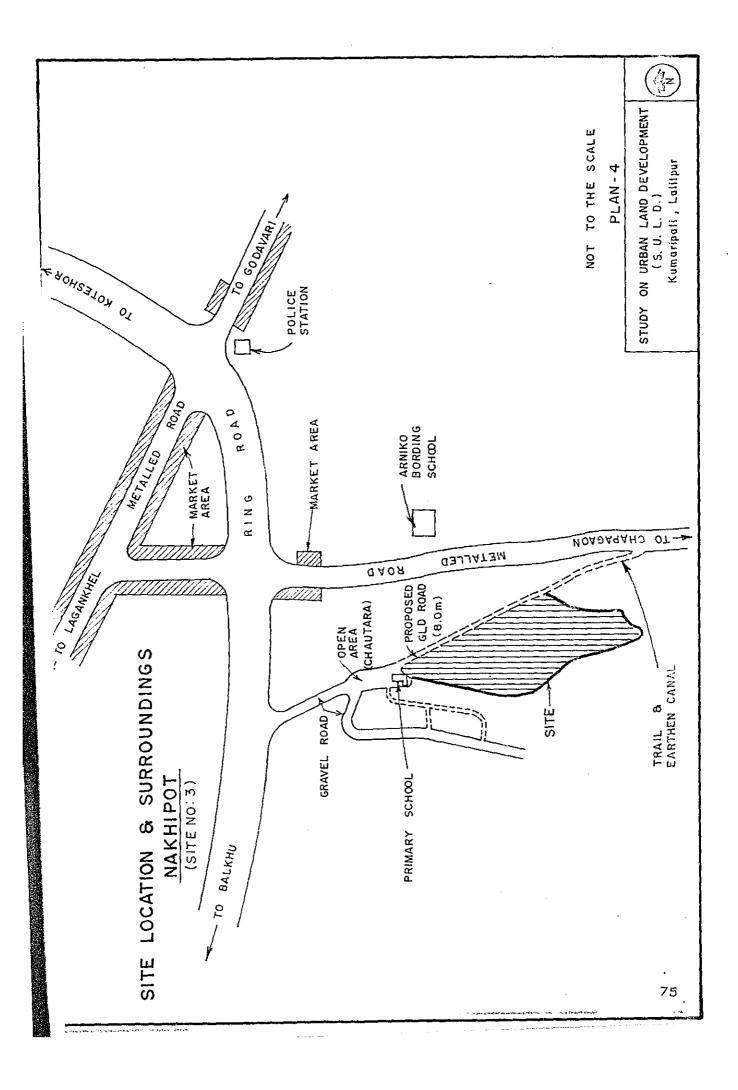
#### <u>Nakhipot</u>

Nakhipot is located in the west of Patan city core out side the ringroad on the way to Sunakothi (refer plan 4). The site area covers an area of 85 ropanis owned by 103 landowners. Majority of land parcels, which are larger than 12 annas (382 sq.m) are owned by future dwellers who are serviced outside the country due to which, the land value is extremely high ranging from 10-12 lakhs for raw land.

Access to site is G.L.D. gravel road through satdobato G.L.D. area. However G.L.D. road has been proposed through the site which connects to the metalled road. The water supply main works of 200 mm diameter and the electrical mainworks are located in the metalled road which is approximately 100 m far from the site.

The site area comprises of terraced land with mild slope which is currently under agricultural use with few residences mushrooming. The soil condition is not good for agricultural production.





Facilities in vicinity are public open space and a primary school at the northern side of the site. The most crucial factor in the site is the constant exposure of the landowners to the planned settlements abroad & hence could be very easy to convince.

## <u>Saibu</u>

Comparatively, Saibu site area at present is untouched though not far from Patan city core due to it's surrounding environment and the access. It is located southeast of Patan city core about 3 km outside the ringroad and on the way to government undertaken Saibu site and service project (refer plan 5). The site area covers and area of 495 ropanis owned by 399 landowners with most of the land parcels larger than one ropani (509 sq.m).

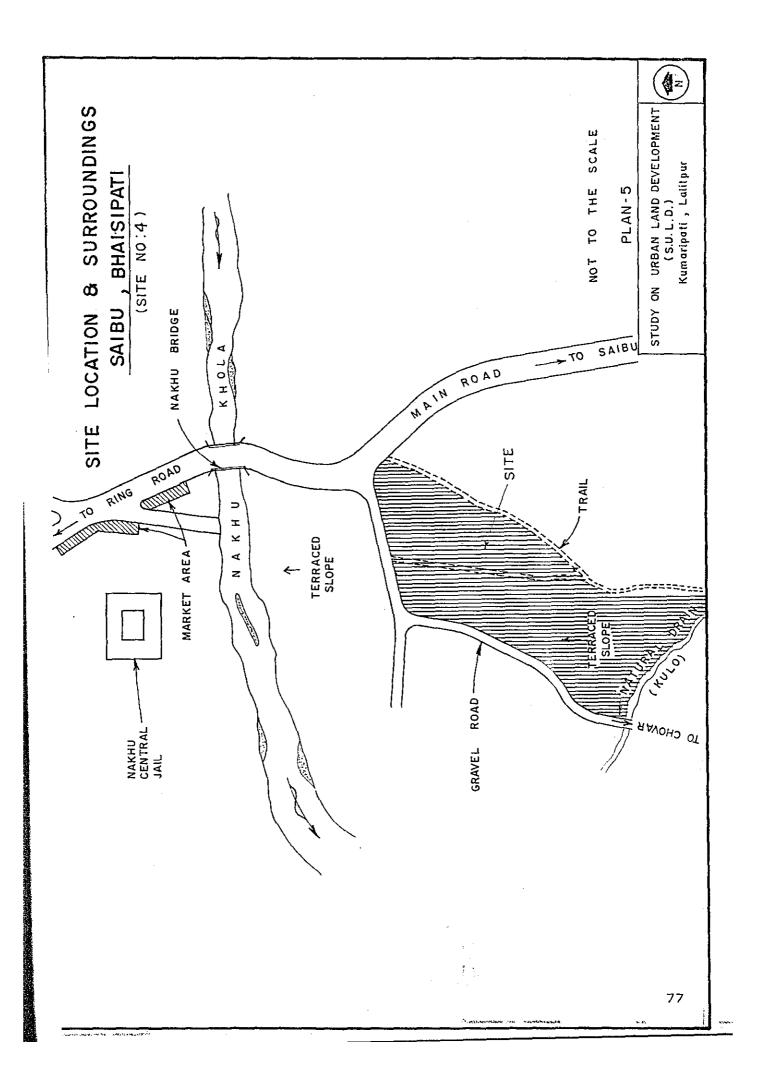
The site area is properly equipped with infrastructural network with gravel road on the north and west side. The 500 mm diameter water supply mainwork runs in the north eastern metalled road. Electrical mains is available on the metalled as well as the northern part of western gravel road.

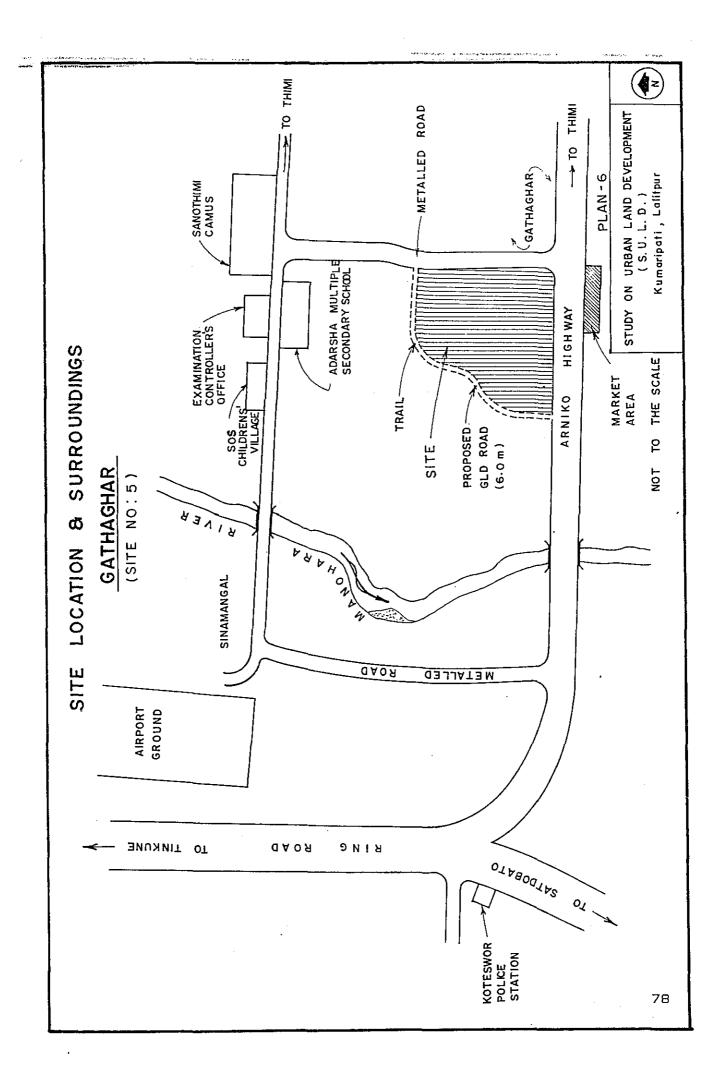
Topography of the site is a combination of flat and terraced land and is upland with respect to three side surroundings whereas low with respect to government undertaken project. However, drainage won't be a problem as a river flows at the north of the site in the lowland.

The lack of proper bridge and the jail in vicinity are the prime factors for the low market value of the area ranging form 2 lakhs to 5 lakhs per ropani depending upon the location of the plot with respect to access road. However, with the completion of new bridge (which at present is underconstruction) and the implementation of the proposal of shifting jail, the area will have good potential in near future.

## Gathaghar

Gathaghar is located in Arniko highway, before Sanothimi about 2.5 km from Koteswor ring road junction (refer plan 6). The site covers an area of 100 ropanis of land owned by 240 landowners, with most of the plots smaller than 8 anna (255 sq.m). It is surrounded by road on all sides, with highway in south, 11 m metalled road in east and trail road (with 6 m. proposed G.L.D. road) in the west and the north. Water supply mains of 80 mm diameter and the electrical mainwork is located in the highway.





Topographically, the site is flat and upland relative to the surrounding with mixed land use, some builtup area and the remaining under agricultural use at present but soon going to be converted into builtup area. The land value varies depending upon the location with reference to the nature of road, ranging from 4 to 8 lakhs. Some of the facilities that are already available in the surrounding area are; a high school, a campus and a convenient shopping nearby.

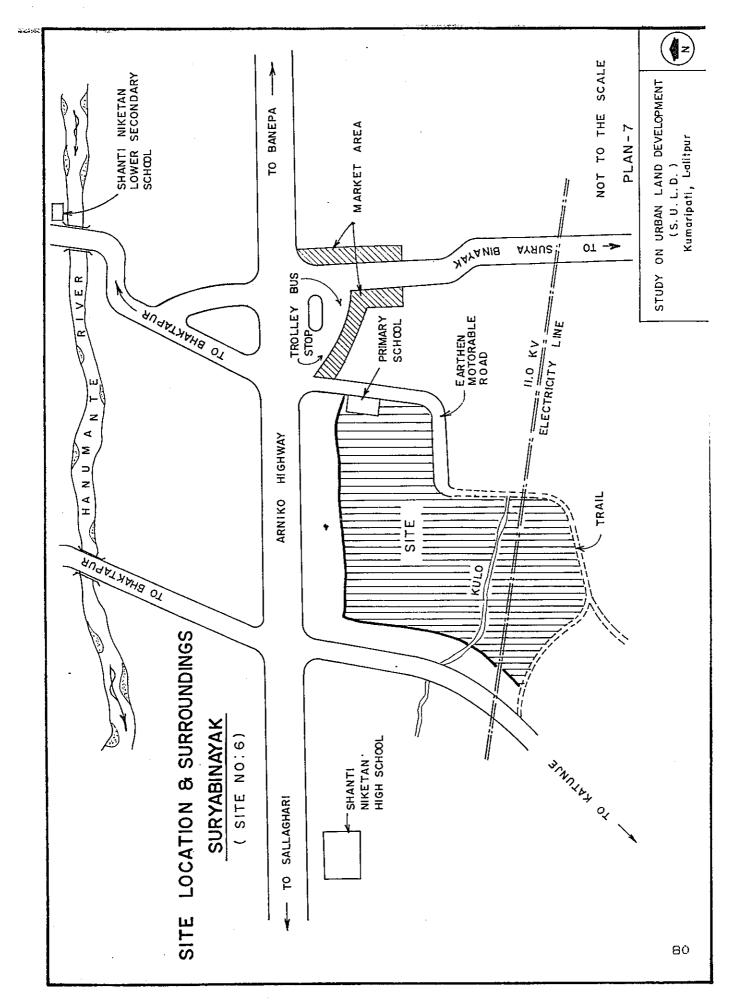
Although this area is quite far relative to other sites mentioned above, from Kathmandu city core but is easily accessible, as various means of public transport systems are available.

### <u>Surya Binayak</u>

Surya Binayak site is located about 50 m south of Arniko Highway, next to trolley bus terminal, further east of Gathaghar and about 8.5 km from Koteswor ringroad junction (refer plan 7). The site covers an area of 100 ropani currently owned by 93 landowners with most of the plots larger than one ropani (509 sq.m). Access to the site is an earthen motorable road connecting Arniko highway which further continues as a trail road and connects to the road leading to Katunje. This trial road has been proposed as 6 m G.L.D. road. Water supply line of 50 mm diameter and the electrical mainworks is on the highway.

The site comprises of terraces with mild slope and is under agricultural use at present. The entire area has been hired by agriculture department to grow seedlings due to the soil being very fertile. Average land value of raw land is Rs. 100,000 per ropani, which will be higher after planning but still will be affordable by middle income.

Although, this areas is quite far from Kathmandu but is connected by various means of public transport system. This, in combination to its location with respect to Bhaktapur, has a good potential to develop in near future.



The sites were then evaluated with respect to the criteria mentioned above and few more as mentioned below.

- Project area/ No of landowners/Size of majority of land parcels.
- b. Average land value.
- c. Existing land use and soil condition for agricultural production.
- d. Public Response (Landowners, tenants, future beneficiaries) about the need for planning in the area.
- Topography with respect to surrounding area and of the site.
- Distance from the city centre / Access to public transport.
- g. Facilities in the surrounding area.

Site evaluation table no. 1 showed sites in Nakhipot and Saibu, both of Patan, as the best alternatives. Both the sites were then detailly examined with reference to the interested landowners and degree of co-operation that the study team would get from them. Landowners in Saibu site were more active and interested compare to Nakhipot. In case of Nakhipot, majority of the landowners are outside the country. Hence, the study team decided on the Saibu site and the detail analysis of the site was done.

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## Table 1. EVALUATION OF SITES

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5.No.:	Criterias	site 1	Site 2	Site 3	Site 4	Site 5		Favourable  Site
	Confiraity to land use	Yes (	Yes	Yes (	Yes	Yee (	Yes	; 411 ;
2	Project Area (ropani)	210	102	85	495	100	100	1 13,5, & 5 1
3	No. of landowners	200	169	103	399	240	93	; ;3 & 6 ;
4	¦Kajority plot size I		Larger than 12 ana				Larger than 1 rop.	1,2,3,4 2 6
5	Average land value (Rs.)	5 to 12 1 Lakh	6 to 8 Lakh	10'to 12 Lakh	2 to 5 Lakh	: 4 to 8 : Lakh :	i Lakh	4 & 6 {
6	Existing Land use	Ł	Agriculture & {Kesidential	<u>k</u>	å.	ł	• •	:  1,2,3,4 &  5 
	¦ }Potential for im≊ediate ¦d≘velopment ¦	: Very good ; ;	600J	600đ	6000	Fair	Fair	1,2,3 & 4
8		Positive	Positive	Positive (Landowner Themselves are future (residents)	Positive Positive	Positive	Positive  Positive  Positive	1,2,3 & 4
9	l Proposed land development Program if any		¦  G.L.D.  proposed	: :G.L.D. :		: :6.L.D. :proposed	2 1 ¥ 1 Å 1	¦4 & 6 ¦

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No.:	Criterias : ;	site 1	Site 2	f Site 3	Site 4	Site 5	Site 6	{Favourable{ {Site }
10	Access to technical infrastructure							  A11
1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		on north	road	laccess lroad	main road		Arniko Highway (50ø far	
			5 5 5 5 5 1 1 1		- t	¦metalled ¦road at ¦east ¦	(motorable (road west (side (Trail road (on east	
	•	on west	dia 80 mm Ion main Iroad		dia 500 mm lon main troad	dia 80 mm Ion highway		
	Electricity main work	Available	Available	Available	; {Available ; ;	i (Available { !	i Available : :	
	Sewer line	  not  available 	inot lavailable l	(not  available 	inot available	lnot lavailable	inot lavailable	
	vicinity 	¦of ¦existing ¦Gongabu	High school Health post Convenient shopping	¦open space ¦ ¦Primary &	project	¦ ¦Campus ¦	Shopping area	
12	l Access to public transport	gcod 1	t fair	fair	poor l	l very good	l very good	1,5, & 6
12	Topography	:  Flat & low  land 	Flat land  & steep  slope	i  Terrace  land with  mild_slope 		Flat & up land	Terraces	3,4,5 & 6
					83			

=====	#95=225225======# <b>325</b> 25=====			==============================		*========		
¦S.No. 	: Criterias :	¦ site 1	Site 2	Site 3	: Site 4	Site 5		(Favourable) (Site
•	=====================================	: 1990/91	1964/65	1764/65	:   1964/65   	::::::::::::::::::::::::::::::::::::::	 1 1964/65 ! !	;1 ;1
: ; 15	  Soil condition for  Agriculture	i  good 	i Inot good I	inot good I	lgood l	'inot good I I	lvery good l	12,4, & 5
16	lother	line passes	developing as institutional area	the land lowners are		• • • • • • • • • • • • • • • • • • •	High Itension Line Ipesses Ithrough Ithe site	1
			: [Peopele [not willing to [contribute land for [public & [community [purpose	1		•		

\_\_\_\_\_\_ Site 1 = Gongabu

Site 2 = Khumaltar

Site 3 = Nakhipot

Site 4 = Saibu, Bhaisipati Site 5 = Gathaghar

Site 6 = Surya Binayak

### 3.2 SITE ANALYSIS

The physical characteristics of Saibu site are shown in plan 8. The site analysis was done under the following headings.

1. Site Boundary:

northern and western side and the metalled road in the north eastern corner. The trail road runs along the eastern border where as the natural drainage channel form the south eastern border of the site.

The site is surrounded by

the

a gravel road in

2. Site Surroundings:

The surrounding environment have a few position as well as negative impact on the site. The central jail located at the north, across the river and the cement factory located southwest behind the hill are the main cause for the low market value of the area. A brick kiln located in the western low land and the carpet dyeing industries which have started to emerge in this area will cause environmental pollution of the surrounding.

Apart from the above factors, government undertaken site & service project at the south and river flowing in the north are other key elements in the site surrounding.

The terrain consists of following conditions.

flat land with mild slope currently under agricultural use with

.

Topography:

3.

some scattered builtup area.

small terraces forming steep slope with agricultural use.

terraces forming mild slope with agricultural use.

upland and lowland with agricultural use.

the land slopes down from south to north.

The site is elongated north south with maximum boundary of the site exposed to east and west, whereas the favorable orientation for a housing plot in Kathmandu is north south. \_ the land Eventhough, slopes up in the form of terraces towards south, but it doesn't form a sunshadow since the slope is mild in comparison to the altitude of sun in south.

Apart from the information on offsite infrastructure mentioned in table 1, some more details are mentioned below.

A trail road of varying width from 0.9 m to 1.5 m runs north south dividing the site area into two sectors.

A high tension line for Himal Cement Factory passes through the site.

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4. Orientation:

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### 5. Infrastructure:

. Road onsite:

Electricity;

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### Water supply:

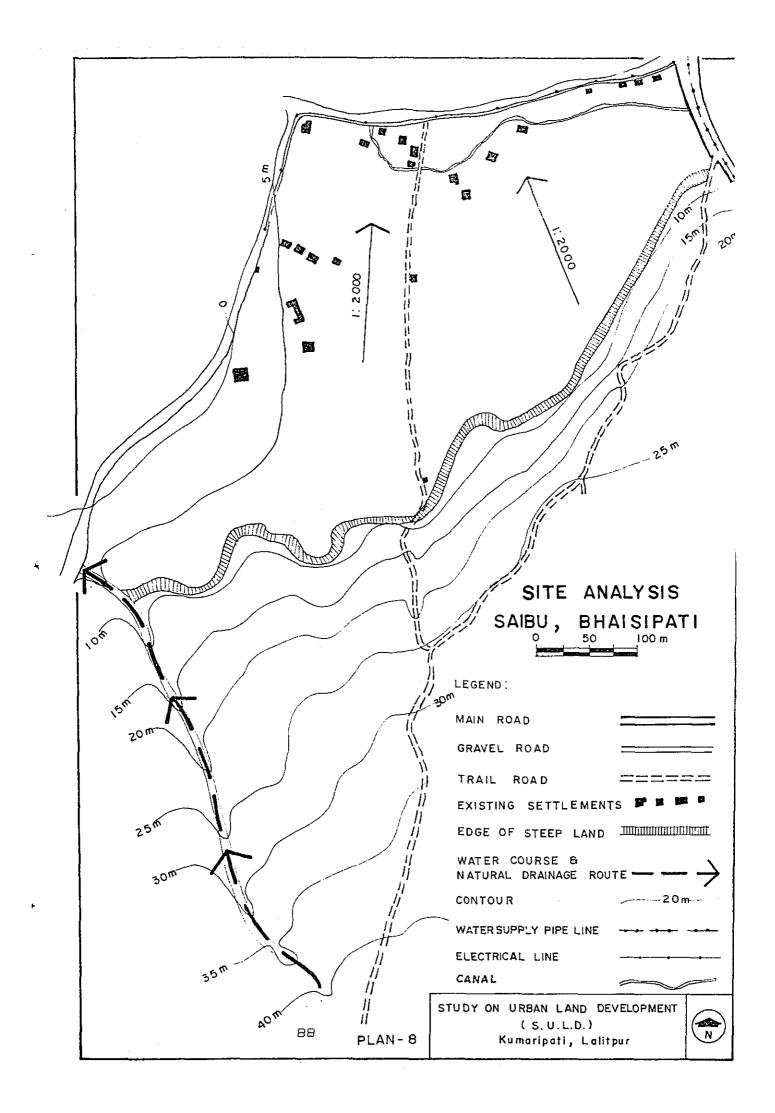
Stormwater drainage : Water supply mainworks of 500 mm diameter with 24 hour supply, is available in the metalled road.

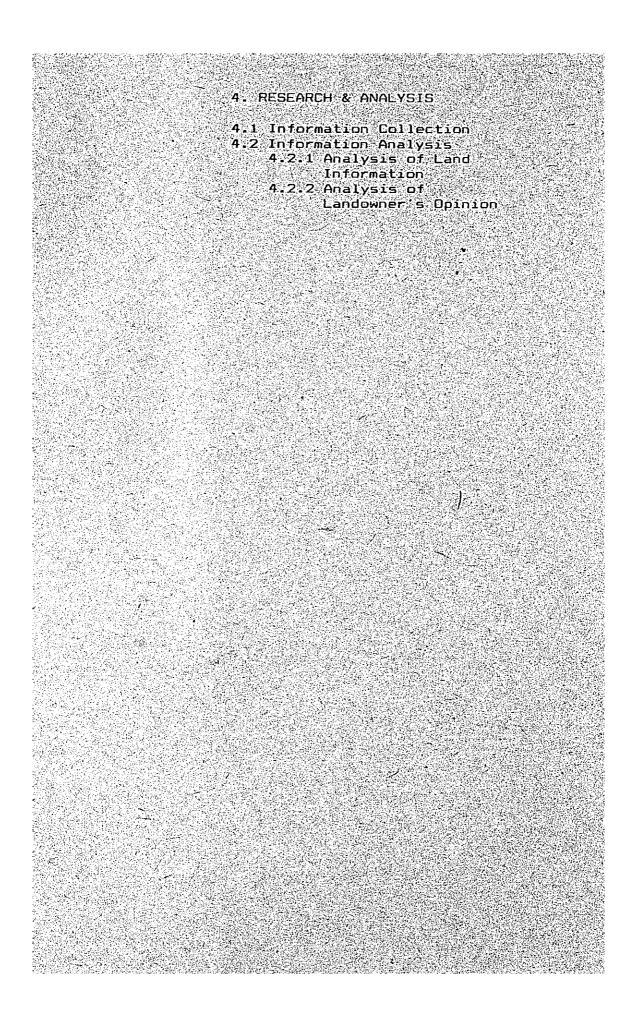
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There is no discernable major drainage channels across the site, although water ultimately flows down the north due to topographical condition. However, natural drainage channel forms a site boundary along northeast.

The site area is elevated with respect to adjacent areas in north and west due to which a view of mountain range in north and an old settlement in the western hill can be enjoyed.

6. View :





### 4. RESEARCH & ANALYSIS

### 4.1 INFORMATION COLLECTION

Information collection refers to the collection of data necessary to execute the project which would be of different natures. One would be information related to land, other's will show the viability of the project etc. Information collection process started with following steps.

- A. Collection of land information
- B. Collection of Public opinion
- C. Collection of information related to infrastructure development.

### A. Collection of Land Information

Information related to land would identify the landowner's, their correspondence address, total no. of landowners, individuals amount of landholding as well as whereabouts of the tenants. The information is available from District Land Revenue Office and Survey Maintenance Section.

Land has been a very profitable business and hence land transaction occurs several times before a plot is really developed. The latest information of land is only available with the District Land Revenue Office. However, due to bureaucratic process and other legal bindings its was not possible to get the latest record from revenue office and hence the study team had to rely on the data available through Survey Maintenance Section, most of which had been outdated and incomplete. The latest information on land was hence, possible only through the landownership paper.

It was almost impossible to contact the landowners through their correspondence address even in the case where land transection had not occurred, as it was incomplete & in case with complete address would take several months. Hence, various approaches, as mentioned below were adopted to contact landowners.

- a) Notice to landowners through Local Newspaper.
- b) Personal contact by SLUD office personnels through telephone and visit.
- c) Enquiry and contact through the land owners and local leaders.
- d) Contact through local brokers.

Some of these methods were partly successful while some were a total failure. Overall, the owners were not much interested as only 24.56 % of total landowners owning 29.33% of the plots contacted.

The effectiveness of techniques i & iii mentioned were almost similar. Contacting landowners through landowners themselves and the local leaders was partly successful as only 5.6% of the total landowners were contacted, who owned 6.3% of the plots. Since the landowners & local residents were properly convinced of project benefit of the Land Readjustment scheme, they co-operated by providing information of adjacent landowners. Few even participated by searching and convincing other owners.

Notice through local newspaper (refer annex 9) was also as successful as contacting landowners through the landowners themselves since 5.01% of the landowners owning 6.3 % of the plot contacted. Most of these contacted through telephone who were then briefed of the project objectives. However, an idea of getting information through the local brokers was a total failure. Infact, it had a negative impact in the success of the scheme as they felt of losing business with success of such schemes & hence started lobbying against the project.

Personal contact through SULD office personnel was the most successful as 14.29% of the landowners with 16.73% plot were contacted. This was the most advance step taken to contact landowners, by visiting the project area and getting information of the landowners with local residents and neighbors who were then contacted either through telephone or by house/office visit. Number of landowners contacted through each of this approach is tabulated in table 2.

Although few landowners showed interest but overall contacting landowners and getting information from them was a very tedious and time consuming task. It was almost impossible to contact landowners of the entire site and get information from them within the allotted timeframe. The study team hence had to first demarcate project area within the site area which is manageable within the study timeframe and collect information of it only. Detail of the number of landowners contacted of the project area is tabulated in table 3.

S.No.	Means		Contacted number				Total number		
			landowners	X	plots	%	lando×ners	plots	
1.	Contact throu local leader	ugh landowner k s.	21	5.26	32	6.30			
2,	Contact by	a) On site	38	9.52	44	8.66			
	SULD office personnel	b) House visit	12	3.00	34	6.69	399	508	
		c) Telephone	7	1.75	7	1.38			
		Total	57	14.29	85	16,73			
3.	Through adver newspaper	Through advertisement in local newspaper		5.01	32	6.30			
4.	Through loca	l brokers	0	0	0	0			
	Total		98	24.56	149	29.33			

# Table no 2. Landowners contacted through various means (Entire Area)

Table no. 3. Landowners contacted through various means (Project Area)

S.No.	Means		Contacted number				Total number		
			landowners	X	plots	X	landowners	plots	
1.	Contact throu local leaders	ugh landowner & s,	21	17.5	32	19.28			
2.	Contact by SULD office	a) On site	19	15.0	21	12.65			
	personnel	b) House visit	8	6.67	25	15.06	120	165	
		c) Telephone	6	5.00	6	3.62			
		Total	32	26.65	52	31.33			
3,	Advertisegen	t in the newspaper	3	2.5	5	3.01			
4,	Through loca	l brokers	0	0	0	0			
	Total		56	45.67	89	53.62			

### B. <u>Collection of Public opinion</u>

Public opinion & its proper analysis is the most important factor in the land development program like Land Readjustment, whose success is entirely dependent on the public participation. Apart from indicating the success of the project, it also identifies the methodology to be adopted as listed below.

- a) Success of the project
- b) Identification of the methodology/ means of cost recovery/ nature of facilities.
- c) Public evaluation of the adopted planning techniques.

To gather public opinion, a survey was conducted with an emphasis on Land Readjustment program. In the process, all the persons surveyed fell into four definite groups; the landowners, general public who could be future beneficiary, actors involved in the land development program and the local leaders. However, emphasis was given to the landowners and the future beneficiaries. Hence a 'Landowner's Opinion Survey Form' (annex 2) was prepared accordingly, along with which a brief writeup was also attached. The persons surveyed were briefed prior to filling up the form. A copy of the form is attached in annex 2.

It mainly focused on the concept of Land Readjustment and the expected facilities in the project area. Few questions were aimed at visualizing the future land use, the growth of the area and how it would have been developed otherwise. It also enquired regarding the general planning process in Nepal. Apart from the form, the formal and informal meetings and discussions held with landowners and local leaders also helped to gather public opinion.

### C. <u>Collection of Information related to Infrastructure</u> <u>development:</u>

Proper enquiry on infrastructure development and government priorities, could reveal the facts on government support for the community planned areas, which could reduce the amount of land to be shared for project expenses. The information required is given below.

a. Check the possibility of developing infrastructural network through government or provision of government support in developing infrastructural network in the areas developed by community. b. Check the cost of various infrastructure network.

The information required would be available from Nepal Electricity Authority, Nepal Water Supply Corporation, Road Department, Town Municipalities, Kathmandu Valley Town Development committee etc.

With the current government policy of motivating public participation in land development for housing, the cost of most of the infrastructure networks for the areas developed by the community would be shared between the government and the community, with major portion of the cost funded by the government.

The normal sharing that has been worked out for the installation of sewerline is, public contribution of 25% and the government support amounting to 75% of the total cost. Provision for cost sharing in water supply is also similar to the installation of sewerline. However, a copy of minute of the meeting of landowners committees is essential to benefit from this facility.

This, in a way avoids partial financial burden to the government in compare to the normal trend of installing all infrastructure networks by the government whereas for landowners the amount of land or money that would have to be contributed for the installation of these services would be less.

### 4.2 INFORMATION ANALYSIS

Analysis of the collected information would form the base for the subsequent stages, i.e., project designing, formation of redistribution criteria, management of the project finance and development of implementation stategy. The analysis has been done of only the plots falling in the project area as defined by 5.1 and under the following headings.

### 4.2.1 ANALYSIS OF LAND INFORMATION

The information gathered from landowners related to land, through landowners opinion survey form (annex 2) was then analysed to check the condition of majority of land parcels prior to planning. The comparison of this information to the neture of returned plot would then justify the necessity of the Land Readjustment concept. The analysis was done under following headings:

- A. Land Ownership.
- B. Area of Existing Land Parcels.
- C. Access to infrastructure networks.
- D. Land Parcels with or without tenants.

### A. Land Ownership

The analysis on landownership showed the land in the project area under three type of holding; individual, public and shared by certain community as shown in table 4. Maximum amount of land is in the form of individual holdings, which can be further divided into plots under cultivation or without any built form and plots with some builtform. Land under individual holding amounts to 96.21% of the total land of which B2.53% is without any builtform & the remaining with some sort of builtform.

Land under public holding constitutes 0.97% of total land and is in the form of trail road and canal. The amount of land under public holding shows the degree of success of Land Readjustment concept and creation of settlement equipped with all public utilities. This is a conclusion drawn from 4.2.2 which show that people are willing to contribute only minimum amount of land for road and are against the contribution for open spaces and public utilities. Hence public land could be used to create public open spaces and community facilities.

Land share by a group is only in the form of access road and is nominal relative to the total project area.

### 8. Area of existing Land Parcels

The total area of the site as the sum of individual land parcels mentioned in the landownership paper differs from the area calculated from the cadastral map, with the later being less. The error is of 1 ropani 15 anna 2 paisa 2 dam equivalent to 1006 sq.m which is 1.76% of the total site area.

The area of individual plots has been analysed by categorizing it into various groups based on the plot area as shown in table 5. Seven groups were formed with group A comprising plots with area ranging from O anna to 4 anna, group B 4 anna to 8 anna and so on. The maximum number of plots fell into group B (4-8 anna) which occupies 30.12% of the total number of plots, followed by group A (0-4 anna) with 22.29% where as group G (2 & more ropani) has the minimum number with only 3.01 %.

However, with respect to the total area under each group, group E (1-15 ropani plots) surpasses the othergroups, occupying 21.24% of the entire area of the site followed by group B with 18.2% where as Group A with only 5.6% has the minimum amount of area in compare to other groups. The area of individual land parcels is tabulated in annex 6.

Analysis of areas of existing land parcels would help to identify the ideal plot which could form as a modular plot size.

### C. Access to infrastructure network

Analysis of plots with respect to infrastructure condition will show the need of Land Readjustment schemes to develop the area. The analysis was done under the following headings and illustrated in table 6.

a) Plots with access road.

- b) Plots with easy access to electricity.
- c) Plots with easy access to water supply mains.
- d) Plots with easy access to sewer mains.

In analysing the plots with respect to the access road, only 76 plots, occupying 45.78% of the total number have some sort of access road. The type of roads vary from trail road with r.o.w. varying from 0.9 to 1.5 meter to gravel road with r.o.w. 5 meter. Number of plots with trail road as an access in 34 whereas plots r with the gravel road as an access total up to 25. Similarly, 7 plots have a shared private road and 10 plots can be accessed via a canal. The detail of nature of access road with plot numbers and areas are mentioned in table 7.

Analysing the plots with easy access to electricity, only 25 plots which have gravel road access are favored by electrical connection. However, none of the plots are in easy access to water supply network and sewer mains and hence getting an individual water supply connection will be a very expensive affair for any plot.

### D. Land parcels with or without tenant

It wasn't possible to distinguish plots with or without tenants. Although the land record showed the existence of tenants in most of the land but most of the landowner's denied the fact that they had tenants. However, this may also be true as the land transaction occures several times before it's actually developed.

Although in few cases, the landowners revealed the fact of having tenants but they are against the involvement of tenants and requested the study team not to contact them. The study team though wanting to contact the tenants but was not able to do so due to lack of contact address. Hence, the study team wasn't able to analyse the area with respect to the tenants.

S.No	Description	,		Plots	Percent	age of Total
			nuaber	area	nuaber	area
1.	Individual Plots	a) With house	18	10-13-1-0	10.84%	9,69%
		b)With boundary wall only	1	1-14-3-0	0.60%	1.72%
		c) Without any built form	141	97-8-2-2	84.93%	87.29%
		Total	160	110-4-2-2	96.37%	98.7%
2.	Public Area	a) Trail road	1	0-10-0	0.60%	0,56%
		b) Canal	2	0-7-1-0	1.21%	0.41%
		Total	3	1-1-1-0	1.81%	0.97%
3.	Community access	road .	3	0-5-3-2	1.81%	0.3%
		Total	166	111-11-3-0	100%	100%

Table 4. Nature of landownership

Table 5.Grouping of plots based on land area

S.No	Description	Plots		Percentage of Total		
		nuaber	area	number	area	
i,	0-4 anna (Group A)	37	6-4-0-2	22.29%	5.6%	
2.	4-8 anna (Group B)	50	20-5-1-2	30.12%	18.2%	
3.	8-12 anna (Group C)	29	17-2-3-1	17.47%	15.37%	
4,	12-16 anna (Group D)	13 .	13-7-2-0	9.04%	12.06%	
5.	1-1.5 ropani (Group E)	19	23-11-2-3	11.44%	21.24%	
6.	1.5-2 ropani (Group F)	11	19-10-3-0	6.63%	17.6%	
7,	2 and more ropani (Group G)	5	11-11-3-0	3,01%	9.93%	
	Total	165	111-11-3-0	100%	100%	

S.No	Description .	Plots		Percent	Percentage of Total		
		number	area	nuaber	area		
1.	With access road	76	52-2-1-3	45.78%	46.67%		
2.	Easy access to electricity	25	22-5-0-0	15.06%	19.73%		
3,	Easy access to water supply mains	0	0	0	0		
4.	Easy access to sewer mains	0	0	0	0		

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Table 6. Plots with access to Infrastructure

Note : Canal also considered as a mode of access.

Table 7. Plots with various road condition

S.No	Description	Plots		Percentage of Total		
		number	area	number	area	
1.	Plots with Gravel Road	25	22-4-2-0	15.06%	22.63%	
2,	Plots with Trail Road	34	17-8-2-1	20.46%	15.69%	
3.	Plots with Private Road	7	3-2-2-2	4.22%	2.83%	
4.	Plots with Canal	10	6-2-3-0	6.02%	5,52%	

### 4.2.2 ANALYSIS OF LANDOWNER'S OPINION

Landowner's opinion survey form was distributed to all the landowners who were contacted. However only few submitted the form. Although, the landowners were very supportive and co-operative and expressed their ideas and desires in the planned area but this wasn't evident while collecting their opinion through the form. Even with the repeated request and house visit the study team were able to collect only few forms. In few cases, the study team also tried to fill the form for the landowners by asking them their opinion. However, with all this effort, the study team was able to collect only 15 forms out of 88.

Analysing the 'landowner's opinion collection form', 80% of the surveyed landowners showed positive response to the planning of the area whereas only 7% were against it. However, in analysing the expected facilities in the proposed planned area there was no objection for the installation of water supply, sewerline and the proper road. 93% of the surveyed landowners were in favour of the electrical connection, 73% for the telephone, 53% for park and 47% for shopping and community hall. In response to the query regarding the expected time frame for the plan to be implemented, 60% wanted the plan to be implemented in near future.

The landowners were very critical regarding the road width. 53% were in favour for the single lane access where as only 20% for the double lane access. Few also wanted to limit the access to two wheeler. Similarly, responding to the quality of road, 60% opted for the metalled road whereas only 27% were in favour for gravel road.

Although 93% of the surveyed were willing to contribute for the project expenses but the amount and nature of contribution varied very much. The amount of contribution for the project expenses varied from 5% of the land area to the individuals share as shown by the calculation to recover the project expenses. Analysing the nature of contribution, few were only willing to contribute money whereas few were willing to contribute land for road and money for other infrastructure network. Detail of the analysis of landowner's opinion survey form has also been tabulated in table 8a,b,c,d,e,f,g.

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## Table 8. Analysis of Landowner's Opinion Survey Form

## a. Issues Related to Planning

S.No	Issues	Consent	No.of Landowner	7.	Remarks
1	Opinion regarding the necessity of	Positive	14	93	
	planning.	Unanswered	1	7	
2	Opinion on the land development activity	Good	2	13	
	development activity conducted by private & government opening	Needs improvement	1	7	
		Haven't been doing properly	2	13	
		Don't know	9	60	
		Unanswered	1	7	
3	Reaction to the idea of planning in Saibu	Positive	12	80	
		Negative	1	7	
		Unanswered	2	13	

### b. Managing Service otherwise

S.No		1 1		Electri- city		Sewer line		Access	
		No.	7.	No.	%	No.	%	No.	7.
1	Available at present	4	26.7	5	33.3	0	0	5	33.3
2	Manage on it's own	उ	20.0	2	13.3	7	46.7	2	13.3
3	Rely on concerned govt. agency	3	20.0	3	20.0	3	20.0	3	20.0
4	Don't know	3	20.0	3	20.0	3	20.0	3	20.0
5	Unanswered	2	13.3	2	13.3	2	13.3	2	13.3

## c. Issues related to the future of Land and Building.

S.No	Issues	Consent	No.of Landowner	7	Remarks
1.	Future activity in the plot after planning.	Continue farming	0	0	
	יטייייטיי	Construct a house.	7	47.0	
		Sell it.	0	0	
		Other	2	13.0	
		Already constr ucted	6	40.0	
2.	Optimum time for starting a construc tion if planning to	Already constructed	6	40.0	
	construct the house.	Within 1 year	2	13.0	
		After 1 year	3	20.0	
		Haven't decided	2	13.0	
		Unanswered	2	13.0	
3.	Intention after the completion of	Live in it	12	80.0	
	construction.	Rent it	1	7.0	
		Sell it	0	0	
		Don't konw	2	13.0	

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S.No	Issues	Consent	No.of landowner	7.	Remarks
1	Reaction to Land Development Technique	Positive	12	80	
	Implemented in the site.	Negative			
		Don't know	2	13	
		Unanswered	1	7	
2	Expected Timeframe for the plan to be	3 to 6 months	1	7	
	implemented.	6 to 1 year	3	20	
		as fast as possible	7	60	
		Unanswered	2	13	

# d. Issues on Land Development Technique implemented in the site

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## e. Facilities preferred in the settlement

S.No	Facilities			Remarks				
		Positive			Negative			
		Nos	7.	Nos	7.	Nos	7.	
1	Road	15	100					
2	Watersupply	15	100					
3	Electricity	14	93			1	7	
4	Sewerline	15	100					
5	Telephane	11	73	1	7	E	20	
6	Park .	8	53	3	20	4	27	
7	Shopping	7	47	4	27	4	27	
8	Public space (community hall)	7	47	4	27	4	27	

S.No	Description	1	No. of landowners	Percent- age of landow- ers	Remarks
1	Road Nature	Trail Road	1	6.5	
		Gravel Road	4	27.0	
		Metalled Road	9	60.0	
		Unanswered	1	6.5	
2	Road Width	Pedestrian Access		-	
	4	Two Wheeler Access	1	7.0	
		Single lane	8	53.0	
		Double lane	з	20.0	
	[ ]	Unanswered	3	20.0	1.

## f. Preferred Road Nature and Width

## g. Type of Co-operation Landowners are ready to offer

S.No	Nature of Co-operation	ļ		Negati- ve		Unansw- ered		Remarks
		Nos	%	Nos	7.	Nos	%	
1	Attending a meeting called by the office.	9	60	2	13	4	27	
2	Becoming a member of landowhers committee.	6	40	5	उउ	4	27	
3	Contribution to project expenses	14	93	1	7	0	0	

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- . 5. PROJECT PLANNING
- 5.1 Concept

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- 5.2 Site Planning Design
  - Standard
  - 5.2.1 Residential Landuse
  - 5.2.2 Circulation 5.2.3 Open Spaces &
  - - Community Facilities
- 5.3 Project Designing 5.4 Redistribution Criteria
  - 5.4.1 Area Deduction for Road
  - 5.4.2 Area Deduction for Gravelling
  - 5.4.3 Area Deduction for

·Implementation 5.4.4 Area Deduction to Adjust Error in Land Area

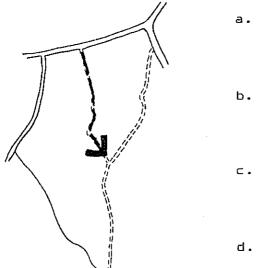
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### 5.0 PROJECT PLANNING

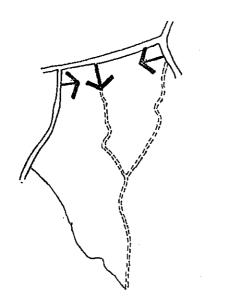
All the issues in project planning are based on the analysis of the landowners opinion, the site condition and other related information. This chapter has been divided into 4 sub chapters as followings.

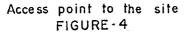
### 5.1 CONCEPT

The planning concept is base on the design brief which arises from various analysis as following.



Trail road to be maintained as arterial road. FIGURE-3



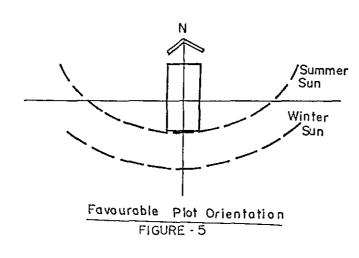


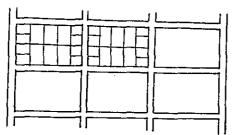
a. The existing trail road which runs north-south should be maintained as the arterial road.

- The existing scattered builtup areas should be properly incorporated within the project area.
- The plots to be returned should be located in the location of the original land parcel as far as possible.
- Project boundary should be fixed in view of topographical condition, landowners interest towards communal planning and other site constraints.
- e. Access point to the site would be maximum three numbers in view of traffic safety and site conditions. One each in gravel road in north and west and one in the metalled road in north eastern corner.
- f. The maximum road width within the project area will be determined by the width of the existing metalled and gravel road.
- g. Storm water drainage should be channelled towards north ultimately discharging into the river in accordance to the topography of the site.

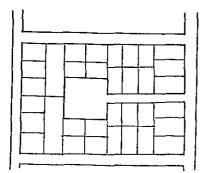
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Apart from the design brief derived from the analysis, few other considerations have also been done as mentioned below.





Rectangular Layout Pattern FIGURE-6



Culdesac Layout Pattern FIGURE -7

### <u>Phasing</u>

# <u>Orientation</u>

With respect to the solar movement pattern, the plots should be oriented geographical north-south so that the plots get winter south sun.

This, however, will not be possible for the plots facing the primary road as it runs north south and hence, the plots will be oriented eastwest.

### Layout

Two different concepts to be tried out in laying out of the plots.

### Rectangular pattern

This is the very common layout followed in the land development and housing project in Nepal. This pattern is preferred by the majority due to the land value being almost equal except for the plots in arterial road.

### <u>Culdesac</u>

In view of the traffic safety culdesac layout is ideal for residential areas. One other advantage of this approach is the culdesac could function as a community space.

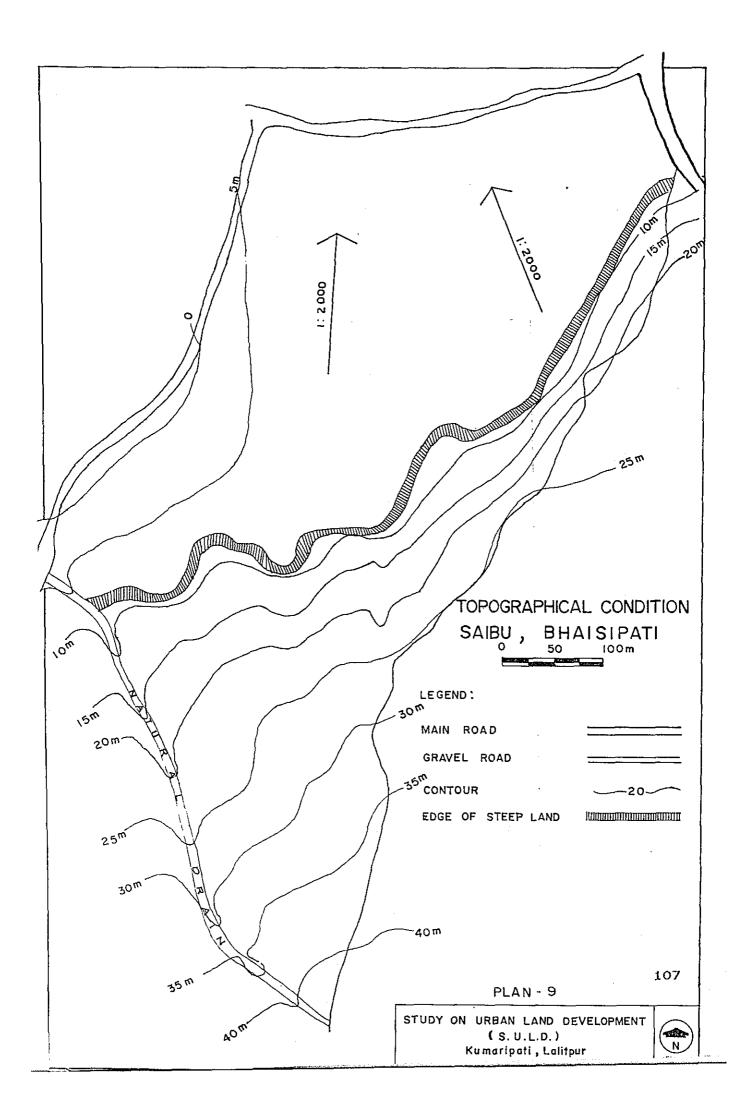
The entire site comprises of 495 ropanis of land owned by 399 landowners. However, the topographical condition of the site suggests to ingore the few steep slope areas from the project area. With the study team's experience in information collection (which is very time consuming) and in

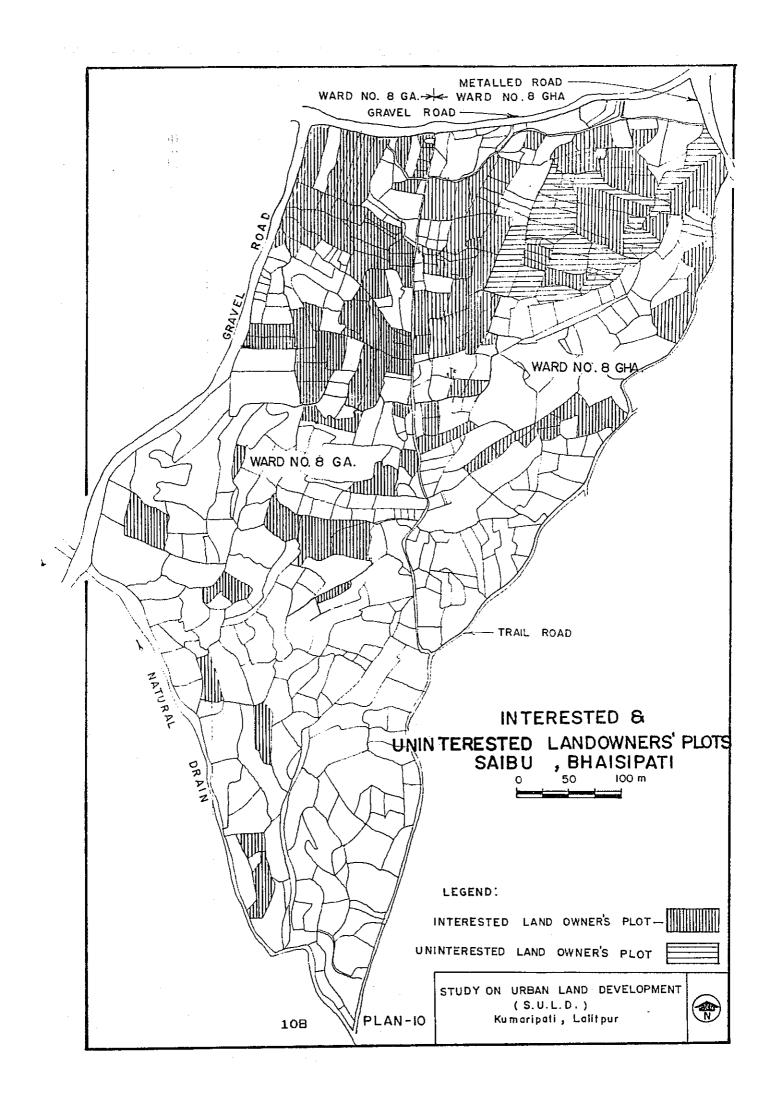
view of the time available, the team felt that the project area should be limited to 100 ropanis of land. Hence, a decision was taken to first demarcate the project area based on few site conditions as listed below.

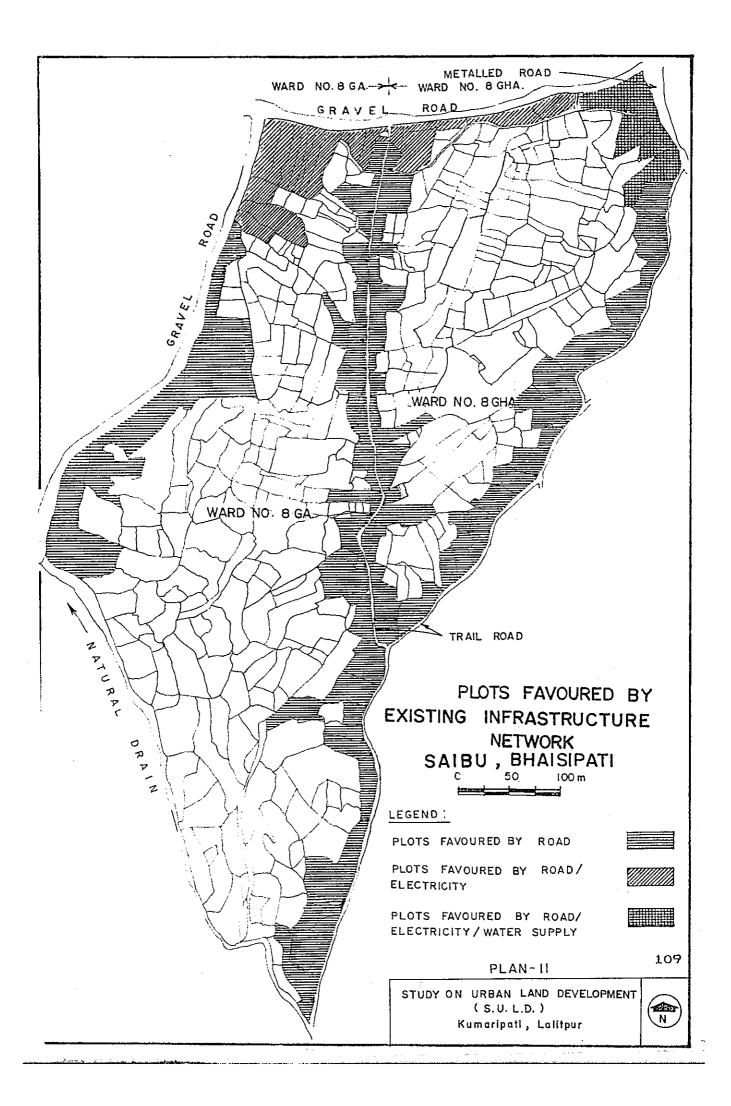
- a. Site topography.
- b. Interested landowners.
- c. Area favoured by offsite & onsite infrastructure network.
- d. Fast growing area.

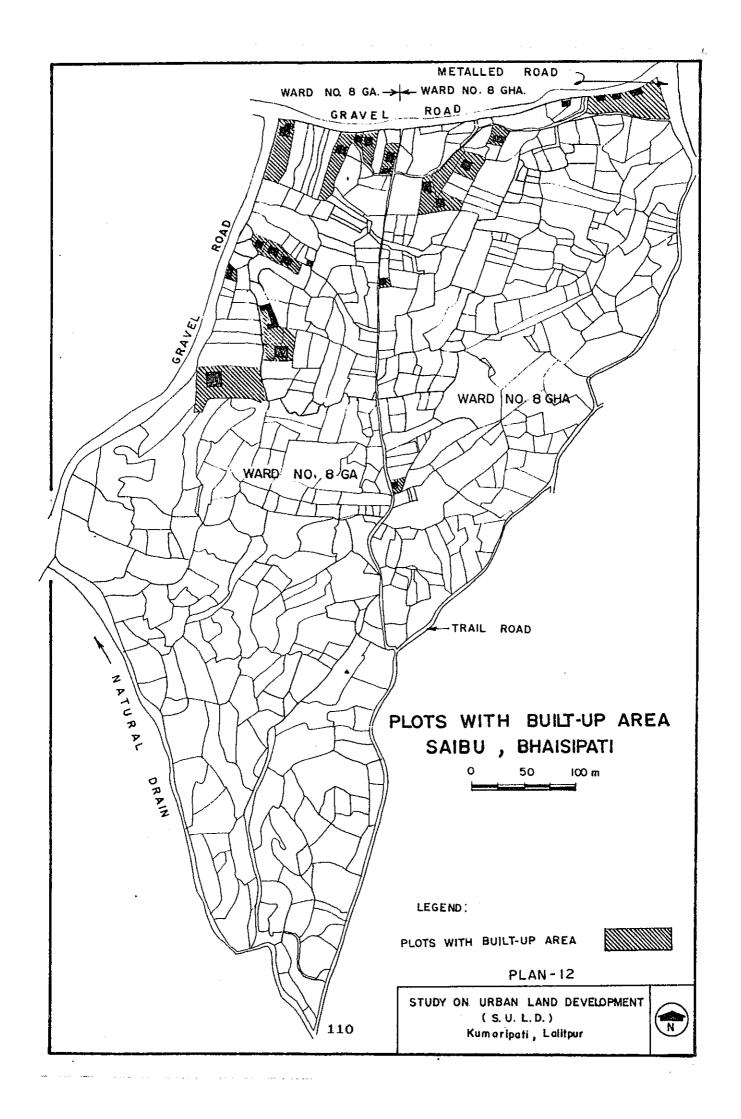
Thematic overlays for each of the conditions were prepared as shown in plan 9,10,11,12. The superimposition of all overlays to identify the most suitable area for immediate development resulted in 180 ropanis of land to fall within the project area which is adjacent to the gravel road (refer plan 13).

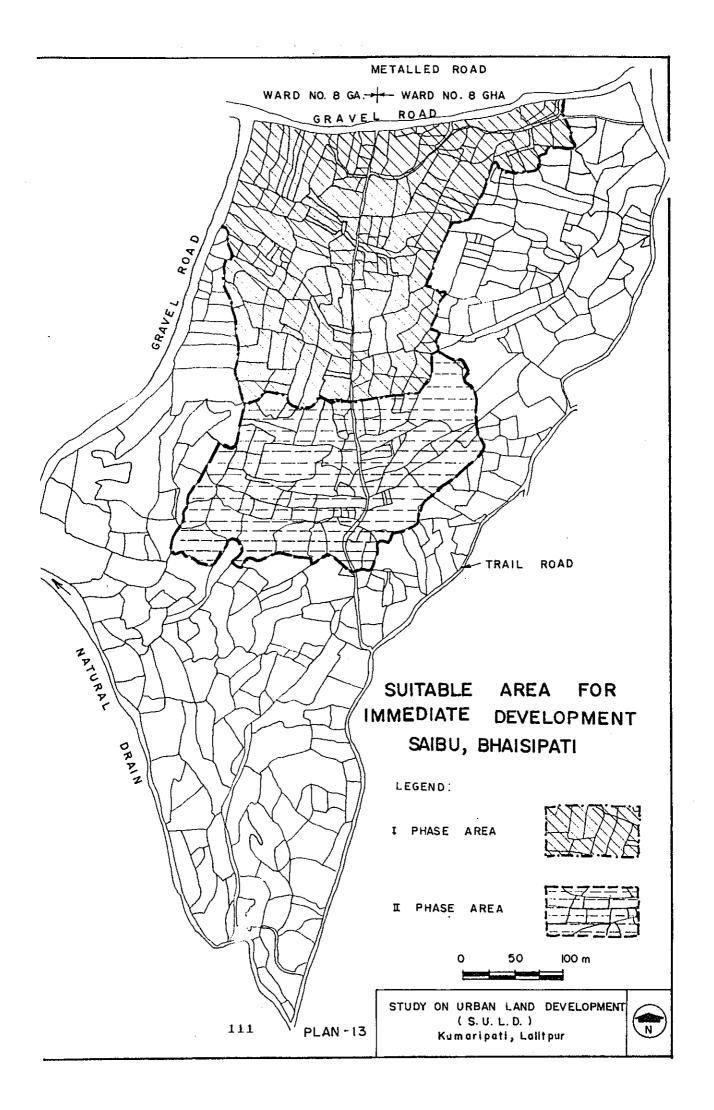
The area favoured by various site conditions were then divided into two phases base on above conditions b, c, & d. Accordingly the area to be developed in first phase consists of 112 ropanis of land & the remaining in the second phase.











### 5.2 SITE PLANNING DESIGN STANDARDS

The standard for various project components are based on the existing site conditions, landowner's opinion and the standard defined by the design manual prepared by DHUD. Standard have been established for the following landuses.

- a. Residential
- b. Circulation
- c. Open spaces & community facilities

### 5.2.1 <u>Residential landuse:</u>

Standard for residential landuse can be subdivided into following headings.

a. Plot sizes

.

The size of the returning plot will depend upon the area of existing land parcels and the amount of area to be deducted to recover the cost of infrastructure network. Hence, there won't be any standard plot size. Following criteria were considered in determining the size of the plots to be returned.

- The width & the area of the plot should be sufficient to accommodate the minimum need of the occupant.
- A modular size to be fixed so that all the returned plots are in it's multiple.

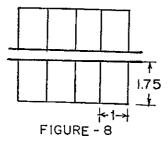
With reference to above two criteria a 6 anna plot (205 Sq m) was fixed as a modular plot since majority of land parcels are either 6 anna or more than 6 anna. The width to the length was so proportioned that it accommodated the floor area need of an occupant and had a sufficient space at the front and back to accommodate exterior function such as septic tank and water storage tank (refer plan 14).

With such provision the width of the modular plot measured 10.6 m and the depth 18m. Taking 18m as the plot depth, the block width of 36m is fixed. The depth of the returned plots is maintained in the multiple of 18m & the width calculated accordingly.

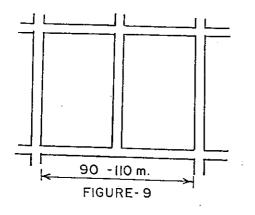
The above mentioned modular size will not be applicable to the plots along the existing gravel road. These plots will be basically untouched except for making it regular.

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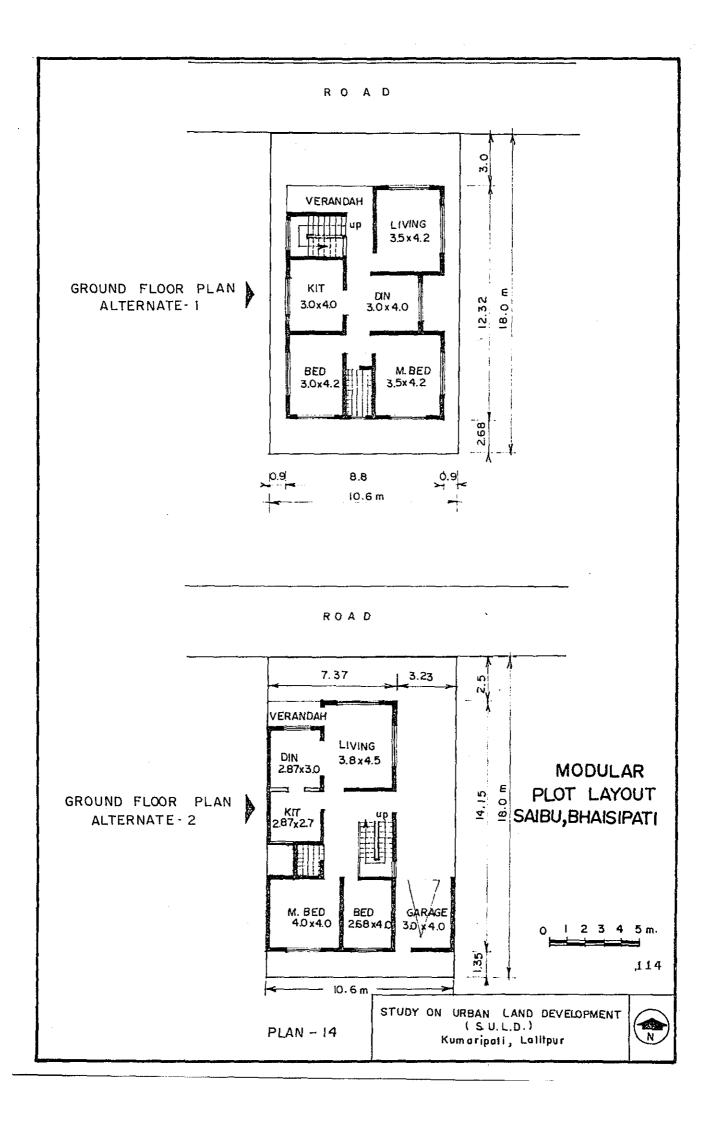






The plots would be rectangular in shape with proportion of length to width of the modular size being 1.75:1. The shorter dimension of the plots are supposed to be oriented to the street. However, this confugration doesnot apply to the plots along the gravel road.

Block length will be fixed in view of the cost οf infrastructure network, better circulation and the existing site condition. In view of cost effectiveness and better circulation, a block length ranging from 90 to 110 meter seems to be the most appropriate. However, the block lengths could differ with reference to the existing site conditions.



### 5.2.2 Circulation

Designing an efficient circulation system that serve the needs of residents with minimum area in road is the objective of this standard. The amount of area in the road can be reduced in two ways.

- a. reducing the road length.
- b. reducing the road width.

However, the standard will only be for the road width. This standard has been governed by the width of existing metal and gravel road. The landowner's opinion on the road width has also been considered as it directly relates to the amount of land to be contributed for the project expenses however the minimum width required as specified by urban road standard shouldn't also be ignored. In view of all these conditions, the width of the road has been fixed as following.

Category	<u>R.O.W</u>	Setback	
Primary Road Secondary Road	6.0m. 4.0m.	1m. 1m.	
Access Road	4.Om.	im.	

Major traffic junctions will be made Y or T instead of cross junction for the safer traffic flow.

### 5.2.3 Open Spaces and Community Facilities

Normally, the area of the site devoted to public facilities and open spaces should be between 10 to 15%. Even with the repeated request by the study team, the landowners have refused to contribute land for such spaces and hence the project area do not incorporate such spaces.

### 5.3 PROJECT DESIGNING

With reference to the concept and the site planning design standards, three alternative schemes were worked out for the entire project area. The brief of each alternative is given below.

Alternative I:

This alternative follows the rectangular layout pattern (refer plan 15) and is planned by giving emphasis to the design brief derived from various analysis. However, effort has also been done to orient the plots north-south.

The arterial road is 6m wide superimposed on the existing trail road running north south and the six loops diverting from the arterial road form the major collector road.

The block length of majority of the blocks ranges from 76 to 90 m due to scattered builtup area. The area occupied by the road is 11.9% of the total project area and 58.6% of the plot area is oriented north-south.

### Alternative II:

Alternative II also follows the rectangular layout pattern (refer plan 16) but gives emphasis to the orientation rather than design brief derived from various analysis.

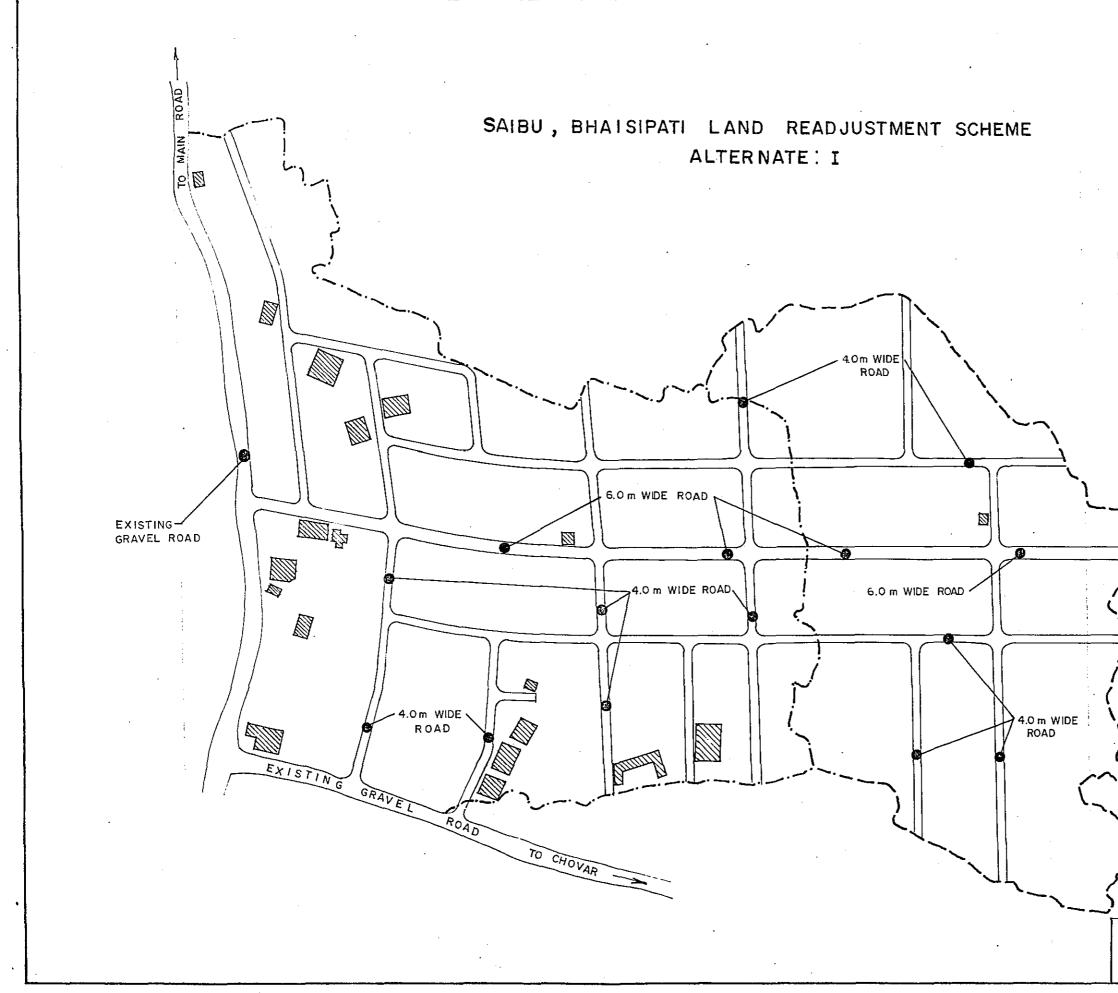
The arterial road of 6 m wide runs along the eastern boundary of the project area and connects the gravel road in the north and the west through the site. The superimposed loops on both the sides of the arterial & collector road form the remaining road network.

The blocks length of majority of the blocks ranges from 85 to 110m, which is cost effective as well as efficient for circulation. The area occupied by the road is 11.9% of the total area and 74.8% of the plot area is oriented north-south.

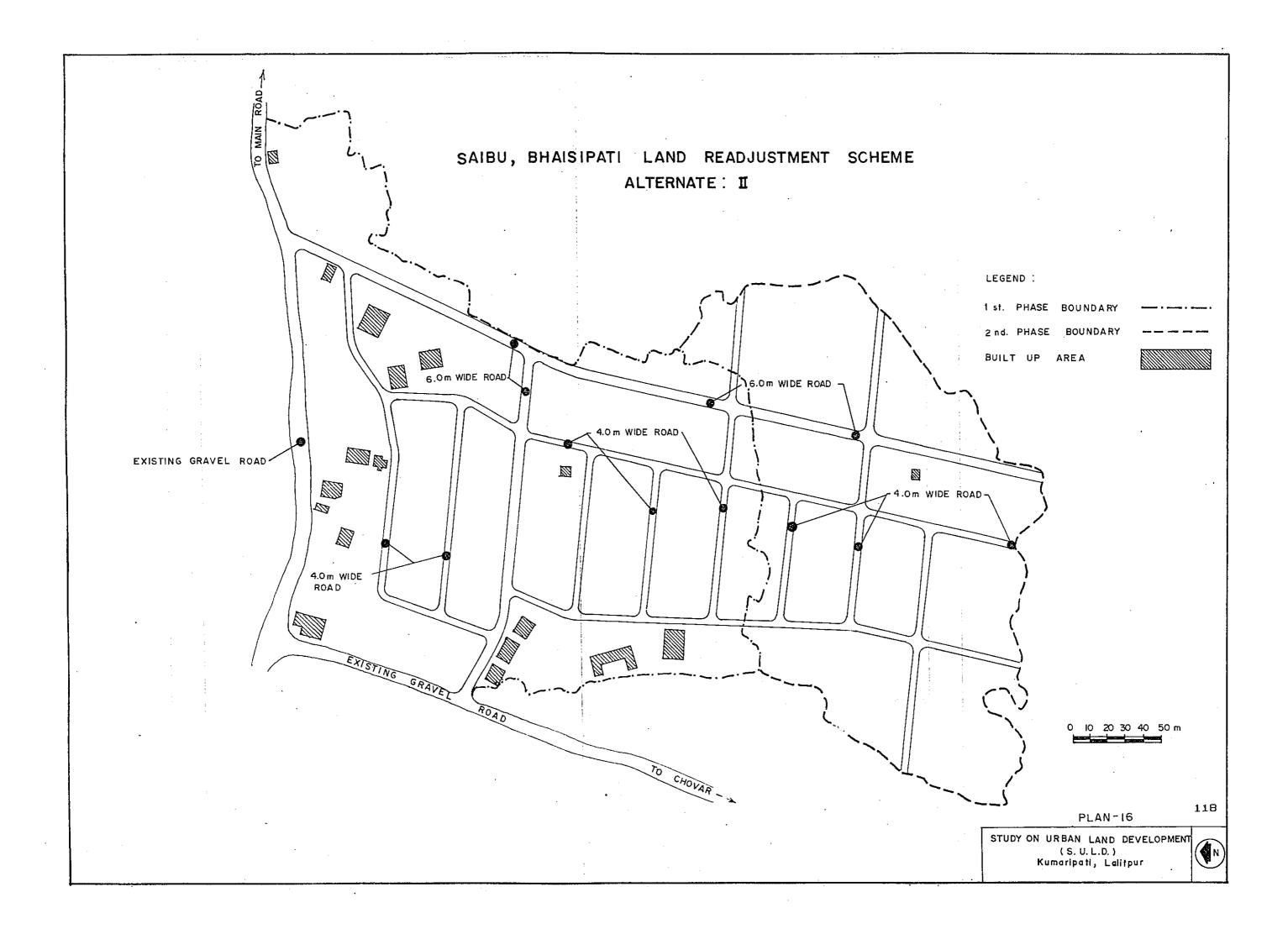
#### Alternative III:

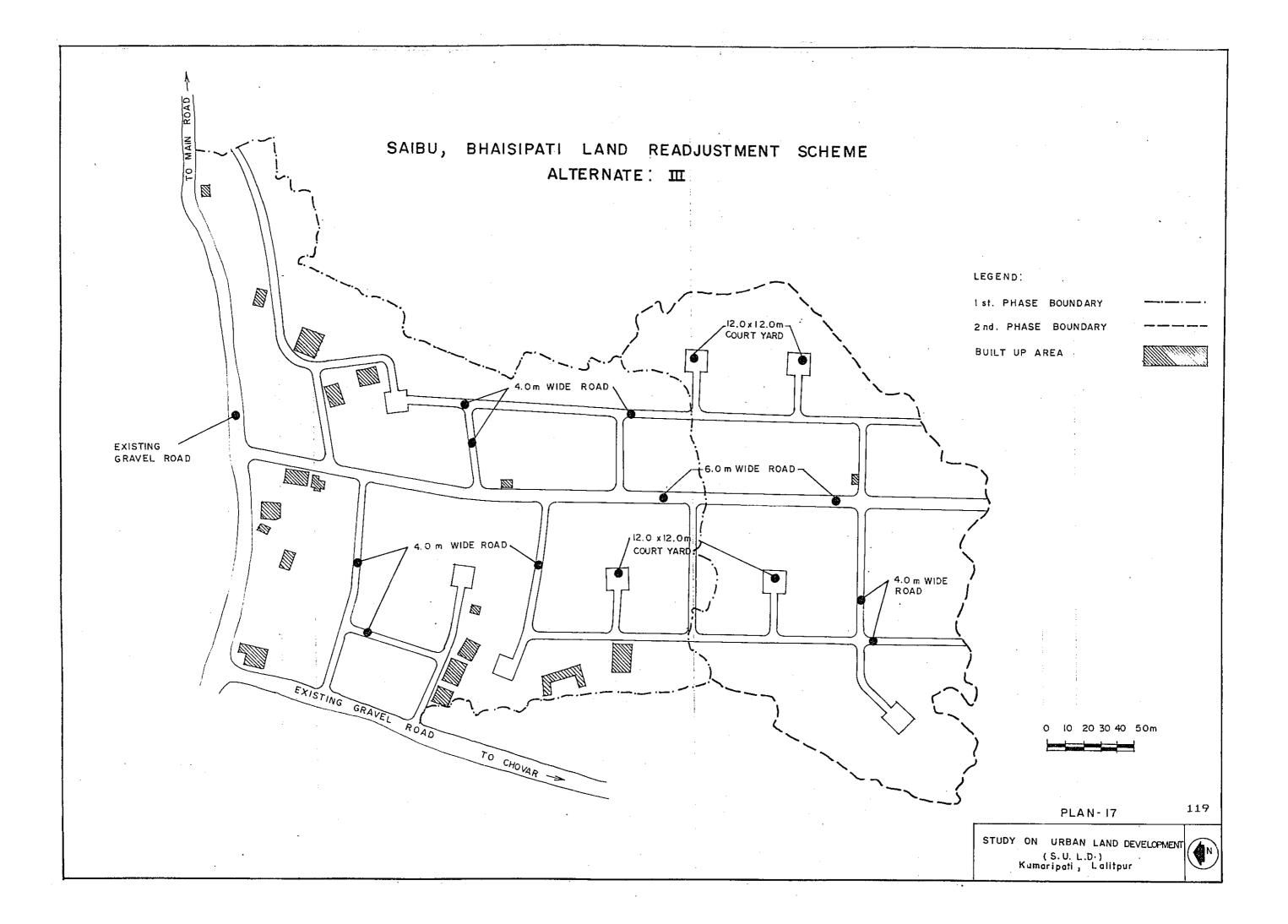
With the culdesac layout pattern (refer plan 17) this alternative gives equal emphasis to the design brief as well as the orientation.

The arterial road of 6m wide is superimposed on the existing trail road running north-south whereas the collectors differ in nature, some with a loop system whereas some ending to a culdesac.



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Majority of the blocks measures between 90 to 100m in length and the length of the culdesac measures 30 m approximately. The area in road is 10.7% of the total area and 72.6% of the plot area is oriented north-south.

All the above three alternatives were studied by the team and redistribution criteria was formulated for each. These were then presented to the landowners committee for the discussion (refer chapter 6). The landowners committee was is favour of alternative I. Infact, alternative I also provides the best access to the existing builtup areas.

Alternative I was then detailed out with some changes in the road network also for the better traffic flow. Accordingly, the redistribution criteria was also modified (refer chapter 5.4). Detail of the project components are given below.

#### Project Components

#### 1. Plotting

As mentioned in 5.2.1, the depth of the plot would be in the multiple 18m and the width varying according to the area calculated in 5.4. However, in the process of detailing out each block, even the depth of the plots had to be adjusted slightly to avoid the remaining land strips at the edge of the block which otherwise would have been wasted. The blocks along the existing gravel road were basically untouched except for little adjustment, which were done to make the plots more proportionate and useable.

In locating the service plots (area deducted for cost recovery) some issues considered are mentioned below:

- a. The service plots are distributed all over the site so that it could function as an open space if the funds are available from the government for road construction and implemention.
- b. The service plots are located in the prime areas so that it could be auctioned later if the funds are not available from the government. This would generate more income than envisaged, which could be used to finance other infrastructure.
- c. The distribution of service plots all over the site also facilitates to adjust the area within each block during demarcation on site.

Plan 19 shows how the ploting has been done and the location of service plots. Plan 18 shows the nature of land parcels prior to planning and plan 20 is and overlay of Land Readjustment scheme over the cadastral map.

## 2. Physical Infrastructure

## <u>Roads</u>

The road system consists of offsite road improvement along the northern border of the project area by making it wider from 5 to 6m. The arterial road 6 m ROW is basically on expansion of existing trail road running north-south measuring 1560m in length. The major collector road and access roads are of same ROW (4m) with the length totalling 5608 m.

The road network within the project site as illustrated in plan 21 is built up from 4 primary loops designated as major collector road which are collected at three points to the arterial road. The major traffic intersections in most cases are cross roads, which though unsafe from traffic conditions but are unavoidable due to smaller block lengths. These junction if made T would be even more unsafe as the distance between two junctions would not be sufficient. However, in possible cases, these have been made T junction.

## Drainage

The terrain slopes in northern and western direction and hence natural drainage is in the form of runoff onto the gravel road. The project area experiences a problem of runoff from upland in south and hence a proper system have been designed which incorporates the runoff of the southern upland areas as well. The storm water drainage also follows the system of road network as shown in plan 22. The section of the drain is shown in road section (fig. 10).

## Water Supply

Water supply is via gravity mains operated by N.W.C. of 500 mm in the metalled road. No other alternative system has been thought of, due to cost constraints.

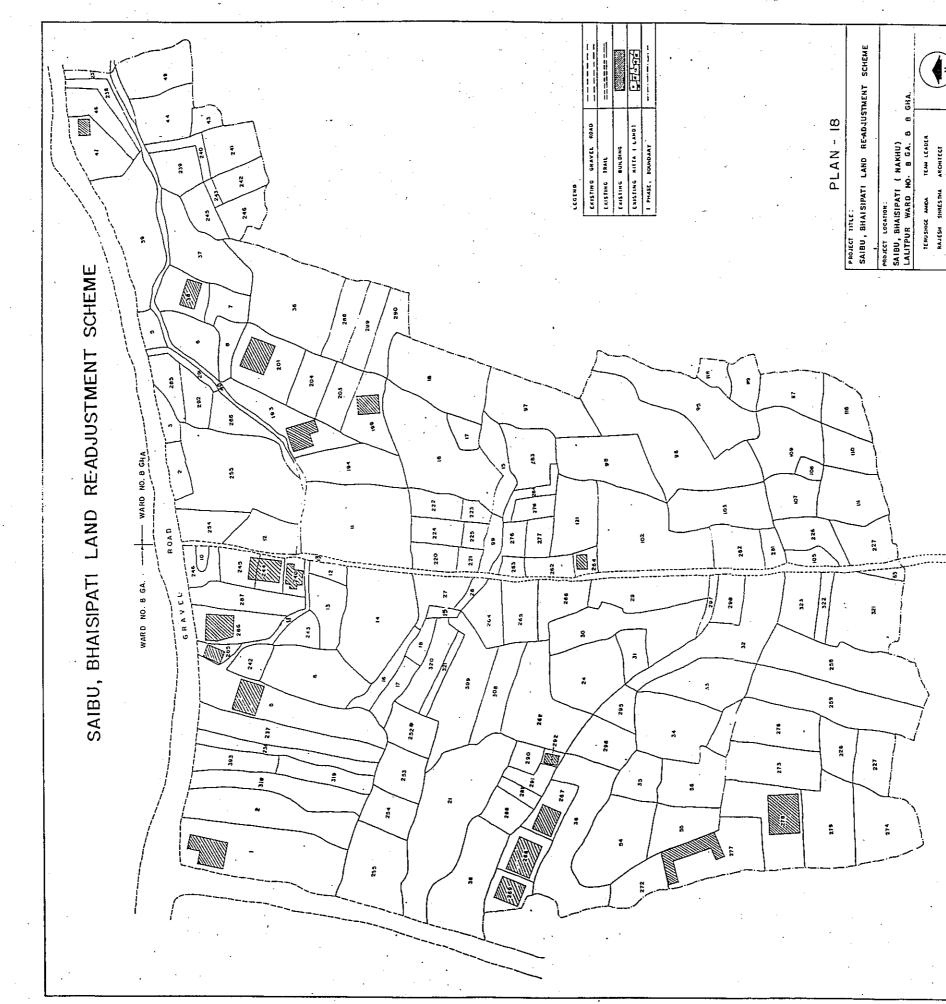
Two alternatives have been worked out for getting water supply mains onto the site. First, getting from the upland area which is slightly impractical and expensive (as the water mains will have to run through the privately owned land outside the project area and to a larger distance) but gives better water pressure. Second, getting from the north-eastern corner of the site which is a low land. Though this is a practical & cost effective approach but gives low water pressure (refer plan 23).

The water mains in the site is of 100 mm diameter running in the arterial road. Distribution system follows the loop system of road network.

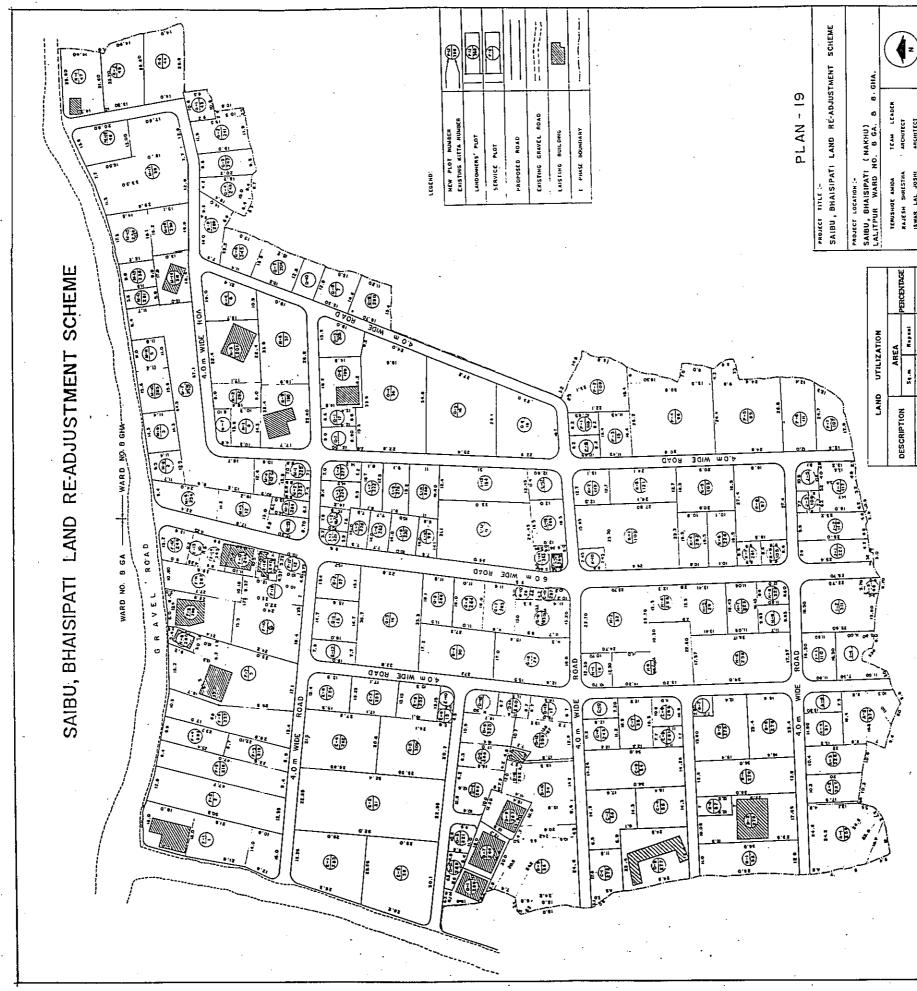
A possibility of installing a ground level storage tank, a pumping station and an overhead storage tank was also thought to have a better supply system but this would not be possible due to cost constraints.

### <u>Electrical</u>

There is an existing 11 KV supply line in the north eastern metal road which has to be extended for the electrical supply in the site. The electrical layout (refer plan 24) follows the road layout pattern and consists of four 150 KVA and one 100 KVA both 11 KV - 0.4 KV step down transformers. In the electrical design the load forcast has been done for the five years and for the total house on the site numbering to 300.



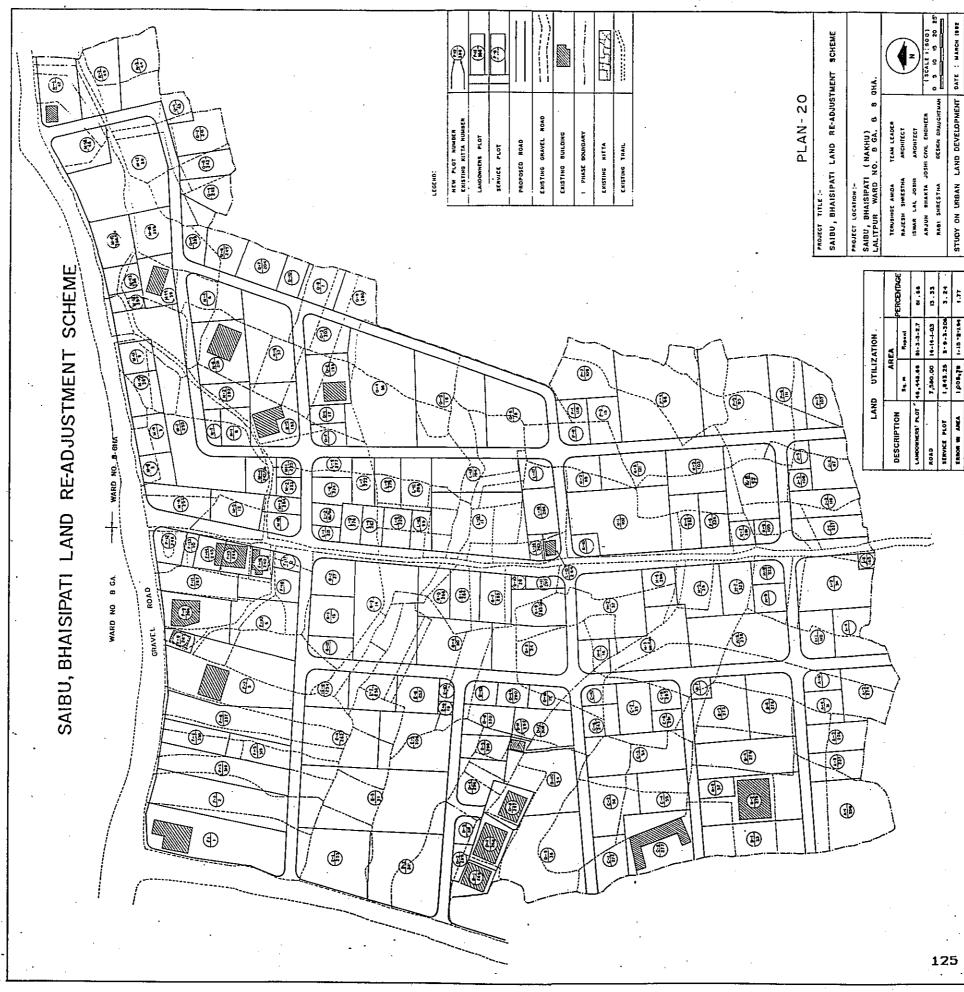
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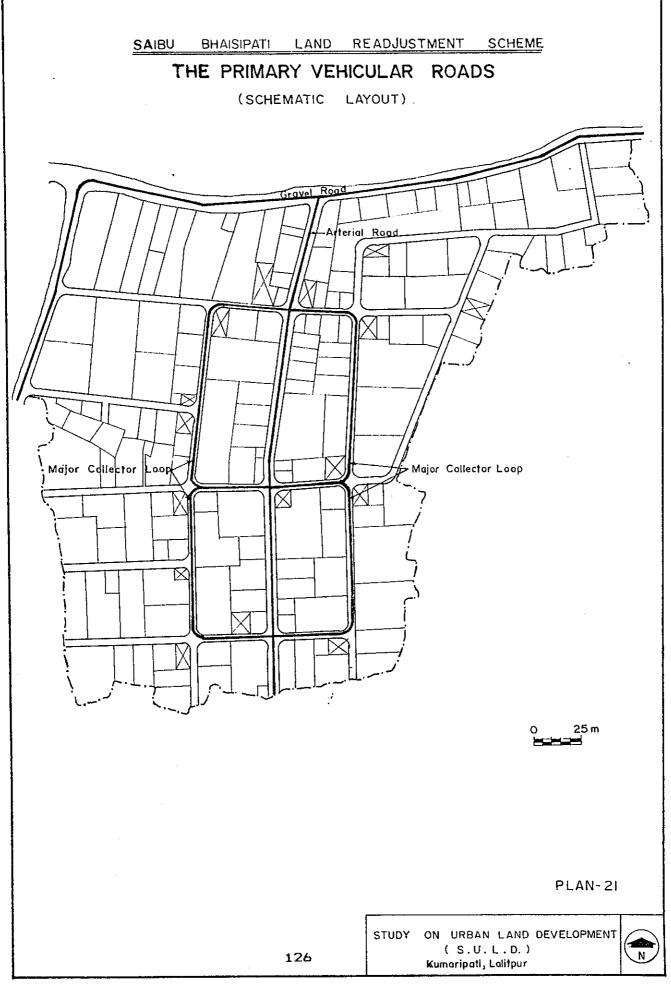
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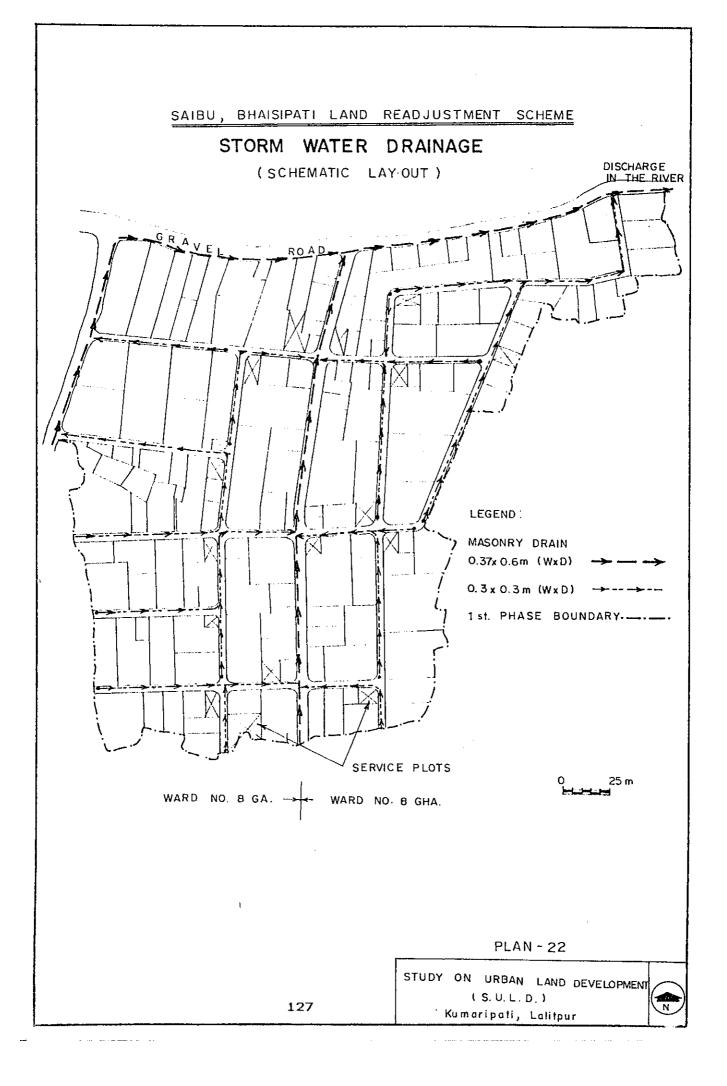


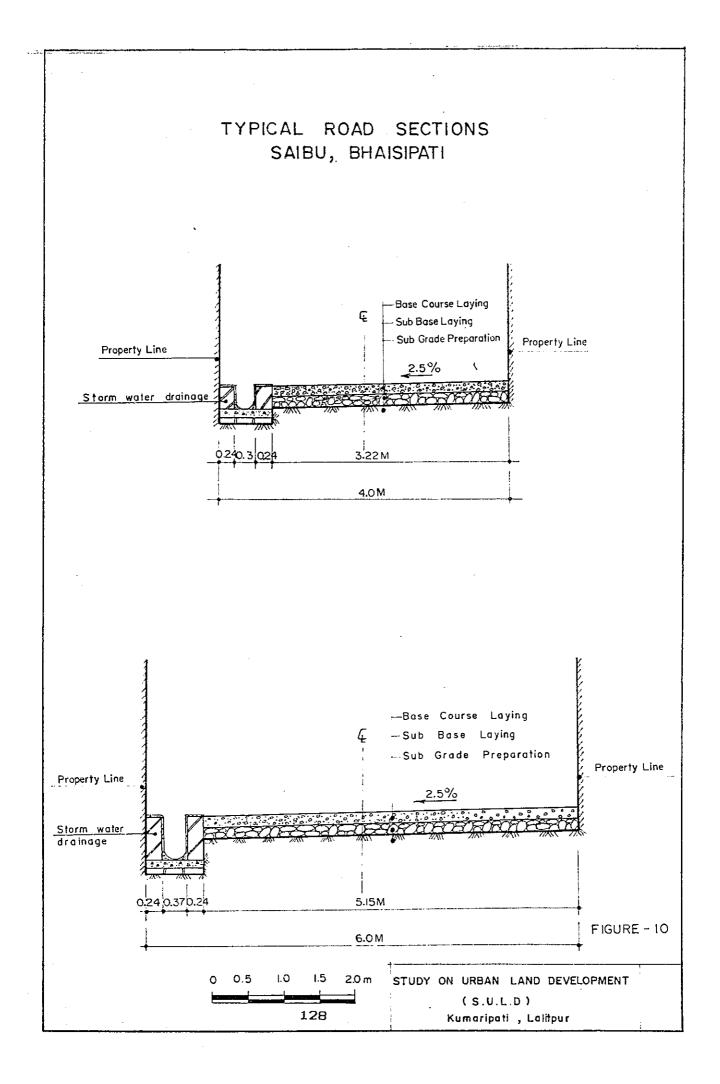
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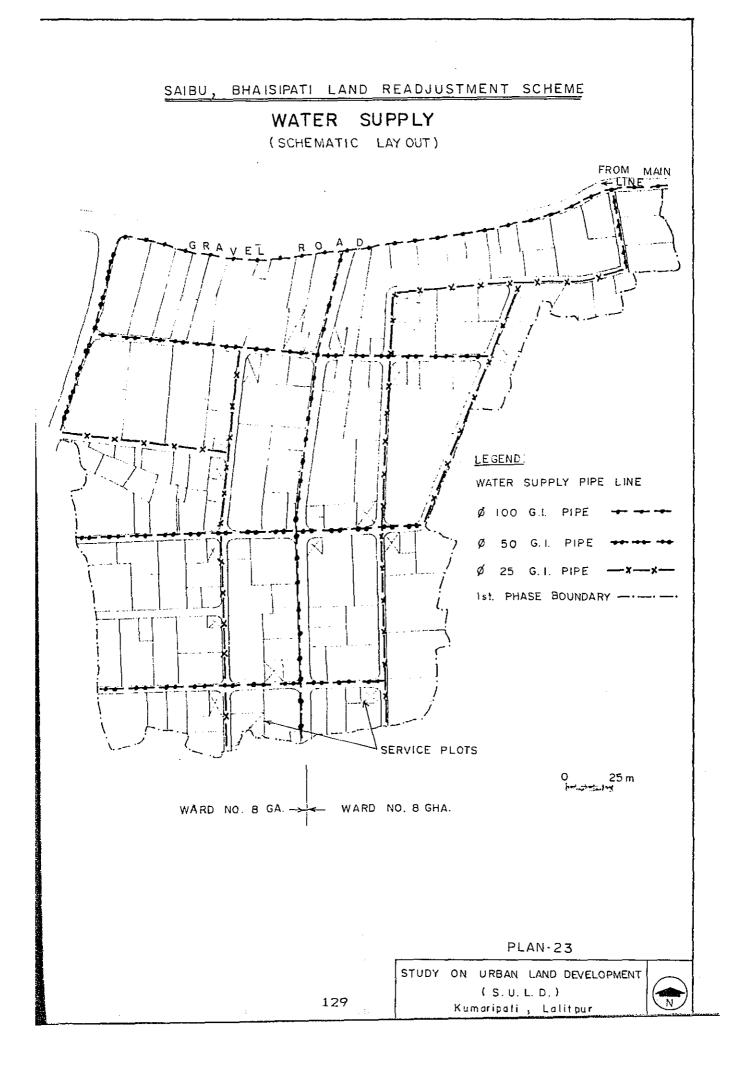
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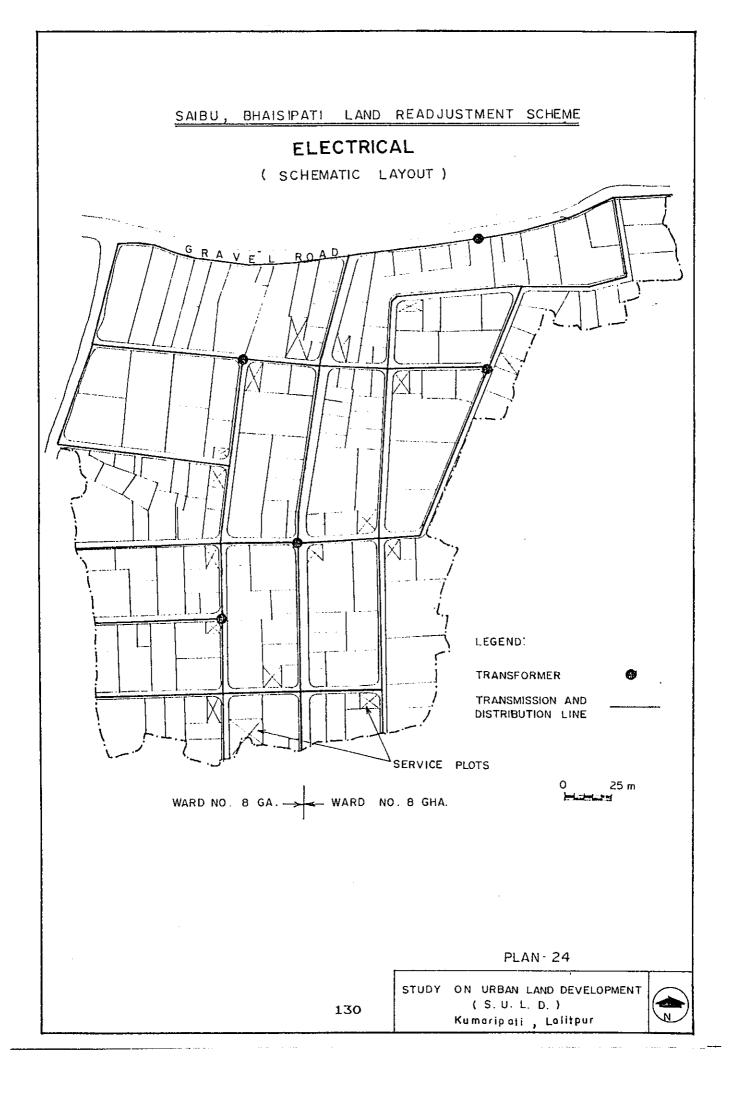
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## 5.4 REDISTRIBUTION CRITERIA

d.

In developing redistribution criteria, following factors were considered.

- The returned plots to be relocated in or around the a. location of existing land parcels.
- The area to be deducted would be minimum thus ь. maximising the area of the returned plot.
- The exiting land parcels are categorized into 4 groups с. according to the existing road condition, mentioned below. Group W Plots with gravel road. a. -Group X ---Plots with private road. ь. Plots with trail road. с. Group Y Group Z -Plots without access.

The area that has to be deducted from individual land parcel would depend upon the nature of facilities to be incorporated within the project area. Since, the project area doesnot have any proper road (refer site analysis), the amount of land that has to be deducted for road itself would be quite high.

Referring to table 9, the area deduction only for road network and to recover the cost of gravelling and implementation ranges from 6.8% to 21.3%, depending upon the existing access condition & proposed road network. Incorporating area deduction for infrastructure development, this would further escalate to reach a figure of 30.5, to which majority of landowners will object as 54.22 % of the total landowners would have to contribute 21.3% only for road, gravelling & implementation (refer table 6 for plot with access road).

Also, the study team suggests to take advantage of H.M.G. policy on 'infrastructure development through cost sharing in community developed areas (refer information collection 4.1. ), due to which the individual contribution for infrastructure development would be nominal amount which can be raised later too. With proper road network incorporation service network, future installation would also not be a problem.

Hence, the study team sticked to the implementation of road network only. Accordingly, the area to be deducted from individual plot are as following.

- Area deduction for road network. а.
- Area deduction to recover the cost of gravelling. ь.

- c. Area deduction to adjust the error in land area.
- d. Area deduction to recover the implementation & management cost.

## 5.4.1 Area Deduction for Road

The area to be deducted for road is variable depending upon the existing access condition and the proposed road width. This area was calculated by multiplying the plot area with the reduction factor ( refer annex 4 for reduction factor calculation).

Area of the plot to be deducted for road
 (a) = Reduction factor x plot area.

The reduction factor calculated for various existing and proposed access condition is tabulated in table 9.

## 5.4.2 Area Deduction for Gravelling

The land to be deducted from the individual's plot to recover the cost of gravel depends upon the proposed road width except for the plots along the existing gravel road. This was calculated by multiplying the plot area with the coefficient of gravelling (refer annex 5 for coefficient of gravelling" calculation).

Area of the plot to be deducted for gravelling (a') = Coefficient of Gravelling x Plot Area.

The coefficient of gravelling for the plots facing 4 m wide road was derived as 0.0319 and for 6m wide road as 0.0356.

Gravelling cost to be shared by the plots along the existing gravel road is only for the one meter strip. This coefficient has been derived as 0.0074.

## 5.4.3 Area Deduction for Implementation

The area deduction to recover the implementation cost (including land survey) was calculated by multiplying the plot area with the co-efficient as calculated below.

Total implementation cost (refer table 13) (c) = 348386.25 NRs.

Estimated land value of the unit area after planning  $(v) = 982.32 \text{ NRs./m}^2$ 

Area required to recover implementation cost,

56,113.14

Area deduction= Plot Area x .00632.

## 5.4.4 Area Deduction to adjust error in land area

As mentioned in 4.2.1, there exists a difference in the land area as calculated from the landownership paper and the cadastral map with the area in cadastral map being less by 1.76%. Although exact area of individual land parcel would be verified before implementation by conducting a resurvey but the difference at this stage has to be adjusted. This has been done by treating it as an error and deducting it from all land parcels in proportion to their area, as illustrated below.

Area	calculated	from	n landownership paper	=56,872.66 m².	
"	11		cadastral map	=55,866.91	
			difference	=1,005.75	

Area of existing land parcels =56,113.14 m<sup>2</sup>. (Excluding trial, Canal & Private road)

1,005.75 Error Adjustment =----= 0.0179 56,113.14

The area to be deducted for each of the above cases from the individual plot (service plot) and the net returning plot are calculated in the "calculation sheet for individual's returning plot" (refer Annex 3). The net returning area of all the plots after the deduction of area the recover the implementation & gravelling cost is given in Annex 6. Similarly, the area of service plots is given in Annex 7. The landuse of the project area before & after planing is shown in table 10.

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2	Private Road	X	0.0256	0.0319	. +	0.0817			x	
3	Tr <u>ai</u> l Road	Y	0.0830	0.0319	+	0.1391	0.1391	0.0356	0.0179 + 0.0063	    0.1989
4	Without Access	2	0.1564	0.0319	0.0179 + 0.0063	0.2125		, , ,	x	, , , , , , , , , , , , , , , , , , ,
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. Table 9. Area Deduction Factors to recover the Project Expenses

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Table 10. Landuse before and after Planning

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### 6. PUBLIC PARTICIPATION

Public participation strated right from the initial stage. Infact, in deciding the project site this was considered as one of the crucial factors.

Initially, the study team motivated the public to participate in the development of the area by requesting the landowners, local leaders, brokers and other individuals to help the study team in identifying other owners. The team also tried to involve the owners by asking their opinion regarding the planning of the area. The landowners were very co-operative and participated actively by identifying other owners. The idea of developing the area in the planned manner was welcomed by the landowners. They even suggested how the area should be developed and what all facilities should be incorporated. Detail of this has already been dealt in chapter 4.

With the completion of data collection & analysis the study team requested the landowners to form a committee. This was done to involve the landowners in all major decisions and allow them to participate in the planning stage as well.

Landowner's participation was very evident at the detail discussion stage. Various conceptual alternatives and redistribution criteria for each were prepared and presented to the landowners committee. The committee was in the favour of the rectangular layout due to difference in land value created by the culdesac layout. Of the two alternatives in rectangular layout, the committee chose alternatives I. This preference to the alternative I was due to the location of arterial road which is basically an expansion of trail road & also it shows the good flow of traffic compare to others.

One member also demanded to retain his present access but convert it into a public access which had been omitted in the conceptual schemes. This forms a direct link from the gravel road to his community. The discussion in redistribution criteria ended with everybody requesting for the minimum amount of land to be deducted. Four sittings had to be done for this discussion with the repeated request and in accordance to the convenience of the members of landowners committee.

The conceptual stage discussion was very delayed due to which time for the subsequent stage discussions were effected. There was very little time for the discussion of the detail plan showing individual plots. Only few attended the meeting called by the team to discuss a detail plan and they were briefed about the criteria in plotting. The detail scheme was unanimously accepted. A copy of the plan was distributed to the members attending the metting and they were requested to show the scheme to other landowners. Also the study team has printed the yearly calender (refer back cover) showing the area before and after planning, a copy of which will be distributed to all the landowners. The study team expects all the landowners to get exposed to the planned scheme of the area through these two media and cooperate in implementing the scheme.

## Formation of landowners Committee

In the process of formation of landowner's committee, the landowners were asked to elect their representatives to form a committee with members comprising 7 in number. The chairperson of the committee was supposed to be elected among the members.

The landowners proposed four members of whom one was a local leader and the remaining three, representative from the bigger group of landowners. The study team didnot get any response from the landowners for the remaining three members even after continuous request. With the time running short and some important decisions to be taken immediately, the study team hence decided to nominate the remaining three members with few criteria as mentioned below.

Should be holding a plot in the project area.

- b. Should be interested in such community work.
- c. Priority to be given to the leaders or representatives from bigger group of landowners or owners with large amount of land holding.

The members comprised of the following persons.

a.	Mr. Dasrath K.C.	-	Elected	Local leader
ь.	Mr. Dharma Bdr. Chhetri		Elected	Representative of bigger group
с.	Mr. Rum Bdr. Pun	<b>-</b> .	Elected	46 54
d.	Mr. Hemanta	-	Elected	11 H
e.	Mr. Ramesh Bdr. Shrestha	-	Nominated individua	interested l
f.	Mr. Krishna Ghimire	-	Nominated	Biglandowner
g.	Mr. Paurash Bajracharya		Nominated	Leader '

The chairperson of the committee was never elected as the all members of the committee never met at one time.



## 7. PROJECT FINANCE

## Project Cost

The project cost is NRs. 6,006,359 for gravelling, physical infrastructure (which include water supply, storm water drainage and electricity) and the implementation ( refer to annex 8 for individual calculation). This is in constant, March 1992 prices. The implementation cost includes the land survey cost and the office running cost of the implementation unit which has been calculated on basis of man months. Summary cost estimates are shown in table 11.

However, as mentioned in chapter 5.4, initially, i.e., stage I only gravelling would be done. Accordingly the project cost for stage I would only be the cost of gravelling and implementation, which would total up to NRs. 1,809,346.

## Financial Cost\_ 'Stage I'

The financial contingencies add Rs. 180,935 to the total cost based on the inflation rate of 15% and the interest during construction add another 223,152 assuming the interest rate of 18.5%. Hence the project total cost in current prices in NRs 2,213,433 (refer table 12). However, financial contingency has been excluded in calculating the area required for service plots in an assumption that inflation on land is much higher than 15%. Hence the total cost with interest add up to NRs 2,032,498.

Refering to revised financial cost 'stage I', table 13, the total cost with interest add up to NRs 1,864,018. This figure has been derived by staging the loan (refer cash flow projections table 14) as & when required. Hence, by staging the loan amount, interest can be reduced by 75%. The calculation of service plot area is based on this figure.

## <u>Cost per Unit Area</u>

The project cost is better visualized by relating it to the size of returned land. As seen from table 13 the total cost with interest is NRs 1,864,018 and the total area of the returned plot is 46,443.6 m<sup>2</sup>. Hence, the project cost per unit area of the returned plots is NRs. 40.14 in current prices excluding financial contengency.

Table 11. Summary Cost Estimate for Project Components

S . No	Project component 	Total cost (3/92 Price)
1	Gravelling	1,492,957.00
2	Water Supply	606,630.00
3	Storm Water Drainage	1,609,008.00
4	Electricity	1,981,375.00
5	Implementation	316,389.00
	Total	6,006,359.00

Table 12. Financial Cost 'Stage I'

S.Mo   Project component	¦ Total cost ¦ Interest ¦ 3/1992 price¦ (18.5%) ¦	¦ including	; Financial ; Financial ;Contengency; cost ; (15%) ;
1 ¦Gravelling 2 ¦Implementation		1	;149,296.00 ;1,826,384.00 31,639.00 ; 387,049.00
Total (NRs.)	1,809,346.09 223,152.00	2,032,498.00	180,935.00 2,213,433.00

.

Table 13. Revised Financial Cost 'Stage I'

S.Mo	Project component	: Total cost : 3/1992 price :				
1	{Gravelling	1,492,957.00	23,016.40	:1,515,973.40	; 18,631.00 ;	1,532,177.00
2	Implementation	316,389.00	31,655.50	348,044.50	25,666.60	376,210.60
	Total (NRs.)	1,809,346.00	54,671.90	1,864,017.90	44,297.60	1,908,387.60

- - 				H	onths			
lten	1 ;	2	3 ;	4 ;	5 (	6	; 7	; 8
-Cash in Loan Sale of Service plot	148500		96889 ; ;		71000		746478.4	1864090
Total Cash In	148500		96889     		71000		746478.4	: 1864070
-Cash But Administration cost Survey cost Gravelling cost Loan Interest Payment	34000	23000	17000 96889		43500	18000	1	35000 746478.40 1117539.38
Total Cash Out	34000	23000	113889	31000	43500	18000	764478.4	1899017.7
- Net Cash Increase	1114500	-23000	-17000	-31000	27500	-18000	-18000	-34927.7
- Total Cash balance	114500	: 91500	74500	43500	71000	53000	35000	72.2

Parametes

Interest - 18.5%

Calculation of Loan interest Payment

Total loan = 148500 + 96889 + 71000 + 746478.4 = 1062867.4

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Interest

a. Interest on loan amount Nrs 148500 for 8 months

= 148500 x .158 x 8/12 = 18315.00

b. Interest on loan amount Nrs 96889 for 6 months

= 96889 x .158 x 6/12 = 8962.23

c. Interest on loan amount Nrs 71000 for 4 months

 $= 71000 \times .185 \times 4/12 = 4378.33$ 

d. Interest on loan amount 746478.4 for 2 months =  $746478.4 \times .105 \times 2/12 = 23016.42$ 

Total interest (a+b+c+d) = 54671.98

Total loan interest = 1117539.38

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## Project Finance Management

The project cost would be recovered through the sale of service plots. However, the sale of service plots would be at the later stage before which a working capital is required. Various alternatives has been thought for arranging the finance required for the implementation.

## Alternative I : Through the loan

- a. Executing the project through the loan for the entire stage I operations at various stages of implementation which would be later repayed through the sale of service plots. With this approach the interest on the loan would be quite high amounting to NRs 54,671.98. Detail cash flow of this approach is given in table 14.
- b. Executing the project through the loan just for the cost of implementation. In this approach, sale of service plot would be done after the road & plot demarcation on the site and before gravelling of roads. The fund recovered from the plot sale is then utilized to repay the loan amount and execute the gravelling. With this approach the interest to be paid on loan is reduced to NRs. 31,655.50. However the project duration could be longer as gravelling is done only after plot sale.

Due to lack of proper institutional setup to provide loan for land development for housing, it may not be possible to get loan. Although, effort will have to be done to get loan from N.H.F.D.C. and Asian Development Bank (which has also started giving loan to the private sector) but alternative have also been worked out incase the loan is not available.

#### <u>Alternative II : Sharing between landowners & H.M.G.</u>

The sharing is in the form of downpayments from landowners for the cost of implementation and H.M.G. executing the gavelling of roads. With this approach the downpayment per unit area of developed plot would amount to NRs 6.87. With H.M.G. financing for gravelling, the service plots could be utilized as open spaces.

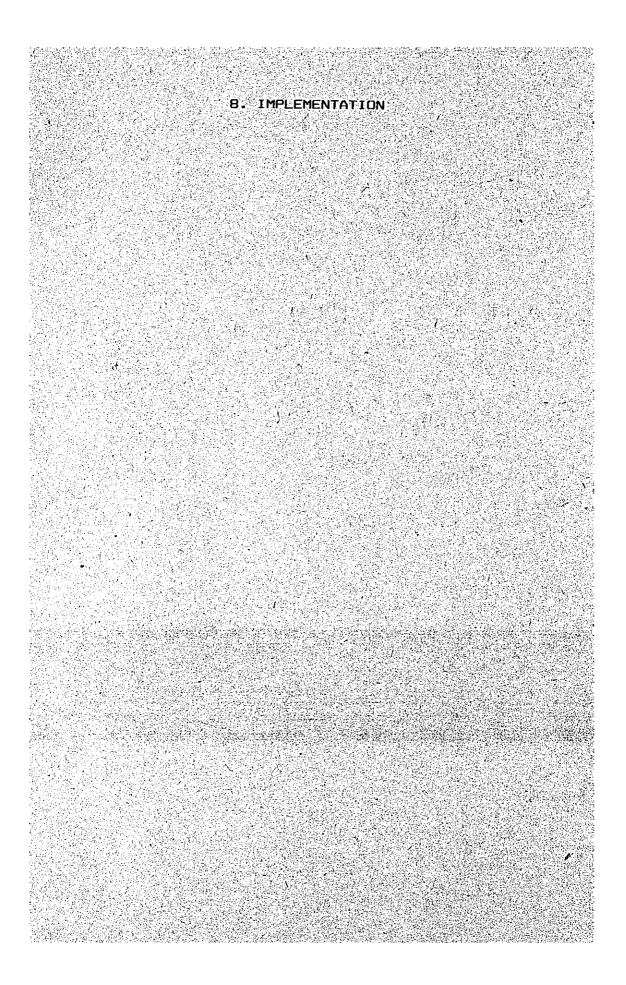
However, in this approach H.M.G. involvement neednot be required at all, since, the finance required for gravelling can be borne after the sale of service plots with the completion of road demarcation as in Alternative Ib.

## Alternative III : Request H.M.G. for Implementation

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This alternative has been thought in an assumption that landowners may not agree for the downpayment. In this H.M.G. finances the cost of implementation and gravelling. The service plots would be hence a public property which would be maintained as an open space.



## 8. IMPLEMENTATION

## <u>Scheduling</u>

The project stage I will be implemented in the period of 8 months. This is in an assumption of getting loan for the entire operations of stage I.

It is expected that the land survey would be completed by the end of second month. The prepared scheme will have to be readjusted in accordance to the land survey due to error prevailing in the land area, which is expected to be completed by the end of third week of the fourth month. Road and plot demarcation has been given a period of two months after which gravelling of road will commence. It is expected that the gravelling would be completed by the end of third week of the eighth month. With the completion of road demarcation, the service plot sell would also begin which is expected to be completed by the first week of eight month. The entire process has been presented in the bar form in table 15.

## Project Implementation Unit.

The project implementation unit has been proposed for the timely implementation of the project under the direction of landowners committee. The responsibilities of the unit would be as followings.

- Manage the finance required to execute the project.
- Organise tenders and select contractors.
- Supervise contracts and release payments.
- Readjust the prepared scheme in accordance to the new survey map.
- Sell service plots and collect payments.

It is recommended that the Unit be staffed by the following personnels for the following manmonths.

Personnels	Nos	Manmonths					
Project Manager		8.0					
Plannes	2	2.0(each)					
Accountant	1	8.0					
Office Assistant	1	8.0					
Overseer	1	4.5					
Draft person	1	2.0					
Peon	1	8.0					

The project manager would also be project engineer having adequate experience and qualification in technical fields of planning and engineering.

The cost of recruiting these personnels are calculated in annex 8. The detail of the staff distribution with time is shown in the bar form in table 16.

## <u>Co-ordination</u>

The project implementation unit will co-ordinate with the landowner's committee for any major decision including alloting contract etc. The implementation unit will also have to co-ordinate with H.M.G and it's line agencies for the necessary help in implementing the project.

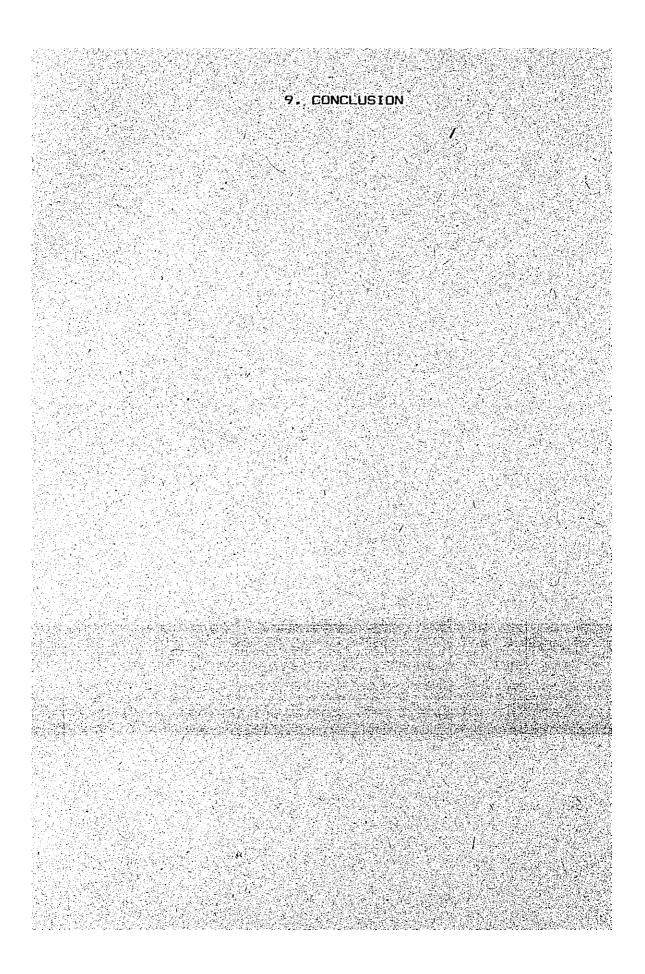
## Table 15. Implementation Work Schedule

S.No	Project work										Tin	e (	Non	h	;)								
	• •	1 1 1	1	1	2	1	3	4	!	5		6		7	8	1	9	;	10	;	11	! 1	12
1	Office Setup	   ##		!		;			:	 				1		:		1		1		1	
2	Tender call for Survey	1 1 1	;;	1		i   			1		     	1		1	   	1		1 1 1 1		6 1 1			
. 3	Land Survey		11	-i  ‡₽: -i	1111			) 1 5 6			L 1 1	1		:		1 1 1		1 1 1		1 1 1			
- 4	: Preparation of Readjustment Ischeme as per Survey	1 7 1 1 1 1		4 1 1 1 1 1		i    ##: 	::::	     		,	1 1 1 1 1 1					1 1 1 1 1						1	
5	Road & Plot demarcation	7 6 1 1				:		; ; ;	; ;;	11111	 	i	t 1 1 1		)       	+     				1 1 1		1 1	
6	: Tender call for gravelling	i 		i   		i   		i 1 1 1	i 1	i	i [ <b>111</b> 	l	1 1 1		5 9 9			4		1		1	
7	Gravelling	к 		1   		1 1 1		; ; ; ;	1		1 1 1	11	, \$\$\$\$ !	\$1	, 	1				1		1	
8	Service, plot sale	1 1 1				1 1 1		L 1 L 1	1		ι • ι	11	\$\$\$\$ !	11	, ; ‡ ;							-	
		1 1 1 1		1 1 1		;		   1	1 1 1		ι • •		• • •		6 2 1 5	1		:				1	

## Table 16. Implementation Unit 'Staff Distribution with Time'

No		1	-					Time	· (	in a	1 <b>0</b> 1	nths)						
	¦ Nature of Staff	; ND , ,				2	! !	3			; ;	; 5	;	6	;	7	;	8
1	¦Planner	 ! !	2	   		   1	:\$\$	1111	11	111	11		;		:		   1	
2	i Engineer		1		Ħ	<b>] ] ] ]</b>	:	1111	1 11 1	111	•••	, 	; ;;;;	1111	1 	111	; ;	###
3	i Accountant		1	   1 1 1   	111	<b>1 1 1 1</b> 	i \$ \$ ;	1111	1 11	111		,                   	ii III	****	11	***	; ;;	1111
4	; ¦Office Assisstant	4 1 4	1	;   \$ \$ \$ } 	111	; []]]] ,	i 11 1		;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	***	II I	, 1 <b>1 1 1 1</b> 1 1	, 111	;;;;	   <b>                                  </b>	***	11	1111
5	lÖverseer		1	1 1 1	1	1 ) 	1	1	1	1	11	1 		1111	:##	111	#	****
6	Draft person	4 5 4 7	ł	1 2 - 1	1	     	1 1 1	1111	; ;;;	111	1	ւ 4 1	1				1 1 1	
	i 1 1	1 1 1		 1 	1	 			1		:	L 1 6	ł		1		1	

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## 9. CONCLUSION

Land Readjustment seems to be a quite feasible technique to develop land for residential purpose especially in the country like Nepal where owner's attachment to land in more of a sentimental value and majority of people rely on land for their livelihood. It even seems to be indispensable for the fast growing urban areas of Kathmandu where planning is actually impossible without a planning technique which can also be applied in partially developed areas, i.e., which incorporates the existing scattered builtup areas.

Land Readjustment could be a positive land management technique in Kathmandu where public have become aware of planning needs and majority of the landowner's are willing to contribute part of their land to develop the area. SULD team's experience show that this concept would be more successful in fast growing areas and in areas where land purchase has been done by the public who are in real need for housing. In general, owners are willing to contribute land or money or both to recover the cost of road and infrastructure network. However, they donot seem to be interested to contribute for the open spaces and other community facilities.

Although, landowners show positive response for the planning of their area but very few are willing to co-operate throughout the project span by participating in the discussion and attending the meetings called by implementing agency. It has also been observed that the owner's interest have declined with time partly because they tend to lose hope with few owners becoming unco-operative and mainly because of the rumours spread by the local brokers by relating it to the land acquisition process prior to the planning. Time also seems to be the most crucial factor otherwise, as the owners cannot afford to lose too much time since majority of the landowners in fast growing areas are in immediate need for housing. Hence, the success of L/R Concept is solely dependent on the efficiency of the implementing agency.

Financially, it is the most viable alternative in the country like Nepal where the government donot have sufficient capital to invest for land development. The various stages of development in Land Readjustment project can be staggered and phased without any financial burden to the implementing agency and hence the entire operation can be conducted through the nominal amount of working capital (just the office running and survey cost). Hence, the government should encourage the landowners for adopting this planning concept by giving some sort of incentive until the public awareness is created of the positive outcome of L/R Concept as it's beneficial to the government as well, since government do not have to devote much time and cope with the financial burden for land development. The landowners should also realize the positive outcome and take benefit of the government incentive as well as the increased market value through the conversion of raw land into the planned plot.

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#### ANNEX

Annex 1 : Site Information Collection form

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- Annex 2 : Landowners Opinion Survey Form
- Annex 3 : Calculation Sheet for Individual's Returning Plots
- Annex 4 : Calculation of 'Returning Factor'
- Annex 5 : Calculation of Coefficient of Gravelling
- Annex 6 : Individual Plot Area Before & After Planning
- Annex 7 : Area of Service Plots
- Annex 8 : Cost Estimates for Various Project Components
- Annex 9 : Notice to the Landowners Published in " The Gorkhapatara"

# Annex 1. Site Information Collection Form

		Space	for	site	location
1.	Site location	:			
2.	Site area (Ropani)	:			
з.	Size of majority of land parcels	:			
4.	No. of landowners	:			
5.	Conditions & location of existing infrastructure	:			
	a) Road b) Watersupply c) Drainage, sewerage d) Electricity e) Telephone	:			
6.	Existing landuse	:			
7.	Soil condition	:			
8.	Any form of land development program undertaken by HMG or any private developers				
9.	Land value	:			
10.	Conformity to land use of the valley	:			
11.	Opinions of landowners about the Land Readjustment scheme	:			
12.	Date of available cadastral ma	ap:			
13. 14.	Development potential Other special features	:			•

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#### Annex 2. Landowners Opinion Survey Form

Date:

- 1. Name:
- 2. Address:
- 3. Telephone Number:
- 4. Occupation:
- 5. Plot No. (Kitta no):
- 6. Location of Plot:
- Should any area be planned prior to opening up for the settlement ? why ?
- 2. What is your opinion regarding the land development activities conducted by the government and the private developer ?
- 3. How do you react to the idea of planning in the area where your land is located? What would be the ideal technique for developing the area?
- 4. What is the total area of your plot? Do you have a tenant?
- 5. What do you plan to do on the plot? Would you be constructing a house or running a factory of keep on farming or sell it?
- 6. How do you plan to manage the waterline, electrical connection, sewerline and the access road as nothing is available along the road adjacent to the site?
- 7. If you are planning to construct a house, when will you be starting and completing it? Why?
- 8. What would you be doing after completing the construction? Would you be living in it or rent it or do you plan to sell it?
- 9. What do you think of the land development technique we are planning to adopt in your area? Does it need any improvement?

- 10. In what time frame do you expect the plan to be implemented?
- 11. What all facilities would you prefer to have in your area after planning?

road	watersupply		sewerline
electricity	telephone		park
shopping_area	public space etc.)	(commun:	ity hall

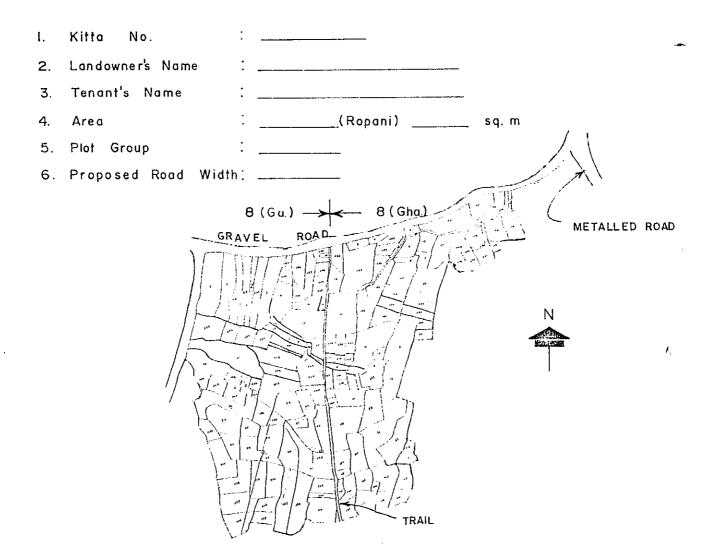
- 12. What is the nature (metalled or gravelled) and the width of the road would you be preferring ?
- 13. Would you be willing to contribute for the project expenses? If yes, what would be the nature of your contribution (land or money or both) and how much would you be contributing?
- 14. Would you be able to attend a meeting called by the office ? If no, why ?
- 15. Are you interested to be a member of the landowners committee? If no, why ?

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ANNEX-3 CALCULATION SHEET FOR INDIVIDUAL'S RETURNING PLOTS Nakhu, Bhaisipati



7. Land to be deducted

S. No.	ltems	Percentage for deduction	Area as per Percentage
١.	Road		
2.	Service plot		
З.	Error Adjustment		*
8. Net	Returning Area:	(Ropani)	sq.m
9. New	Plot size :		
IO. New	Plot No :		

Annex 4. Calculation of " REDUCTION FACTOR"

	The large states	
1.	Total area of plots without Access (Group Z)	:31,094.61m <sup>2</sup>
2.	Total area of plots with private road (Group X)	:1,610.50m <sup>2</sup>
3.	Total area of plots with existing canal and proposed 4m road (Group Y)	: 3,141.48m <sup>°°</sup> .
4.	Total area of plots with existing trail road and proposed 6m road (Group Y)	: 8,925.39m <sup>2</sup> .
5.	Total area of plots with gravel road (Group W)	:11,341.16m <sup>°</sup> .
Area	of existing trail road	
in p	roposed 6m road	: 318.12m <sup>2</sup> .
Area	of existing canal in proposed 4m road	: 230.64m <sup>≃</sup> .
Area	of existing private road	: 210.75m <sup>2</sup> .
a.	For plots along proposed 4m road	
	Total length of 4m road: 1,40Total area of 4m road: 5,60	
	Road area shared by the plots without a	CCESS
	Total plot area without access	
	Total plot area in 4 meter road	area of 4m road
	31094.61 =× 5608 = 4864.58 m <sup>∞</sup> . 35846.59	
	Road area shared by the plots with priv	ate road
	Total area with private road	rea of 4 m road
	Total plot area in 4 m road	
	1610.5 =x 560B = 251.95 m <sup>2</sup> .	
	35846.59	

Road area shared by the plots with canal

Total plot area with canal = ----- x Total area of 4 m road Total plot area in 4 m road

3141.48=----- x 5608 = 491.47 m<sup>2</sup>. 35846.59

i. Reduction factor for plot without access

```
Road area shared by plots without access
=------Plot area
```

 $\begin{array}{r} 4,864.58\\ =-----= 0.1564\\ 31,094.61 \end{array}$ 

ii. Reduction factor for plot with private road

Area of road-existing area of private road

Plot area

 $251.95-210.75 = ---- = 0.0256 \\ 1,610.50$ 

iii. Reduction factor for plot with trail road

Area of proposed road-existing area of trail road =-----Plot area

491.47-230.64 =----- = 0.0830 3,141.48

1,54

b. For plots along proposed 6m road

Total length of 6m road: 260m.Total area of 6m road:  $260 \times 6$  :  $1560m^2$ .

i. Reduction factor for plots with trail road,

Area of proposed road-area of trail road =-----Plot area

 $\begin{array}{rcl} 1,560-318.12\\ =&----&=&0.1391\\ 8,925.39\end{array}$ 

ii. Reduction factor for plots along gravel road,

#### Annex 5. Calculation of "COEFFICIENT OF GRAVELLING"

Estimated land value of unit area after planning (NRs/m<sup>2</sup>) = 982.32Cost of Gavelling of units area (NRs) = 200.00Road Area of 4m wide road =  $5,608 \text{ m}^2$ . Road Area of 6m wide road =  $1,560 \text{ m}^2$ .

#### For 4m wide Road

Total cost of gravelling (F		= 5,608 × 200 = 1,121,600
Area required to recover th	ne cost	1,121,600 = 982.32
		= 1,141.79 m <sup>2</sup> .
Coefficient of Gravelling		1,141.79 == 0.0319 35,846.59

,

#### For 6m wide Road (proposed)

Total cost of gravelling (NRs)	= 1,560 × 200 = 312,000
Area required to recover the cost	312,000 = 982.32
	= 317.62 m <sup>2</sup> .
Coefficient of Gravelling	317.62 = = 0.0356 8,925.39

## For 6m wide road (existing)

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Area of extended part Total cost of gravelling(NRs.)	= $412 \text{ m}^{2}$ . = $412 \times 200$ = $82,400$
Area required to recover the cost	82,400 = 982.32
	= 83.88m <sup>2</sup>

	83.88
Coefficient of Gravelling	==0.0074
	11341.16

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#### Annex 6. Individual Plot Area befor and after Planning

S.No¦	KITTA No.	AREA BEFORE F	LANNING	¦680	¦ PR. ¦ROAD ¦WIDTH	t TOT	AL LAND T	0 BE	DEDUI	CTED	NET RE   AFTER				: {NEW -{Plot	i Renari
;		in ropani	1	ł	{ (雨)	;	  in sq.m	: ; i	n ro	panı	; ;in 5q.0	;	in	ropani	¦ No ¦	-
		1 (10 ; 2 ;0	843.03	: W												
		1   5   1  0					: 45.90									
	5/GA (	1  15   2  0					¦ 68.04									
	6/GA ;	1 ; 2 ; 1 ;(					123.37									-
	10/GA	0 1 2 1 0 10					; 12.55									
	12/6A	0 1 2 1 1 10					14.24									
	13/GA 5						37.61									
	14/6A						200.90									
	15/GA 2	0;1;0;(				121.25				0 (3.39						
	15/6A (	0 ; 5 ; 1 ;(				21.25				0 11.85						
	17/GA	0 1 5 1 1 (				21.25				0 (1.85) 2 17 65						
		0   3   1  0   2   8   1  0				131.25				2  3.05 5 5 5						
	21/6A						1 86.94									
		0 1 1 2 , 2 , 9 ,9				19.89	126.75									
		0 1 4 1 0 10								0 (3.18) 5 21 M						
						(19.87	1 50.62			2 11.45 0 (3.80						
	30/GA						125.06									
		016113					42.25									
		1 + 5 + 2 + 6					142.37									
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							; 111.54 ; 138.58									
		0 9 1 0 1														
	3576A 3576A						: 50.84									
	38/GA						; 218.01 ; 52.38									
	5070A 5476A						138.58									
	55/6A						1 70.98									
							89.57									
		013121				21.25				2 ;3.90						
						19.89				0 13.98						
		018131				:21.25				3 1.75						
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		0 9 0					60.84									
		0 8 1					\$ 55.77									
		1:3:2:					42.12									
							170.59									
		1 9 1														

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S.No	KITTA No.	AREA BEFORE PLANNING	: : PR. :GRD:ROAD :UP :WIDTH	tot 1		TO BE DEDUCTED		TURNING AREA Planning	¦  new -¦plot	l ¦renari 'l
		in ropani in sq.m	(m) 		¦ ¦in sq.m	¦ in ropani	in sq.m	¦ ¦ in ropani	l No	
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		0 7 3 0 246.55				0 1 2 0.70		0 6 0 3.30		
49	265/GA	0 8 0 3 260.46				; 0 ; 1 ;2 ;2.05 ;		0 1 6 1 2 10.95		
50 ;	265/GA	0 0 0 1 0 12 1 258.48	Y   6	19.89	51.41	; 0 ; 1 ;2 ;1.85 ;	207.07	0 6 2 0.15	¦6-5	1
		0   8   0  0   254.50		21.25	; 54.08	0   1  2  3.20	200.42	0 6 1 1 10.80	(D-8	ł
52 (	268/GA	0 1 8 1 0 10 1 254.50	Z   4	21.25	; 54.08	0   1  2  3.20	200.42	0 6 7 1 10.80	10-7	1
		0 6 0 0 10 190,88	12: 4	21.25	: 40.56	; 0 ; 1 ;1 ;0.40 ;	150.32	0 1 4 1 2 13.60	;D-1	1
		0 1 8 1 0 10 1 254.50		21.25	; 54.08	1 0 1 1 12 13.20 1	200.42	0 6 1 1 0.80	1-3	1
		1 1 0 1 0 10 1 509.00		21.25	; 108.16	0   3  1  2.40	400.84	0 12 2 1.60	¦B-5	1
		: 0 :15 : 2 :0 : 493.10		21.25	104.78	0   3  1  0.70	388.32	0 112 1 0 3.30	(A-5	1
		0 (15   2 (0 ; 493.10				0   3  1  0.70		0 12 0 3.30		
	277/GA					1 0   4  1 10.00		0 115 1 3 10.00		
	278/GA					0   4  1  3.40		1 0 2 0.60		
		1 1 2 2 2 0 588.53				: 0 : 3 :3 :2.90 :		0 14 2 1.10		
		0 2 1 0 71.58				0 0 0 2.45		0 2 0 1.55		
		0 (12 ) 0 (0 ) 381.75				; 0 ; 0 ;3 ;1.04 ;		0 11 0 2.96		
	20776A					1 0 ; 0 ;2 ;2.86 ;		0 9 1 1 1.14		•
	208/6A			21.25		0   1  1 (0.40		0 1 4 1 2 13.60		
		0 2 2 2 2 2 83.50				0   0  2  0.92		(0;2;0;1.08		
	290/GA 291/GA					0 0 3 11.60				
	292/6A					0   0  2  3.48     0   0  1  0.25				
						{ 0 { 1 { 0 { 0.15 } }		1 0 1 0 1 3 13.75 1 0 1 3 1 2 13.85		
		0 1 9 1 1 0 1 294.27				0 1 3 3.45		0 7 1 0.55		
		0 2 2 0 79.53				; 0 ; 0 ;1 ;3.95 ;		0 2 0 0 0.05		
		0 6 2 10 2 10 1 205.78				0 1 1 1 0.68		0;5;0;3.32		
		0 (12 ; 0 ;0 ; 381.75				0 2 2 0.80		0 1 9 1 1 13.20		
		{ I ; 5 ; 1 ;0 ; 676.02				0 1 4 12 10.25 1		1 1 0 2 3.75		
	311/GA					0 1 3 13 12.05		0 15 2 1.95		
	318/GA					; 0 ; 1 ;0 ;0.30 ;		0 13 3 3.70		
	319/GA					: 0 : 1 :2 :3.20 :				
		0 8 0 0 254.50	•	•	•	0 1 2 3.20		0 6 7 1 0.80	• · ·	
		0   3   2  0   111.34				10 0 2 3.90		0 2 3 0.10		
		0 4 0 0 127.25				0 0 3 0.70		0 ; 3 ; 0 ;3.30		
		0 8 0 0 254.50				0   1  2  1.46		0 6 1 2.54		
		0 1 7 1 0 10 1 222.69				0 0 1 3.60		0 6 2 0.40		
		0   4   1  0   135.20				0 0 1 1 10.60		0 1 3 1 3 3.40		
		0 ; 5 ; 2 ;0 ; 174.98				0 ; 0 ;1 ;2.00 ;		0 ; 5 ; 0 ;2.00		
85 ;	Sz GHA	0   4   1  0   135.20	EW 1 6	6.79	; 9.18	0   0  1  0.60	126.02	0   3   3  3.40	¦H-11	1
		0 10 2 0 334.03	; Y ; 4	13.91	45.46	0   1  1  3.40	287.57	0   9   0  0.60	;N-4	F I
		0 ; 7 ; 1 ;0 ; 230.64				; 0 ; 1 ;2 ;0.65 ;		0 1 5 1 2 13.35		
		0 ; 5 ; 1 ;0 ; 167.01				{ 0 ; 0 ;2 ;3.70 ;		0   4   2  0.30		
		1  14   3  0   978.23				0 1 6 10 11.85 1		1   0   2  2.15		
		0 8 3 0 278.35				{ 0 ; 1 ;2 ;3.84 ;		0 ; 7 ; 0 ;0.16		
		0 7 2 0 238.59				1 0 1 1 12 11.50 1		0 1 5 1 3 12.50		
		1 115 2 0 1002.09				0 6 2 3.10		1 8 3 0.90		
		0 3 1 1 0 1 103.39				0 0 2 3.05		0   2   2  0.95		
		1   4   1  0   644.20				0   4  1  0.85		0 15 3 3.15		
95	36/GHA	2 1 3 0 1073.67	[ Z ] 4	21.25	228.15	0 7 0 2.75	845.52 ;	1 10 2 1.25	10-4	!

159

	KITTA : No. :	AREA DEFORE PI	ANNING	¦GRO ¦UP		( TOT.	AL LAND TI	0 BE	DEDUC	TED		AFTER	PL	RNING AREA ANNING		-{PLOT	
	1 1 1	in ropani	in sq.m		( @ ) 	: {in %		¦ ¦i	n rop	ani	¦ ¦in	sq.a		in ropani		¦ No ¦	
; 96 ;	37/GHA ;	1 ; 3 ; 2 ;0	620.34	¦ Y	; 4	13.91	86.29	:0;	2 ;2	3.40	;	534.05	; 1	l ; 0 ; 3	;0.60	{N-6	1
-		0   8   1  0					36.51							) { 7 } 0			
		1  13   2  0					63.72							11   1			
		0   3   1  0					8.45							)   2   3			
		0 12 2 0					32.49										
		0   8   1  0					17.82							)   7   2			
	47/6HA :						24.84										
· ·	49/GHA :						32.49										
	95/GHA ; 96/6HA ;						190.97							1:6:0			
	97/GHA :						246.75							l {12 { 2 0 {15 } 3			
	90/GHA (						140.27							0   13   3			
	99/GHA						25.31							0 : 3 : 0			
		1  14   1  0					191.41							1 8 0			
		0  13   3  0					[ 92.95							0 10 3			
		0   3   1  0					20.56							0   2   2			
112	107/GBA	0 10 0 0	318,12	¦Ζ	; 4	21.25	67.60	; 0 ;	2 ;0	2.00	:	250.52	<b>;</b> (	0   7   3	12.00	¦P-7	1
¦113	108/6HA	0 ; 2 ; 2 ;0	; 79.53	; 2	4	21.25	16.90	; 0 ;	0 ;2	0.50	!	62.63	; (	0   1   3	3,50	¦J-3	1
;114 ;	109/GHA	0  15   3  0	501.04	; 1	: 4	21.25	106.47	; 0 ;	3 [1	1.55	1 i	394.57	; (	0  12   1	2.45	¦P-2	1
		0 1 7 1 3 10		; 1		21.25				2.34				0 : 6 : 0			
		0   12   2   0				21.25								0   9   3			
		0;9;2;0				21.25				0.30				0   7   1			
						21.25								0   8   1			
		0   3   2  0				21.25								0 1 2 1 3			
		0   6   2  0   0  12   1  0				21.25	43.94							0   5   0 0   7   2			
							64.16							0 12 1			
		0   14   2   0					44.16							0 112 1 1			
		0 10 3 0					72.67							0   8   1			
		1:0:0:0					108.16							0 12 2			
		0:8:0:0					54.08							0 1 6 1 1			
127	204/GHA	0 1 8 1 0 10	254.50	: 2	: 4	21.25	54.08	; 0 ;	1 [2	2 13.20	:	200.42	1 (	0   6   1	0.80	10-7	:
128	220/GHA	0 1 5 1 2 10				19.89	34.80	; 0 ;	1 :(	0 (1.50	ł	140.17	11	0   4   1	2.50	¦L-8	ł
		0;2;0;0					12.65							0   1   2			
		0 1 5 1 2 10					37.18							0   4   1			
		0 1 2 1 2 10					15.90							0   1   3			
		0   5   2  0   0   5   2  0					37.18										
		0   2   2  0   0   7   3  0					16.90							0   1   3			
		0 7 3 0   0 8 0 0					49.04							0   6   0 0   6   1			
		, 0, 0, 0, 0, 0 ; 0; 4; 0;0				4.79	; 50.62 9.64			2 11.40				0   6   1 0   3   2			
		0181010					20.79							0   7   1			
		0 0 0 1 3 10					22.74							0   8   0			
		0 6 0 0 0				8.17				1 3.84				0 1 5 1 2			
		0 : 6 : 0 :0					15.59							0   5   2			
		0 1 6 1 0 12		¦Χ			15.92							0 ; 5 ; 2			
		0 0 1 8 1 0 10			; 6	6.79	[ 17.28	: 0	0 🗄	2 :0.70	1	237.22	1	0   7   1	3.30	(H-6	1
		2 2 3 3 3					; 75.06							2 : 0 : 1			
144	262/GHA	; 0;4;1;0	)   135.20	ĮΥ	<u>;</u> Р	19.89	26.89	; O :	10 H	3 1.52	:	108.31	1	0   3   1	2.48	¦L-6	1

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S.No¦		AREA	8E	FORE	: PL	ANN.	ING		GR	0;7	PR. Idad IIDT	ł		TAL	LAND 1	0	88	DEI	DUCT	ED	¦ ;	NET RE After						¦ ¦new ¦plot	REMAR
	No.	in	ro	pani	ì	  in	59.		ł	1	(四)	L L		¦ ¦i	.n sq <b>.n</b>	1 1 1	i	n	ropa	Ani	¦ ¦in	5q.@	:	in	ra	ipani		l No	-
145	263/GHA	0;	2	: 0	;0	:	63.	.62	 ;		6	1;	9.89	:	12.65	;	0 ;	0	1	(2.36	1	50.97	ł	0 :	1	; 2	1.64	¦L-14	:
146 ;	264/GHA;	0 ;	2	11	10	1	71.	58	: Y	۲.	6	11	9.89	1	14.24	ł	0 ¦	0	11	;3.16	:	57.34	10	0 (	1	; 3	0.84	¦L-15	4 1
147 ;	276/GHA	0 1	4	; 0	<u>{</u> 0	1	127.	.25	¦ Y	1	6	11	9.89	ł	25.31	ł	0	0	;3	10.73	1	101.94	1	0 ;	3	¦ 0	;3.27	¦L-5	1
148	277/GHA	0;	4	; 0	;0	:	127.	25	; 2	;	4	;2	1.25	ł	27.04	ł	0	0	¦3	1.60	:	100.21	10	0 ;	3	: 0	;2.40	¦L-4	ł
149	278/GHA	0 1	6	; 2	10	:	205.	.78	; 7	1	4	;2	1.25	÷	43.94	ł	0	1	;1	12.10	ł	162.84	11	0 ;	5	¦ 0	(1.90	¦L-9	1
150 ;	201/6HA	0 :	3	; 0	10	1	95.	44	¦ Y		6	<b>¦</b> 1	9.89	ł	18.98	1	0	0	;2	1.55	!	76.46	14	0 ¦	2	11	(2.45	¦K−7	ł
151 ;	282/GHA	0;	8	1	;0	1	262.	45	11	' ¦	6	1	9.87	ł	52.20	1	0	1	12	;2.25	:	210.25	Ľ	0	6	; 2	¦1.75	X-4	1
152 ;	2837GHA	6;	10	; 2	;0	:	334.	.03	; 7		4	;2	1.25	ł	70.98	ł	0	2	¦0	;3.70	:	263.05	1	0 ;	8	¦ 1	0.30	6-9	1
153 ;	284/GHA	0	3	1	(0	ł	103.	. 39	17	1	4	12	1.25	ł	21.97	ł	0.	; 0	;2	¦3.05	ł	81.42	1	0 ¦	2	; 2	:0.95	¦H-3	1
154	285/GHA	01	6	; 0	;0	!	190.	.87	÷¥	F I	6	ł	6.79	ł	12.96	ł	0	Ú	11	(2.52	1 1	177.91	:	0 (	5	2	1.48	¦N-10	1
155 ;	286/GHA	: 0 :	7	¦ 1	10	ł	230.	.64	13	[ ]	4	¦1	3.91	1	32.08	i i	Q	¦ 1	;0	10.00	!	198.56							
156	280/GHA	01	8	; 0	¦3	1	260.	46	11	:	4	;2	1,25	1	55.35	ť	0	1	;2	¦3.83	ł,	205.11	11	0 :	6	¦ 1	13.17	<u> L-11</u>	1
157	289/GHA	: 0 ;	8	; 0	-[3	t L	260	.46	1	! ;	4	12	1.25	÷	55.35	1	0	: 1	12	;3.83	÷	205.11	ť	0 ;	6	; 1	13.17	10-5	1
158 ;	290/6HA	0 1	8	; 0	12	:	258.	48	; 7	1	4	12	1.25	ł	54.93	:	Û	1	¦2	(3.63	t	203.55	1	0 ¦	6	1	2.37	0-9	ł
159	291/6HA	; 0 ;	2	11	;0	:	71	. 58	: 1	1 !	6	÷	6.79	1	4.86	÷	0	; 0	¦0	2.45	:	66.72							
160 ;	292/6HA	: 0 :	ά	; 0	¦0	1	190.	.80	; ;	: ;	4	14	1.25	ł	40.55	1 }	0	; 1	¦1	;0.40	:	150.26	:	0¦	4	; 2	13.60	N-2	1
	Total	 {110 }	13	; 3	 [2	   54	1649.	.85	 ¦	:	758	;		19	7413.41	;1	8	15	3	;3.30	; 4	5236.44	;9	 1 :		; 3	(2.70		:

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	:   KITT   No.	•					INTRG	; GR	0   F		ł		AND 1	10 B.	E DE	DUCTE	)	1 1 1	NET RI Aftei	R P	Lâb	NI	16		-		T Trenard T
	1 1 1 1 1					ł		i	ł	(Ħ)	ł	ł	Sq.m	: :	IN	ROFAN	1	:	IN Sq.m	ŀ						No	•
2 3 4 5	: 13/6 : 40/6 : 237/ : 240/	A ( ) HA ( ) HA ( ) GHA( ) GHA( ) GHA( )	)  1 )   )   )   )   1	0 : 6 : 1 : 3 :	0   0   2   2   3	0   0   0   0   2	190,88 71,58 111,34 27,83	2   - 3   - 3   - 4   -		-		 4 8 6 1	,- - -			· (-   • (-   •  -			-		- { -   -	-		)               	- ;		land l
	Total	, 1 1	1 ;	7 ¦	0 ;	2 ;	759.5	2 ;	;		!	 ;		;	:	; ;		;		;		:	;	:		,	¦

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#### ex 7. Area of Service Plots

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	Block No	Area (sq.m)	Are	a ir	n roj	pani	Remark
1	A-6	99.00	0	3	0	1.8	
2	B-7	53.20	0	1	2	2.76	
3	C-10	93.44	0	2	3	3	
4	D-15	100.05	0	3	0	2.32	
5	E-10	48.44	0	1	2	0.36	
6	F-18	211.48	0	6	2	2.36	
7	G-12	126.40	0	3	З	3.56	
8	H-9	115.50	0	3	2	2.09	
9	I-4	227.32	0	7	.0	2.33	
10	J−5	85.86	0	2	2	3.18	
11	K-10	65.56	0	2	0	0.97	
12	L-17	134.31	0	4	0	3.55	
13	M-19	113.66	0	3	2	1.16	
14	N-7	72.89		2	1	0.66	
15	0-7	105.13	; ; 0	3	1	0.87	
16	P-8	87.33		2	2	3.93	
17	ୟ-10	103.68		3	1	0.15	
	6 2 5	(     	i 4 1		i 1 1	i 1 1	
	Total	1843.25	3	9	3	3.06	

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though the area required to recover the gravelling & implementation cost has in calculated 1871.41 but after the replotting the total area of the service its as calculated above is 1843.25. This difference has been considered as error during the plotting on a small scale.

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Annex 8. Cost Estimates for various project components

A. Gravelling of Road

Calculation of unit rate

S.No	Job Description	Thickness   (Cm)	¦Unit Rate ¦(Rs/Sq.m)
1	Earthwork in Excavation	20	6.76
2	Earth back filling	20	8.03
3	Rolling of Subgrade	-	0.50
4	Sub base laying	20	32.00
5	Base course	10	123.98
   	Sub Total	!	; 171.27
	Contengency	15%	; 25.69
1	Total (NRs/Sq.m)		¦ 196.96

# Čalculation of Total Cost

S.No	Width (m)	Length (m)	•	Unit Rate  (Rs/sg.m)	¦Total Cost ¦ (NRs)			
1	4m road	1402	5608	196.96	1104551.68			
2	6m road	260	1560	196.96	307257.60			
3	6m road (1m strip)	412	412	196.96	81147.52			
	Total	- <b></b>	·	, 	; 1492956.80			
	Interest (for half amou	nt for 2 mon	ths) 18.5%		} 23016.42			
	Total with Interest							
	Unit Rate with Interest			200.00				

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## B. Water Supply

S.No	Pipe Diameter (mm)	Pipe Length    (m)	Unit Rate (Rs/m)	
1	100	430	570.00	245100.00
2	50	807	290.00	234030.00
3	25	850	150.00	127500.00
 Tc	otal cost	۱ ۱ 		606630.00

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## C. Electricity

S.No	l Particulars	: Quantity	; Rate	;Total (Rs)	
1	Cement pole	69	4500.00	; 310500.00	
2	: 10.03 Sq. in conductor	2448	: 17.00	; ; 41616.00	
3	¦ ¦Pin insulator	48	: : 150.00	1   7200,00	
4	l 150kVA transformer	4	; 145000.00	   580000.00	
5	100KVA transformer	1	:  100000.00	: 100000.00	
6	l Drop aut set	5	: : 40000.00	; ; 200000.00	
7	:  Panel board	5	; 40000.00	; 200000.00	
8	l A type arm	16	: 1000.00	16000.00	
9	l  Arm with sacal insulator	1 1 48	: : 900.00	43200.00	
10	0.05 Sq in conductor	: 10848	20.00	215960.00	
	:				
¦~	Labour cost ê 10%			; 171547.60	
t t t t	Contengencies @ 5%			; 94351.1	
! !	Total (NRs.)			1981374.7	

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b. Storm water drainage
 a. Unit rate (Im length) of drain for 6m road.

. Hoʻ	Item	Quantity (cu.m)	Rate  (Rs/cu.m)	Total (Rs)
1	Earthwork in Excavation	0.621	34.82	21.62
2	Flat brick	0.85	88.09	74.88
З	P.C.C (1:2:4)	0.0638	2352.26	150.07
4	Brickwork in cement mortar (1:4)	0.288	1693.64	487.77
5	Cement plaster (1:4)	2.42	60.62	146.70
	Sub Total (NRs.)	· · · · · · · · · · · · · · · · · · ·		881.04
	Contengency 15%			132.16
· · · · ·	Total			1013.20

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= 680,870.4

b. Unit rate (Im length) of drain for 4m road.

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,110	Ttem		Rate (Rs/cu.m)	Total (Rs)
1	Earthwork in Excavation	0.351	34.82	12.22
2	Flat brick	0.78	88.09	68.71
3	P.C.C (1:2:4)	0.0585	2352.26	137.61
4	Brickwork in cement mortar (1:4)	0.1536	1693.64	260.14
5	Cement plaster (1:4)	1.6	60.62	96.99
	Sub Total		·	575.67
	Contengency 15%		· · · · · · · · · · · · · · · · · · ·	86.35
	Total			662.03

Total cost (Nrs)=928138.02+680870.4 =16,09,008.42

#### E. Implementation Cost

S.No	Expenses	Headings		Amount (NRs)
1	Office Expense	Salary		162000
		Rent	1	18000
		Stationery	;	11000
		Furniture		20000
		Miscellaneous	us¦	8500
	1 1 1	Total	:	219500
2	Survey Cost	· · · ·	:	97000
	Total Cost	1 1	:	316500

## F. Salary Break up

Personels	Nos	Manmonths	Salary   (Rs/month	Total Salary
Project manager	1	8.00	6000.00	48000.00
Planner	2	2.50	6500.00	32500.00
Accountant	1	8.00	3500.00	28000.00
Office Assistant	1	8.00	2750.00	22000.00
Overseer	1	4.50	3000.00	13500.00
Draft person	1	2.00	3000.00	6000.00
Peon	1	8.00	1500.00	12000.00
i 		i 	i i 	
Total		<b>.</b> .		162000.00

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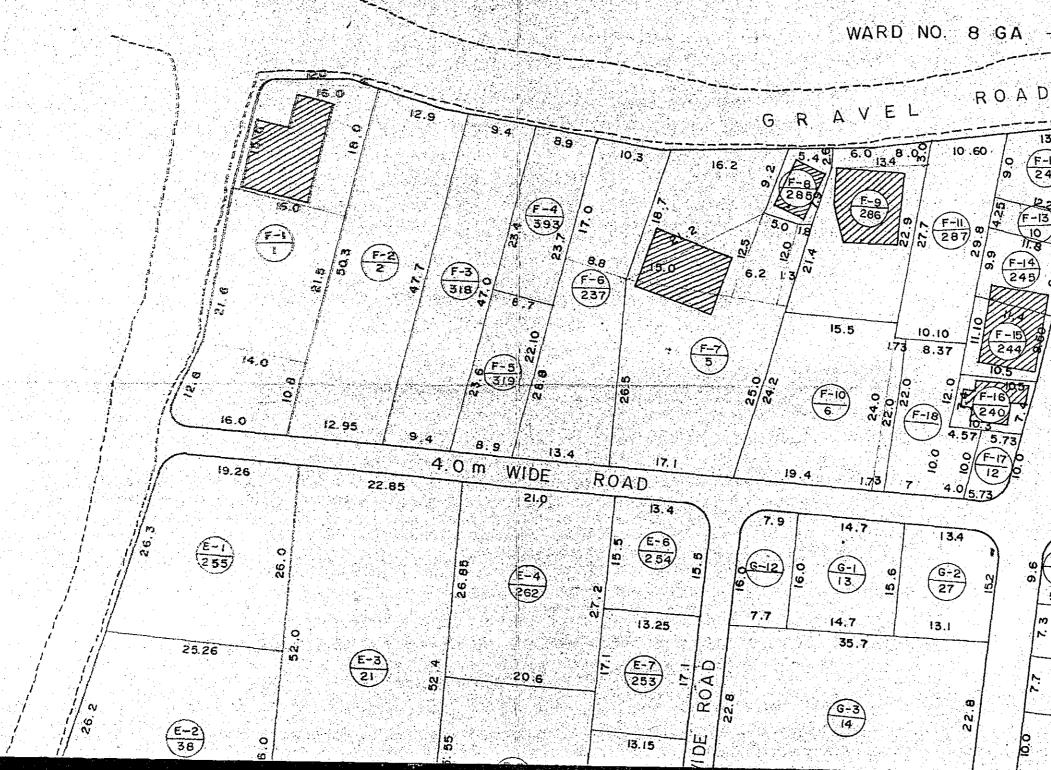
#### Annex 9: Notice to the Landowners published in "The Gorkhapatra"

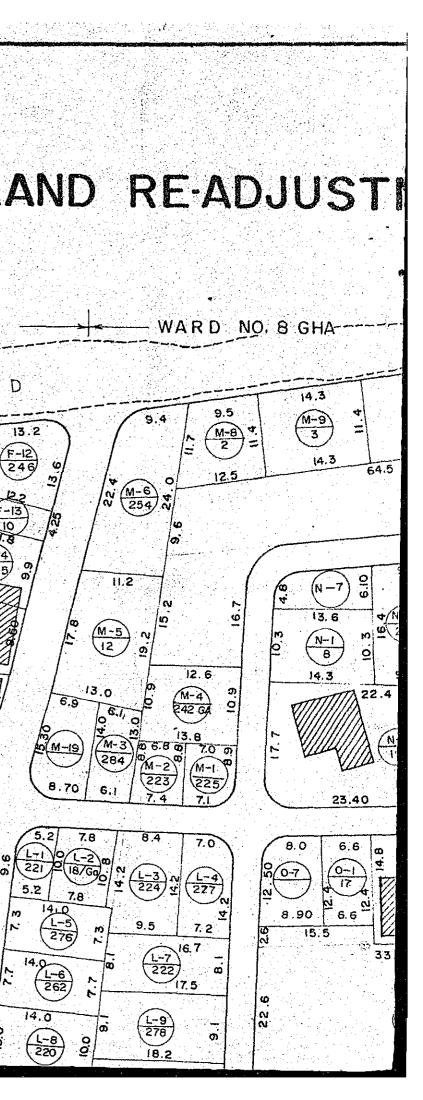
# ललितपुर जिल्ला वडा नं, ५ ब नखिपोट र संवु भैसि-पाटी वडा नं, ४ 'ग' र 'घ' का जग्गा धनीहरूलाई अत्यन्त जरूरी सूचना

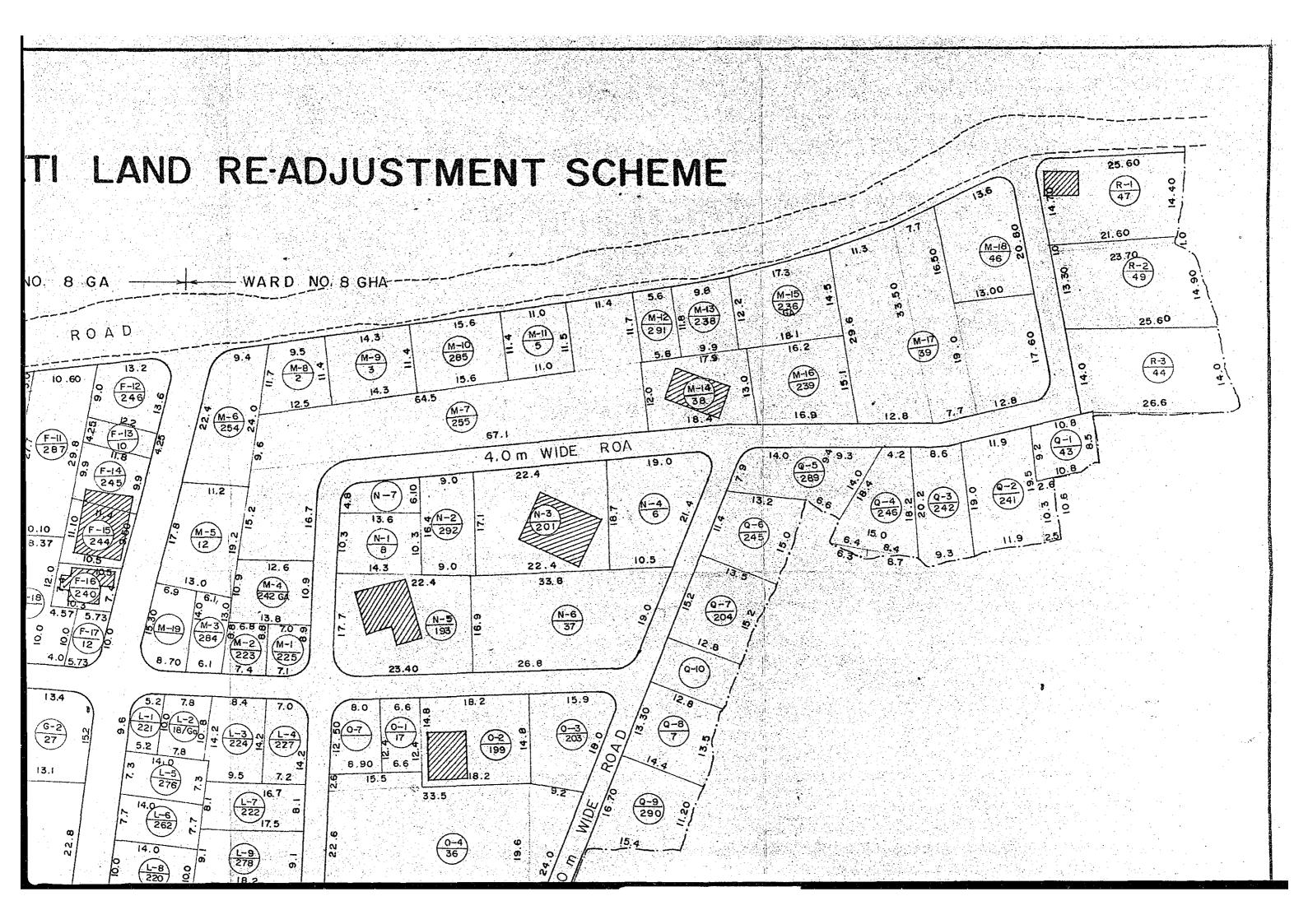
एक खयम् सेवक टोलील उक्त दुइक्षेत्रको विकासको लागि योजना तर्जुमा गर्न लागेको हुनाले सम्बन्धित जग्गा धनीहरूले तलको ठेगानामा यथाशीघ्र छिटो सम्पर्क राखी सहयोग गरी दिनु हुन अनुरोध गर्दछौं। स्थानः- तफाल्हो, कुमाग्रीपाटो, ललितपुर फोन नं.: ५२३५८१ समयअ- १०-५ सम्म

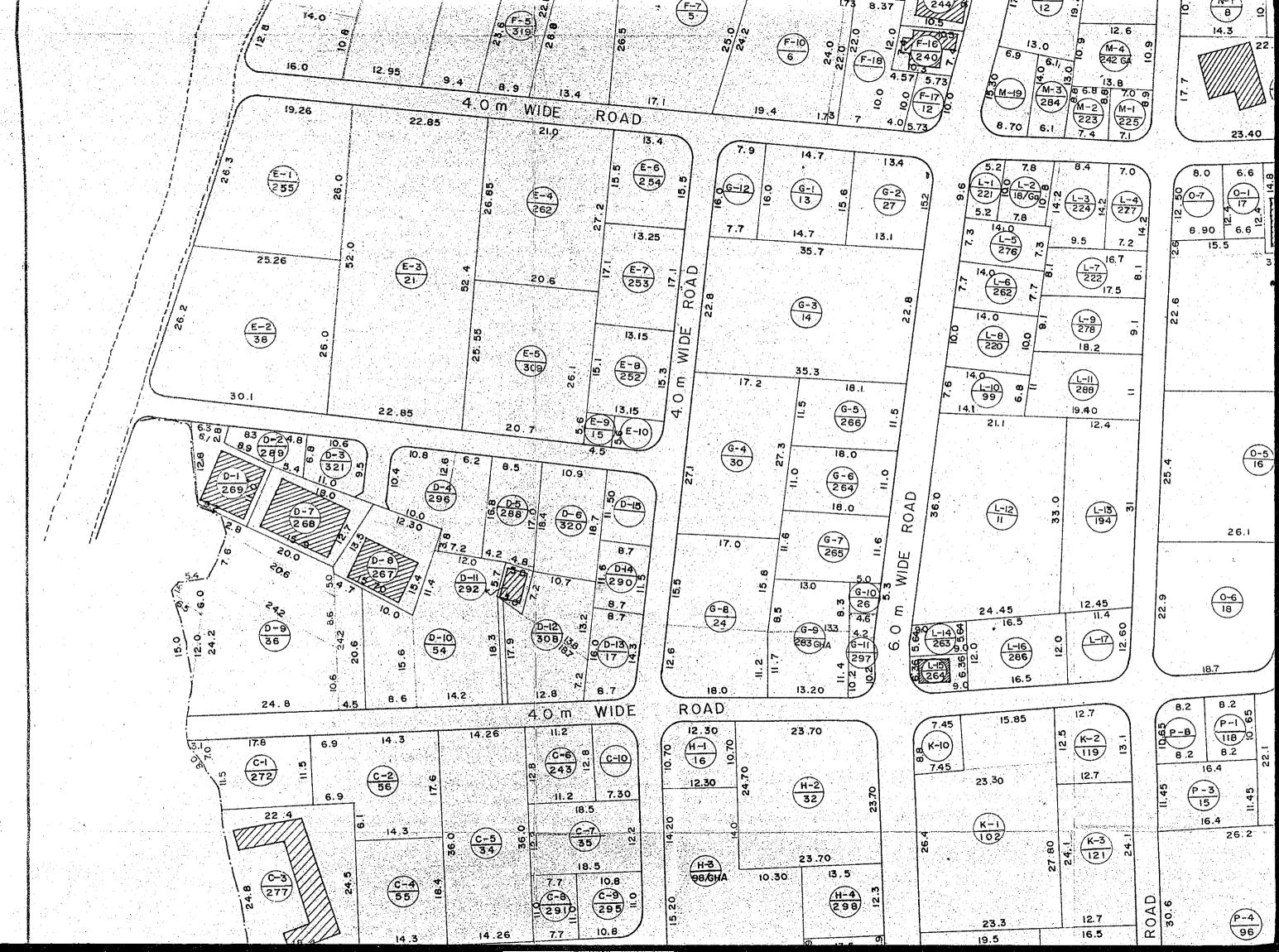
> Published Date: 16 & 18 Paush 2048

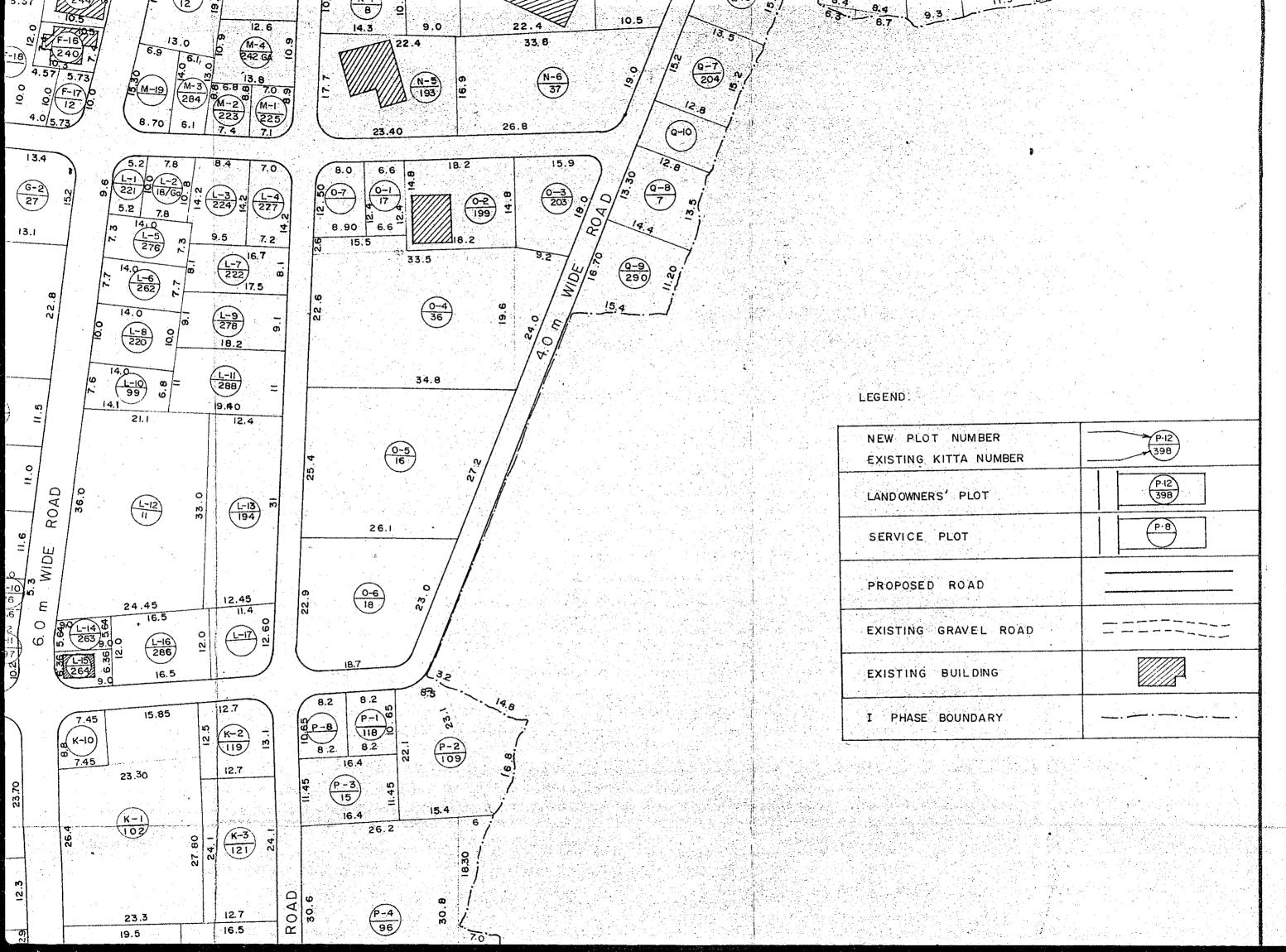
# SAIBU, BHAISIPATI LAND RE-ADJUST

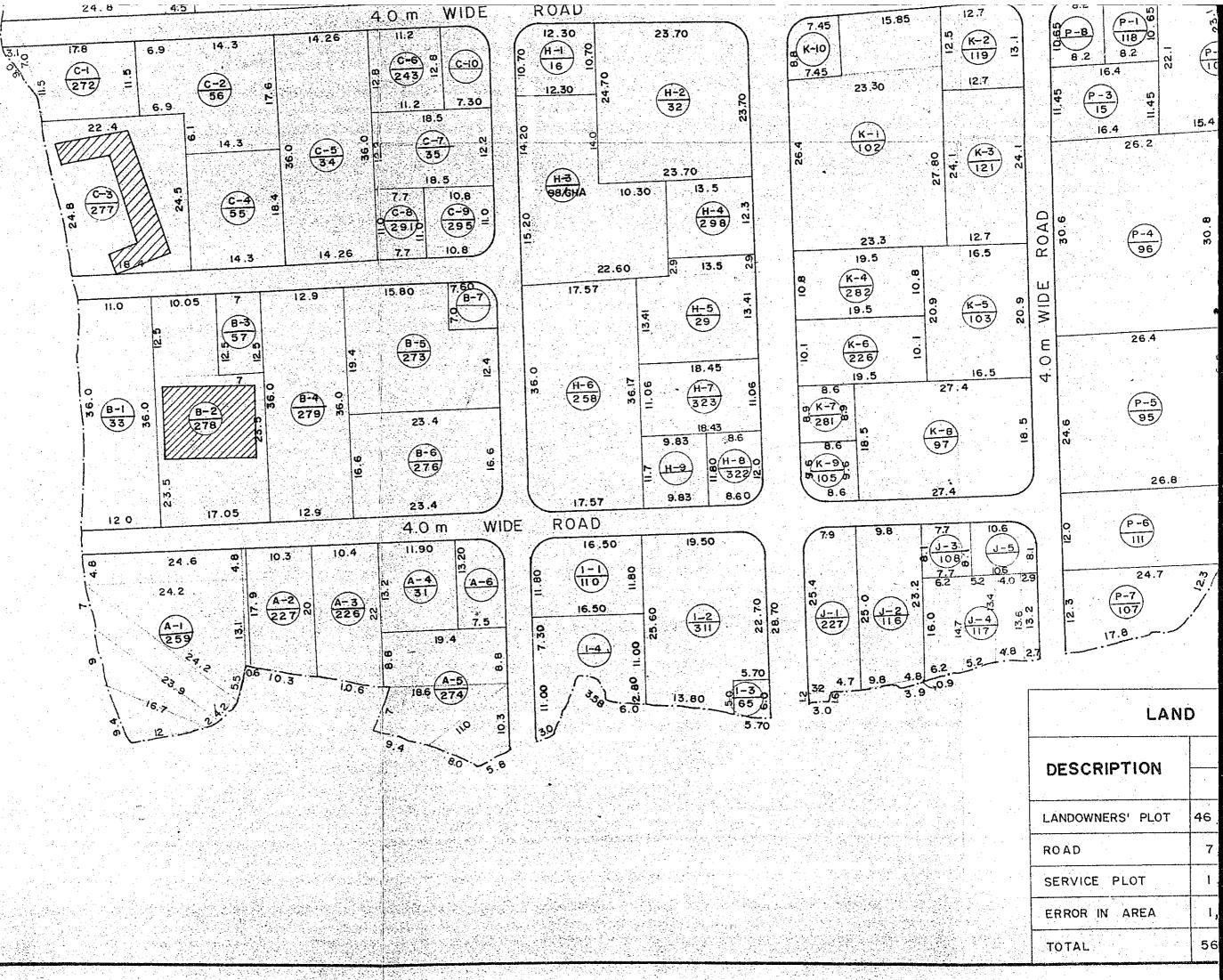




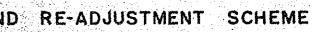


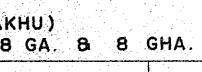




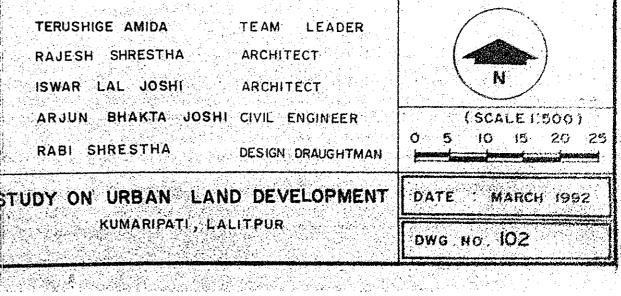


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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	N N $\left( \frac{P-7}{107} \right)$		ATION		PROJECT TITLE :- SAIBU, BHAISIPATI LAND RE PROJECT LOCATION :- SAIBU, BHAISIPATI (NAKHU) LALITPUR WARD NO. 8 GA
5.70	LAN				
	DESCRIPTION			PERCENTAGE	TERUSHIGE AMIDA TEAM LI RAJESH SHRESTHA ARCHITECT
	LANDOWNERS' PLOT	Sq.m 46,443.66	Ropani 91-3-3-2.7	81.66	ISWAR LAL JOSHI ARCHITECT
	ROAD	7,580.00	14-14-1-0.3	13.33	ARJUN BHAKTA JOSHI CIVIL ENGI
	SERVICE PLOT	1,843.25	3 - 9 - 3 - 3.06		RABI SHRESTHA DESIGN DRA
	ERROR IN AREA	1,005.75	1-15-2-1.94		STUDY ON URBAN LAND DEVELO
	TOTAL	56,872.66		100	KUMARIPATI, LALITPUR

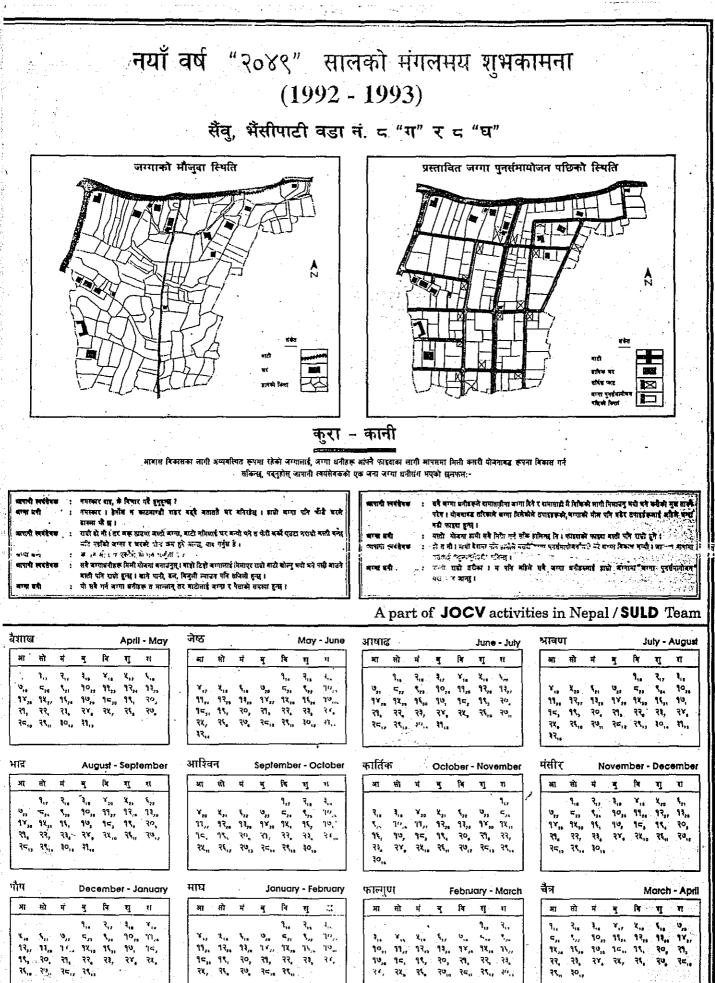




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