Public-Private Partnership in the Delivery of Served Land in Delhi

Research Study 81

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The new economic policies and the National Housing Policy provides a broad framework within which the role of the government is to enable the private sector to perform efficiently. While significant changes in the financial sector, industrial policies and trade policies have taken place, the urban sector reforms have lagged behind. The DDA has been considered a 'role model' for the rest of the country in the past and many urabn development authorities have emulated its operation. Within the framework of macro-economic policies and the National Housing Policy, the DDA should now take a lead in initiating a public-private partnership model for land development and shelter construction and provide new directions to the other urban development authorities in the country.

We are grateful to the vice-chairman and Member finance of DDA for their support and comments at various stages of this study.

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PREFACE

Provision of adequate shelter for all has been the avowed goal of national government. High cost of urban land and shelter have forced many families to live in squatter and slum settlements. Past public policies related to land and shelter were aimed at addressing to the shelter needs of the vulnerable groups in urban areas. However, given the limited capacities of public housing agencies, the shelter delivery from public sector has been for below the required level.

The National Housing Policy of May 1992 advocates a change in the role of public agencies that have been involved in housing construction. In their new role as a facilitator, the public agencies are expected to devise innovative approaches to help the private and cooperative sector increase housing supply. This study provides a framework for public-private partnership in land development and housing in Delhi and identifies the facilitative role to be played by the Delhi Development Authority.

According to recent estimates of NIUA, the Delhi Union Territory requires an annual supply to 70,000 housing units. The DDA has, however, been able to provide only 8600 units per year over the past 26 years. The cooperative sector in Delhi is expected to supply about 16000 units per years. If the gap is not met by the private sector, there will be severe overcrowding in existing housing units and increase in slums and squatter settlements. A vast tract of land is currently available with the DDA. If appropriate partnerships with the private sector can be designed, the housing supply in Delhi can be increased significantly. Public-private partnerships in land development and shelter constructions has been practiced successfully in many cities of India. In this study, these practices have been evaluated on the basis of time taken, scale of operation, resource mobilisation, cost effectiveness and the beneficiary profile. Based on this evaluation, the study proposes two alternatives for involving private sector developers in land development and shelter constructions on land that currently vests with DDA. These alternatives have been shown to be financially viable for both the private developers as well as the DDA.

The housing problem in urban areas is primarily due to mismatch of supply and demand. Efforts to increase supply of housing for each segment of the market can have a dramatic impact on house price. The private sector developers of Delhi are keen to participate in land development and shelter construction activities. If the suggested alternatives in this report can be implemented in Delhi, it will make a significant impact on shelter availability in Delhi.

CHAPTER - I

I. Introduction

The National Housing Policy, in consonance with the national planning goals, has avowed to motivate and help people to secure affordable shelter and raise the quality of life. Such objectives presuppose a smooth supply of land into the market, as availability of serviced land at the right location at affordable price is crucial for achieving the goal of 'shelter for all'.

Public intervention in the land market has been a major feature of urban development policy in India. Such interventions were justified on the grounds of ensuring optimal social use of land, prevent monopolistic land holding and provide land to the poor. Various attempts at formulation of urban land policies have reiterated these goals. Over the years, the guiding principles of land development have remained the same, though the regulatory processes have been modified from time to time with changing circumstances.

The National Housing policy formulated in May 1992 seeks to redefine the role of government as that of a facilitator rather than a builder. Within the perspective of the National Housing Policy, the role of public agencies that have been involved in construction of housing is to be redefined. This study provides a formula for public-private partnership in land development and housing in Delhi, and defines the facilitative role to be played by the Delhi Development Authority (DDA).

Paradigmatic Shifts in Urban Land Policy

The constitution of India grants the right to acquire, hold and dispose off property to every Indian citizen. It, however, allows the state to impose restrictions on property and its acquisition in public interest. Much of the public intervention in urban land development was of indirect nature. The most common means of public control on urban land is through zoning, density and building regulations. These provisions are spelt out in master plans prepared for each city. Though these regulations are formulated to ensure proper urban development and serve the social goals of health and safety, its poor enforcement have made them ineffective tools of urban development. These interventions have also not helped in achieving the broader societal goals of reducing concentration of ownership of urban land, controlling land prices and providing land

to the poor. The direct public interventions in urban land relates to acquisitions of small parcels of land for roads and public amenities. The Urban Improvement Trusts established in many states also acquired tracts of land for housing and area development programme. While some of these housing programmes were targeted at the urban poor, by and large the intervention in the land market remained very small. The process of land acquisition under the Land Acquisition Act, 1894 was also cumbersome. As a result, many of the provisions of master plans related to public services and amenities, could not be implemented.

In contrast to the acquisition of small parcels of land, in a few Indian cities, the local authorities have resorted to large scale acquisition of land. In the city of Delhi, and for New Bombay, bulk land acquisition was resorted to by public agency. The notion embedded in this approach was that of a complete control of land ownership and development with a public agency to meet the broader societal goals of urban land policy. These agencies were to use the urban land as a resource and generate sufficient funds to supply the needed amount of land and housing in the local market at affordable prices. In practice, however, these agencies have not need able to cope up with the demand for land and housing and are unable to control the rapid rise in land and house prices.

The urban Land Ceiling and Regulation Act, 1976 aimed at reducing the concentration of urban land holdings by imposing ceiling on urban land holdings in 72 major cities and regulating transfers of land. This direct intervention of the government, however, did not have the desired effect. Very little surplus land was acquired. Large tracts of land sought exemption under the provisions of section 20 and section 21 of the legislation. With the restriction in supply of land in cities due to the imposition of ceilings, the land prices shot up dramatically. The housing built for the urban poor, under the exemptions from ceiling legislation, also did not reach the poor as they were expensive.

In many states, especially Haryana and Gujarat, public agencies have guided private land development through licensing scheme or land readjustment schemes. The public-private partnership evident in these arrangements come close to the notion of supportive and facilitative role envisaged for public agencies in the national Housing Policy document.

The paradigm of urban land policy have shifted from a complete control of urban land by a public agency to evolving a public-private partnership model. It must, however, be

Scope of the Study

The study covers the following aspects:

a. Evaluation of the various public-private partnership models in India - especially the licensing of developers in Lucknow, the Guided Urban Development framework adopted in Tamil Nadu, the land readjustment schemes (Town Planning Schemes) of Gujarat and the modular approach to land development attempted by CIDCO.

b. Preparation of prototype guidelines and a framework for DDA. An attempt has also been made to identify suitable strategies for provision of shelter to all sections of the society at reasonable prices and yet ensure overall profitability for both the public and private partners.

c. Identification of main constraints in legal, institutional and organisational structure to initiate such partnerships in Delhi.

CHAPTER - II

Typology of Public-Private Partnership Approach

The problems of providing adequate shelter, infrastructure, or of creating the conditions that will allow urban populations to acquire them for themselves and keeping in view the limited financial and managerial capacity to meet this challenge, there is a need to explore wide range of options and alternative policies by which the public sector can create the "enabling conditions" for the poor to obtain greater access to services and shelter through self-help or from the private sector.

Various research studies conducted in different cities of India have shown that, by and large, the urban poor have had to either fend for themselves in gaining access to land or depend on "quasi-legal" developers who lease "problematic" land at exorbitant rates. Even in cities where public authorities dominate the land and housing market, supply of land to the poor has generally been very small. The housing targeted at this group is often beyond the reach of this income group.

Given the high land prices and high costs of land development, provision of serviced urban sites to the poor households at affordable prices is a major enigma. In case of bulk land acquisition approach for overall land development by public agencies, the low income groups and especially the poor have not always been served. The impact of large scale acquisition and land development by public agency on the local land market has been quite the contrary. Even in low growth urban areas like Lucknow, where the urban development authority and housing board have released many developed plots during the last 8 years, there has been no downturn in land prices in these cities. In fact, the rise in land prices in Lucknow & Ghaziabad are comparable to that of Madras, Hyderabad and Ahmedabad where the private sector dominates the land supply.

Thus it becomes important to examine the existing processes of land delivery, identify the potentials and constraints in these and ascertain the precise role of public agencies vis-a-vis other operators in the system and assess the effectiveness of different mechanisms in terms of speed, quality of development and the fiscal coverage achieved, the reach for low income groups and the extent of supply by such modes.

In the chapter, an attempt is made to answer some of the question such as : what different types of partnership exist in India? What are the reasons for their success or failure?

Delivery of Urban Land in Delhi

There have been many attempts in India to formulate Urban Land Policy. The objectives of the first urban land development policy in 1937 were (1) optimal social use of land, (2) moderate pricing, (3) prevention of concentration of land in single ownership to safeguard the interests of the poor and (4) encourage cooperative housing to supplement public efforts.

Over the years, the guiding principles of land development have remained the same, though the regulatory processes have been modified from time to time with changing circumstances.

The laws and regulations impacting the delivery of urban land in Delhi and their consequence are as follows:

Table 1

Land Development Laws and Regulations

Law/Regulation	Control over Land Development	Consequence Inconsistencies
Constitution of India	Guaranteed the right to acquire, hold and dispose of property; allowed state to impose restrictions on property;allowed for compulsory land acquisition by state.	Confusion over statement of public purpose for land taking
Land Acquisition Act of 1894	Implemented compulsory taking of private property for public purpose; allowed state to acquire, develop and dispose of land for public purpose; established process for notification of taking, setting of price, and reasons for exemptions.	Delays caused by requirements setting land values
Improvement Trust Act of 1937	Established Delhi Improvement Trust (DIT) for acquisition of land, development and construction of housing.	Land Holdings acquired and withheld from market.
Slum Areas Improvements & Clearance Act of 1956	Granted power to DDA to relocate informal settlements to new resettlement colonies; allows demolition of structures located on land in unauthorized colonies.	Inconsistent enforcement; delays in reuse of cleared land.
Delhi Development Act of 1957	Established DDA to implement Interim General Plan of Delhi and subsequent planning and implementation of Delhi Master Plan;	Lack of Authority over provision of off-site; inconsistent planning; dual authority over building codes.
Delhi Municipal Act of 1957	Established DMC, responsible for (i) provision of off-site infrastructure, and (2) maintenance of both on-site and off-site and off-site infrastructure	Lack of coordination with acquisition, development and disposal of land; dual authority over building codes.

Law/Regulation	Control over Land Development	Consequence Inconsistencies
Delhi Rent Control Act of 1958	Fixed rents at 10% of construction cost; set value for property tax as function of rents.	Undervalues property tax revenues; inconsistent collection enforcement
Delhi Master Plan of 1962	Established land uses, subdivision standards and approval process; projected population growth and developed land use strategies.	Lack of enforcement of subdivision approvals, lack of ability to mix land uses.
Scheme for large-scale Acquisition Development, and disposal of land in Delhi of 1961	Provided power to DDA to implement Mast Plan, authority for land acquisition construction of on-site infrastructure and housing, sale of land to co-ops. and plots and flats to individuals; established transfer of land and flats by 99 year leases; established revolving development fund through reuse of proceeds from sale of land.	Froze land supply; created dual land market of freehold and leasehold; institutionalised dual goals of land and housing supply.
Delhi Cooperative Societies Act of 1972	Recongnised 4 types of housing cooperative established organisational requirements; established authority to guide and supervise.	Delays caused by lack of off-site infrastructure and approvals; misused by speculators
Urban Land (Ceiling and Regulation) Act of 1976	Placed ceiling on individual land holdings in and around Delhi; fixed compensation at maximum of Rs.10 per sq.m.	Froze land supply, exempted larger land holders; inequitable compensation.

Source: Billand, (1990).

While the Land Acquisition Act provided the public sector with authority for compulsory acquisition of land for public purpose, it also required a cumbersome, expensive and time consuming process. Procedures required under the act most often end in legal disputes taking normally three to four years to resolve - and in some cases up to twenty years. Until 1894, the Act's definition of public purpose was unclear. This was amended to include planned development of land from public funds, land for housing the poor, and for any housing or slum clearance scheme.

The Delhi Development Authority Act of 1957 established the DDA, and the Scheme for Large Scale Acquisition, Development and Disposal of Land in Delhi Provided the implementation powers. One of the underlying weaknesses of such a large scale development plan was the lack of citizen participation in the planning process, and the outgrowth of planning standards which were unrealistic vis-a-vis the impact on costs and affordability (Acharya, 1987). A second consequence was the impact of the revolving funding concept. After the initial capital was provided by the central government, additional funding would be generated through the sale of land. This focused land development activities on income generating opportunities, at the expense of land delivery for the lower-income markets.

The Delhi Municipal Corporation Act, among other things, established responsibility of DMC for the provision and maintenance of infrastructure and roads, and the approval of building by-laws.

By 1982, DDA had acquired about 60 percent of the notified land for residential use, of which only 4 percent could be distributed over a period of 25 years. The ratio of distribution was to be 50 percent for low income, 30 percent for middle income and 20 percent for high-income groups. However, since DDA was dependent on the revolving fund income through sale of land, such stipulations could not be maintained. Actual distribution was substantially skewed to plots auctioned to the high-income groups.

The land acquisition act requires that compensation to the owner be based on the market price at the time that DDA notifies of their intent for compulsory acquisition. By the time the acquisition actually takes place due to delays in the bureaucratic process, market prices have appreciated in value, and the owner is compensated at less that market value.

DDA has the authority to develop the land that it has acquired. Therefore, the provision of on-site water, sewer, roads and power are under its control. DMC has the authority to provide off-site trunk water, sewer, power and roads. The Delhi Administration is responsible for the coordination and planning between DDA's delivery of projects and DMC's provision of off-site infrastructure. However, there is little institutional coordination of the activities of the two entities. Therefore, DMC's capital improvement planning, budgeting and works programmes are mostly carried out without regard for the planning, budgeting and implementation of DDA's land development schemes. This has proven to be a serious constrains in the deliver of developed land.

Financial constraints impacts on the delivery of serviced land in two ways. First, the priority given by DDA to the development of income generating land reduce the allocation of land to lower-income households; and secondly, the lack of adequate funding for DMC to carry out the construction of off-site trunk infrastructure delays in delivery of serviced land as on site infrastructure provided by DDA has to be connected to off-site infrastructure.

Consequently, the hiatus between the demand and supply increased, and the prices went up spiralling. Between 1952 and 1977 prices of freehold land in authorised colonies increased upto 60 times. Leasehold public housing plots, resold informally through power of attorney, increase from 4 times in low-income plots to 25 times for high-income plots. Plots in unauthorised colonies increased by 10 to 15 times. Between 1980 and 1989 land prices in West Delhi increased on an average annual rate of 14 percent and in South Delhi by 23 percent.

The general feeling is that since the supply of land is inadequate, the allocation system adopted by DDA is erratic and fragmented. The financial constraints and its impact on off-site infrastructure also delays development. Coordination and management of Delhi Development

Authority (DDA), Delhi Administration (DA) and Municipal Corporation of Delhi (MCD) has also been very poor, creating bottlenecks for development.

The major constraints which operates against the public sector's ability to more effectively deliver land are: the provisions of the Land Acquisition Act of 1894; inefficient administration; coordination with the other public agencies for the provision of off-site trunk infrastructure; the inability to mix land uses in development schemes; financial constraints; and the lack of land information.

It is, therefore, unlikely that without a major restructuring of the mechanics of the formal sector land delivery and development processes, sufficient land would be made available in Delhi to absorb the new growth as per the development plans.

Further, city governments will find it increasing difficult, if not impossible, to extend infrastructure and services to the poor through public service delivery arrangements, or to provide adequate shelter through public housing programmes. The high costs and administrative complexities of delivering serviced land through concentional means will require government to look for alternatives. Self help programme, informal sector participation, privatisation of services, user charges and cost-recovery financing, or combination of public and private service provisions are some of the options that will have to explored if the growing needs for shelter, services and infrastructure are to be met. Even before the urban land policy came into existence in 1961, large residential areas were being developed in Delhi by the Private Sector agencies.

The recent Draft Housing policy, correctly pinpoints the shortage of serviced land in urban areas as one of the main constraint to the improvement of the country's urban economy and environment. In this regard, the Draft Policy document proposes that activities of public agencies would be reoriented to enable and facilitate the shelter activities of the community at large and legitimate private sector action.

Typology of Public-Private Partnership Approach

To give a board view of different types of partnership in the Indian context, a total of five models have been reviewed indicating the type of development, the locations, the agencies involved, and the public/private splits of responsibilities.

A. Haryana Joint Development Model

The Haryana Development and Regulation of Urban Area Act (HDRUAA), 1985 provide for certain planned areas to be specially designated to allow private developers to assemble parcels of land that exceed the limits set by the Urban Land Ceiling Act (ULCER). In designated areas, the act provides for the licensing of private developers to assemble land directly from landowners and develop such land for residential purposes according to stipulations which include (financial contributions to the development authority for attributable off-site infrastructure costs); and (2) the reservation of a portion of the developed land for lower-income housing to be allotted through the development authority.

Haryana State, with the enactment of the Haryana Development and Regulation of Urban Areas Act (HDRUAA) in 1975, became the only State in India to formally involve the corporate private sector in the acquisition, development, and disposal of urban land. The Act and its 1981 bylaws stipulate that private developers must first apply for a license from the State Director of Town Planning, stating the details of the land. The land must be within a township/city development scheme which has been prepared by the Haryana Urban Development Authority (HUDA) and sanctioned by the State. The developer must also prove that he is bonafide and "has a good track record". The license granted has mandatory provisions, such as:

- the developer must pay external development charges to HUDA on a gross area basis (net m^2 bases for water) to cover the off-site infrastructure costs.

- the developer must reserve an additional 25 percent of created plots to be sold on a "no-profit no-loss" basis.

- the developer must pay other servicing/administrative costs to HUDA on a net m^2 basis.

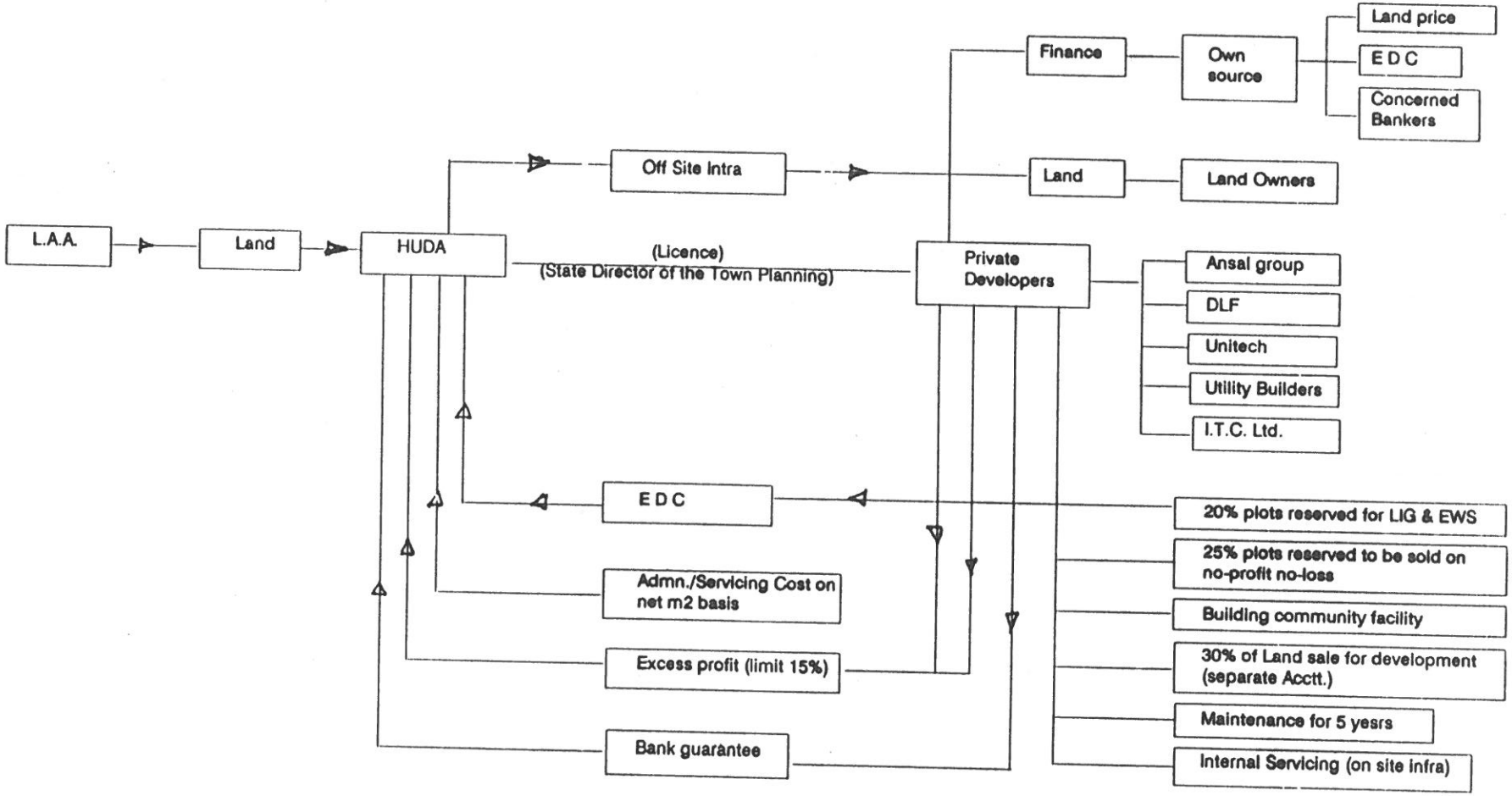
- the developer must build certain community facilities and/or provide land for such free of charge.

- the developer must put 30 percent of the proceeds of land sales into a separate account to be used for development.

- the developer must maintain the completed colony for five years.

- the developer must return any excess profit to the state (a ceiling of 15 percent profit on total project costs is imposed).

HARYANA JOINT DEVELOPMENT MODEL



Land Development by Private Developer: DLF's Qutab Enclave (Haryana)

a. **Land Purchase:**

DLF has purchased and developed land in phases. DLF bought land for its first phase in 1979. Development work continued till 1985. It starts developing new phases half way through the earlier phase as it would have mobilized enough resources from its clients and minimize its own investments.

DLF has been buying large chunks of land (about 200 acres) at a time. The price it pays for land is negotiated with groups of farmers until an agreeable amount is decided upon. This is in keeping with the market price and is substantially higher than the government rates. Land is bought on credit from farmers. Farmers tend to buy land adjacent to DLF land with the money they get from selling their land. This proves to be good investment as DLF would pay a higher amount in the next round of land purchase. Patches of vacant pockets within the colony, indicates the reluctance of some farmers to sell. Only small deposits are made for the agreement to sell. Once land is bought, the plan is approved from the T.P. department and license is sought.

Purchase rates of land have been increasing. Interviews with farmers reveal that - 1981, the price paid was Rs. 39,000/ acre while in 1990, they were Rs. 54,000/acre.

b. **Developing Land:**

Phase - I has the maximum amount of land while Phase-III has the maximum number of plots.

Table

Distribution of Area/Plots in Various Phases, DLF

Phases	Area (acres)	No. of plots	Remarks
I	585	3700	(98% - EWS plots)
II	467	3200	
III	475	5400	
IV	198	1200	
Total	1725	13500	

It is in the III phase that almost all the reserved plot for the EWS have been positioned. However, according to the HDRUA Act 1975, DLF should have distributed these through each of its phases. DLF sells different categories of plots, according to sizes and associated profit motives.

c. Infrastructural Provision

According to the HDRUA Act, 1975, the colonizer is to provide all on-site infrastructure while HUDA is to provide off-site services. The internal development works include metalling roads, providing street lighting, water supply, sewers drains and tree plants. The colonisers could constructs the social facilities at its own cost or transfer the plots of land to the government, free of cost. In the latter case, it would have to pay EDCs.

Water Supply

Presently groundwater is being used, untreated. However, there are plans of chlorinating it. The networks has been designed in a way so once the trunk water supply systems of HUDA (South Yamuna Canal) gets connected to the colony's system, it would supply treated water.

Sewerage

The colony has no treatment plant. An oxidation pond was used till recently. It now meets HUDA's trunk sewer lines.

Electricity

As per the norms of the act, the Haryana State Electricity Board is to provide electrification facilities to all colonies. However, to speed up the process. DLF got approved contractors to do the job, under its supervision. Phase-I and III have overhead electrification while Phase-IV has underground cabling and fancy lamp posts which have contributed to the increase in the costs of development in this phase.

Roads

All the internal roads, provided by DLF are metalled. There are plans of recarpeting, before handling over the maintenance of the colony to HUDA.

To ensure compliance with these conditions the developer must take out a bank guarantee in favour of HUDA. (fig.1).

Public Sector Development

In the 1490 hectares of residential areas being managed by HUDA, almost all land is being developed as serviced plots. Land was acquired from farmers at very low prices by compulsory purchase under the Land Acquisition Act. Plot sizes range from 50 to 600 m^2, and are sold sporadically to lots of citizens who have signed up under a complicated registration process which includes, for EWS and LIG plot (50 to 125 m^2), income statements. Demand for plots has far exceeded supply at any one time, and beneficiaries are chosen by lot. The prices for these lots are low by market standard averaging Rs.350/m^2 for larger plots in 1986.

Private Sector Development

The 1430 hectares in Gurgaon reserved for private development have been acquired by five main real estate companies, all of which are based in New Delhi. As stipulated in the HDRUA Act, licenses for acquisition of separate discrete sections (usually ranging from 25 to 60 acres) has to be obtained. The first licenses were issued in 1980 and the licensing/acquisition process continued through 1984. Land prices negotiated between private developers and farmers were significantly higher than those set by Government for compulsory purchase. This led to the first of many frictions between public bodies and the developers.

Within each developer's domain, 20 percent of plots created were to be reserved for EWS and LIG categories (sizes ranging from 50 to 125 m^2) and sold at nominal prices set by HUDA. In addition a further 25 percent of plots (sizes ranging from 125 to 250 m^2) had to be sold at cost. The fact that in areas of Gurgaon developed by HUDA these norms were apparently only half-heartedly applied contributed to the climate of distrust. Also, hefty external development charges had to be paid to HUDA by developers, in spite of the fact that there appeared to be very little of this development. (By 1981 it was estimated that all HUDA investments in trunk infrastructure, 70 percent went for roads and practically none for water, storm drainage and sewerage). Whereas the residential sectors under private companies tended to be served with internal infrastructure quickly (one-to-three year average), in those sectors under HUDA the rate was much slower.

d. **Costing:**

DLF spends about 70% of its development costs on the provision of water supply and roads[1]. For Phase I, II and III, the internal development costs come to about Rs.74/ sq.mt. Keeping in mind the saleable area, the chargeable amount comes to about Rs.165/sq.m.

In the IV phase, development costs increased phenomenally due to the use of fancy light poles and underground cabling.

For the on-site infrastructure provided by the DLF, it takes maintenance charges worth Rs. 150/ plot. These are interest free deposits.

e. Pricing and Disposal

Table 3

Selling Price and Market Rates of DLF, 1991

Category	% of area	Plot size (sq.m.)	DLF price Rs/sq.m.	Market price Rs. sq.m.	Machanism to choose beneficiary
EWS,LIG	20	125	85	1250	Lottery
NPNL	25	125-225	500	2000	first come first serve
General	55	225-855	3000-3700	3800-4320	first come first serve

[1] Components of the development costs for the first phases

	Components	% of development costs
1.	Water supply	34
2.	Sewerage	11
3.	Storm drainage	14
4.	Roads and culverts	34
5.	Horticulture and landscaping	3
6.	Street lighting	5

Considering that the chargeable amount equals Rs. 165/sq.m., the EWS and LIG plots have been subsidized by about 50%. However, since market prices are much higher than the price at which plots are sold, the plots rarely remain with the beneficiaries as it is more profitable to sell them off. The allotment to application ratio for this category is 1:200. As stated in the act, HUDA monitors the allotment of the EWS and LIG plots. The applicants in this category are required to submit an income affidavit as these plots are meant for the poor.

The no-profit no-loss category and the general category plot are sold at prices above the chargeable amount. This allotment is monitored by DLF itself. DLF often sells the NPNL (no profit no loss) plots to its sister concerns, and villages and town houses are built upon them. So contrary to the name of the category, these fetch high returns.

e. **Profitability:**

The EWS and LIG plots are cross-subsidized with the help of high profits that the company earns from the sale of its general category plots.

Due to a convenient arrangement and selling some of the NPNL plots to its subsidiary companies, it also earns high profits from selling property built on it. Another source of income is the interest on the installments of the allottee. Maximum profits comes from the sale of commercial space which are sold at Rs. 80/sq.ft.

Financing the Project

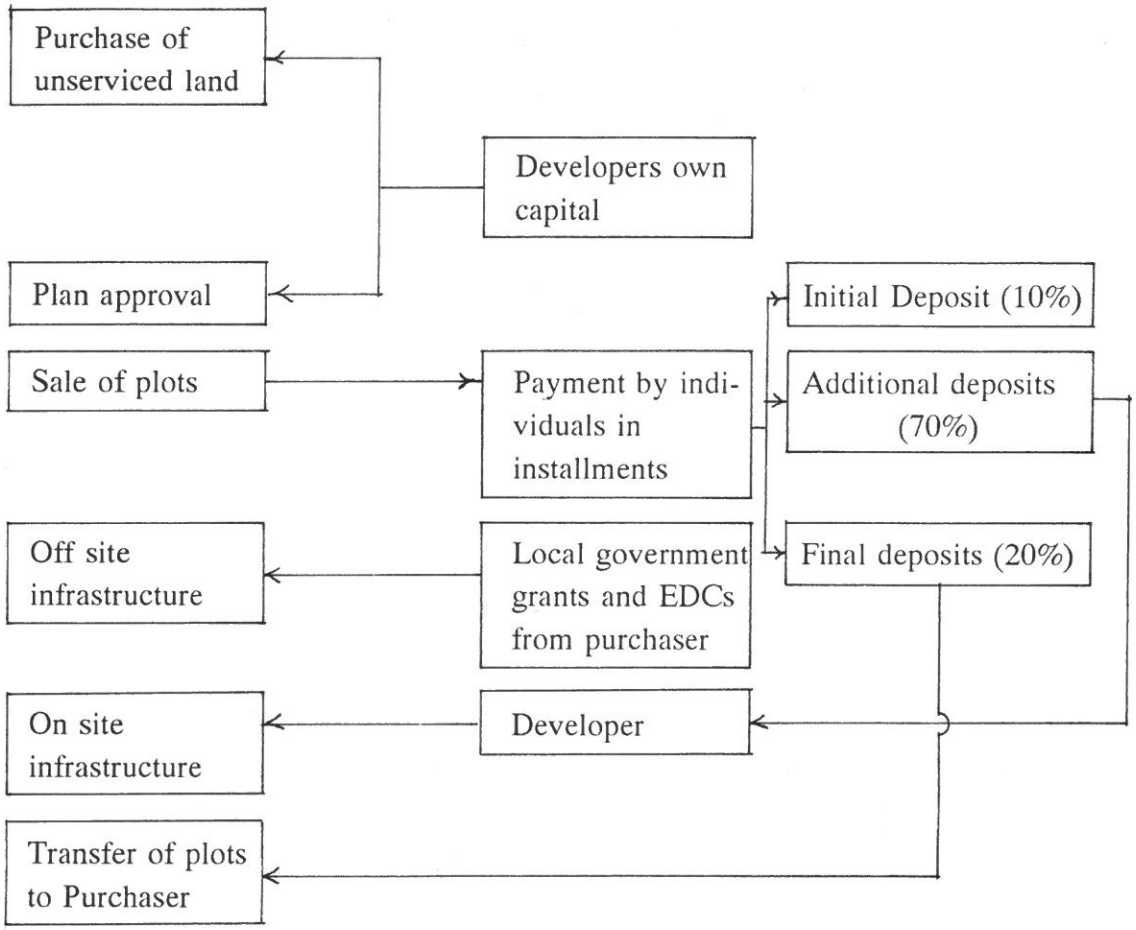
DLF uses internal funds as initial capital. Once land is bought on credit, payments for land are made from the initial installments paid by the allottee.

For the offsite infrastructure provided by HUDA and other state agencies, DLF charges the allottee what is called as the External Development charges or EDCs. The total amount of EDC paid till date by DLF sums up to Rs.64 crores i.e. Rs. 3.72 lack/acre.

The following diagram is self explanatory.

Fig. 2

Private Sector Flow of Funds in Haryana



Source: Billand (1990)

B. Lucknow Development Authority Model (1987)

Under a Government Order (G.O.) issued by the State of Uttar Pradesh, the State's twenty development authorities were empowered to provide land on a license basis to private developers for land development and construction of houses in planned areas and as per master plan norms.

In 1987, the State Government of Uttar Pradesh took the policy decision to involve the private sector in the development of shelter for all socio-economic groups, including low-income and weaker sections.

The novelty of the LDA model in the Indian context is that it is the only example identified by the team whereby a public body enters into a licensing agreement to allot public land to a private developer for the joint public-private development of a range of shelter solutions. In this specific case, the LDA allotted large sections of land to the three developers from a new township it was developing on the southern periphery of Lucknow. The main features of this joint public/private land delivery model are as follows:

- Developer reimburses the Development Authority (DA) for the raw land price of the entire site (marketable and non-marketable);

- Developer pays/reimburses the DA for the installation of the external development works (roads, sewerage, storm water drains, etc.) @ Rs. 37.00/sq.m.

- Seventy percent of the total plots must contain dwelling units;

- Forty percent of the total plots must be for EWS households;

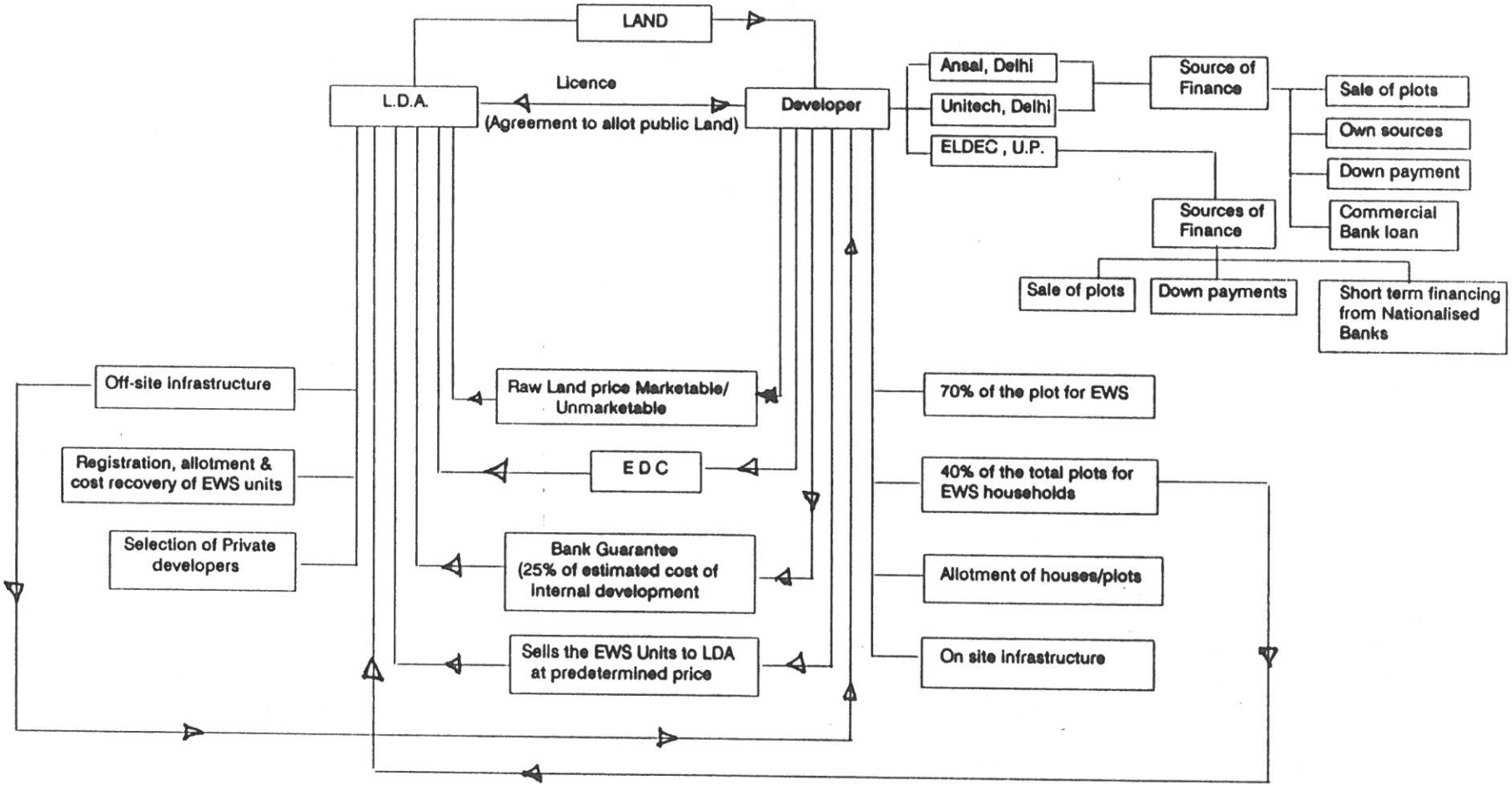
- Developer sells the EWS unit to the DA at a below market, pre-determined price;

- Registration, allotment and cost recovery of the EWS unit are the responsibility of the DA;

- Allotment of the other houses/plots is done by the developer.

The developer is obliged to furnish a bank guarantee (performance bond) to the DA in the amount of 25 percent of the estimate cost of internal development. (fig.3).

LUCKNOW DEVELOPMENT AUTHORITY MODEL (LDA)



With respect to the licensing arrangement covered by the Government Order, the LDA allotted approximately 800 acres of this township to the three developers selected for the programme - Ansals, 400 acres' Unitech, 200 acres; and ELDECO, 200 acres.

Private Sector Development of Township Scheme

As mentioned previously, the LDA has divided the private sector portion of the township into three sectors. The individual developers, through a licensing arrangement, purchased their respective parcels from the LDA at an initial sum of Rs. 40 per sq.m., which subsequently has increased to Rs. 100 per sq.m. The developer reimburses the LDA not only for the marketable land, but also for land reserved for roads, public facilities and open space. In addition to raw land costs, the developer also paid reimbursed the LDA for the estimated cost of external development, including access roads, sewerage, storm water drains, etc. The LDA initially fixed the price for this development at Rs.37.50 per sq.m.

The licensing agreement with the LDA stipulates that 40 percent of all unit must be for EWS households. The developer, who constructs the EWS units, is reimbursed by the LDA at a predetermined price. The developer is allowed to recoup the difference through a cross-subsidy from the non-ews units. The plot size of the EWS units will vary from 27 to 36 sq. m.

C. Guided Urban Development: Madras Metropolitan Development Authority (MMDA) Model

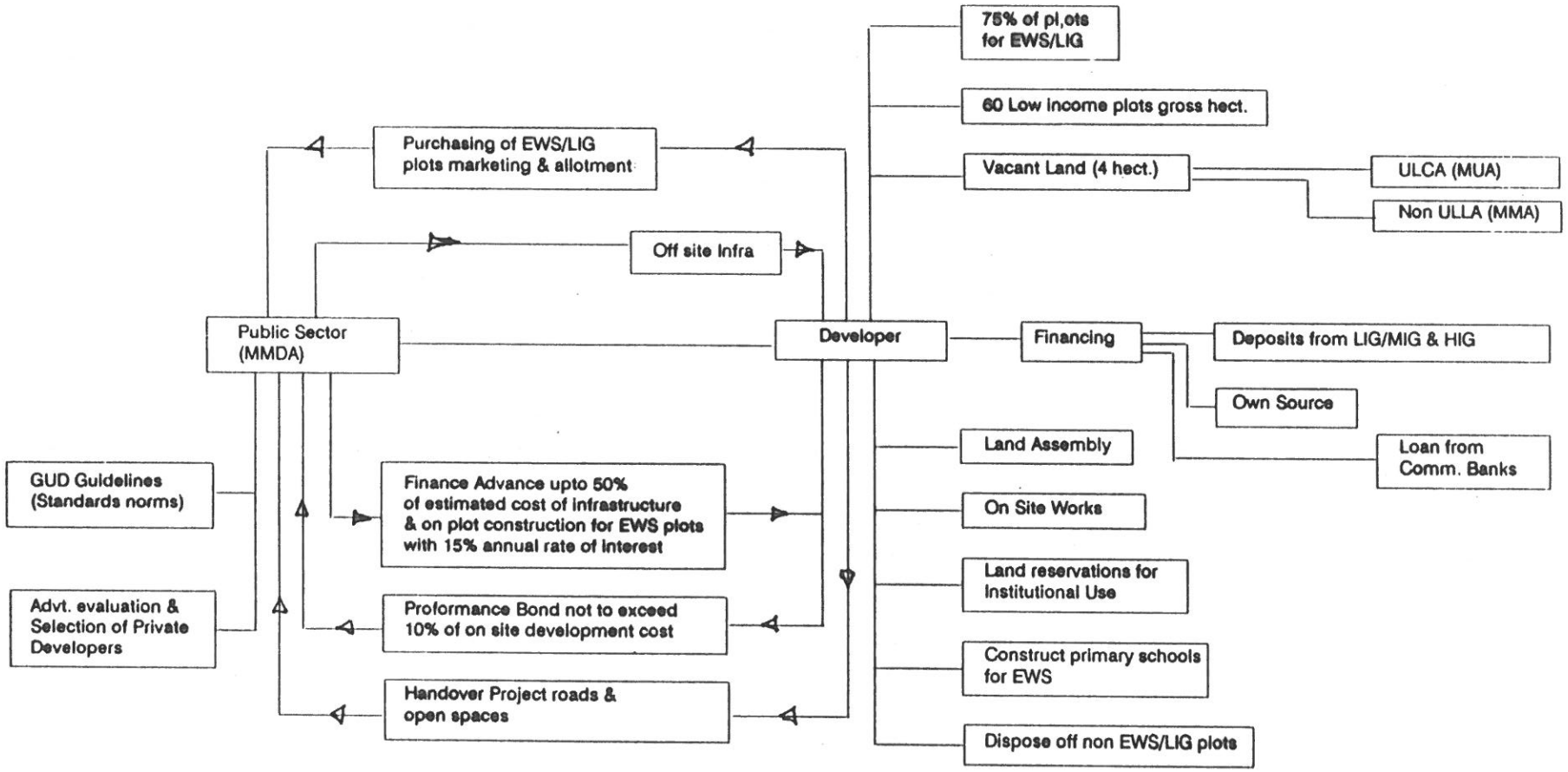
Prior to the concept of guided Urban Development, the MMDA undertook its land development schemes through compulsory acquisition under the Land Acquisition Act (1894). However, due to various reasons given below MMDA has not been particularly successful in providing access to land for a wide range of socio-economic groups.

- Significant quantities of urbanizable land are registered as agricultural land, and thus not covered by the Urban Land Ceiling & population Act, 1976 (ULCA) until a change of use is requested.

- developers do not perceive the ULCA's EWS exemption as sufficient incentive to develop for lower-income groups;

- much surplus land potentially available for lower-income development is tied up for years in court litigations.

GUIDED URBAN DEVELOPMENT: MMDA MODEL



Objective

- ensure the provision of a high percentage of services plots for lower-income families at affordable prices (approximately 75 percent of total plots);

- provide incentives to the private landowner/developer to participate in the provision of lower-income shelter solutions by guaranteeing a fair return on ivestment (guidelines recommend profit of 20-30 percent).

Partnership Typology

Public Sector

- formulating GUD guidelines and physical development standards that are patterned on those used on prior sites and services projects;

- advertising, evaluation and selection of private developers based on a predetermined set of criteria;

- providing essential off-site infrastructure such as roads, water supply and access to electricity;

- purchasing the EWS and LIG plots from the developers at a fixed price, and marketing and allotting these plots to the target group.

Private Developers

- Carry out land assembly;

- provide performance bond not to exceed 10 percent of on-site development costs to guard against default;

- provide on-site services including water supply, sewerage, roads, drainage, street lighting, etc.;

- handover project roads and open space to the MMDA;

- provide free of charge all land reservations for institutional use;

- construct primary schools specifically for EWS households;

- dispose of all non-LIG and EWS plots at prices fixed by the developer. (fig.4).

Principal Physical Development Guidelines

The MMDA will apply the following principal development guidelines to the GUD programme:

- minimum project size of four hectares for proposed development; the assembled land can include:

  - vacant land subject to the ULCA within the Madras Urban Agglomeration (MUA);

  - land parcels not subject to the ULCA outside the Madras urban area, but within the Madras Metropolitan Area (MMA).

- minimum of 60 low income plots per gross hectare of land; the size distribution of these plots will be as follows:

- 75 percent of total plots will be reserved for EWS and LIG households.

Project Housing

On-site development is the responsibility of the private developer. The MMDA is prepared to offset these development costs by offering the selected developers an advance of up to 50 percent of the estimated cost of infrastructure and on-plot costs for the EWS plots. This advance would carry an annual interest of 15 percent. While potentially interesting, most developers indicated that they would most likely opt for financing the on-site development from other sources. The GUD programme permits developers to collect deposits from prospective LIG, MIG and HIG households for on-site works. However, the agreement limits deposits to one-tenth of the LIG and MIG plot costs, and to one-fourth of the HIG's. The developers envisaged for this programme will also make use of their own capital resources, as well as to those of commercial financial institutions.

The costs of off-site infrastructure, if any, will be borne by the MMDA. Funds from the World Bank-financed tamil Nadu Urban Development Project (TNUDP) can be used by the MMDA to provide off-site infrastructure and to purchase the low-income plots from the private developers at prices stipulated in the guidelines.

Compensation to Private Developers for EWS / LIG Plots

The private developer will receive compensation for the lower-income plots at the following rate:

Category	Plot Area (m^2)	Compensation (Rs.)
EWS A	30	5000
EWS B	40	8000
LIG	60	6000

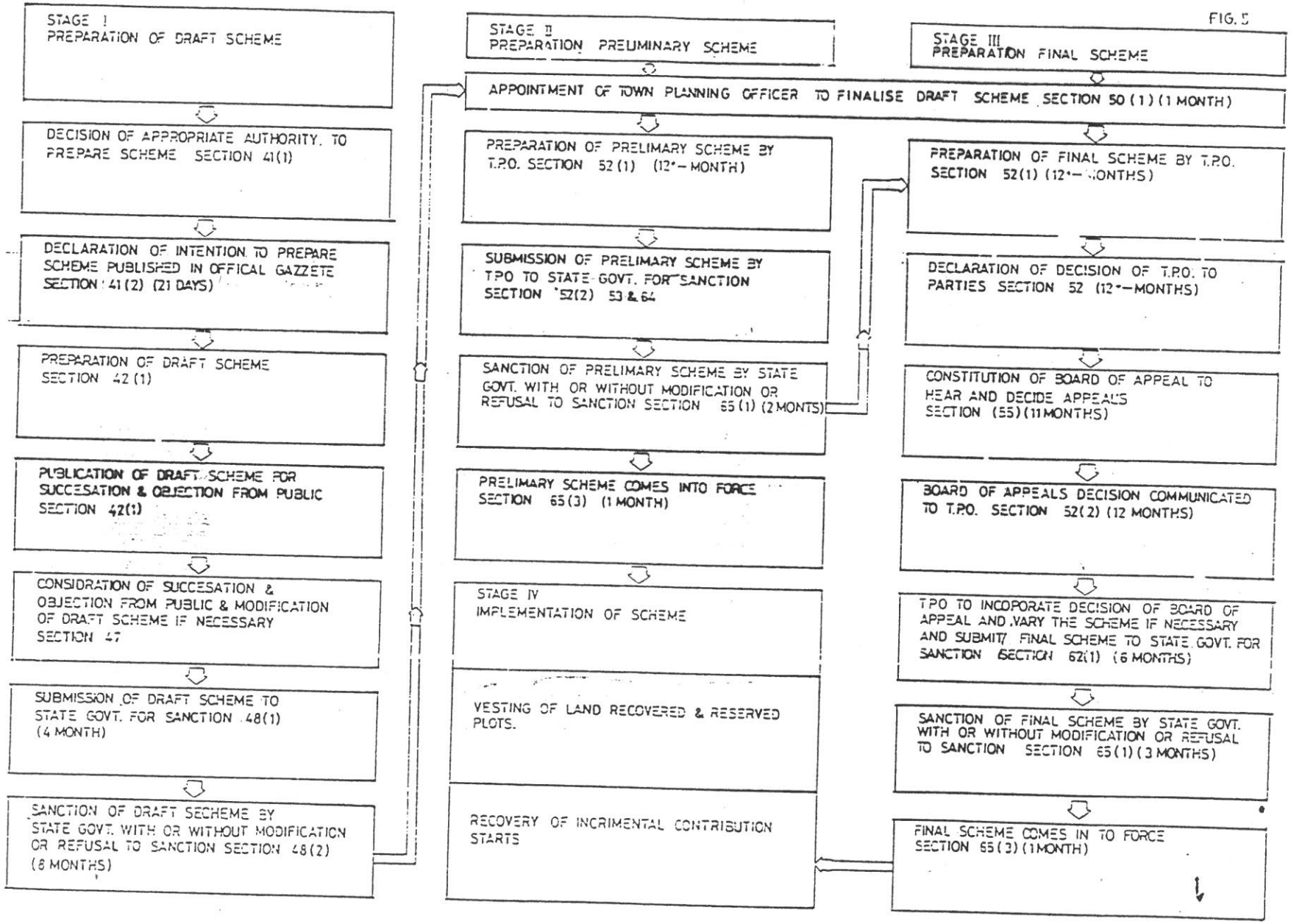
The apparent discrepancy between the compensation paid for the smaller EWS plot contain a minimum sanitary core unit. These plots, therefore, are marginally more expensive than the LIG plots. The households income criteria used to allot the lower-income plots are revised annually in accordance with increases in the cost of living.

D. Town Planning Schemes (Gujarat)

The Scheme:

Gujarat adopted the Town Planning Scheme (TPS) to expedite the process of land development, which was constrained by the then existing method of land acquisition and development as it was both time consuming and expensive because of legal problems and the heavy compensation the local authorities had to pay to land owners. To overcome such difficulties the state adopted the technique of land pooling (followed in Eastern Asia by Japan, South Korea and Taiwan), whereby irregular plots of land are pooled together, serviced and reconstituted into systematic plots before returning a proportion of improved land to the owners. A fraction of the retained land is used for public use, and another portion is sold to buyers to generate funds for development. The method, thus, becomes a self-financing technique and is less costly for the local authorities, as no payment has to be made for land acquisition. Besides, a portion of the cost of infrastructure is realised from the land owner. It was believed that with less of financial transactions, this technique of land development would work out to be faster and

FIG. 5


STAGE I
PREPARATION OF DRAFT SCHEME
DECISION OF APPROPRIATE AUTHORITY TO PREPARE SCHEME SECTION 41(1)
DECLARATION OF INTENTION TO PREPARE SCHEME PUBLISHED IN OFFICAL GAZZETE SECTION 41(2) (21 DAYS)
PREPARATION OF DRAFT SCHEME SECTION 42(1)
PUBLICATION OF DRAFT SCHEME FOR SUCCESATION & OBJECTION FROM PUBLIC SECTION 42(1)
CONSIDRATION OF SUCCESATION & OBJECTION FROM PUBLIC & MODIFICATION OF DRAFT SCHEME IF NECESSARY SECTION 47
SUBMISSION OF DRAFT SCHEME TO STATE GOVT. FOR SANCTION 48(1) (4 MONTH)
SANCTION OF DRAFT SECHEME BY STATE GOVT. WITH OR WITHOUT MODIFICATION OR REFUSAL TO SANCTION SECTION 48(2) (6 MONTHS)
STAGE II
PREPARATION PRELIMINARY SCHEME
APPOINTMENT OF TOWN PLANNING OFFICER TO FINALISE DRAFT SCHEME SECTION 50(1) (1 MONTH)
PREPARATION OF PRELIMARY SCHEME BY T.P.O. SECTION 52(1) (12*—MONTH)
SUBMISSION OF PRELIMARY SCHEME BY TPO TO STATE GOVT. FOR SANCTION SECTION 52(2) 53 & 64
SANCTION OF PRELIMARY SCHEME BY STATE GOVT. WITH OR WITHOUT MODIFICATION OR REFUSAL TO SANCTION SECTION 65(1) (2 MONTS)
PRELIMARY SCHEME COMES INTO FORCE SECTION 65(3) (1 MONTH)
STAGE IV
IMPLEMENTATION OF SCHEME
VESTING OF LAND RECOVERED & RESERVED PLOTS.
RECOVERY OF INCRIMENTAL CONTRIBUTION STARTS
STAGE III
PREPARATION FINAL SCHEME
PREPARATION OF FINAL SCHEME BY T.P.O. SECTION 52(1) (12*—MONTHS)
DECLARATION OF DECISION OF T.P.O. TO PARTIES SECTION 52 (12*—MONTHS)
CONSTITUTION OF BOARD OF APPEAL TO HEAR AND DECIDE APPEALS SECTION (55)(11 MONTHS)
BOARD OF APPEALS DECISION COMMUNICATED TO T.P.O. SECTION 52(2) (12 MONTHS)
T.P.O TO INCOPORATE DECISION OF BOARD OF APPEAL AND VARY THE SCHEME IF NECESSARY AND SUBMIT FINAL SCHEME TO STATE GOVT. FOR SANCTION SECTION 62(1) (6 MONTHS)
SANCTION OF FINAL SCHEME BY STATE GOVT. WITH OR WITHOUT MODIFICATION OR REFUSAL TO SANCTION SECTION 65(1) (3 MONTHS)
FINAL SCHEME COMES IN TO FORCE SECTION 65(3) (1 MONTH)

cheaper. For the satisfaction of the land owners, the method involved a kind of community participation in which the judgement of the owners was sought at all stages of development.

T.P. schemes have been in practice in Gujarat for the past seven decades, with a legal backing of the Bombay Town Planning Act of 1915. This Act provides for the planning and implementation of the T.P. schemes within the limits of urban local bodies. The 1915 Act was modified in 1954 and subsequently replaced in 1976 to take up T.P. schemes within and outside the limits of the urban local bodies.

Initially, sale of plots as is prevalent in the east Asian countries, was not practiced in Gujarat. This created financial constraints for the development agencies. Hence, at the behest of the World Bank, an amendment was made in the Town Planning Act 1986, providing for sale of some land to generate resources for development.

Formulation of the Scheme

The scheme follows the master/development plan and is prepared in three stages. In the first stage, which is the draft stage, the local authority, in consultation with the Chief Town Planner declares the intention to formulate a T.P. scheme and specifies the area. The local authority then calls a meeting of the land owners to explain the tentative proposal and to elicit public opinion and suggestions. Within a year of the declaration, a draft scheme is made, accompanied by such details as ownership and extent of land included, the street network, the statement showing the lands proposed for acquisition and reservation the estimated cost of the scheme and regulations for enforcing the scheme proposal.

The local authority has to publish the draft scheme in the Government Gazette inviting objections and suggestions from interested persons, in writing, within 60 days from the publication of the scheme. The local authority considers these objections and suggestions and modifies the schemes if it is needed, in consultation with the Chief Town Planner and then submits the modified scheme for government approval through the Chief Town Planner.

The Government may sanction the scheme with or without the modifications or may refuse to sanction or return it to the local authority for reconsideration. It is then resubmitted to the government within 6 months for approval. In the case of a modified scheme, it should be published and passed by the local authority once again before resubmission. When the scheme is sanctioned by the Government, it is published by notification in the Government Gazette, which is the conclusive evidence that the scheme has been duly sanctioned. After the sanction of the scheme, a Town Planning Officer is appointed by the Government to finalise the scheme.

The role of this officer is similar to that of an arbitrator. He divides the draft scheme into two parts - the preliminary scheme and the final scheme.

In the Preliminary scheme the Town Planning Officer determines the reconstitution of plots and demarcates areas for public use. He then decides on the ownership of the final plots and the shares of the owners and the transfer of rights from the original to the final plots. He also determines the period within which the work has to be completed by the local authority. The town Planning Officer publishes the scheme and communicates his decisions to owners and interested persons. He also presents a copy of the scheme for public inspection and finally submits the preliminary scheme to the Government for sanction. However, the work on preliminary scheme can begin even before the final scheme is approved. Such a process saves time. Normally the implementation of preliminary scheme and processing of the final scheme is done simultaneously.

In the final scheme, decisions regarding valuation are finalised. These decisions include determination of the values of the original undeveloped plots and the developed final plots, fixation of compensation payable to and the payment of incremental contribution by the land owner. It also determines the extent to which every plot reserved for public purpose is beneficial for the area.

The Town Planning Officer publishes the scheme and communicate his decisions to the owner and the interested person. He also keeps the copy of the scheme open for public inspection. An opportunity is given to any aggrieved part to file an appeal before the Board of Appeal. The Town Planning Officer then submits the final scheme to the State Government for sanction. The State Government may sanction it in original or with modifications. The government keeps the scheme open for public inspection and notifies the date of enforcement. (fig.5).

Financing of the Scheme:

The development of land and its reconstitution increases the guidability of land and thereby the value of the plot. The plots become regular in shape, their accessibility increases, more facilities are available and the quality of the environment improves. The owner, thus, gets an "unearned increment" with the rising market value. The local authority, therefore, has legitimate claim over it. Hence, in a T.P. scheme, the owner, has to pay half of the "estimated increment" (at the existing market rates) of the land value, as his contribution towards the cost of the Scheme, as he directly benefits from such development. He retains half the increment in the immediate market value and full increment in the future. The owner receives a compensation

for the land which is deducted from his original plot for public and/or other use. The deduction of the area is shared equally by all the land owners.

Investment for planning and implementation of a T.P. scheme is made by the urban local body/development authority. As per the regulations of the Town Planning Scheme, the costs include; (i) construction costs of infrastructure and public facilities; (ii) compensation for land reserved or designated for any public purposes; (iii) expenses for making the scheme, and (iv) legal and administrative expenses. The actual expenditure on implementation of TPS is much higher than the estimated cost of the final scheme. This is because implementation of TPS takes a long time and the estimated costs do not include escalation in construction and other costs. The cost of implementation of a TPS is met through the annual budget of the urban local body. The urban local bodies, generally have marginal resources for this purpose. This is one of the reasons for delay in implementation of TP schemes.

Cost recovery (betterment collection) from a TPS project as mentioned earlier, is in the form of owner's contribution which is upto half of estimate increment in land value due to implementation of the scheme. The land owners have the option of paying their contribution either in lump sum or in ten annual installments at a nominal interest rate of 6 percent per year. Therefore, most of the land owners prefer to pay the amount in installments. However, it is worthwhile to mention here that the compensation for land acquired for public infrastructure and facilities through implementation of TPS, is lower than the market price (Chetan Vaidya: 1984). Besides, the owner's contribution helps to partly recover the cost of infrastructure, which is normally the responsibility of the local bodies. It is here that the TP Scheme merits over the highly expensive traditional land acquisition and development mechanisms.

E. City and Industrial Development Corporation (CIDCO)

While CIDCO's operations in the new townships viz: New Bombay, New Nashik, New Aurangabad etc, followed the model of bulk land acquisition-development-disposal, in certain other projects it has innovated approaches that do not depend on bulk land acquisition. These innovations are significant and provide important guidelines to the urban Development Authorities in the country, to explore alternatives to bulk land acquisition.

Land Acquisition Act of 1894, under which most urban development authorities operate, is found to be quite a cumbersome and time-consuming process. Increasingly, the various amendments to the Act have favoured the land owners and thus increased the cost of land acquisition manifold. While the other agencies are still in the process of identifying alternatives to bulk land acquisition, CIDCO's approach in Vasai-Virar and Waluj, demonstrate such options.

In the following description, the major concepts used in both these projects by CIDCO are highlighted.

Vasai - Virar Sub-Region

CIDCO was designated as Special Planning Authority under the Maharashtra Regional and Town Planning Act, 1966, for the sub-region of Vasai-Virar, north of Bombay Municipal Corporation. This sub-region is covered under the development plan of the Bombay Metropolitan Region. The suburban railway line upto Virar has provided an impetus for rapid and haphazard development. The draft development plan also follows this linear spine of the commuter rail network and proposed to provide an orderly development with adequate infrastructure services.

As the developmental pressures in the region are already very high, with many plots already developed or being developed, the conventional strategy of bulk land acquisition, followed in new town development, would have led to many difficulties and delays. Instead of this conventional strategy, CIDCO adopted the concept of Transferable Development Rights (TDRs) as prevalent in the Bombay Municipal area and extended it in the form of a negotiable instrument of Development Rights Certificates (DRCs). These are explained in the subsequent sections.

Transferable Development Rights and Development Rights Certificates

The underlying concept to land acquisition, used by CIDCO is that of Transfer of Development Rights (TDR). Under the scheme of TDR, the owner (or lessee) of a plot of land which is reserved for public purpose is eligible for the award of Transferable Development Rights in the form of Floor Space Index equal to the gross area of the reserved plot to be surrendered. Such FSI is made available to the land owner in the form of a development Rights Certificate (DRC), as a negotiable instrument, which may be used by the owner or transfered to other persons.

It is thus hoped that the entire requirement of land for public uses and under reservation for roads, housing and community facilities would be forthcoming from the owners willingly, as the developmental rights of the land will in fact be still available with the owner, to be used or traded in the market. The specific conditions governing the TDRs and DRCs are listed in Annex 4.

Development Charge

Financing of land development in the two project is envisaged through levy of development charge. This charge varies by the zones and land-uses. The specific rates are listed in Annex 5 for Vasai-Virar and Annex 6 for Waluj.

Waluj Model

Waluj Notified Area of about 10,000 hectares, is situated 4 kms west of Aurangabad in Maharashtra and includes a large industrial estate (1600 hect.) of the Maharashtra Industrial Development Corporation. This rapid development of this industrial estate has already created pressures on the city of Aurangabad. As CIDCO's new township of Aurangabad city, had succeeded in reducing pressures on the city of Aurangabad, CIDCO proposed the Waluj township near the industrial area.

In the Vasai-Virar sub-region of Bombay Metropolitan Area, demand for land and shelter has been growing rapidly as a result of overall development in the region. CIDCO's role as a special planning authority is more of managing this demand within a public-private partnership mode.

On the other hand, in the Waluj industrial area, CIDCO's role is to promote development of the township in consonance with the industrial development taking place in the planned industrial estate. To promote the township, CIDCO has adopted a different approach of public-private partnership in land development.

The strategy adopted for Waluj is to acquire only minimum of private agricultural land and allow the owners of land to participate in the development of new towns- CIDCO envisages its role to provide the basic infrastructure and develop small parcels of land in each node as 'growth centres' to promote private development around these growth centres.

In the growth centres, CIDCO proposes to develop services upto plot level and provide all the social/community facilities. In areas outside the growth centres, CIDCO would construct all major roads (18 m and above) and provide the trunk infrastructure like electrification, water, sewerage and stream water drains, along these roads, land received for community facilities & services are to be developed by owners under TDR/DRC scheme or to be acquired by CIDCO.

Shelter

The approaches being used to provide shelter in New Bombay by City Industrial and Development Corporation (CIDCO) is given below:

CIDCO pre-qualifies developers on the basis of a minimum turnover of Rs.3 crores/year in building works who could execute housing schemes of their own design including infrastructural services on a turn-key basis within a given time frame. The works are awarded through competitive tendering. The execution is supervised by eminent Engineering project management Consultants (PMCs) instead of CIDCO's in-house engineering staff. The role of PMC is equivalent to that of the in-house executive engineer i.e.e to approve the engineering designs, drawings, supervise, administer contract conditions, certify all running bills and recommended to CIDCO the release of payment. The fees fixed for the PMC is two to two-and-a-half per cent of the estimated project cots. The PMCs are selected form the prequalified list and must execute an agreement with CIDCO including furnishing or performance guarantee.

CIDCO has also pre-qualified eminent architects and planning consultant firms who are members of all India council of Architects. The final selection is based on the track record of each consultant. CIDCO has decided to entrust each consultant with one scheme of about 1000 houses along with the provision of infrastructure. The consultants job includes planning the layout, designing the houses, preparing detailed engineering drawings of buildings and services including preparation of tender documents, scrutinizing tenders and preparing comparative statements for tender acceptance. The actual execution is supervised by PMCs.

CIDCO has also floated housing design, competitions among young architects and the prize winning entries are later taken up for execution through the same architect with PMC supervising the actual work. The benefits of such an approach are that the monotony of designs is broken, competition is induced among architects and builders, it is cost effective in terms of supervision and it also helps to dispense with creation of a large number of permanent staff with CIDCO.

Another new approach is going to be tried out by CIDCO for the Mass housing scheme. CIDCO proposes to earmark bulk land (of 3 ha each) for construction of houses to prequalified builders/developers. The permissible FSI will be 1 and 35% of the area will be earmarked for houses to be constructed for CIDCO with a build up area of between 20 to 50 sq.m. with given specifications. While the builder will construct the houses, CIDCO will market them to register eligible buyers either on hire purchase or outlift purchase terms. It will pay to the builder a fixed sum per tenement which will be released in stages commensurate with progress. On the

remaining 65% of the area the builder can construct houses of his choice as per the layout approved by CIDCO. 5% of the 65% area can be used by the builder for commercial purpose. CIDCO will use PMCs to supervise its part of the houses. The builder can simultaneously construct all tenements on the total plot, but will be required to obtain the Occupation Certificate for CIDCO's portion of housing first.

Thus, the houses are planned to be constructed not departmentally but with the help of outside consultants/reputed builders on a turn-key basis. CIDCO will pay the role of prime-coordinator and will do general supervision. By doing so it will be possible for CIDCO to construct a large number of houses in different nodes simultaneously by engaging sufficient number of architects/developers/PMCs.

Evaluation

The modes of public-private partnership in the delivery of serviced vis-a-vis existing set-up have been reviewed against five evaluation criteria. The major concern are those of equity, efficiency and compatibility in the distribution of land.

1. **Equity**

In the existing set up public authority acquire the bulk of land likely to be urbanized in the near future and exerts control over its use. It aims at the socialization of land through its equitable distribution so that it helps to widen the base of land ownership (by implementing the LCRA and by making provision for low income housing). Land development schemes which follow this modes have a set percentage of reserved plots targeted for the lower income groups, depending upon its social motive. For example, while Rohini has almost 83% of the total residential land reserved for EWS and LIG. Dwarka only has 22% reserved plots. Thus, the share of the poor varies but reservations definitely exists because of a social commitment that the public sector has towards the underpriveledge and those outbidden by market forces. However, prices are not affordable for them despite reserved plots being cross subsidized. In addition to this, genuine clients sometimes get adversely affected by the erratic disposal mechanism (when out of turn allotments, are made) which cause delays in allotment, after the long wait for the area to develop.

On the other hand, licensed colonizer is forced by the legislation, to reserve plots for the poor (as seen in the case of DLF) where 20 percent of the created residential plots are to be reserved for EWS and LIG and, another 25% for the 'no profit no loss' category. In a Public-Private partnership of this kind, the development authority monitors the allotment of the EWS

COMPARATIVE SUMMARY OF P/P PARTNERSHIP

MODEL CHARACTERISTICS	HARYANA	LUCKNOW	MADRAS	GUJARAT T.P. SCHEME
Form of Development	Integrated Township	Integrated Township	Guided Urban Development	Land Readjustment
Units Produced	Mostly Serviced Plots	Half Plots, Half Houses	50% EWS has san core, Rest Plots	Regularized LandParcels
Enabling Legislation	State Act	State Government Orders (GOs)	World Bank Loan Agreement	State Act
Area Coverage	State-Wide	Lucknow City to Date	Madras City	State-Wide
RESPONSIBILITIES				
Land Assembly	Private Developer	Public D.A.	Private Developer	Private Developer or Co-Op.
Internal Land Servicing	Private Developer	Private Developer	Private Developer	Private Developer or Co-Op.
External (Off-Site) Servicing	State D.A.	City D.A.	City D.A.	City Corporation or D.A.
Housing Construction	Plots Owners	1/2 Private Developer 1/2 Plot Owner	Mainly Plot Owners	Private Developer and Cooperatives
Disposal/Marketing of Units	Developer W/D.A.	Developer & D.A. Control	Developer & D.A.	Developer or Cooperative

plots which are cross-subsidized by the larger plots and commercial sites, so that prices are kept below the market rates. Since returns for these plots from second sale is much higher than the price that a beneficiary pays for them (Rs.1250 sq.m., Rs 85/- sq.m. respectively in the DLF case) he finds it more profitable to sell it off. Due to this, they are usually in higher demand and upward filtration through the process of second sales takes place. Vacant land speculation occurs till time when higher returns are assured. In the process, the intended target group looses out. The method of selecting beneficiaries for these reserved plots also deserve attention. The concern applicants are required to submit an income affidavit, ostensibility to prove their eligibility. This instead acts more as a shield for the private developer from any accusation of being unethical. The authenticity of the certificate is a prerequisite if the legislation genuinely has to benefit the poor and needs to be monitored carefully. The disposal of the NPNL plots (which are aimed at the MIG) are not monitored by the government. Contrary to the name, these fetch high returns after the plots are sold to sister concerns, and sold at exorbitant prices. Thus, despite there being a legislation which overtly provides for a mixed income group, land does not reach the strata it is aimed at as private developers are quick to find loopholes and try to increase profits. The Town Planning Standards (which result in 55% saleable area) and the stipulated reservations (which allows only 55% of plots to be profit earning) prompts the profit maximizing private developer to price the other plots so high, that it caters only to the HIG.

2. Efficiency

Efficiency is first being measured in terms of the time taken during the various stages of development. The case study of Rohini reveals that within a time span of 10 years, DDA has been able to acquire 70% of its targeted 4340 acres. From this, it could be concluded that process of acquisition by the public sector is slow. Delays take place due to litigation and administrative problems. This affects the pace of provision of service too. As legal problems on land persist, especially in parts that are built-upon before acquisition, large chunks of land amidst the project site need to be integrated with the rest of the plan. For example in Dwarka, about one-third of the site is occupied by unauthorized colonies. Time taken to provide even trunk services in these areas would take long. In the Rohini case, it has been seen that only 37% of the total areas has been serviced in 10 years, while DDA had hoped to do so in just half the time. DDA has always been accused of a very slow disposal process as in Rohini, DDA has been able to dispose of 35% of its total number of plots in a span of 10 years, considering the Ist draw of lots took place in 1982. Apart from this slow performance in releasing plots, allotment has also been rather erratic. In 1982, about 10,300 plots were allotted while in 1989, only 4700 plots were allotted.

In the case of the private developer operating in Gurgaon where a legislative act to involve them in the land development processes exists, things are very different. The process of purchasing land from the farmers is very fast i.e. it takes about 3 years to buy land in each phase of about 500 acres each. DLF develops it with all on-site infrastructure in about 6 years time and within another year, it starts disposing plots. So, each phase has taken about 10 years time to reach the client. This mode seems time efficient.

3. Quantity

The bulk land acquisition model adopted by a public agency (which operates on a very large scale), develops large tracts of land (how fast it is able to develop and supply land is quite a different story). It ranks the highest in this criteria as it is backed by availability of funds and legislative backing to acquire land (under the Land Acquisition Act, 1894).

Licensed developers are able to supply the next highest amount of land, since they are backed by legislation. Sometimes, licenses are issues for land parcels above a minimum specified size (for example, 100 acres in Haryana). Thus, the legislation operating in the area influences the scale of operation of the private developer. Since scales of economy operate, large townships are created. As and when demands rise, more land could be bought and licenses acquired. Thus, it responds to the need of the market. However, since the reserved plots are only a proportion of the total developed area, specified demand for EWS plots often remains unsatisfied. In Qutab Enclave for example, the EWS plots were in high demand where allotment to applicant ratio was 1:200. It must be realized that a number of non-genuine applicants distort the true picture of demand.

Private developers on freehold land seem to operate on a smaller scales, as they have to take into account, rural land ceiling limits. The case study of Ansals reveals that small parcels of 12 acres each was bought, under different heads and them amalgamated for Chiranjiv Vihar, a Group Housing Scheme presently covering about 100 acres. Since developers here are not backed by legislation to operate on a larger scale, their 'minicities' tend to be smaller.

4. Operational Efficiency

Apart from the time taken at each stage, the cost of development and profitability are the other criteria used to evaluate the modes.

a. Cost of development

In comparison with the other modes, DDA's cost of land is moderate i.e. Rs. 150/m^2. As stated earlier, the acquisition of land is done by Delhi Administration and handed over to DDA for developmentation activities. The land and developmental office of the Delhi Administration fixes its rates according to the standard compensation to be paid for acquisition which now is Rs. 6 lakhs/acre. This is in contrast to the market rates at which some private developers have to buy land.

Rohini's cost for developing the land is very high i.e. Rs. 560/m^2. This consists of costs for servicing land and overhead charges. This is probably where the public sector losses out in a big way to partnership models where provision of on-site infrastructure is in the hands of the private sector and this component is lower by about 3 to 4 times. The cost of developed land comes to Rs. 715/m^2 in Rohini. However, due to the objective of social equity, EWS, LIG and MIG plots are cross subsidized usually. Profits are enormous from the sale of HIG plots. In Dwarka, EWS, LIG plots, resettlement plots, CGHS, alternative plots are all subsidized.

5. Profitability

Profits earned by the land developer influences the price of plots and dwelling units which ultimately affects the affordability and thus the access to the poor.

The private developer gets the highest returns. In the licensed Colonizer model, huge profits are reaped, despite the existing legislation operating in the area, imposing a ceiling of 15% maximum net profit (of the total project cost). The DLF case study revealed that their profits reached dizzy heights despite 45% of the plots being subsidized. These high profits are earned from the general category plots, built property (often located on the reserved plots) and commercial sites. The pricing of these profit earning plots are designed to accommodate cross subsidization. It has been realized that the allotment of all the reserved plots need to be monitored and supervised by the public agency or it becomes an easy prey to the manipulation of the private developer. The Town Planning Standards are also responsible for the high prices of the unreserved plots as they allow only 50% saleable area and this hikes up prices to make the venture viable. May be the proportion of reserved plots could be reduced and the Town Planning Standards made more realistic, so prices are fixed lower.

Private Developer on freehold land also make huge profits selling built up property. This takes place despite the delayed development, as the developer takes advantage of the appreciation that is fuelled by public expectations.

In the bulk land acquisition model, profits are moderate and the system is self-sustaining. Due to the social commitment that is natural of a public sector, EWS, LIG and MIG plots/flats are usually cross-subsidized by high returns from commercial and auction plots. The Dwarka and Rohini cases illustrate this point. Due to the mechanism of financing development in the bulk land acquisition model (usually through a revolving fund), the development authority is often accused of speculation, which leads to a rise in prices.

CHAPTER III

Public - Private Partnership Arrangements: Alternative Options

The earlier section analyses the initiatives in dealing with the serviced land delivery. The public agencies in most cities plays a major role in land development either as active developers or a passive controlling authority. In the now accepted premise of a facilitative role of the public sector, it is important to promote local initiatives which will lead to increased supply of serviced urban lands, which are largely self financing, and which serve the needs of the urban poor.

The emerging options is to evolve innovative means of participation and joint ventures between public and private sector. There are number of possible ways that this can be done. These include equity participation, sale and lease back of public owned asset, private financing and construction of infrastructure in return to a share of revenue or land etc.

With the objective of i) speeding up the planning, development and construction of residential and commercial spaces which are always in short supply in Delhi urban area and ii) to involve and channelize private sector and resources in development/construction of urban spaces in a controlled and planned way to reduce the growth of sub-standards areas i.e. shanty clusters, unauthorized colonies, extension of villages etc. an attempt is made to find ways to mitigate the problems identified earlier in public-private partnership approaches so that the suitable public-private partnership could be evolved in Delhi.

It may be mentioned here, that in past, facilitator role of the public agency was never really articulated. However, it is taking form through changes and reforms. The new ULCRA, (Urban Land Ceiling and Regulation Act) amendment limits at setting up "developer association" which acts as a self regulating body with codes of ethics to go by. Two new sections have also been introduced regarding the participation of property agents, private builders and developers.

In the new set-up, it is proposed that the Delhi Development Authority should assume a role of facilitator and monitor to meet urban land policy objectives. Involving public-private partnership in the delivery of serviced land in Delhi, the functional distribution of planning, land acquisition, trunk infrastructure development, peripheral infrastructure development, construction, monitoring and coordination work and disposal would be as under;

Delhi Development Authority should remain as an apex agency responsible for:

a. Overall city planning,

b. Land use zoning, sub-division regulation, building by laws, plan approval.

c. Co-ordinating and monitoring agency.

d. Provision of Trunk Infrastructure (Major Roads)

The private sector participation would be as under:

a. Sector planning

b. Peripheral development of infrastructure

c. Construction

The public-private partnership will be in terms of:

a. Disposal of land/space:

major part	-	Private developer
Small part	-	DDA

b. Investment:

Initial capital	-	DDA/Private developer
Subsequent capital	-	Private Developer

The functional distribution mentioned above will be applicable to the Nazul Land and the leased land. However, in case of freehold land, the different tools of land development such as land pooling/sharing could be used in specific pockets, as an alternative to compulsory acquisition - a way to persuade reluctant land-owners to participate in the land development process.

The financial arrangements involved in packaging a public/private partnership are quite sophisticated and difficult to pull together. The private developer requires expertise in mobilizing resources from multiple sources. This include his own equity and the initial installments of prospective buyers, as well as access to commercial and public sector lines of

credit. The requisite "proven track record" and the inherent financial risks involved are yet another factor that limits participation by the large developers.

However, the bias in favour of the larger developer must be rectified if India's enormous needs for serviced land are to be met in a formally planned and organized manner by earmarking smaller projects for smaller developer.

Keeping in view the enormous need for serviced land which has to be met in formally planned and organised manner and rectifying the bias in favour of large developers in metropolitan areas, three alternative options have been suggested for joint public-private partnership in Delhi earmarking small projects for smaller development. These are:

Alternative Option - I

In this case, Delhi Development Authority may allot a piece of land (up to 5 ha.) on lease to small private developer for the joint public/private development (Fig.1).

The salient feature of this public-private partnership will be as given below :

1. Cost of land to be charged from the private developer.

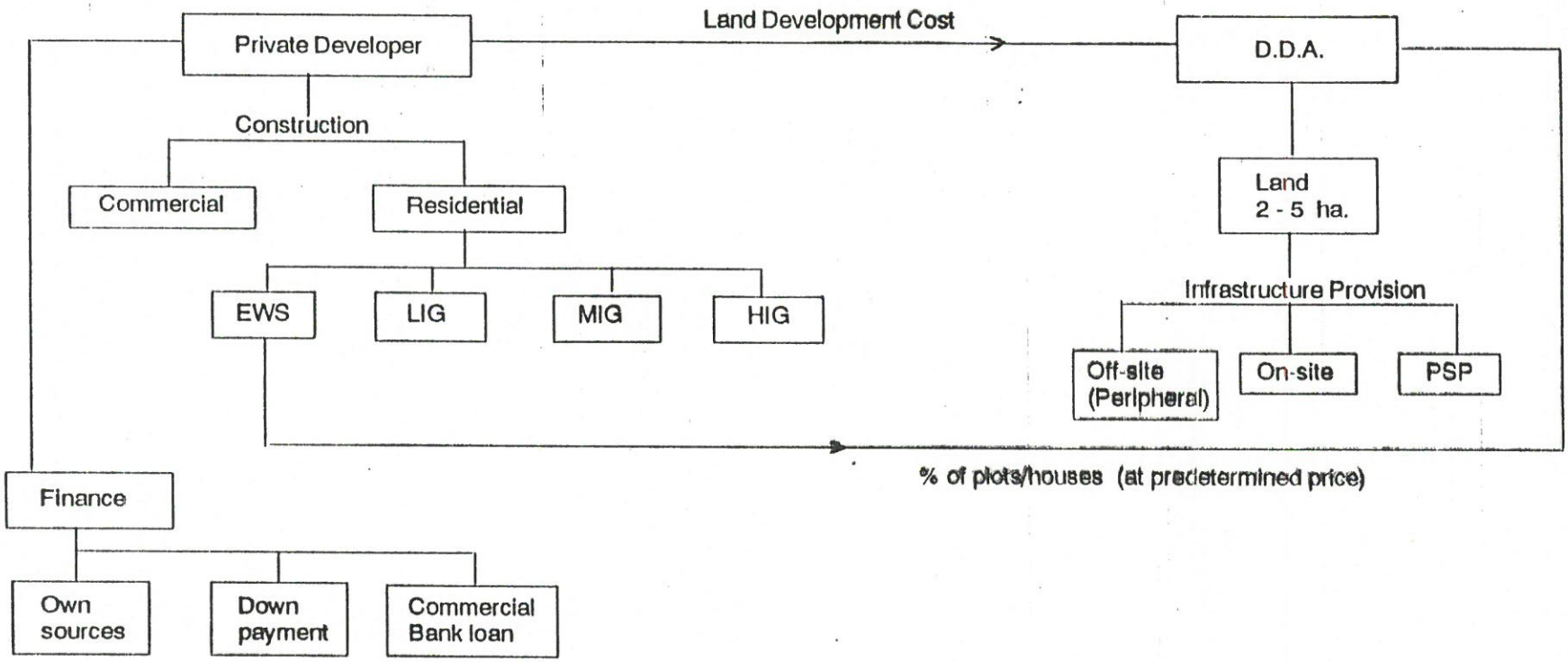
2. The private developer will undertake the development of plots and residential buildings. All the EWS houses are to be sold by DDA at predetermined price (affordable cost) for allotment to beneficiaries. Further, all LIG units and MIG units should be either given back to DDA to be sold at current sale price or will be sold by the developer at the current sale price i.e. chargeable cost. The cross-subsidisation within the scheme can be achieved by the developer by selling off HIG plots at a higher price, keeping in view the affordability of the income groups.

3. The DDA will be responsible for provision of off-site infrastructure and, on site infrastructure and provision of public/semi public buildings.

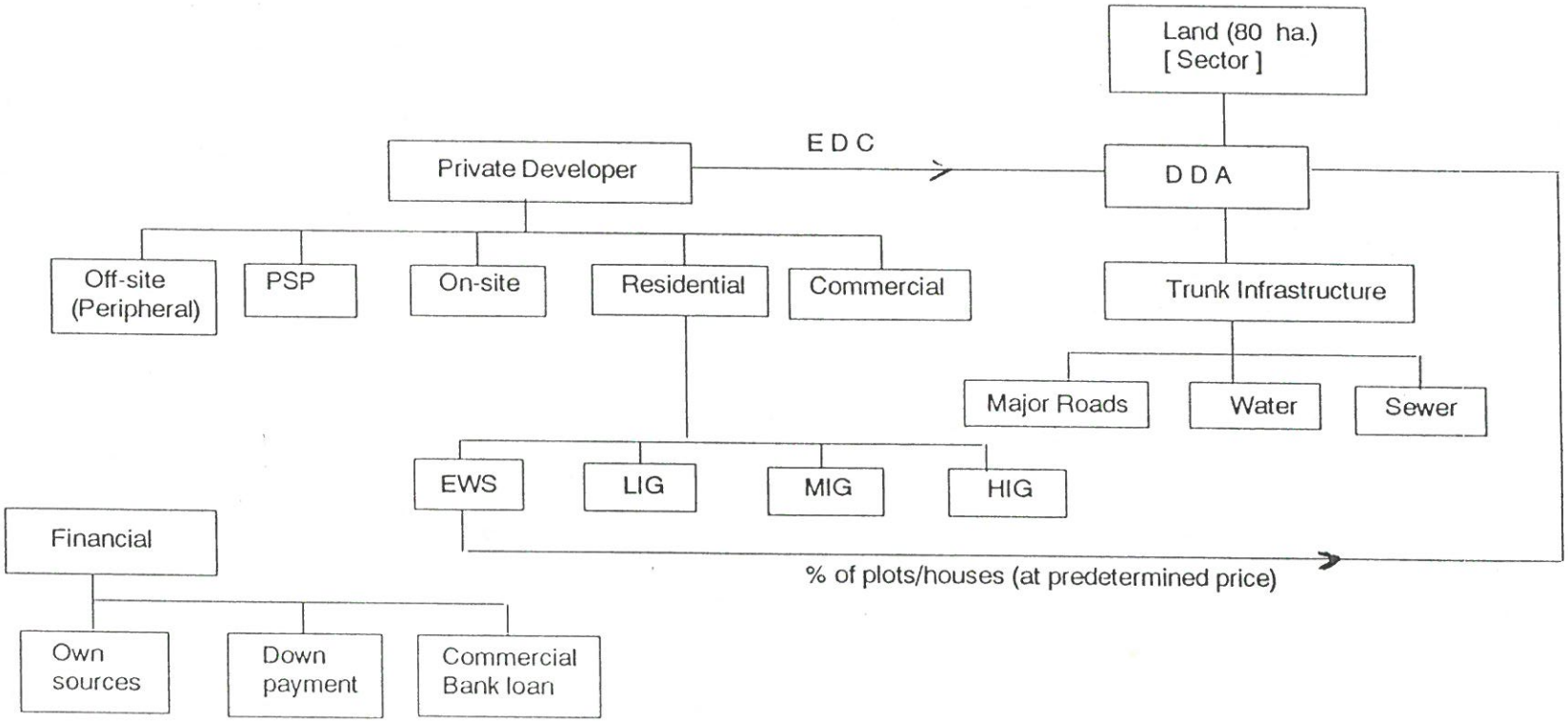
4. The development authority, while granting a license, may also impose a condition of time limit for development.

5. The registration and allotment of EWS units shall not be on hire-purchase extending more than six installments.

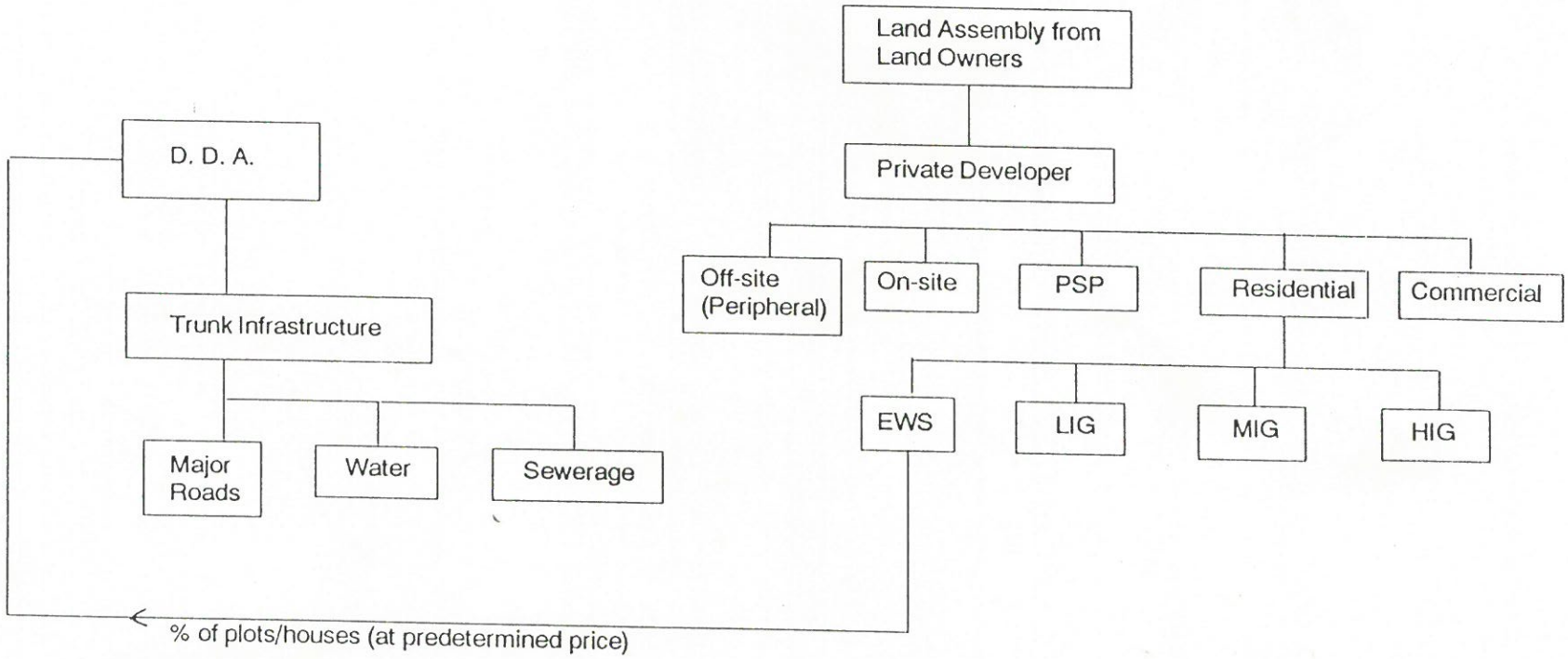
PUBLIC PRIVATE PARTNERSHIP (OPTION - 1)



PUBLIC PRIVATE PARTNERSHIP (OPTION - 2)



PUBLIC PRIVATE PARTNERSHIP (OPTION - 3)



6. After the construction is complete by the private developer, the area will be handed over to Development Authority for maintenance. Till such time the responsibility of maintenance would be of a private developer.

7. To ensure compliance as well as the timely completion of project works, the developer is obligated to furnish a bank guarantee (performance bond) for the entire project cost to the Development Authority.

8. After completing the construction of residential and commercial development, the lease is to be entered by the buyer with the Delhi Development Authority.

9. In case, if the developer leaves the development, the license fee which shall be considered as caution money would be forefitted.

10. No sub-licensing of the development sights in the project area shall be permitted without the consent of Delhi Development Authority.

The estimates of receipt and expenditure of DDA and private developer have also been worked out, under the public-private partnership arrangement mentioned above taking the estimates of cost of land over the break even price, investment required for provision of infrastructure, cost of construction of houses to be provided by developer and the number of houses constructed in different income categories according to the prescribed density in the Master Plan of Delhi, 2001.

Alternative Option - II

In this case, Delhi Development Authority may allot a large price of land (about 80 ha) on lease to the private developer for development under public-private partnership arrangement (fig.2). In this case, while the trunk infrastructure like major roads and off-site infrastructure for water supply and sewerage will be provided by Development Authority, the peripheral off-site and on-site infrastructure will be provided by the private developer. Besides, private developer will also undertake the construction of residential and commercial buildings. The other features of the partnership remains same as mentioned in Alternative Option I, with adjustments in land uses, wherever necessary. Besides, land for alternative plots and institutional housing and such other uses may not be provided in the sectors to be awarded to the private developer. Further, the major city level facilities such as ISBT or railway terminal etc. have to be accomodated either outside the sector area or all such areas are to be excluded from the sector to be awarded to the private developer for tendering.

Alternative Option - III

The third alternative option of public-private partnership arrangement in Delhi is being suggested in which land assembly can be done directly by the land owners and develop such land for residential purposes according to the stipulations which include: a) financial contribution to the development authority for attributable off-site infrastructure cost; and b) the reservation of a portion of the developed land for lower income housing to be allotted through the development authority (Fig. 3). In this case, either the developer is licensed and allowed to purchase land directly from landowners, or he purchases it from the Development Authority which has acquired it under the Land Acquisition Act.

Under this option certain planned areas may specially be designated to allow private developers to assemble parcels of land that exceed the limits set by the Urban land Ceiling Act (ULCA). In these designated areas, the developers may assemble land directly form landowners and develop such land for residential purposes which include : (a) financial contributions to the development authority for attributable off-site infrastructure costs; and (2) the reservation of a portion of the developed land for lower- income housing to be allotted through the development authority.

The Delhi Development Act, will have to be amended similar to the Haryana Development and Regulation of Urban Areas Act. (HDRUA) to formally involve the corporate private sector in the acquisition, development, and disposal of urban land. In this case, private developers will have to first apply for a license from the Delhi Development Authority, stating the details of the land and project intended. The land will be within a development scheme prepared by the Development Authority. The license to be granted should have mandatory provisions, such as:

- the developer must pay external development charges to DDA on a gross area basis (net m^2 basis for water) to cover the off-site costs of water, sewerage, surface drainage, roads, landscaping, and community facilities.

- the developer must reserve 20 per cent of the created residential plots of land for LIG and EWS housing categories with such plots to be allotted to beneficiaries under a system laid down by DDA.

- the developer must pay other servicing/administrative costs to DDA on a net m^2 basis.

- the developer must build certain community facilities and/or provide land for such purposes free of charge.

- the developer must maintain the completed colony for five years.

To ensure compliance with these conditions the developer must make out a bank guarantee in favour of DDA. The Development Authority in granting a license, may also impose additional conditions at their discretion, such as a time limit for development.

CHAPTER -IV

Public- Private Partnerships in the Delivery of Serviced Land in Delhi

The alternative options of public-private partnership arrangement in the previous section is applied to the forthcoming Dwarka project's sector. The attempt was to detail out the nature of partnership arrangements in the context of a current DDA project, in order to enable DDA to implement such arrangements.

Dwarka: A Sub-City of Delhi

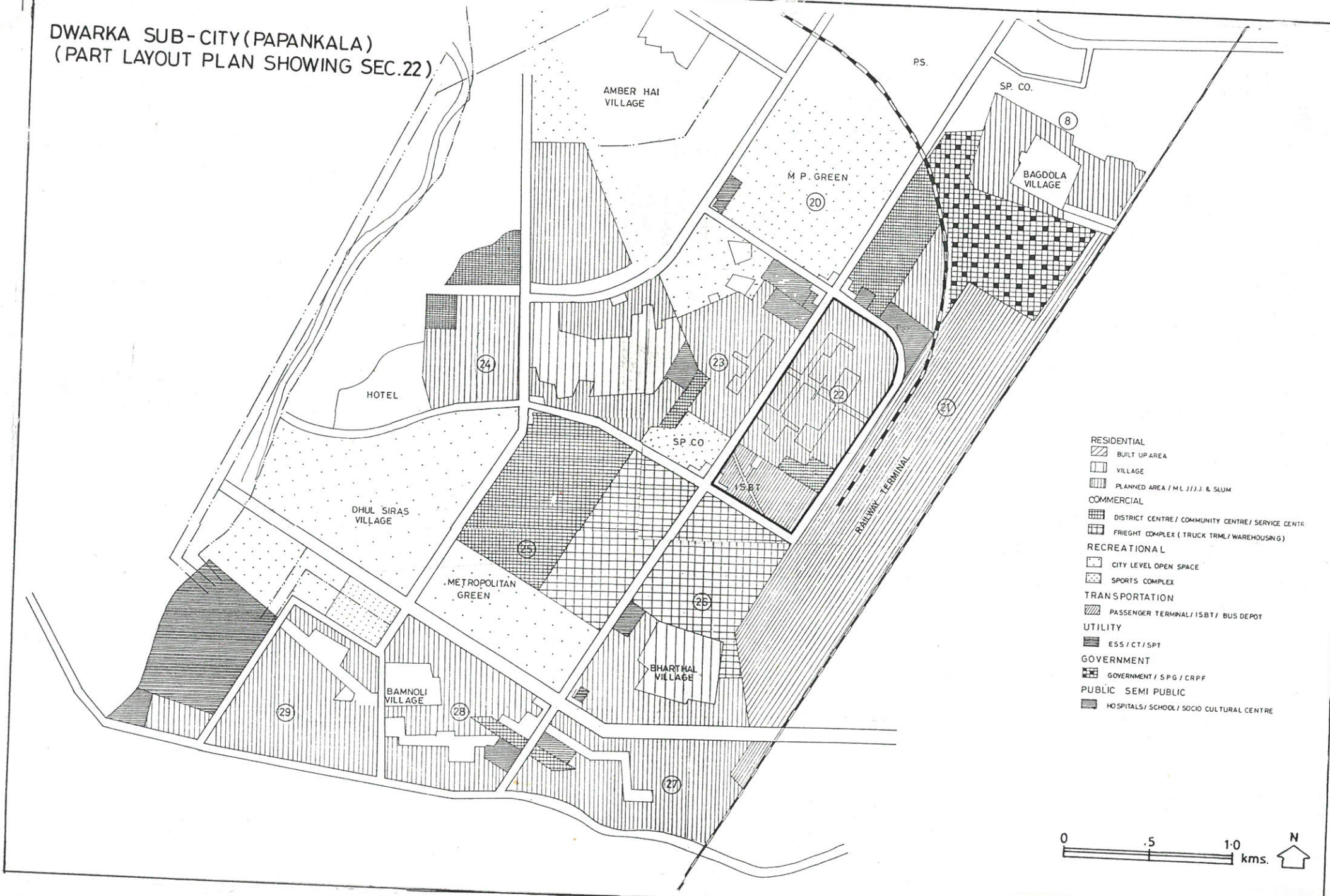
Dwarka project is located towards South-West of Delhi and is bounded by Nazarfarh Drain, Nazafgarh Road, Rewari Railway Line and Bijwasan Road. The areas around the project are Vikas Puri, Janakpuri, Cantonment area and Indira Gandhi International Airport. The total area of the project is 5,648 ha. which will be developed in two phases. The conceptual plan of Dwarka Project was approved by Delhi Urban Arts Commission (DUAC) in September, 1990.

Detailed planning of Phase I of Dwarka has been completed and at Master Plan level, land-use is as under : -

Master Plan Level Landuse distribution in Dwarka Phase I

S.No.	Type of landuse	Area in Ha.	%Area
1	Gross Residential	906	49
2	Commercial	68	4
3	Govt. Office	63	3
4	Public/Semi-Public	181	10
5	Service Centres	45	2
6	Utilities	41	2
7	Recreational	249	18
8	Transportation	309	17
		1862	100

DWARKA SUB-CITY (PAPANKALA)
(PART LAYOUT PLAN SHOWING SEC.22)



NATIONAL INSTITUTE OF URBAN AFFAIRS, NEW DELHI

Delhi Development Authority proposes to develop Dwarka as an independent sub-city to accommodate people of all income Group, High, Middle, Low and Janta (including EWS). It will provide physical (water, sewerage, drainage, power, tele-communication and roads), social (education, health, security, justice, recreation, shelter and employment), economic (commercial centres and other work places) and ecological (parks, playgrounds, open spaces) infrastructure facilities for these persons. On the commercial side, Dwarka will have 4 District Centres, 13 Community Centres, 21 Local Shopping Centres, about 100 Convenient Shopping Centres and service Centres etc. and educational institutions like Delhi Institute of Technology, Colleges, Senior Secondary Schools, School for Handicapped etc. Further, there is provision for public facilities like Hospitals, Nursing Homes, Poly Clinics, Health Centres, Police Post, Bus Depots, Integrated Freight Complex-cum- Wholesale Markets, Railway Passenger Terminal, Inter State Bus Terminus. (Map-1)

Apart from the construction of about 45,000 houses by DDA for its registrants, land will be allotted to about 400 Cooperative Group Housing Societies (about 60,000 flats) and to institutions for staff housing.

In the built-up area of 1688 hac. the existing population is about 2 lakh and with the passage of time, this population will increase to about 3.5 lakhs. As such, out of the total population of 11 lakh, there will be about 7.5 lakh population in the planned area of DDA, whereas the population of already built up area will be 3.5 lakh. DDA proposes to replan and redevelop these areas in a phased manner but with the plan funds of Delhi Administration. Therefore, while planning physical and social infrastructure, the requirement of water supply, sewage disposal, electrification and storm water drainage of the total project area including that of built up area is being considered at trunk level so that as and when these areas are planned and developed, these infrastructure and civic amenities are available.

DDA will also ensure land for green spaces and recreation at the rate of 15 sq.m.per person. A new concept of rolling greens i.e. where one green opens up into the other green or is connected with the other greens by means of suitable green linkages, has been introduced. The greens will be in the form of city forests, parks, playgrounds, sports complexes etc. It has been planned to bring an effective circulation system within the constraints of existing limited R/W of Pankha Road & Najafgarh Road so as to ensure maximum mobility as well as ecological balance. Urban rail by linking with existing Ring Railway has also been provided.

In Dwarka Project area, Delhi Admn. is expected to construct all master plan roads which are considered as city level roads including construction of over-bridges and sub- ways and various links with the other parts of the city except for 2 lane master plan roads which DDA

has already constructed to open the area. The expenditure on the construction of the Master Plan roads shall be met by PWD/Delhi Admn. out of the plan funds. DDA shall provide the land free of cost within the project area and any land required outside the project shall be acquired by P.W.D., Delhi Admn. out of their own funds. The roads and other links are supposed to be completed by PWD, Delhi Admn. within the duration of Eighth Five Year Plan.

Delhi Water Supply & Sewerage Disposal Undertaking shall construct the water treatment plant and lay the trunk water line feeding the command tanks. While the land for construction of these trunk facilities by Delhi Water Supply and Sewerage Disposal Undertaking of M.C.D. shall be given by DDA free of cost, the construction cost of these facilities shall be met by MCD out of its own funds/plan funds. It has further been assumed that Delhi Water Supply & Sewerage Disposal Undertaking shall take 3 years time for providing these trunk services after the land is handed over to them by DDA.

DDA shall finance the laying of sewer lines and take the sewerage upto the pumping stations. From these pumping stations onwards Delhi Water Supply & Sewerage Disposal Undertaking shall lay rising mains and construct the sewerage treatment plant. DDA shall give the land to Delhi Water Supply & Sewerage Disposal Undertaking free of cost to construct these facilities. The funds for the construction of these facilities shall be met by the Undertaking. Delhi Water Supply & Sewerage Disposal Undertaking shall complete their part of the work within 3 years of handing over of land. For construction of 4 nos. 220 kv & 11 nos. 66 kv electric station, DDA shall hand over the land free of cost. D.E.S.U. shall provide the trunk electrification services out of their own funds. The time schedule for completion of work shall be three years from the date of handing over land.

All drains with discharge of 1000 cusecs and above shall be constructed by I & F Department of Delhi Administration, out of the plan funds; DDA shall only provide the land free of cost wherever required.

The project is envisaged to be completed by 1997-98. Even though land was acquired in 1986-87, development started only in the year 1990-91 and so far an expenditure of Rs.52.00 crore has been incurred.

a) According to the information collected from Delhi Development Authority, the sale price of the land with 12% provisions for physical and price contigencies shall be as under:

i) Per Sq.mtrs : Rs. 1241.10
ii) Per Acre : Rs. 50,24,696.35
iii) Per Hect. : Rs. 124.110 lacs

b) Statement of pre-determined proposed rates based on the breakeven prices including 12% provision for physical and price contingency for the year 1993-94 area as under :

Category of Land	Predetermined rates existing for 1992-93 per sq.mtr.	Proposed predetermined rates for Dwarka 1993-94 per sq. mtr.	Multiplier
1. **Land for CGHS(upto 31.3.91)**	Rs.1650.65	Rs.1861.65	1.5
2. **Alternative Plots (upto 31.3.92)**	Rs. 1650.65 including internal development	Rs.1845.90* * The cost of internal development and use and occupation charges included.	1.0
3. **Housing Schemes (upto 31.3.93)**			
SFS	Rs. 1650.65	Rs. 1861.65	1.5
MIG	Rs. 1375.54	Rs. 1551.37	1.25
LIG	Rs. 825.32	Rs. 930.82	0.75
EWS	Rs. 550.22	Rs. 620.55	0.50
4. **Industrial**	Rs. 1375.54 excluding internal development	Rs. 2156.17* * The cost of internal development and use & occupation charges included	1.25
5. **J.J. & Squatters resettlements**	Rs. 550.22 excluding internal development	Rs. 620.55 (excluding internal development)	0.50

Predetermined institutional rates and market rates are to be fixed by the government based on the above data.

Keeping in view the high cost and administrative complexities of delivering serviced land, the affordability and the low elasticity of supply of urban land, the alternative options suggested

both for 5 ha and 80 ha were tested for design evaluation and financial analysis with the help of Housing and Area Planning Software (HAPS), developed by Mehta and Mehta (1992). The model was applied to Sector 22 of Dwarka for which detailed maps were made available to the team. The core data for generating on site costs in the model were generated from CPWD schedule of rates on major construction items. The Off-site costs were estimated from DDA's other projects.

The results for both 5 ha and 80 ha. options are given in the enclosed tables and annexures.

Public-Private Partnership in Dwarka

Using Housing and Area Planning Software (HAPS) developed by Mehta and Mehta (1992), option for private development in Sector 22 (Dwarka) have been worked out.

This model is flexible and amenable to various options. It provided us an opportunity to evaluate various physical design options and pricing options to arrive at a mix of land-uses, the composition of residential units, prices for certain groups based on affordability and yet maintaining the overall profitability.

Alternative Option II (Approx. 80 ha.)

The strategy is as follows,

1. DDA acquires the land, develops and provides trunk infrastructure in Dwaraka Project.

2. A suggested model (table -3) worked out for sector 22 shows the break-even price and costs to developer at different land pricing sold by DDA to the private developer. In this case, the land sold by DDA to the developer @ Rs. 662.00 per sq. mt. includes the land development cost and internal peripheral cost (Trunk infrastructure etc.), while the land to be sold @ Rs. 1000/- per sq. mt. includes minimum cost of development and the profit on it at the rate of 50% of the cost (i.e. Rs. 662 + Rs. 338). The rate of Rs. 1262.00 per sq. mt. includes cost of land development, off-site infrastructure and on site infrastructure (i.e. Rs.412 + Rs. 250+ Rs. 600) while the rate of Rs. 1906 includes the profit of 50% of this cost (i.e. Rs. 1262+ Rs 644). These cost are based on DDA estimates. These land prices form the basis for the four scenarios that are presented in the subsequent analysis.

3. DDA specifies and monitors facility, infrastructure and construction standards.

4. DDA will get back all EWS houses at a pre-determined prices of Rs.40,000.00 for allotment to the beneficiary.

5. The area of the sector 22 is 77.68 hectares (excluding the area under ISBT).

Private Developer :

6. (a) Constructs all residential (multi family) and commercial (both bigger and lower level). The proportion of EWS houses is specified at 33%.

(b) Returns all EWS houses at a predetermined price of Rs.40,000 to DDA for allotment to beneficiary. Other units are sold at chargeable cost.

7. (a) Provides city and sector level facilities according to master plan.

(b) **Sector Level Facilities**

Builder provides the facilities such as nursery, primary and secondary schools, community room, community hall, dispensary, religious building, local shopping centre, milk booth, electric substation, taxi stand, parks and play grounds.

The norms of these facilities (both areas and population thresholds) are based on the Master Plan Guidelines (pp 144-145). The adopted standards are presented in the Annexure A.

8. **City Level Facilities**

Developer also provides city level facilities such as higher commercial of 4.32 hectares and one petrol pump of 200 sq.m which are envisaged in Sector (22) Plan.

9. **Residential Mix**

It is proposed that private developer would provide the multi-family built units. The envisaged residential mix is presented in the Table 1. The per capita group spaces, their marketability, occupancy rates, plot length to width ratios, floor space ratios, ratios of super built-up area to dwelling area for multi-family are presented in the Annexure A.

10. **Physical Infrastructure**

The proposed standards of infrastructure such as roads, water supply, sanitation, street lighting and land scaping are given in the Annexure A.

Table 1

Residential Mix

	Category	Percentage Distribution to total households	Dwelling Area in sq.m.	No. of Units
1	EWS	33.00	25.0	2161
2	LIG	22.50	35.0	1473
3	MIG I	10.00	45.0	654
4	MIG II	12.50	60.0	818
5	HIG I	10.00	90.0	654
6	HIG II	12.00	120.0	785
	Total	100.00		6545
	Total population	30579	Density	394

Note : The ratios of super-builtup area to dwelling area are assumed to be 1.15 for EWS and LIG and 1.25 for MIG and HIG.

11. **Resulting Landuse**

Table 2

Landuse Distribution

Land Use	Total Area (in sq.km.)	Percent to total developable area
Residential	338964	43.64
Commercial	62057	7.99
Public Institutions	112701	14.51
Utilities	3095	.40
Open Spaces/Parks etc.	122318	15.75
Roads	136102	17.52
Total Developable Area	776800	100.00

Source : Refer Annexure C.

12. **Unit Cost**

The unit costs for construction and infrastructure are presented in Annexure B. The price escalation is assumed to be 10 percent per annum.

13. **Phasing of Development**

It is expected that the project would commence in 1994 and get completed in 1997. Details of phasing related to land development, construction of commercial complexes and residential units are presented in Annexure A.

14. **Costs to Private Developer**

Table 3: Costs and Pricing

Item	Land sold by DDA to developer at (in Rs. per sq.m.)			
	662	1000	1262	1906
1. Population	30579	30579	30579	30579
2. No. of Dwelling units	6545	6545	6545	6545
3. Gross density (pa/ha)	394	394	394	394
4. Total marketable area as % to total area	59.4	59.4	59.4	59.4
5. Break-even price for developer (Rs.sq.m.)	1279	1886	2329	3408
6. Costs to developer (in Rs. lakhs)				
a. Land Acquisition	5142	7768	9803	14806
b. On-site infrastructure	931	931	931	931
c. Commercial complexes	4544	4544	4544	4544
d. Residential	18941	18941	18941	18941
e. Total	29558	32184	34219	39222

Source : Generated using Housing and Area Planning Software.

Note : 1. Price escalation of materials is assumed to be 10 percent per annum

2. Physical contingencies and Administration charges are at 8 percent

3. Cost of land sold by DDA has been worked according to estimates provided by DDA. Accordingly, Rs. 662.00 per sq.mt. includes Rs. 412/ sq.mt. as land development cost and Rs. 250/ sq.mt. as internal peripheral cost (trunk infrastructure) as mentioned in para 2 in this section.

15. **Pricing**

The adopted pricing for facilities and residential units is given in Table 4.

16. Different scenarios have been worked out for sector-22 (Dwarka) for different prices of land to be sold by DDA to the Developer. (Table 3,4 as well as Annexure D).

Table 4
Scenario 3
(All monetory values are in Rs. Lakhs)

1. Charges for Higher Commercial at 6 times reserve price
2. Charges for Local Commercial at 3 times reserve price
3. Facilities such as education, health, religious bulidings at 0.5 times reserve price
4. Utilities such as tax stabd at 1 time reserve price
5. **Residential** - EWS - Rs/40000, LIG and MIG at Chargeable Costs HIG at Chargeable Costs
6. Price rise at 10 % for commercial and 5 % for Others

Item			Land sold by DDA to Developer at (in Rs. per sq.m.)			
			662	1000	1262	1906
I.	**DDA**					
1.	Land development costs to DDA at Rs. 662 per sq.m.		5142	5142	5142	5142
2.	Returns from Land		5142	7768	9803	14806
3.	Net Revenue		-	2626	4661	8664
II.	**Private Developer**					
4.	Pricing of Residential Units (Rs/Unit)					
	i.	EWS (Affordable Cost)	40000	40000	40000	40000
	ii.	LIG (Chargeable Cost)	147186	155321	161257	175716
	III.	MIG I (Chargeable Cost)	236767	253599	265883	295804
	iv.	MIG II (Chargeable Cost)	398527	440370	470908	545289
	v.	HIG I (Chargeable Cost)	673865	731417	773419	875722
	vi.	HIG II (Chargeable Cost)	887355	969869	1030089	1176766
5.	Pricing of land for non-residential use (Rs/sq.m.)					
	i.	City Level Commercial	7674	11316	13974	20448
	ii.	Local commercial	3837	5658	6987	10224
	iii.	Educational	640	943	1165	1704
	iv.	Health	640	943	1165	1704
	v.	Religious	640	943	1165	1704
	vi.	Utilities such as taxi stand, electric substation	1279	1886	2329	3408
6.	Returns to private Developer (All monetory figures are present values at 15% discount rate)					
	i.	Total costs	21633	23923	25686	30036
	ii.	Total revenues	21832	27168	30146	38639
	iii.	Net present value (lakhs)	199	3245	4460	8653
	iv.	Internal rate of return (IRR)	16.3	32.1	34.2	37.4

Note :
1. Project period is assumed to be 5 years starting from 1994.
2. Charges for EWS are at affordable cost (at the household income of Rs 1500 per month, interest rate of 9 percent per annum, income to installment ratio of 25 percent, 15 years repayment period and down payment of 6 times monthly income).
3. Market prices are assumed to be Rs 7500 per sq.m for EWS and Rs 12500 per sq.m for other categories during 1993. (Price rise is assumed to be 5 percent per annum)

17. **Sales Plan**

It is assumed that the sale of units (both facility and residential) are assumed to be completed by 1998 starting from 1994. Proposed sales plan is presented in Annexure A.

18. **Returns to Private Developer**

The internal rate of return increases (refer Table 4) in proportion to DDA land pricing mainly because of the possibility of profit from non-residential units.

Alternative Option - I

Table 5: 5 Hectare Model

Table 1 : Costs and Pricing

Model : Five Hectares

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	662	1000	1262	1906
1. Population	1542	1542	1542	1542
2. No.of Dwelling Units	324	324	324	324
3. Gross Density (pa/Ha)	308	308	308	308
4. Total Marketable Area as % to total area	66.8	66.8	66.8	66.8
5. Break-Even Price for Developer (Rs/Sq.m)	1084	1611	2004	2803
6. Costs to Developer (in Rs Lakhs)				
a. Land Acquisition	331	500	631	953
b. On-Site Infrastructure	38	38	38	38
c. Residential	938	938	938	938
d. **Total**	1307	1476	1607	1929

Source : Generated using Housing and Area Planning Software.

Note : 1. Price escalation of materials is assumed to be 10 percent per annum

2. Physical contingencies and Administration charges are at 8 percent

3. The population has been worked out on the basis of income distribution and FSI guidelines prescribed in master plan for Delhi.

Table 6

Table 2 : Scenario 2 (Five Hectares)

(All monetory values are in Rs Lakhs)

1. **Residential** - EWS - Rs/40000, LIG and MIG at Chargeable Costs
   HIG I & II at **Market Price**
6. Price rise at 5 % per annum

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	662	**1000**	**1262**	**1906**
I. DDA				
1. Land Development Costs to DDA at Rs 1262 per Sq.m	631	631	631	631
2. Returns from Land	331	500	631	953
3. Net Revenue	- 300	- 130	0	322
II. PRIVATE DEVELOPER				
4. Pricing of Residential Units (Rs/Unit)				
i. EWS (Affordable Cost)	40000	40000	40000	40000
ii. LIG (Chargeable Cost)	187754	222559	244262	294550
iii. MIG I (Chargeable Cost)	301014	361735	399598	487332
iv. MIG II (Chargeable Cost)	451846	541592	597554	727226
v. HIG I (Market Price)	1476563	1476563	1476563	1476563
vi. HIG II (Market Price)	1968750	1968750	1968750	1968750
5. Returns to Private Developer (All monetory figures are present values at 15 % discount rate)				
a. Total Costs	974	1121	1237	1515
b. Total Revenues	1250	1309	1346	1432
c. Net Present Value (Lakhs)	276	188	109	-83
d. Internal Rate of Return (IRR)	63.1	37.6	25.6	9.4

Note : 1. Project period is assumed to be 5 years starting from 1994.

19. The perusal of above mentioned project for 80 hectares and 5 hectares in terms of cost, benefit analysis shows that in 80 hectare model, the land should be sold by DDA to the

developer at the minimum price of Rs. 662.00 per sq. mt. while in 5 hectare model the minimum price should be at least Rs. 1262.00 per sq. mt. which include cost of land development, off-site infrastructure and on site infrastructure. However, to attain the market rate of returns and affordability, it is recommended that land should be sold at Rs. 1000 per sq.mt. in case of 80 ha. model while the recommended price should be at least, Rs. 1800 per sq.mt. in case of 5 ha. model as shown in Annex 1, model 2 (alternative-4).

It may also be mentioned here, that in case of pricing of residential units for 5 hectare model, the HIG-I and II should be sold be private developer at market price while LIG and MIG can be sold at chargeable cost and EWS at affordable cost. On the other hand, in case of 80 hectare model, the developer would sell LIG, MIG and HIG at chargeable cost and EWS at affordable cost. The emerging scenario is in keeping with the objectives of the National Housing Policy which seek to accelerate provision of serviced land and housing for the economically weaker section of the society.

20. The above project conceptualises a framework in which the DDA and the private developer can work hand-in-hand. By virtue of the privatisation process, the DDA would be in position to assess its operational efficiency vis-a-vis private sector.

21. This model format can be suitably modified and applied in other sectors on the basis of experience gained during the project implementation and execution.

CHAPTER V

Conclusion and Recommendation

The study has focussed on the evaluation of existing public-private partnership approaches in the country and has suggested alternative options for delivery of serviced land in Delhi.

This chapter recapitulates the main findings of the report and gives recommendations for improving the delivery of serviced land in Delhi.

1. The various public-partnership models being practiced in India were evaluated in a comparative framework according to specific criteria in order to guage their degree of success. These partnership models were evaluated for their timeliness, scale of operation, mobilisation of resources, cost effectiveness and clientele served. Some of these are briefly summarised below:

SUMMARY EVALUATION

Evaluation Criteria/mode	Bulk Land Acquisition Model (DDA)	Licensed colonizer (Public-private partnership) (LDA/HUDA)	Private Developers on freehold land
EQUITY			
Share of the poor	**variable**, depends on project	**Medium** exists overtly forced by legislation	**very low** in LIG Housing, low profit margin, no legislation to force them
Affordability to the poor	**Low** highly priced despite cross-subsidization	**very high** cross-subsidized	**very low** developer's profit maximizing motive high costs of D.U.
EFFICIENCY			
Timeliness	**Poor** Delay in acquisition development and disposal	**Medium** developing land takes long	**Medium-low**
Locational efficiency	**Medium** depends on land availability, irrespective of travel convenience	**High** located to serve regional housing market	**High** also to serve regional housing market
Quantity	**High** Operates on a large scale	**Medium** License given to land parcel of minimum size	**Medium-low** must take into account rural land ceiling limit
Efficient use of Funds	**No economy of scale** seems to operate. Heavy administrative cost.	**Scales of economy** Land at cheaper cost	**Land costs are high**
Profitability	**Medium** EWS, LIG, MIG cross-subsidized by high returns of commercial auction plots	**Very high**	**Very High**

Source: Rini Sen (1992).

2. An attempt was made by taking a case study of Dwarka, a sub-city of Delhi to develop prototype guidelines for Delhi Development Authority for involving private developers in land development and shelter construction to cope up with the rising demand for land and housing in Delhi. Three alternative options were suggested for joint public-private partnership in land development and housing in Delhi.

The design evaluation and financial analysis for the study were done using the housing and area planning software (HAPS), developed by Mehta and Mehta (1992). This model is flexible and amenable to various option. It provided us an opportunity to evaluate various physical design option and pricing option to arrive at a mix of land-uses, the composition of residential units, prices for certain groups based on affordability and yet maintaining the overall profitability.

With the help of HAPS (Housing and Area Planning Software) model, developed by Mehta and Mehta (1992), various scenarios were worked out keeping in view the affordability of economically weaker sections of society and taking price rise into consideration. The internal rate of return (IRR) has been worked out with the helps of HAPS model at different land prices, to be charged from the developer by DDA (see model 2, annex 1)

After careful investigation of these scenarios in terms of internal rate of return etc, the suitable option was taken into consideration for estimating receipts and expenditure of DDA and private developer for 80 ha. and 5 ha. alternatives in Dwarka sub-city of Delhi. The core data for on-site costs in the model were generated from CPWD schedule of rates on major construction items. The off-site costs were estimated from DDA's other projects.

3. The salient feature of the public-private partnership (**Alternative Option - I**), in case of Delhi Development Authority allotting a piece of land (5 ha.) on lease to small private developer for joint public/private development will be as under:

a. The perusal of various scenarios in terms of cost-benefit analysis shows that while the minimum price of land to be sold by DDA to private developer be atleast Rs. 1262.00 per sq.mt. (break-even price), the recommended price should be atleast Rs. 1800 per sq.mt. as shown in Annex I, Model 2 (Alternative - IV). The recommended price, at which land is to be sold by DDA to private developer will earn a net profit of Rs. 369.00 lakh to DDA.

b. The private developer will undertake construction of residential buildings. All the EWS houses constructed by private developer will be given back to DDA to

be sold at an affordable cost of Rs. 40,000 each for allotment to beneficiaries. However, it may be mentioned here, that chargeable cost of each EWS house at the recommended price comes to about Rs. 2.13 lakh. Further, 100 percent of LIG and MIG units constructed by private developer will be either given back to DDA to be sold at current sale price or will be sold by the developer at the current sale price (chargeable cost). The private developer will sell off remaining 50 percent of MIG and 100 percent of HIG plots at a higher price.

The net present value (NPV) at 15 percent discount rate to private developer at the recommended price will be Rs. 33.20 lakhs on a total investment of Rs.1468.80 lakh with an internal rate of return of be 17.3.

c. The DDA will be responsible for provision of off-site infrastructure, on site infrastructure and provision of public/semi public buildings.

d. The development authority, while granting a license, may also impose a condition of time limit for development.

e. Registration and allotment of EWS units shall not be on hire-purchase extending more than six installments.

f. After the construction is complete by the private developer, the area will be handed over to Development Authority for maintenance. Till such time the responsibility of maintenance would be of a private developer.

g. To ensure compliance as well as the timely completion of project works, the developer is obligated to furnish a bank guarantee (performance bond) for the entire project cost to the Development Authority.

h. After completing the construction of residential and commercial development, the lease is to be entered by the buyer with the Delhi Development Authority.

i. In case, if the developer leaves the development, the license fee which shall be considered as caution money would be forefitted.

j. No sub-licensing of the development rights in the project area shall be permitted without the consent of Delhi Development Authority.

4. The salient feature of the public-private partnership (**Alternative Option - II**), in case of Delhi Development Authority allotting a large piece of land (80 ha.) on lease to the large-private developer for development will be as under:

a. In this case, while the trunk infrastructure like major roads and off-site infrastructure for water supply and sewerage will be provided by Development Authority, the peripheral off-site and on-site infrastructure will be provided by the private developer. Besides, private developer will also undertake the construction of residential and commercial buildings. The strategy will be as follows:

i. DDA acquires the land, develops and provides trunk infrastructure in Dwarka Project.

ii. DDA specifies and monitors facility, infrastructure and construction standards.

iii. DDA will get back all EWS houses constructed by private developer at a pre-determined prices of Rs.40,000.00 (affordable cost for EWS) for allotment to the beneficiary. The proportion of EWS houses are specified at 33 percent. The other units (LIG, MIG and HIG's) constructed by the private developer will be sold directly by the developer in the market at cost price.

iv. 1. The private developer will provide city and sector level facilities according to master plan.

2. The private developer will provide the facilities such as nursery, primary and secondary schools, community room, community hall, dispensary, religious building, local shopping centre, milk booth, electric substation, taxi stand, parks and play grounds.

3. The private developer will sell the non-residential units in the market with a profit margin.

b. The perusal of various scenarios developed for 80 ha. in terms of cost-benefit analysis shows that while minimum price at which DDA should sell the land to the private developer is Rs. 662.00 per sq. mt., the recommended price should be at least Rs. 1000.00 per sq.mt. The DDA will get the net revenue of Rs. 2626.00 lakh at this recommended land price and returns to private developer at 15 percent discount rate (net present value (NPV)) will be to the tune of Rs. 3245.00 lakh. The internal rate of return to the private developer at the recommended price will be 32.1. (Table 4, Scenario 3).

c. For working out the internal rate of return and cost to developer, certain assumption were taken into account on the basis of discussions with officials, and secondary data collected from Delhi Development Authority. These were:-

i. Project period is assumed to be 5 years from 1994. Details of phasing related to land development, construction of commercial complexes and residential units are presented in Annex A.

ii. Charges for EWS are at affordable cost (at the household income of Rs. 1000) per month, interest rate of 9 percent per annum, income to instalment ratio of 25 percent, 15 years repayment period and down payment of 6 times monthly income.

iii. Market prices are assumed to be Rs. 7500 per sq.mt. for EWS and Rs. 12,500 per sq. mt. for other categories during 1993.

iv. The total population were worked out on the basis of income distribution & FSI guidelines as prescribed in Master plan for Delhi.

d. The other terms and condition regarding maintenance, the furnishing of a bank guarantee or in case of default remains same as in Alternative Option - I.

5. The third alternative option of public-private partnership arrangement in Delhi was suggested in which land assembly can be done directly by the land owners and develop such land for residential purposes according to the stipulations which include: a) financial contribution to the development authority for attributable off-site infrastructure cost; and b) the reservation of a portion of the developed land for lower income housing to be allotted through the development authority. In this case, either the developer is licensed and allowed to purchase land directly from landowners, or he purchases it from the Development Authority which has acquired it under the Land Acquisition Act.

Under this option certain planned areas may specially be designated to allow private developers to assemble parcels of land that exceed the limits set by the Urban land Ceiling Act (ULCA). In these designated areas, the developers may assemble land directly form landowners and develop such land for residential purposes which include: (a) financial contributions to the development authority for attributable off-site infrastructure costs; and (2) the reservation of a portion of the developed land for lower-income housing to be allotted through the development authority.

The Delhi Development Act, will have to be amended similar to the Haryana Development and Regulation of Urban Areas Act. (HDRUA) to formally involve the corporate private sector in the acquisition, development, and disposal of urban land. In this case, private developers will have to first apply for a license from the Delhi Development Authority, stating the details of the land and project intended.

To ensure compliance with these conditions the developer must make out a bank guarantee in favour of DDA. The Development Authority in granting a license, may also impose additional conditions at their discretion, such as a time limit for development.

According to the Delhi Development Act, 1957, the authority may allot Nazul land for public utilities, community facilities, open spaces, parks, playgrounds, residential purposes, industrial and commercial uses and such other purposes as may be specified from time to time by the Central Government by notification. The disposal of Nazul land is governed by DDA (Disposal of Developed Nazul land) Rules, 1981 termed under Section 22 of Delhi Development Act, 1957.

However there is no provision in the said Rules for giving permission to a Developer to develop land, construct built-up properties (both flats and shops) and dispose of the same. It is, therefore, necessary that the word "Developer" is appropriately defined under Rule 2 of the said Rules.

> "**Developer-** Developer means a person, or body of persons, whether corporate or otherwise, who is authorised by the Authority, to enter upon the Nazul land for the purpose of development and construction in accordance with approved plans and for disposal of developed land/built up space/ premises through the Authority on terms and conditions as may be prescribed by means of Agreement to be executed between the Authority and Developer".

Since there is no provision in the Nazul Rules, 1981 for allowing a private developer to develop land, construct flats and shops and dispose of the same, a section may be added in Rule 44 to allow the developer to enter upon the Nazul land for the purpose of development of land construction on the said land in accordance with the plans, specification and designs as may be approved by the competent authority and on such terms and conditions as may be decided by the Authority, by means of an Agreement, to be executed between the Authority and the "Developer".

The emerging scenario is in keeping with the objectives of the National Housing Policy which seek to accelerate provision of serviced land and housing for the economically weaker section of the society.

The above project conceptualises a framework in which the DDA and the private developer can work hand-in-hand. By virtue of the privatisation process, the DDA would be in position to assess its operational efficiency vis-a-vis private sector.

This model format can be suitably modified and applied in other sectors on the basis of experience gained during the project implementation and execution.

Annexure 1

Model 2 : For Five hectares (at Rs 1000 per sq.m)

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1.	Population	1542	1542	1542	1542	1542
2.	No.of Dwelling Units	324	324	324	324	324
3.	Total Area in Ha	5	5	5	5	5
4.	Gross Density in pa/ha	308	308	308	308	308
5.	Total costs in Lakhs	1475.8	1475.8	1475.8	1475.8	1475.8
a.	Land Acquisition	500.0	500.0	500.0	500.0	500.0
b.	On-site infrstructure	38.0	38.0	38.0	38.0	38.0
c.	Residential	937.9	937.9	937.9	937.9	937.9
6.	Chargeable Costs in 1994 (RS/Unit)					
i.	EWS	158141	158141	158141	158141	158141
ii.	LIG	222559	222559	222559	222559	222559
iii.	MIG I	361735	361735	361735	361735	361735
iv.	MIG II	541592	541592	541592	541592	541592
v.	HIG I	870003	870003	870003	870003	870003
vi.	HIG II	1149762	1149762	1149762	1149762	1149762
7.	Pricing of Units in 1994 (Rs/Unit)					
i.	EWS	40000	40000	40000	40000	40000
ii.	LIG	222559	222559	222559	222559	222559
iii.	MIG I	361735	361735	361735	361735	361735
iv.	MIG II	541592	541592	541592	541592	541592
v.	HIG I	870003	870003	870003	1476563	1476563
vi.	HIG II	1149762	1968750	1968750	1968750	1968750
8.	Total Returns in Lakhs					
9.	Present Values at 15 percent discount rate (Lakhs)					
i.	Total costs	1121.0	1121.0	1121.0	1121.0	1121.0
iii.	Total returns	931.0	1166.1	1071.8	1309.0	1203.1
iv.	NPV	-190.0	45.1	-49.2	188.0	82.1
10.	Internal Rate of Return (IRR)		20.2		37.6	25.6

Note :

Scenario 1 Indicates
- i. EWS at Rs 40000 per units
- ii. All other residential units at chargeable cost
- iii. Price rise at 5 % per annum

Scenario 2 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II and HIG I units at chargeable cost
- iii. HIG II at market price
- iv. Price rise at 5 % per annum

Scenario 3 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II and HIG I units at chargeable cost
- iii. HIG II at market price
- iv. Price rise at 0 % per annum

Scenario 4 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II units at chargeable cost
- iii. HIG I and II at market price
- iv. Price rise at 5 % per annum

Scenario 5 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II units at chargeable cost
- iii. HIG I and II at market price
- iv. Price rise at 0 % per annum

Model 2 : For Five hectares (at Rs 1200 per sq.m)

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1.	Population	1542	1542	1542	1542	1542
2.	No.of Dwelling Units	324	324	324	324	324
3.	Total Area in Ha	5	5	5	5	5
4.	Gross Density in pa/ha	308	308	308	308	308
5.	Total costs in Lakhs	1575.8	1575.8	1575.8	1575.8	1575.8
a.	Land Acquisition	600.0	600.0	600.0	600.0	600.0
b.	On-site infrstructure	38.0	38.0	38.0	38.0	38.0
c.	Residential	937.9	937.9	937.9	937.9	937.9
6.	Chargeable Costs in 1994 (RS/Unit)					
i.	EWS	171752	171752	171752	171752	171752
ii.	LIG	239071	239071	239071	239071	239071
iii.	MIG I	390542	390542	390542	390542	390542
iv.	MIG II	584169	584169	584169	584169	584169
v.	HIG I	928452	928452	928452	928452	928452
vi.	HIG II	1240166	1240166	1240166	1240166	1240166
7.	Pricing of Units in 1994 (Rs/Unit)					
i.	EWS	40000	40000	40000	40000	40000
ii.	LIG	239071	239071	239071	239071	239071
iii.	MIG I	390542	390542	390542	390542	390542
iv.	MIG II	584169	584169	584169	584169	584169
v.	HIG I	928452	928452	928452	1476563	1476563
vi.	HIG II	1240166	1968750	1968750	1968750	1968750
8.	Total Returns in Lakhs					
9.	Present Values at 15 percent discount rate (Lakhs)					
i.	Total costs	1207.9	1207.9	1207.9	1207.9	1207.9
iii.	Total returns	998.9	1208.1	1110.3	1337.2	1229.0
iv.	NPV	-209.0	0.1	-97.6	129.2	21.1
10.	Internal Rate of Return (IRR)		15.0	4.6	28.2	17.2

Model 2 : For Five hectares (at Rs 1500 per sq.m)

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1.	Population	1542	1542	1542	1542	1542
2.	No.of Dwelling Units	324	324	324	324	324
3.	Total Area in Ha	5	5	5	5	5
4.	Gross Density in pa/ha	308	308	308	308	308
5.	Total costs in Lakhs	1725.8	1725.8	1725.8	1725.8	1725.8
a.	Land Acquisition	750.0	750.0	750.0	750.0	750.0
b.	On-site infrstructure	38.0	38.0	38.0	38.0	38.0
c.	Residential	937.9	937.9	937.9	937.9	937.9
6.	Chargeable Costs in 1994 (RS/Unit)					
i.	EWS	192168	192168	192168	192168	192168
ii.	LIG	263839	263839	263839	263839	263839
iii.	MIG I	433751	433751	433751	433751	433751
iv.	MIG II	648034	648034	648034	648034	648034
v.	HIG I	1032779	1032779	1032779	1032779	1032779
vi.	HIG II	1359098	1359098	1359098	1359098	1359098
7.	Pricing of Units in 1994 (Rs/Unit)					
i.	EWS	40000	40000	40000	40000	40000
ii.	LIG	263839	263839	263839	263839	263839
iii.	MIG I	433751	433751	433751	433751	433751
iv.	MIG II	648034	648034	648034	648034	648034
v.	HIG I	1032779	1032779	1032779	1476563	1476563
vi.	HIG II	1359098	1968750	1968750	1968750	1968750
8.	Total Returns in Lakhs					
9.	Present Values at 15 percent discount rate (Lakhs)					
i.	Total costs	1338.4	1338.4	1338.4	1338.4	1338.4
iii.	Total returns	1099.9	1274.9	1171.8	1379.5	1267.9
iv.	NPV	-238.4	-63.4	-166.6	41.1	-70.5
10.	Internal Rate of Return (IRR)		9.7		18.4	8.7

Model 2 : For Five hectares (at Rs 1800 per sq.m)

		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
1.	Population	1542	1542	1542	1542	1542	1542
2.	No.of Dwelling Units	324	324	324	324	324	324
3.	Total Area in Ha	5	5	5	5	5	5
4.	Gross Density in pa/ha	308	308	308	308	308	308
5.	Total costs in Lakhs	1875.8	1875.8	1875.8	1875.8	1875.8	1875.8
a.	Land Acquisition	900.0	900.0	900.0	900.0	900.0	900.0
b.	On-site infrstructure	38.0	38.0	38.0	38.0	38.0	38.0
c.	Residential	937.9	937.9	937.9	937.9	937.9	937.9
6.	Chargeable Costs in 1994 (RS/Unit)						
i.	EWS	212584	212584	212584	212584	212584	212584
ii.	LIG	288607	288607	288607	288607	288607	288607
iii.	MIG I	476961	476961	476961	476961	476961	476961
iv.	MIG II	711899	711899	711899	711899	711899	711899
v.	HIG I	1113569	1113569	1113569	1113569	1113569	1113569
vi.	HIG II	1473852	1473852	1473852	1473852	1473852	1473852
7.	Pricing of Units in 1994 (Rs/Unit)						
i.	EWS	40000	40000	40000	40000	40000	40000
ii.	LIG	288607	288607	288607	288607	288607	288607
iii.	MIG I	476961	476961	476961	476961	476961	476961
iv.	MIG II	711899	711899	711899	711899	711899	984375
v.	HIG I	1113569	1113569	1113569	1476563	1476563	1476563
vi.	HIG II	1473852	1968750	1968750	1968750	1968750	1968750
8.	Total Returns in Lakhs						
9.	Present Values at 15 percent discount rate (Lakhs)						
i.	Total costs	1468.8	1468.8	1468.8	1468.8	1468.8	1468.8
iii.	Total returns	1194.2	1336.2	1228.1	1421.7	1306.7	1502.0
iv.	NPV	-274.6	-132.6	-240.7	-47.1	-162.1	33.2
10.	Internal Rate Return (IRR)		5.6		11.6	2.7	17.3

Note :

Scenario 1 Indicates
- i. EWS at Rs 40000 per units
- ii. All other residential units at chargeable cost
- iii. Price rise at 5 % per annum

Scenario 2 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II and HIG I units at chargeable cost
- iii. HIG II at market price
- iv. Price rise at 5 % per annum

Scenario 3 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II and HIG I units at chargeable cost
- iii. HIG II at market price
- iv. Price rise at 0 % per annum

Scenario 4 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II units at chargeable cost
- iii. HIG I and II at market price
- iv. Price rise at 5 % per annum

Scenario 5 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I, MIG II units at chargeable cost
- iii. HIG I and II at market price
- iv. Price rise at 0 % per annum

Scenario 6 Indicates
- i. EWS at Rs 40000 per units
- ii. LIG, MIG I units at chargeable cost
- iii. MIG I, HIG I and II at market price
- iv. Price rise at 5 % per annum

Breakeven Analysis of Dwarka Phase - I With Provisions for Physical and Price Contigencies

Year	Dev.Expdr.	*Discounted Dev. Expdr.	Land Acqu. Cost	Addl. Compensation	*Discounted Acqu. Cost	*Discounted Addl. Compensation
1	2	3	4	4A	5	5A
1986-87			22.352		65.573	
1987-88						
1988-89						
1989-90			0.052		0.097	
1990-91	13.094	20.768				
1991-92	19.326	26.284	47.020		63.949	
1992-93	11.869	13.842	137.611		160.483	
1993-94	188.000	188.000				
1994-95	242.264	202.000		113.349		94.511
1995-96	225.827	157.000				
1996-97	175.960	102.000				
1997-98	140.689	68.000				
	1017.030	777.893	207.036	113.349	290.101	97.511

SOURCE : D.D.A.

Contd.....

Total Expdr.	Total Discounted Expdr.	Total Revenue	Discounted Value of Revenue	Net Cash Flow (Col.8-Col.6)	Cummulative Cash Flow	Int. Outflow & 18% When Net Outflow Int. Inflow & 11% When Net Inflow	Discounted Value of Amount in Col.-12
6	7	8	9	10	11	12	13
22.352	65.573			-22.352	-22.352	-2.012	-5.902
0.000	0.000			0.000	-22.352	-4.023	-10.121
0.000	0.000			0.000	22.352	-4.023	-8.679
0.052	0.097			-0.052	-22.404	-4.028	-7.451
13.094	20.768			-13.094	-35.498	-5.211	-8.265
66.346	90.232			-66.346	-101.845	-12.361	-16.811
149.480	174.324	0.000	0.000	-149.480	-251.325	-31.785	-37.068
188.000	188.000	619.526	616.526	431.526	180.201	-21.505	-21.505
355.614	296.511	326.894	280.307	-75.307	104.894	13.044	10.876
225.827	157.000	227.640	167.379	-58.448	46.446	6.278	4.365
175.960	102.000	264.967	167.060	-8.900	37.546	4.308	2.497
140.189	68.000	299.600	161.976	21.286	58.833	7.929	3.832
1337.415	1162.505	1738.627	1396.248	58.833			-94.230

Discounted Expdr. for Physical & Price	1162.505
12% Provision for Physical & Price	139.501
Contigencies Expenditure	2901.132
Projected Expenditure Rate Per Sq.	1302.006
Rate Per Sq.	1241.100

Discounted Revenue	1396.248
Discounted Interest Inflow	-94.230
Project Revenue	1302.018

* Discounted rate has been assumed to be 16.62%. This is based on the average cost rise for PWD works from 1.11.88 to 31.3.94 as notified by CPWD from time to time.

Yearwise Breakup of Expected Revenue From Saleable Area in Dwarka Phase - I

Use Code	Use	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	Total
		0.834	1.000	1.166	1.360	1.586	1.850	
1	2	3	4	5	6	7	8	
A1.1	Cooperative Housing	0.000	33882.030	13058.903	.000	.000	.000	.000
A1.2	DDA Housing							
	EWS	0.000	0.000	0.000	590.772	590.537	795.430	1976.741
	LIG	0.000	0.000	0.000	1139.349	1323.708	1571.922	4039.979
	MIG	0.000	0.000	0.000	2742.876	3198.742	3483.595	9425.213
	SFS	0.000	4654.125	4598.297	0.000	0.000	0.000	9252.422
A1.3	Institutional Housing	0.000	0.000	6215.734	0.000	0.000	0.000	6215.734
A1.4	Resettlement Squatters	0.000	4418.954	0.000	0.000	0.000	0.000	4418.954
A1.5	Alternative Plots	0.000	620.550	723.685	843.962	492.114	0.000	2680.312
A1.6	Auction Plots	0.000	0.000	1157.897	1350.339	1574.765	1680.390	5763.391
A1.7	Existing Villages	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Net Residential	0.000	43575.659	25754.516	6667.299	7184.867	7531.337	90713.679
A2	Educational Facilities	0.000	0.000	1302.634	1417.856	1653.504	1600.502	5974.496
A3	Other Comm. Facilities	0.000	0.000	0.000	0.000	0.000	0.000	0.000
A4	Local/Convenient Shopping	0.000	0.000	0.000	1519.131	2196.798	2754.737	6470.666
A5	Utilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
A6	Parks & Playground	0.000	0.000	0.000	0.000	0.000	0.000	0.000
A7	Sector Roads	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Res. Supporting Facilities	0.000	0.000	1302.634	2936.987	3850.301	4355.239	12445.162
	Total Residential	0.000	43575.659	27057.150	9604.287	11035.169	11886.576	103158.841

Contd.....

1	2	3	4	5	6	7	8	
B1.1	Open Spaces	0.000	0.000	0.000	0.000	0.000	0.000	0.000
B1.2	Commercial Spaces	0.000	0.000	0.000	4726.187	5511.379	6730.741	16968.607
B1.3	Comm. Low Turnover	0.000	0.000	0.000	337.585	393.691	449.940	1181.217
B1.4	Cultural Spaces	0.000	0.000	0.000	675.170	787.383	899.881	2362.433
B1.5	Facilities	0.000	0.000	0.000	67.185	94.805	110.562	272.552
B1.6	Residential	0.000	0.000	0.000	506.377	590.537	674.911	1771.825
B1.7	Utilities	0.000	0.000	0.000	0.000	0.000	**	
	Total Dist. Centre	0.000	0.000	0.000	6312.508	7578.095	8866.025	22556.633
B4.1	Comm. Spaces	0.000	0.000	1269.634	1687.924	1968.457	2295.614	7221.629
B4.2	Commercial Lowturn Over	0.000	0.000	240.264	270.068	314.953	367.298	1192.583
B4.3	Facilities Plus Cultural	0.000	0.000	378.632	472.619	551.168	642.772	2045.191
B4.4	Utilities	0.000	0.000	0.000	0.000	0.000	**	
	Total Community Centres	0.000	0.000	1888.529	2430.610	2834.578	3305.685	10459.402
C1.1	Circulation/Parking	0.000	0.000	0.000	0.000	0.000	0.000	0.000
C1.2	Public & Semi Public	0.000	0.000	20.164	23.515	27.423	27.412	98.513
C1.3	Commercial	0.000	0.000	72.369	67.517	98.423	91.825	330.133
C1.4	Utilities	0.000	0.000	0.000	0.000	0.000	**	
C1.5	Net Industrial Plots	0.000	0.000	1302.634	1519.131	1771.611	2066.053	6659.429
	Total Industrial	0.000	0.000	1395.166	1610.163	1897.457	2185.289	7088.075
D1.0	Colleges/Hospital/Other	0.000	1116.990	1302.634	1519.131	1653.504	1942.778	7535.037
D2.0	Integrated School	0.000	242.015	282.237	354.464	413.376	447.645	1739.737
D3.0	Socio-Cultural	0.000	0.000	72.369	126.594	147.634	229.561	576.159
D4.0	Circulation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total Public & Semi Public	0.000	1359.005	1657.240	2000.190	2214.514	2619.985	9850.932

Contd.....

1	2	3	4	5	6	7	8	
E1.0	Utilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
F1.0	Recreation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
G1.0	Transportation Railway	0.000	16425.090	0.000	0.000	0.000	0.000	16425.090
H1.0	Circulation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
I1.0	Government	0.000	592.800	691.323	806.221	1136.877	1096.479	4323.701
	Others	0.000	17017.890	691.323	806.221	1136.877	1096.479	20748.790
	Grand Total	0.000	61952.553	32689.408	22763.975	26496.690	29960.048	173862.674

Note : All Figures are in Lakhs.

Yearwise Breakup of Discounted Revenue From Saleable Area in Dwarka (Phase - I)

Use Code	Use	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	Total
		0.834	1.000	1.166	1.360	1.586	1.850	
1	2	3	4	5	6	7	8	
A1.1	Cooperative Housing	0.000	33882.030	11197.825	0.000	0.000	0.000	45079.855
A1.2	DDA Housing							
	EWS	0.000	0.000	0.000	434.385	372.330	430.041	1236.756
	LIG	0.000	0.000	0.000	837.743	837.743	849.843	2525.328
	MIG	0.000	0.000	0.000	2016.788	2016.788	1883.369	5916.944
	SFS	0.000	4654.125	3942.975	0.000	0.000	0.000	8597.100
A1.3	Institutional Housing	0.000	0.000	5329.904	0.000	0.000	0.000	5329.904
A1.4	Resettlement Squatters	0.000	4418.954	0.000	0.000	0.000	0.000	4418.954
A1.5	Alternative Plots	0.000	620.550	620.550	620.550	310.275	0.000	2171.925
A1.6	Auction Plots	0.000	0.000	992.880	992.880	992.880	908.485	3887.125
A1.7	Existing Villages	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Net Residential	0.000	43575.659	22084.133	4902.345	4530.015	4071.739	79163.891
A2	Educational Facilities	0.000	0.000	1116.990	1042.524	1042.524	865.295	4067.333
A3	Other Comm. Facilities	0.000	0.000	0.000	1116.990	1385.068	1489.320	3991.378
A4	Local/Convenient Shopping	0.000	0.000	0.000	1116.990	1385.068	1489.320	3991.378
A5	Utilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
A6	Parks & Playground	0.000	0.000	0.000	0.000	0.000	0.000	0.000
A7	Sector Roads	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Res. Supporting Facilities	0.000	0.000	1116.990	2159.514	2427.592	2354.615	8058.711
	Total Residential	0.000	43575.659	23201.123	7061.859	6957.607	4626.354	87222.602

Contd.....

B1.1	Open Spaces	0.000	0.000	0.000	0.000	0.000	0.000	0.000
B1.2	Commercial Spaces	0.000	0.000	0.000	3475.080	3475.080	3638.905	10589.065
B1.3	Comm. Low Turnover	0.000	0.000	0.000	248.220	248.220	243.256	739.696
B1.4	Cultural Spaces	0.000	0.000	0.000	496.440	496.440	486.511	1479.391
B1.5	Facilities	0.000	0.000	0.000	49.400	59.774	59.447	168.948
B1.6	Residential	0.000	0.000	0.000	372.330	372.330	364.883	1109.543
B1.7	Uatilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
	Total Dist. Centre	0.000	0.000	0.000	4641.470	4651.844	4793.329	14086.643
B4.1	Comm. Spaces	0.000	0.000	1088.693	1241.100	1241.100	1241.100	4811.993
B4.2	Commercial Lowturn Over	0.000	0.000	206.023	198.576	198.576	198.576	801.751
B4.3	Facilities Plus Cultural	0.000	0.000	324.672	347.508	347.508	347.508	347.508
B4.4	Utilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
	Total Community Centres	0.000	0.000	1619.387	1787.184	1787.184	1787.184	6980.939
C1.1	Circulation/Parking	0.000	0.000	0.000	0.000	0.000	0.000	0.000
C1.2	Public & Semi Public	0.000	0.000	17.290	17.290	17.290	14.820	66.690
C1.3	Commercial	0.000	0.000	62.055	49.644	62.055	49.644	223.398
C1.4	Utilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
C1.5	Net Industrial Plots	0.000	0.000	116.990	116.990	116.990	116.990	4467.960
	Total Industrial	0.000	0.000	1196.335	1183.924	1196.335	1181.454	4758.048

Contd.....

D1.0	Colleges/Hospital/Other	0.000	1116.990	1116.990	1116.990	1042.524	1050.343	5443.837
D2.0	Integrated School	0.000	242.015	242.015	260.631	260.631	242.015	1247.306
D3.0	Socio-Cultural	0.000	0.000	62.055	93.083	93.083	124.110	372.330
D4.0	Circulation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total Public & Semi Public	0.000	1359.005	1421.060	1470.704	1396.238	1416.467	7063.472
E1.0	Utilities	0.000	0.000	0.000	0.000	0.000	0.000 **	
F1.0	Recreation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
G1.0	Transportation	0.000	16425.090	0.000	0.000	0.000	0.000	16425.090
H1.0	Circulation	0.000	0.000	0.000	0.000	0.000	0.000	0.000
I1.0	Government	0.000	592.800	592.800	592.800	716.794	592.800	3087.994
	Others	0.000	17017.890	592.800	592.800	716.794	592.800	19513.084
	Grand Total	0.000	61952.553	28030.705	16737.941	16706.001	16197.589	139624.789

Annexure A : DWARAKA - SECTOR 22 : PROJECT DATA

BASIC PROJECT DETAILS : LANDUSE AND SERVICES/1

1. TOTAL SITE AREA (Sq.m)	776800
2. UNDEVELOPABLE AREA (sq.mts)	0
3. LENGTH TO WIDTH RATIO OF SITE	1.5
4. ENTRY TO SITE (1.Short side 2.Long side 3.both)	2
5. CURRENT YEAR	1993
6. YEAR TO START DEVELOPMENT	1994
9. FACILITY STANDARDS: 1.Give facilitywise standards CORE DATA : 2. Low 3. Medium 4. High	1
10. ROAD STANDARDS CORE DATA : 1. Low, 2. Medium, 3. High GIVE ROAD LENGTHS IF KNOWN (meters)	2
Access: 0 Collector 0 Distributor:	0
11. SPATIAL DESIGN 1. Yes 0. No	1

CITY SERVING NON-RESIDENTIAL ACTIVITIES : LAND USE AND SERVICES/2

	TYPE OF ACTIVITY	AREA ALLOCATION (sq.m)	AREA MARKETABLE (Sq.m)	NO OF USERS (DAILY)	LAND USE CODE	
1	COMMERCIAL	43200	43200	1000	2	Land use code :
2	ISBT	0	0	0	5	1. Residential
3	PETROL PUMP	200	200	1000	5	2. Commercial
4	TELEGRAPH	0	0	0	5	3. Public Insti-
5	ART CENTRE	0	0	0	3	tutions
6	UNIVERSITY	0	0	0	3	4. Industrial
7	.....					5. Utilities
8	.....					6. Open Spaces/
9	.....					Parks etc.
10	.....					7. Roads

DETAILED FACILITY SPECIFICATIONS 1 : LANDUSE AND SERVICES/3

NAME OF NODE : NEIGHBOURHOOD POPULATION THRESHOLD 5000

	TYPE OF FACILITY	AREA PER FACILITY (Sq.m)	MARKETABLE 1=YES/0=NO	ACTIVITY CODE	NO OF USERS (DAILY)	LAND USE CODE	
1	NURSERY	1600	1	1	150	3	Land use code:
2	PRIMARY	4000	1	1	250	3	As in the
3	COMM ROOM	660	0	6	150	3	above screen
4	RELIG B	400	1	4	100	3	Activity Code:
5	CON SHOP	1400	1	3	300	2	1.Education
6	MILK BOOTH	150	1	1	20	2	2.Health
7	PARK	5000	0	6	400	6	3.Commercial
8	PLAY	5000	0	6	400	6	4.Religious
9							5.Utilities
10							6.Other

DETAILED FACILITY SPECIFICATIONS 2 : LANDUSE AND SERVICE/4

NAME OF NODE : SECTOR POPULATION THRESHOLD 15000

	TYPE OF FACILITY	AREA PER FACILITY (Sq.m)	MARKETABLE 1=YES/0=NO	ACTIVITY CODE	NO OF USERS (DAILY)	LAND USE CODE	
1	SEC SCHOOL	32000	1	1	500	3	Land use code:
2	DISPENSIRY	2000	1	2	500	3	As in the
3	COMM. HALL	2000	0	6	300	3	above screen
4	ESS	920	1	5	50	5	Activity Code:
5	TAXI STAND	500	1	5	100	5	1.Education
6	LOCAL SHOP	4600	1	3	1000	2	2.Health
7	PARK	15000	0	6	750	6	3.Commercial
8	PLAY	15000	0	6	500	6	4.Religious
9	ESS	0	0	0	0	0	5.Utilities
10							6.Other

DISTRIBUTION OF HOUSEHOLDS. **RESIDENTIAL DESIGN/1**

	BENEFICIARY/ CLIENT GROUP	PERCENTAGE DISTRIBUTION TO TOTAL HOUSEHOLDS	PERCENTAGE DISTRIBUTION TO TOTAL HOUSEHOLDS IN EACH GROUP		
			SINGLE FAMILY	MULTI FAMILY	TOTAL
1	EWS	33.00	1.00	99.00	100.00
2	LIG	22.50	1.00	99.00	100.00
3	MIG I	10.00	1.00	99.00	100.00
4	MIG II	12.50	1.00	99.00	100.00
5	HIG I	10.00	1.00	99.00	100.00
6	HIG II	12.00	1.00	99.00	100.00
7	.....	0.00	0.00	0.00	0.00
8	.....	0.00	0.00	0.00	0.00
9	.....	0.00	0.00	0.00	0.00
10	.....	0.00	0.00	0.00	0.00
	TOTAL	100.00			

DWELL SIZES AND RES BUILT FORM -Multi family : RES DESIGN/3

	BENEFICIARY/ CLIENT GROUP	AVERAGE DWELLING SIZE (sq.m)	SUPER BUILTUP /DWELL AREA	OCCUPANCY RATE (PERSONS/ DWELLING)	GROUP SPACE PERCAP (Sq.m)	GROUP SPACE TO SELL? (1=yes/0=no)	LENGHTH TO WIDTH RATIO FOR PLOT
1	EWS	25.00	1.15	5.50	3.00	0	1.25
2	LIG	35.00	1.15	5.50	2.00	0	1.25
3	MIG I	45.00	1.25	4.50	2.00	1	1.50
4	MIG II	60.00	1.25	4.50	2.00	1	1.50
5	HIG I	90.00	1.25	4.00	1.00	1	2.00
6	HIG II	120.00	1.25	4.00	1.00	1	2.00
7	.....	0.00	0.00	0.00	0.00	0	0.00
8	.....	0.00	0.00	0.00	0.00	0	0.00
9	.....	0.00	0.00	0.00	0.00	0	0.00
10	.....	0.00	0.00	0.00	0.00	0	0.00

PLOT SIZES AND BUILT FORM - MULTI FAMILY : RESIDENTIAL DESIGN/4

	BENEFICIARY/ CLIENT GROUP	{ FSI {	AVERAGE PLOT SIZE }	OR	{ NO. OF UNITS ON { A FLOOR	PLOT COVERAGE	NO. OF FLOORS }
1	EWS	0.00	0		2	65	2
2	LIG	0.00	0		2	75	2
3	MIG I	0.00	0		2	75	2
4	MIG II	1.33	600		0	0	0
5	HIG I	1.33	1000		0	0	0
6	HIG II	1.33	1200		0	0	0
7	.....	0.00	0		0	0	0
8	.....	0.00	0		0	0	0
9	.....	0.00	0		0	0	0
10	.....	0.00	0		0	0	0

RESIDENTIAL MIX-1 MULTI FAMILY SPATIAL DESIGN/2

	BENEFICIARY/ CLIENT GROUP	PERCENTAGE OF AREA IN A NEIGHBOURHOOD/SECTOR 1	2	3	4	5	6	TOTAL
1	EWS	20.0	20.0	15.0	15.0	15.0	15.0	100.0
2	LIG	20.0	20.0	15.0	15.0	15.0	15.0	100.0
3	MIG I	20.0	20.0	15.0	15.0	15.0	15.0	100.0
4	MIG II	20.0	20.0	15.0	15.0	15.0	15.0	100.0
5	HIG I	10.0	10.0	20.0	20.0	20.0	20.0	100.0
6	HIG II	10.0	10.0	20.0	20.0	20.0	20.0	100.0
7	.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ADDITION TO BASE COST AND LAND COSTS : DEV. STDS & COSTS/1

1.	DISCOUNT RATE FOR NET PRESENT VALUE (%)	15.00
2. a)	PHYSICAL CONTINGENCY (%)	5.00
b)	DESIGN SUPERVISION AND MANAGEMENT (%)	3.00
3.	PRICE ESCALATION (Average per year (%))	10.00
4.	% INCREASE/DECREASE IN EST. ON-SITE INFRA COSTS	0.00
5.	* LAND ACQUISITION/PURCHASE COST (Rs./sq.m)	1500.00
	* YEAR OF LAND ACQUISITION/PURCHASE	1994
	* OPPOR. COST OF CAPITAL INVESTED IN LAND(%)	0.00
6.	SITE PREPARATION AND LAND LEVELLING (Rs./sq.m)	
	SOIL TYPE (REFERANCE NUMBER- CORE DATA)	1
	DEPTH(cms.)	0.00
7.	OFF-SITE INFRA (% to total land dev costs)	0.00
8.	SOIL PERMEABILITY (percolation rate in minutes)	60
9.	YEAR TO COMPARE DWELLING COSTS (Market Price, Affordable and Chargeable Costs)	1994
10.	ONSITE INFRA. 1.Standards 2.Quantities & Rates	1

ON-SITE INFRASTRUCTURE STANDARDS-1 DEV. STDS & COSTS/2

WATER SUPPLY OPTIONS :

A. SOURCE : SINGLE FAMILY 5 MULTI FAMILY 5

(Choose Option From Codes Given Below)

Community Facility
Individual

0. No water supply/facility
1. Hand pump, 2.Taps with bore well
3. Taps with distribution network
4. With bore well and distribution network
5. Off-site source with distribution network

B. BORE WELL (If Opted Furnish Details Below) :

Size (Ref. No - CORE DATA)	3	4
Number of wells	2	2
Depth (m)	100	150

C. SUPPLY OF WATER - 1. Intermittent, 2. Continuous 1

ON-SITE INFRASTRUCTURE STANDARDS-2 DEV. STDS & COSTS/3

SEWAGE DISPOSAL OPTIONS : SINGLE FAMILY 6
MULTI FAMILY 6

(Choose Option From Codes Given Below)

Community Latrines
Individual latrines

0. No sewerage/toilets
1.Pit latrines, 2. Septic Tank ,
3. Collection network
4.Pit latrines, 5. Septic Tank,
6. Collection network.

ON-SITE INFRASTRUCTURE STANDARDS-3 DEV. STDS & COSTS/4

ITEM	STANDARD (Select codes for quality) (0= None, 1 = Low, 2 = Medium, 3= High)
WATER SUPPLY :	
- RATES (for quantity of water to be supplied)	2
- QUALITY OF DISTRIBUTION NETWORK (material of pipes)	2
- NUMBER OF DWELLINGS SHARING COMMON FACILITY	1
SEWERAGE :	
- QUALITY OF COLLECTION NETWORK (material of pipes)	2
- NUMBER OF DWELLINGS SHARING COMMON TOILET	1
- NUMBER OF COMMON TOILETS SHARING A SEPTIC TANK	1
LANDSCAPING :	
- COMMON GORUP SPACES	1
- PARKS	1

BUILDINGS FOR CITY-SERVING NON-RES ACTIVITIES: DEV.STDS & COSTS/9

TYPE OF ACTIVITY	PERCENTAGE OF AREA TO BE BUILT	F S I	BASE COST FOR BUILT UP AREA (Give Ref.No. CORE DATA)	PERCENTAGE OF COST TO BE ALLOCATED TO THIS PROJECT
1 COMMERCIAL	100.00	1.50	20	100.00

BUILDINGS FOR LOCAL FACILITIES ETC. : DEV. STDS & COSTS/10

	TYPE OF ACTIVITY	PERCENTAGE OF AREA TO BE BUILT	F S I	BASE COST FOR BUILT UP AREA (For Ref.No. CORE Data)	PERCENTAGE OF COST TO BE ALLOCATED TO LAND DEVELOP
1	EDUCATION	0.00	1.30	18	0.00
2	HEALTH	0.00	1.30	18	0.00
3	COMMERCIAL	100.00	1.30	18	0.00
4	RELIGIOUS	0.00	0.00	0	0.00
5	UTILITIES	0.00	0.00	0	0.00
6	OTHERS	0.00	0.00	0	0.00

COSTS OF RESIDENTIAL DEVELOPMENT - MULTI FAMILY : DEV.STDS & COSTS/12

	BENEFICIARY/ CLIENT GROUP	PERCENTAGE OF TOTAL AREA TO BE SOLD AS PLOTS	BUILT HOUSING	
			BASE COST FOR FLOOR SPACE (Ref no: CORE DATA)	COST OF ON-PLOT UTILITY CONNECTION (Rs./plot)
1	EWS	0.00	16	800
2	LIG	0.00	17	900
3	MIG I	0.00	18	1000
4	MIG II	0.00	19	1000
5	HIG I	0.00	20	1000
6	HIG II	0.00	20	1000
7	.....			
8	.....			
9	.....			
10	.....			

HOUSEHOLD INCOMES **AFFORDABILITY/1**

	BENEFICIARY/ CLIENT GROUP	AVERAGE HOUSEHOLD INCOME (Rs./month)	EXPECTED ANNUAL INCREASE IN AVERAGE INCOME (%)
1	EWS	1000	8.0
2	LIG	1950	8.0
3	MIG I	3100	8.0
4	MIG II	4000	8.0
5	HIG I	6000	8.0
6	HIG II	10000	8.0
7	.....		
8	.....		
9	.....		
10	.....		

CITY SERVING ACTIVITIES : PRICING /1

	ACTIVITY	PRICE TO BE CHARGED IN CURRENT YEAR (Rs./sq.m)		EXPECTED ANNUAL INCREASE IN PRICE (%)
		ONLY PLOTS	BUILDINGS	
1	COMMERCIAL	23424	28424	10.0
2	ISBT	0	0	0.0
3	PETROL PUMP	23424	0	10.0
4	TELEGRAPH	0	0	0.0
5	ART CENTRE	0	0	0.0
6	UNIVERSITY	0	0	0.0
7	.....			
8	.....			
9	.....			
10	.....			

POPULATION SERVING FACILITIES : PRICING/2

FACIALITY/ ACTIVITY	PRICE TO BE CHARGED IN CURRENT YEAR (Rs./sq.m)		EXPECTED ANNUAL INCREASE IN PRICE (%)
	ONLY PLOTS	BUILDINGS	
EDUCATION	3660	0	5.0
HEALTH	3660	0	5.0
COMMERCIAL	11712	15462	10.0
RELIGIOUS	3660	0	5.0
UTILITIES	5856	0	5.0
OTHERS	3660	0	5.0

RESIDENTIAL DEVELOPMENT - CURRENT MARKET PRICES : PRICING/4

BENEFICIARY/ CLIENT GROUP	MULTI FAMILY		
	PLOT (Rs/sqm)	BUILT DWELLING (Rs/sqm)	EXPECTED ANNUAL INCREASE IN PRICE (%)
1 EWS	3000	7500	5
2 LIG	7500	12500	5
3 MIG I	7500	12500	5
4 MIG II	7500	12500	5
5 HIG I	7500	12500	5
6 HIG II	7500	12500	5
7			
8			
9			
10			

RESIDENTIAL PRICING - MULTI FAMILY - BUILT UNITS : PRICING/8

BENEFICIARY/ CLIENT GROUP	PRICE TO BE CHARGED* (Codes:-below table (*))	SPECIFIED PRICE (Rs/sqm)	DOWN PAYMENT AS A % TO TO PRICE (Only for non HUDCO fin)	NO OF ANNUAL INSTALMENTS
1 EWS	4	1600	100	1
2 LIG	2	0	25	2
3 MIG I	2			
4 MIG II	2			
5 HIG I	3			
6 HIG II	3			
7				
8				
9				
10				

(*) CODES:1.Affordable cost 2.Chargable cost 3.Market price 4.Specified

BENEFICIARY/ CLIENT GROUP BLOCKS	% OF TOTAL PLOTS IN DIFF. PRICE BLOCKS PLOTS 1	2	3	BUILT UNITS 1	2	3
1 EWS	20.00	60.00	20.00	20.00	60.00	20.00
2 LIG	20.00	60.00	20.00	20.00	60.00	20.00
3 MIG I	20.00	60.00	20.00	20.00	60.00	20.00
4 MIG II	20.00	60.00	20.00	20.00	60.00	20.00
5 HIG I	20.00	60.00	20.00	20.00	60.00	20.00
6 HIG II	20.00	60.00	20.00	20.00	60.00	20.00
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00
9						
10						
SALE PR/MAR PR	1.20	1.00	0.95	1.20	1.00	0.95

SALES PLAN **PHASING/1**

YEAR	% OF AREA OR UNITS TO BE SOLD IN GIVEN YEAR						
	CITY SERVING ACTIVITIES	FACIL-ITIES	SINGLE FAMILY			MULTI FAMILY	
			OPTION-1	OPTION-2		PLOTS	UNITS
1994	15.0	20.0	15.0	15.0	15.0	15.0	15.0
1995	15.0	20.0	25.0	25.0	25.0	25.0	25.0
1996	15.0	20.0	25.0	25.0	25.0	25.0	25.0
1997	15.0	20.0	25.0	25.0	25.0	25.0	25.0
1998	40.0	20.0	10.0	10.0	10.0	10.0	10.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PHASING OF PROJECT(% OF WORK) **PHASING/2**

ITEM	1994	1995	1996	1997	1998
LAND DEVELOPMENT					
SITE PREPARATION & ON-SITE INFRASTRUCTURE	30.00	30.00	30.00	10.00	0.00
OFF SITE INFRASTRUCTURE	30.00	30.00	30.00	10.00	0.00
BUILDINGS FOR					
CITY SERVING ACTIVITIES	25.00	25.00	25.00	25.00	0.00
FACILITIES	25.00	25.00	25.00	25.00	0.00
RESIDENTIAL					
SINGLE FAMILY					
C & P	25.00	25.00	25.00	25.00	0.00
BUILT UNIT	25.00	25.00	25.00	25.00	0.00
MULTI FAMILY					
ONLY PLOTS	25.00	25.00	25.00	25.00	0.00
BUILT UNITS	25.00	25.00	25.00	25.00	0.00

Annexure B : DWARAKA - SECTOR 22 : CORE DATA

MAXIMUM ROAD LENGTHS **CORE DATA/5**

	ROAD WIDTH (m)	MAXIMUM ROAD LENGTH (m)
1	6.0	75
2	7.5	150
3	9.0	300
4	10.5	450
5	100.0	1500
6		
7		
8		
9		
10		

STANDARDS OF ROAD DEVELOPMENT/ACCESS ROADS **CORE DATA/6**

ITEM DEV. STANDARD	LOW	MEDIUM	HIGH
. WIDTH OF ROW (m)	4.5	6.0	7.5
. WIDTH CARRIAGEWAY (m)	3.0	3.5	4.0
. WIDTH FOOTPATH (m)	0.0	0.0	1.8
. SPACING OF TREES (m)	50	40	30
. SPACING OF STREETLIGHTS (m)	20	15	10
. ELECTRICITY	0	2	1
0. None 1. Underground 2. Overhead			
GIVE REFERENCE NO OF MATERIAL/TREE			
. CARRIAGEWAY SURFACING	4	4	3
. FOOTPATH SURFACING	0	0	7
. TYPE OF TREES	2	3	4
. TYPE OF STREET LIGHT POLE	1	1	1
. STORM WATER DRAINAGE	0	1	1

STANDARDS OF ROAD DEVELOPMENT/COLLECTOR ROADS **CORE DATA/7**

ITEM DEV. STANDARD	LOW	MEDIUM	HIGH
. WIDTH OF ROW (m)	7.60	9.00	12.00
. WIDTH CARRIAGEWAY (m)	4.5	6.0	7.5
. WIDTH FOOTPATH (m)	0.0	1.8	2.5
. SPACING OF TREES (m)	50	40	30
. SPACING OF STREETLIGHTS (m)	30	25	20
. ELECTRICITY	2	2	2
0. None 1. Underground 2. Overhead			
GIVE REFERENCE NO OF MATERIAL/TREE			
. CARRIAGEWAY SURFACING	4	3	3
. FOOTPATH SURFACING	0	7	7
. TYPE OF TREES	3	3	4
. TYPE OF STREET LIGHT POLE	2	2	2
. STORM WATER DRAINAGE	0	3	4

STANDARDS OF ROAD DEVELOPMENT/DISTRIBUTOR ROADS **CORE DATA/8**

ITEM DEV. STANDARD	LOW	MEDIUM	HIGH
. WIDTH OF ROW (m)	12.50	15.00	20.00
. WIDTH CARRIAGEWAY (m)	9.0	10.5	12.0
. WIDTH FOOTPATH (m)	1.8	2.5	4.5
. SPACING OF TREES (m)	50	40	30
. SPACING OF STREETLIGHTS (m)	30	25	20
. ELECTRICITY	2	2	2
0. None 1. Underground 2. Overhead			
GIVE REFERENCE NO OF MATERIAL/TREE			
. CARRIAGEWAY SURFACING	3	2	1
. FOOTPATH SURFACING	7	6	5
. TYPE OF TREES	4	4	4
. TYPE OF STREET LIGHT POLE	3	3	5
. STORM WATER DRAINAGE	0	4	5

RATES OF SITE PREPARATION, LEVELLING ETC. **CORE DATA/9**

TYPE OF SOIL	REF.NO.	RATE IN (Rupees/Sq.m) Upto a depth of (cms)		
		20	30	50
HARD ROCK	1	2.7	4.0	6.7
MURRAM	2	2.0	2.5	3.3
	3			
	4			
	5			

RATES FOR ROADS AND FOOTPATHS **CORE DATA/10**

MATERIAL/BRIEF SPECIFICATIONS	REFERANCE NO.	RATE FOR DEVELOPMENT (Rs./sq.m.)
Asphalt with soling,metaling and seal	1	166
Asphalt with soling and metaling	2	120
Asphalt with metaling	3	67
Only seal coat	4	47
Footpath-Morrack stone with water cur	5	226
Cement concrete block with water curb	6	214
Brick on edge without ater curb	7	128
	8	
	9	
	10	
	11	
	12	

RATES FOR ELECTRICITY

CORE DATA/11

	REF NO	RATE PER RUNNING METRE (Rupees)
. ELECTRIC LINE DISTRIBUTION		
. UNDERGROUND		72.35
. OVERHEAD		48.28
RATE FOR STREETLIGHT (Rupees/Pole)	1 Tube light pole	5320
	2 125 WT Mecury pole	5985
	3 250 WT Mercury pole	6650
	4 150 WT Sodium pole	8778
	5 250 WT sodium pole	9975

RATES OF LANDSCAPING

CORE DATA/12

1. GROUP SPACES AND PARKS

DISCRIPTION	REF. NO.	RATE FOR DEVELOPMENT (Rs./sq.m)	
		GROUP COMMON SPACES	PARKS
Low		106	40
Medium		200	106
High		266	213

2. TREES

TYPE OF TREE	REF. NO.	RATE PER TREE (Rs)
Neem	1	665
Ashok	2	133
Eucalypt	3	160
Gulmohar	4	266
	5	
	6	

RATES FOR STORM WATER DRAINAGE **CORE DATA/13**

ITEM	REF.NO.	RATE PER RUNNING METRE (Rupees)
Drain size(0.3*0.46)	1	133
Drain size(0.3*0.53)	2	166
Drain size(0.46*0.69)	3	200
Drain size(0.61*0.91)	4	266
Drain size(0.61*1.22)	5	333
Drain size(0.76*1.37)	6	399
Drain size(0.76*1.52)	7	466
Drain size(1.07*1.75)	8	532
	9	
	10	

WATER SUPPLY STANDARDS **CORE DATA/14**

ACTIVITY	STANDARDS		
	LOW	MEDIUM	HGIH
. DOMESTIC/RESIDENTIAL (lpcd)	60	100	150
. NON-RESIDENTIAL (lpcd)	20	40	60
. PARKS ETC. (Litre pd/100 sq.m)	20	30	40
. WITHOUT DISTRIBUTION NETWORK (lpcd)	40	50	60

PEAK FACTORS ETC. **CORE DATA/15**

WATER SUPPLY :	PEAK FACTOR	LEAKAGE (%)	WATER TANK(%to daily supply) OVERHEAD	UNDERGROUND
INTERMITTENT SUPPLY	3	20	33.0	33.0
CONTINUOUS SUPPLY	1.5	10	25.0	25.0

IF INTERMITTENT, HOURS OF SUPPLY IN A BLOCK 4

SEWERAGE :

POPULATION (upto)	PEAK FACTOR	FLOW IN PIPE (flow/total area)	DIAMETER (mm) (upto)REF NO
20000	3.50	0.50	5
50000	2.25	0.67	9
75000	2.00	0.75	10
1000000	1.75		

PIPE MATERIALS AND MINIMUM PIPE SIZES **CORE DATA/16**

LEVEL Along.....	(Give Ref. No. from CORE DATA) MINIMUM PIPE DIAMETER	MATERIAL LOW	MEDIUM	HIGH
WATER SUPPLY				
ACCESS ROADS	1	1	2	3
COLLECTOR ROADS	2	2	4	5
DISTRIBUTOR ROADS	3	3	5	6
SEWERAGE				
ACCESS ROADS	1	1	1	5
COLLECTOR ROADS	2	1	5	5
DISTRIBUTOR ROADS	4	5	5	6

STANDARDS FOR SHARED FACILITIES **CORE DATA/17**

FACILITY	UNITS	LOW	MEDIUM	HIGH
COMMON WATER TAPS	DWELLINGS	25	15	5
HAND PUMP	DWELLINGS	15	10	5
PIT LATRINE	DWELLINGS	20	10	5
COMMON TOILET	DWELLINGS	20	10	5
SEPTIC TANK	COMMON TOILET	3	5	8

WATER SOURCES - RATES **CORE DATA/18**

ITEM	RATE (Rupees)
HAND PUMP (Per Installation)	6650
COMMON WATER TAP (Per Connection)	3325
BORE WELL (Furnish following details)	

DIAMETER (mm)	REF. NO.	MAX DEPTH(m)	RATE(Rupees/m)
150.00	1	100	652
200.00	2	100	698
250.00	3	165	886
200*300	4	200	1663
200*350	5	250	2128
250*350	6	250	2660
2(200*350)	7	250	4256
2(250*350)	8	250	5320

WATER STORAGE - RATES **CORE DATA/19**

	OVERHEAD		UNDERGROUND	
	CAPACITY (Litres)	RATE (Rs/litre)	CAPACITY (Litres)	RATE (Rs/litre)
	25000	5.45	25000	1.60
	50000	4.52	50000	1.60
	200000	4.19	200000	1.13
	500000	2.59	500000	1.00
	1000000	2.19	1000000	0.80
	2000000	1.86	2000000	0.80
MAXIMUM SIZE	2000000		2000000	

PREF. VELOCITIES AND RATES FOR FIRE HYDRANTS - WATER **CORE DATA/20**

PIPE SIZE DIAMETER (mm)	REF.NO.	PREFERRED VELOCITY (m/sec)	FIRE HYDRANTS	
			RATE(Rs.)	SPACING(m)
40	1	0.61	1330	0
80	2	0.61	1596	0
100	3	0.76	1995	200
150	4	1.07	1995	200
200	5	1.22	2660	150
250	6	1.37	2660	100
300	7	1.52	2660	100
350	8	1.52	3325	100
400	9	1.52	3325	100
450	10	1.52	3325	100
500	11	1.52	0	100
750	12	1.52	0	100

RATES FOR PIPES IN WATER DISTRIBUTION NETWORK **CORE DATA/21**

PIPE MATERIAL Ref no	PIPE DIA Ref no	PIPE MATERIAL (Reference Number) 1	2	3	4	5	6
1 G I Class LA	1	133	160	186	47	52	56
2 G I Class A	2	193	214	227	60	61	63
3 G I Class B	3	237	261	279	73	78	81
4 AC Prees I	4	340	368	404	113	118	146
5 AC Press II	5	493	533	573	166	185	245
6 AC PressIII	6	661	698	762	219	263	314
	7	846	932	1008	279	342	424
	8	1085	1154	1262	415	430	576
	9	1273	1402	1540	489	548	750
Cell Values are	10	1535	1698	1831	612	644	880
rates in rupees	11	0	0	0	0	0	0
	12	0	0	0	0	0	0
ROUGHNESS COEFF(%)		140	140	140	130	130	130

CAPACITY OF SEPTIC TANKS **CORE DATA/22**

NUMBER OF DWELLINGS	SIZE (cum.)	RATE (Rs./cum.)	RETENTION CAPACITY REQUIRED FOR SOAK PIT (hours)
1	1.40	1899.2	24
2	2.22	1916.5	18
3	2.86	1859.3	18
4	3.27	1830.1	18
5	3.82	1815.5	18
10	12.70	1729.0	18
20	24.85	1605.3	18
30	37.20	1501.6	8
40	49.10	1429.8	8
60	74.70	1280.8	8
MAXIMUM CAPACITY OF SEPTIC TANK (Number of dwellings)			60

PREF VEL. IN SEWAGE PIPES AND RATES FOR MANHOLES & VENTS **CORE DATA/23**

PIPE SIZE DIAMETER (in mm)	REF. NO.	PREF VELOCITY (m/sec)	MANHOLES RATE (Rs)	MANHOLES SPACING (m)	VENT PIPES RATE (Rs)	VENT PIPES SPACING (m)
150	1	0.75	7147	45	3325	45
200	2	0.75	7147	45	3325	45
250	3	0.75	7147	45	3325	45
300	4	0.75	7147	45	3325	45
400	5	0.75	7147	75	5586	75
500	6	0.75	0	75	0	75
600	7	0.75	0	90	0	90
750	8	0.75	0	90	0	90
900	9	0.75	0	90	0	90
1000	10	0.75	0	90	0	90
	11					
	12					

RATES FOR TOILETS. SEPTIC TANKS ETC. **CORE DATE/24**

ITEM	UNIT	RATE (Rupees)
PIT LATRINE	NUMBER	2660
COMMUNITY TOILET	NUMBER	3990
SOAK PIT	CUM.	81

RATES FOR PIPES IN SEWERAGE NETWORK **CORE DATA/25**

PIPE MATERIAL Ref no	PIPE DIA Ref no	PIPE MATERIAL (Reference Number) 1	2	3	4	5	6
1 Stoneware	1	60	69	85	93	63	
2 RCC P1	2	130	100	106	133	86	
3 RCC P2	3	173	121	156	186	110	173
4 RCC P3	4	255	154	217	265	132	253
5 RCC NP2	5	333	230	331	440	173	326
6 RCC NP3	6		0	0		0	0
	7		0	0		0	0
	8		0	0		0	0
	9		0	0		0	0
Cell Values are	10					0	0
rates in rupees	11						
	12						
ROUGHNESS COEFF(%)		0.013	0.013	0.013	0.013	0.013	0.013

COSTS OF CONSTRUCTION - CORE **CORE DATA/27**

QUALITY DETAILS	REFERENCE NUMBER	COST OF CONSTRUCTION (Rupees)
CORE TYPE 1	1	1330
CORE TYPE 2	2	1995
CORE TYPE 3	3	2660
CORE TYPE 4	4	3990
CORE TYPE 5	5	6650
CORE TYPE 6	6	9310
CORE TYPE 7	7	13300
	8	
	9	
	10	

COSTS OF CONSTRUCTION - DWELLING/FACILITY **CORE DATA/28**

QUALITY DETAILS	REFERENCE NUMBER	COST OF CONSTRUCTION (Rs./sq.m)
BUILDING TYPE 1	11	1064
BUILDING TYPE 2	12	1330
BUILDING TYPE 3	13	1663
BUILDING TYPE 4	14	1995
BUILDING TYPE 5	15	2128
BUILDING TYPE 6	16	2328
BUILDING TYPE 7	17	2660
BUILDING TYPE 8	18	2926
BUILDING TYPE 9	19	3325
BUILDING TYPE 10	20	3990

SUMMARY PROJECT DETAILS I AREA UTILIZATION TABLE 1

DISTRIBUTION OF AREA	TOTAL AREA (in sq.m)	PERCENT TO TOTAL DEVE-LOPABLE AREA	AREA PER CAPITA (sqm)
. CITY SERVING ACTIVITIES	43400.	5.6	1.42
. FACILITIES & OPEN SPACES	256771.	33.1	8.40
. ROADS	136102.	17.5	4.45
. RESIDENTIAL AREA	338964.	43.6	11.08
COMMON GROUP SPACES	66204.	8.5	2.16
SINGLE FAMILY PLOTS	5476.	.7	17.91
MULTI FAMILY PLOTS	267285.	34.4	8.83
. TOTAL DEVELOPABLE AREA	776800.	100.0	25.40
. TOTAL MARKETABLE AREA	461533.	59.4	15.09

SUMMARY PROJECT DETAILS 2 POPUALTION, COSTS AND RETURNS TABLE 2

. TOTAL POPULATION	30579.
. TOTAL DWELLING UNITS	6545.
. GROSS RESIDENTIAL DENSITY (p/ha)	482.
. GROSS RESIDENTIAL DENSITY (dwellings/ha)	84.
. TOTAL COSTS (Rupees '000 -current prices)	3606732.
. AVE LAND DEV COSTS PER MARKETABLE AREA (Rs./sq.m)	2726.97
. HUDCO FINANCE-WEIGHTED RATE OF INTEREST	.00
. INTERNAL RATE OF RETURN (%)	112.21
. NET PRESENT VALUE AT 15.0 % DISCOUNT RATE (Rs '000)	1880045.

LANDUSE DISTRIBUTION TABLE 3

LANDUSE	TOTAL AREA (IN SQ.M)	PERCENT TO TOTAL DEVELOPABLE AREA	PERCENTAGE MARKETABLE AREA TO TOTAL AREA
RESIDENTIAL	338964.	43.64	86.08
COMMERCIAL	62057.	7.99	100.00
PUBLIC INSTITUTIONS	112701.	14.51	92.80
INDUSTRIAL	0.	.00	.00
UTILITIES	3095.	.40	100.00
OPEN SPACES/PARKS ETC.	122318.	15.75	.00
ROADS	136102.	17.52	.00
OTHER	0.	.00	.00
TOTAL DEVELOPABLE AREA	776800.	100.00	59.41

POPULATION SERVING FACILITIES **TABLE 4**

	NEIGHBOURHOO	SECTOR	ZONE	TOWNSHIP
TOTAL NODES	6.	2.	0.	0.
TOTAL FACILITY AREA (Sq.m)	111185.	145586.	0.	0.
AREA PER NODE (sq.m)	18531.	72793.	0.	0.
AREA PER CAPITA (sq.m)	3.6	4.8	.0	.0
AVE MAXIMUM WALKING DISTANCE TO NODE (m)	203.	352.	0.	0.

RESIDENTIAL ANALYSIS **TABLE 5**

BENEFICIARY/ CLIENT GROUP	NO OF DWEL UNITS		RES PLOT AREA (%)	PLOT SIZE(sqm)		GROUP SPACE (sqm/person)		MULTI FAMILY PLOTS (number)
	SINGLE FAMILY	MULTI FAMILY		SINGLE FAMILY	MULTI FAMILY	SINGLE	MULTI	
EWS	21.	2140.	17.6	26.8	88.	3.1	3.0	535.
LIG	14.	1459.	7.4	42.1	107.	2.1	2.0	182.
MIG I	6.	648.	4.6	65.5	150.	2.2	2.0	81.
MIG II	8.	810.	17.1	122.8	600.	2.0	2.0	81.
HIG I	6.	648.	20.5	163.8	1000.	1.1	1.0	59.
HIG II	7.	778.	32.9	280.8	1200.	1.1	1.0	78.
.....	0.	0.	.0	.0	0.	.0	.0	0.
.....	0.	0.	.0	.0	0.	.0	.0	0.
.....	0.	0.	.0	.0	0.	.0	.0	0.
.....	0.	0.	.0	.0	0.	.0	.0	0.
TOTAL	62.	6483.	100.0					1016.

SPATIAL DISTRIBUTION OF PLOTS **TABLE 6**

SR NO	HOUSE TYPE	SPATIAL UNIT / BENEFICIARY/CLIENT GROUP 1	2	3	4	5	6	7	8	9	10
1	SF	4.	3.	1.	2.	1.	1.	0.	0.	0.	0.
	MF	106.	36.	16.	17.	6.	8.	0.	0.	0.	0.
2	SF	4.	3.	1.	2.	1.	1.	0.	0.	0.	0.
	MF	106.	36.	16.	17.	6.	8.	0.	0.	0.	0.
3	SF	3.	2.	1.	1.	1.	2.	0.	0.	0.	0.
	MF	78.	27.	12.	12.	12.	16.	0.	0.	0.	0.
4	SF	3.	2.	1.	1.	1.	2.	0.	0.	0.	0.
	MF	78.	27.	12.	12.	12.	16.	0.	0.	0.	0.
5	SF	3.	2.	1.	1.	1.	2.	0.	0.	0.	0.
	MF	78.	27.	12.	12.	12.	16.	0.	0.	0.	0.
6	SF	3.	2.	1.	1.	1.	2.	0.	0.	0.	0.
	MF	78.	27.	12.	12.	12.	16.	0.	0.	0.	0.

SPATIAL DISTRIBUTION OF AREA TABLE 7

	AREA IN SPATIAL UNIT (sqm)					
	1	2	3	4	5	6
RESIDENTIAL PLOTS	41931.	41931.	51303.	51336.	51336.	51336.
GROUP SPACES	12564.	12564.	10070.	10078.	10078.	10078.
FACILITY SPACES	46230.	46230.	40583.	40613.	40613.	40613.
ACCESS ROADS	6321.	6321.	5999.	6004.	6004.	6004.
TOTAL AREA	105645.	105645.	105645.	105719.	105719.	105719.

NETWORK LENGTHS TABLE 8

ROADS		WATER DISTRIBUTION		SEWERAGE NETWORK	
WIDTH (m)	LENGTH (m)	PIPE DIA (mm)	LENGTH (m)	PIPE DIA (m)	LENGTH (m)
6.	6132.	40.	0.	150.	6132.
9.	8636.	80.	105.	200.	0.
15.	1439.	100.	102.	250.	0.
		150.	5925.	300.	0.
		200.	0.	400.	8636.
		250.	8636.	500.	0.
		300.	0.	600.	0.
		350.	0.	750.	0.
		400.	0.	900.	0.
		450.	0.	1000.	1439.
		500.	0.	0.	0.
		750.	1439.	0.	0.

QUANTITIES FOR ON-SITE INFRASTRUCTURE TABLE 9

ITEM	UNIT	QUANTITY
. STREET POLES	Number	812.
. TREES	Number	405.
. COMMUNITY TAPS	Number	0.
. HAND PUMPS	Number	0.
. WATER STORAGE(overhead)	Number	1. Lit/tank1285497.
. WATER STORAGE(underground)	Number	1. Lit/tank1291268.
. FIRE HYDRANTS	Number	101.
. PIT LATRINES	Number	0.
. COMMUNITY TOILETS	Number	0.
. SEPTIC TANKS/SOAK PITS	Number	0.
. SEPTIC TANK	Cum.	0.
. SOAK PIT	Cum.	0.
. MANHOLES	Number	267.
. VENT PIPES	Number	267.

ON-SITE INFRASTRUCTURE COSTS **TABLE 10**

ITEM	BASE TOTAL COST (Rupees in '000)	PERCENTAGE TO TOTAL COST
. ROADS	13736.0	20.36
. WATER SUPPLY		
SOURCE & COMM TAPS	.0	.00
DISTRIBUTION NETWORK	34800.8	51.57
. SEWERAGE		
COMMUNITY FACILITY	.0	.00
COLLECTION NETWORK	3323.3	4.92
. ELECTRICITY	782.5	1.16
. STORM WATER DRAINAGE	2925.5	4.34
. LANDSCAPING		
GROUP SPACES	7017.6	10.40
PARKS	4892.7	7.25
TOTAL-	67478.4	100.00

DWELLING COSTS - SINGLE FAMILY - 1994 **TABLE 11**

BENEFICIARY/ CLIENT GROUP	C & P			BUILT UNIT		
	CHARGEABLE COST	EFF DEMAND BASED COST	MARKET PRICE	CHARGEABLE COST	EFF DEMAND BASED COST	MARKET PRICE
EWS	0.	0.	0.	147803.	19301.	196875.
LIG	0.	0.	0.	234207.	39190.	459375.
MIG I	0.	0.	0.	377312.	71853.	590625.
MIG II	0.	0.	0.	623946.	104968.	787500.
HIG I	0.	0.	0.	966658.	171217.	1312500.
HIG II	0.	0.	0.	1538730.	309006.	1958750.
.....	0.	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.	0.

DWELLING COSTS - MULTIFAMILY 1994 **TABLE 12**

BENEFICIARY/ CLIENT GROUP	ONLY PLOTS (Rupees)		BUILT UNITS (Rupees)		
	CHARGEABLE COST	MARKET PRICE	CHARG-EABLE COST	EFF DEMAND BASED COST	MARKET PRICE
EWS	0.	0.	144507.	19301.	226406.
LIG	0.	0.	166612.	39190.	528281.
MIG I	0.	0.	276961.	71853.	738281.
MIG II	0.	0.	498448.	104968.	984375.
HIG I	0.	0.	811297.	171217.	1476563.
HIG II	0.	0.	1073760.	309006.	1968750.
.....	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.

DISTRIBUTION OF COSTS **TABLE 13**

ITEM	TOTAL (IN CURRENT PRICES) (Rupees '000)	PERCENTAGE TO TOTAL COSTS	
		SUB-HEAD	TOTAL
LAND DEVELOPMENT	1258279.	100.00	34.88
LAND ACQUISITION	1165200.	92.59	32.30
SITE PREPARATION	0.	.00	.00
ON-SITE INFRASTRUCTURE	93079.	7.41	2.58
BUILDINGS FOR SERVICES	0.	.00	.00
OFF-SITE INFRASTRUCTURE	0.	.00	.00
SUPERSTRUCTURE	2348453.	100.00	65.12
CITY SERVING ACTIVITIES	355674.	15.14	9.86
OTHER FACILITIES	98715.	4.21	2.74
SINGLE FAMILYC & P	0.	.00	.00
SINGLE FAMILYBUILT UNIT	0.	.00	.00
MULTI FAMILY - PLOTS	0.	.00	.00
MULTI FAMILY - BUILDINGS	1894064.	80.65	52.52
TOTAL	3606732.		100.00

CASH FLOW ANALYSIS (EXPENDITURE) (Rupees '000) Current Prices TABLE 14

YEAR	LAND DEV	SUPER STRUCTURE	LOAN REPAYMENT BY AGENCY	CASH LOAN DISBURSEMENT	TOTAL
1994	1189997.	506023.	0.	0.	1696020.
1995	27276.	556625.	0.	0.	583902.
1996	30004.	612288.	0.	0.	642292.
1997	11002.	673517.	0.	0.	684518.
1998	0.	0.	0.	0.	0.
1999	0.	0.	0.	0.	0.
2000	0.	0.	0.	0.	0.
2001	0.	0.	0.	0.	0.
2002	0.	0.	0.	0.	0.
2003	0.	0.	0.	0.	0.
2004	0.	0.	0.	0.	0.
2005	0.	0.	0.	0.	0.
2006	0.	0.	0.	0.	0.
2007	0.	0.	0.	0.	0.
2008	0.	0.	0.	0.	0.
2009	0.	0.	0.	0.	0.
2010	0.	0.	0.	0.	0.
2011	0.	0.	0.	0.	0.
2012	0.	0.	0.	0.	0.
2013	0.	0.	0.	0.	0.
2014	0.	0.	0.	0.	0.
2015	0.	0.	0.	0.	0.
2016	0.	0.	0.	0.	0.
2017	0.	0.	0.	0.	0.
2018	0.	0.	0.	0.	0.
TOTAL	1258279.	2348453.	0.	0.	3606732.

CASH FLOW ANALYSIS (RETURNS/INCOME) (Rupees '000) Current Prices TABLE 15

YEAR	LOAN RECEIPT BY AGENCY	CITY SERVING ACTIVITIES	FACILITIES	SINGLE FAMILY	MULTI FAMILY	TOTAL
1994	0.	287522.	154097.	4944.	510060.	956623.
1995	0.	316275.	165563.	8652.	892605.	1383095.
1996	0.	347902.	177979.	9085.	937235.	1472201.
1997	0.	382692.	191429.	9539.	984097.	1567757.
1998	0.	1122564.	206007.	4006.	413321.	1745898.
1999	0.	0.	0.	0.	0.	0.
2000	0.	0.	0.	0.	0.	0.
2001	0.	0.	0.	0.	0.	0.
2002	0.	0.	0.	0.	0.	0.
2003	0.	0.	0.	0.	0.	0.
2004	0.	0.	0.	0.	0.	0.
2005	0.	0.	0.	0.	0.	0.
2006	0.	0.	0.	0.	0.	0.
2007	0.	0.	0.	0.	0.	0.
2008	0.	0.	0.	0.	0.	0.
2009	0.	0.	0.	0.	0.	0.
2010	0.	0.	0.	0.	0.	0.
2011	0.	0.	0.	0.	0.	0.
2012	0.	0.	0.	0.	0.	0.
2013	0.	0.	0.	0.	0.	0.
2014	0.	0.	0.	0.	0.	0.
2015	0.	0.	0.	0.	0.	0.
2016	0.	0.	0.	0.	0.	0.
2017	0.	0.	0.	0.	0.	0.
2018	0.	0.	0.	0.	0.	0.
TOTAL	0.	2456955.	895075.	36226.	3737319.	7125575.

RETURNS AND SUBSIDIES (Current Prices - Rupees '000). **TABLE 16**

ITEM	TOTAL CHARGE-ABLE COSTS	TOTAL RETURNS	PERCENTAGE TO TOTAL RETURNS	SUBSIDY(-) OR PREMIUM(+) SURPLUS (RETURNS -COST) AS A PERCENTAGE TO TOTAL CHARGEABLE COSTS
CITY SERVING ACTIVITIES	839839.	2456955.	34.48	192.55
OTHER FACILITIES	939942.	895075.	12.56	-5.01
SINGLE FAMILY				
C & P	0.	0.	.00	0.0
BUILT UNIT	32455.	36226.	.51	10.41
MULTI FAMILY				
PLOTS	0.	0.	.00	.00
BUILT UNITS	1794496.	3737319.	52.45	108.26
TOTAL	3606732.	7125575.	100.00	97.56

ANNUAL CONSTRUCTION ACTIVITY **TABLE 17**

ITEM	1994	1995	1996	1997	1998
- LAND DEVELOPMENT('000 SQ.M)	233.	233.	233.	78.	0.
SITE PREPARATION AND ON-SITE INFRASTRUCTURE					
- TOTAL FLOOR SPACE ('000 SQ.M)					
- CITY SERVING ACTIVITIES	16.	16.	16.	16.	0.
- FACILITIES	6.	6.	6.	6.	0.
- MULTI FAMILY DWELLINGS	204.	204.	204.	204.	0.
- TOTAL DWELLING UNITS/PLOTS					
- SINGLE FAMILY					
C & P	0.	0.	0.	0.	0.
BUILT UNIT	16.	16.	16.	16.	0.
- MULTI FAMILY					
PLOTS ONLY	0.	0.	0.	0.	0.
BUILT UNITS	1621.	1621.	1621.	1621.	0.

ANNUAL MARKETING REQUIREMENTS **TABLE 18**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
NON-RESIDENTIAL REQUIREMENTS('000sq.m)										
CITY SERVING										
ONLY LAND	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FLOOR SPACE	10.	10.	10.	10.	26.	0.	0.	0.	0.	0.
FACILITIES										
ONLY LAND	22.	22.	22.	22.	22.	0.	0.	0.	0.	0.
FLOOR SPACE	5.	5.	5.	5.	5.	0.	0.	0.	0.	0.
RESIDENTIAL REQUIREMENTS										
SINGLE FAMILY										
(TOTAL DWL.)										
C & P	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BUILT UNIT	9.	16.	16.	16.	6.	0.	0.	0.	0.	0.
MULTI FAMILY										
PLOTS-NOS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
AREA('000Sq.m)	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
BUILT DWELLING	972.	1621.	1621.	1621.	648.	0.	0.	0.	0.	0.

SUBSIDIES IN RES DEVELOPMENT (Average -using current prices) **TABLE 19**

BENEFICIARY/ CLIENT GROUP	SALE PRICE/CHARGEABLE COST * 100				SALE PRICE/MARKET.PRICE * 100			
	SINGLE FAMILY		MULTI FAMILY		SINGLE FAMILY		MULTI FAMILY	
	C & P	BUILT UNIT	PLOTS	BUILT UNITS	C & P	BUILT UNIT	PLOTS	BUILT UNITS
EWS	0.	30.	0.	0.	0.	22.	0.	0.
LIG	0.	100.	0.	100.	0.	50.	0.	32.
MIG I	0.	100.	0.	100.	0.	62.	0.	38.
MIG II	0.	100.	0.	100.	0.	76.	0.	50.
HIG I	0.	143.	0.	186.	0.	103.	0.	103.
HIG II	0.	134.	0.	188.	0.	103.	0.	103.
.....	0.	0.	0.	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.	0.	0.	0.
.....	0.	0.	0.	0.	0.	0.	0.	0.

RESOURCE MOBILISATION **TABLE 20**

AGENCY	TOTAL FINANCE REQUIRED (Rs in '000)					
	1994	1995	1996	1997	1998	TOTAL
HUDCO	0.	0.	0.	0.	0.	0.
State Govt.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.
TOTAL EXTERNAL	0.	0.	0.	0.	0.	0.

SCHEMEWISE RESOURCE MOBILISATION FROM HUDCO **TABLE 21**

BUILT UNIT SCHEME	FINANCE REQ (Rs in '000)	S & S PLOT SCHEME	FINANCE REQ (Rs in '000)	CASH LOAN SCHEME	FINANCE REQ (Rs in '000)
EWS	0.	EWS	0.	EWS	0.
LIG	0.	LIG	0.	LIG	0.
MIG I	0.	MIG I	0.	MIG I	0.
MIG II	0.	MIG II	0.	MIG II	0.
HIG I	0.	HIG I	0.	HIG I	0.
HIG II	0.	HIG II	0.	HIG II	0.
	0.		0.		0.

Annexure 'D'

Model 1 : At Medium Infrastructure Standards for Sector 22

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	1000	1200	1500	1800
1. Population	30579	30579	30579	30579
2. No.of Dwelling Units	6545	6545	6545	6545
3. Gross Density (pa/Ha)	394	394	394	394
4. Total Marketable Area as a percentage of total area	59.4	59.4	59.4	59.4
5. Reserve Price (In Rs/Sq.m)	1886	2223	2728	3233
6. Costs to Developer (in Rs Lakhs)				
a. Land Acquisition	7768	9322	11652	13982
b. On-Site Infrastructure	931	931	931	931
c. Commercial Comlexes	4544	4544	4544	4544
d. Residential	18941	18941	18941	18941
e. Total	32184	33738	36068	38398
7. Chargeable Costs to Residential Units (Rs/Unit)				
i. EWS	125895	133340	144507	155674
ii. LIG	155321	159837	166612	173387
iii. MIG I	253599	262944	276961	290978
iv. MIG II	440370	463601	498448	533295
v. HIG I	731417	763369	811297	859225
vi. HIG II	969869	1015680	1073760	1131840

Source : Generated using Housing and Area Planning Software. For Rs 1500 per sq.m option, refer Annexure A, B and C.

Note :
1. Price escalation of materials is assumed to be 10 percent per annum
2. Physical contingencies and Administartion charges at 8 percent

Scenario 1

1. Charges for Higher Commercial at 8 times reserve price
2. Charges for Local Commercial at 4 times reserve price
3. Facilities such as education, health, religious bulidings at 1.25 times reserve price
4. Utilities such as tax stabd at 2 times reserve price
5. Resedential - EWS - Rs/40000, LIG and MIG at Chargeable Costs
   HIG at Market Prices
6. Price rise at 10 % for commercial and 5 % for Others

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	1000	1200	1500	1800
1. Total Costs (Lakhs)	32184	33737	36068	38398
2. Pricing of Residential Units (Rs/Unit)				
i. EWS (Affordable Cost)	40000	40000	40000	40000
ii. LIG (Chargeable Cost)	155321	159837	166612	173387
iii. MIG I (Chargeable Cost)	253599	262944	276961	290978
iv. MIG II (Chargeable Cost)	440370	463601	498448	533295
v. HIG I (Market Price)	1476563	1476563	1476563	1476563
vi. HIG II (Market Price)	1968750	1968750	1968750	1968750
3. Pricing of Other Facilities (Rs/Sq.m)				
i. City Level Commercial (Built Units)	20088	22784	26824	30864
ii. Petrol Pump (Plot)	15088	17784	21824	25864
iii. Local Commercial (Built Unit)	11294	12642	14662	16682
Only Plots				
iv. Educational	2358	2778	3410	4041
v. Health	2358	2778	3410	4041
vi. Religious	2358	2778	3410	4041
vii. Utilities such as taxi stand, electric substation	3772	4446	5456	6466

4. Total Revenues (Lakhs)	61802	65584	71256	76934
a. Higher Commercial	18396	20867	24570	28272
b. Local commercial and facilities	6554	7512	8951	10390
c. Residential	36852	37205	37735	38272
5. Present Values at Discount Rate of 15 percent (Lakhs)				
a. Total Costs	23923	25274	27300	29327
b. Total Revenues	40176	42547	46100	49659
c. Net Present Value (Lakhs)	16253	17273	18800	20332
6. Iternal Rate of Return (IRR)	141.8	126.8	112.2	102.6

Scenario 2

1. Charges for Higher Commercial at 8 times reserve price
2. Charges for Local Commercial at 4 times reserve price
3. Facilities such as education, health, religious bulidings at 1.25 times reserve price
4. Utilities such as tax stabd at 2 times reserve price
5. **Resedential** - EWS - Rs/40000, LIG and MIG at Chargeable Costs
   HIG at Chargeable Costs
6. Price rise at 10 % for commercial and 5 % for Others

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	1000	1200	1500	1800
1. Total Costs (Lakhs)	32184	33737	36068	38398
2. Pricing of Residential Units (Rs/Unit)				
i. EWS (Affordable Cost)	40000	40000	40000	40000
ii. LIG (Chargeable Cost)	155321	159837	166612	173387
iii. MIG I (Chargeable Cost)	253599	262944	276961	290978
iv. MIG II (Chargeable Cost)	440370	463601	498448	533295
v. HIG I (Chargeable cost)	731417	763369	811297	859225
vi. HIG II (Chargeable Cost)	969869	1015680	1073760	1131840
3. Pricing of Other Facilities (Rs/Sq.m)				
i. City Level Commercial (Built Units)	20058	22784	26824	30864
ii. Petrol Pump (Plot)	15058	17784	21824	25864
iii. Local Commercial (Built Unit)	11294	12642	14662	16682
Only Plots				
iv. Educational	2358	2778	3410	4041
v. Health	2358	2778	3410	4041
vi. Religious	2358	2778	3410	4041
vii. Utilities such as taxi stand, electric substation	3772	4446	5456	6466

4. Total Revenues (Lakhs)	47870	52284	58810	65345
a. Higher Commercial	18396	20867	24570	28272
b. Local commercial and facilities	6554	7512	8951	10390
c. Residential	22920	23905	25289	26683
5. Present Values at Discount Rate of 15 percent (Lakhs)				
a. Total Costs	23923	25274	27300	29327
b. Total Revenues	30846	33640	37765	41899
c. Net Present Value (Lakhs)	6923	8366	10465	12572
6. Iternal Rate of Return (IRR)	53.40	56.20	59.00	61.10

Scenario 3

1. Charges for Higher Commercial at 6 times reserve price
2. Charges for Local Commercial at 3 times reserve price
3. Facilities such as education, health, religious bulidings at 0.5 times reserve price
4. Utilities such as tax stabd at 1 time reserve price
5. **Resedential** - EWS - Rs/40000, LIG and MIG at Chargeable Costs
   HIG at Chargeable Costs
6. Price rise at 10 % for commercial and 5 % for Others

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	1000	1200	1500	1800
1. Total Costs (Lakhs)	32184	33737	36068	38398
2. Pricing of Residential Units (Rs/Unit)				
i. EWS (Affordable Cost)	40000	40000	40000	40000
ii. LIG (Chargeable Cost)	155321	159837	166612	173387
iii. MIG I (Chargeable Cost)	253599	262944	276961	290978
iv. MIG II (Chargeable Cost)	440370	463601	498448	533295
v. HIG I (Chargeable cost)	731417	763369	811297	859225
vi. HIG II (Chargeable Cost)	969869	1015680	1073760	1131840
3. Pricing of Other Facilities (Rs/Sq.m)				
i. City Level Commercial (Built Units)	16316	18338	21368	24398
ii. Petrol Pump (Plot)	11316	13338	16368	19398
iii. Local Commercial (Built Unit)	9408	10419	11934	13449
Only Plots				
iv. Educational	943	1112	1364	1617
v. Health	943	1112	1364	1617
vi. Religious	943	1112	1364	1617
vii. Utilities such as taxi stand, electric substation	1886	2223	2728	3233

4. Total Revenues (Lakhs)	42024	45398	50358	55330
a. Higher Commercial	14940	16792	19570	22346
b. Local commercial and facilities	4165	4700	5500	6301
c. Residential	22919	22106	25288	26683
5. Present Values at Discount Rate of 15 percent (Lakhs)				
a. Total Costs	23923	25274	27300	29327
b. Total Revenues	27168	29307	32448	35596
c. Net Present Value (Lakhs)	3245	4033	5148	6269
6. Iternal Rate of Return (IRR)	32.1	33.8	35.5	36.8

Scenario 4

1. Charges for Higher Commercial at 6 times reserve price
2. Charges for Local Commercial at 3 times reserve price
3. Facilities such as education, health, religious bulidings at 0.5 times reserve price
4. Utilities such as tax stabd at 1 time reserve price
5. **Resedential** - EWS - Rs/40000, LIG and MIG at Chargeable Costs
   HIG at Chargeable Costs
6. Price rise at 5 % for commercial and 0 % for Others

Item	Land Sold by DDA to Developer At (in Rs per Sq.m)			
	1000	1200	1500	1800
1. Total Costs (Lakhs)	32184	33737	36068	38398
2. Pricing of Residential Units (Rs/Unit)				
i. EWS (Affordable Cost)	40000	40000	40000	40000
ii. LIG (Chargeable Cost)	155321	159837	166612	173387
iii. MIG I (Chargeable Cost)	253599	262944	276961	290978
iv. MIG II (Chargeable Cost)	440370	463601	498448	533295
v. HIG I (Chargeable cost)	731417	763369	811297	859225
vi. HIG II (Chargeable Cost)	969869	1015680	1073760	1131840
3. Pricing of Other Facilities (Rs/Sq.m)				
i. City Level Commercial (Built Units)	16316	18338	21368	24398
ii. Petrol Pump (Plot)	11316	13338	16368	19398
iii. Local Commercial (Built Unit)	9408	10419	11934	13449
Only Plots				
iv. Educational	943	1112	1364	1617
v. Health	943	1112	1364	1617
vi. Religious	943	1112	1364	1617
vii. Utilities such as taxi stand, electric substation	1886	2223	2728	3233

4. Total Revenues (Lakhs)	37051	39975	44265	48566
a. Higher Commercial	12601	14168	16507	18850
b. Local commercial and facilities	3596	4058	4748	5440
c. Residential	20854	21749	23010	24276
5. Present Values at Discount Rate of 15 percent				
a. Total Costs	23923	25274	27300	29327
b. Total Revenues	24275	26155	28910	31674
c. Net Present Value (Lakhs)	352	881	1610	2347
6. Iternal Rate of Return (IRR)	16.90	19.3	21.80	23.60

ANNEXURE E

Table 7
Cost of Land Acquisition for Dwarka

(in crores)

Year	Land accu. cost Phase-I & II (3960 HA)	Pooled land accu. cost for Phase-I	Discounted land accu. cost (1993-94)	Discounted pooled land accu. cost Phase-I
1986-87	47.537	22.352	139.458	65.573
1987-88				
1988-89				
1989-90	0.111	0.052	0.206	0.097
1990-91				
1991-92	100.000	47.020	136.002	63.949
1992-93	292.665	137.611	341.305	160.483

Table 8
Yearwise Breakup of Disposable Area in Dwarka (Phase - II)

Use code	Use	Gross area (in HA)	% of total area	Disposable area (in ha)	* Ratio/rate & per acre	Saleable total area
A1.1	Cooperative Housing	242.150	13005	242.150	1.500	242.150
A1.2	DDA Housing	131.380	7.056			
	EWS			19.930	0.500	19.930
	LIG			27.130	0.750	27.130
	MIG			38.140	1.250	38.140
	SFS			46.180	1.500	46.180
A1.3	Institutional Housing	28.630	1.538	28.630	1.500	28.630
A1.4	Resettlement Squatters	71.210	3.829	71.210	0.500	71.210
A1.5	Alternative Plots	29.170	1.567	17.500	1.000	17.500
A1.6	Auction Plots	13.050	0.701	7.830	4.000	7.830
A1.7	Existing Villages	0.000	0.000	0.000	0.000	0.000
	Residential	515.590	27.690	498.700		498.700
A2	Educational facilities	109.240	5.8670	109.240	0.300	109.240
A3	Other Comm. Facilities	0.000	0.000	0.000	0.000	0.000
A4	Local Convenient Shopping	16.080	0.864	16.080	2.000	16.080
A5	Utilities	2.808	0.151	2.808	**0.000	**
A6	Parks & Playgrounds	141.871	7.619	0.000	0.000	0.000
A7	Sector Roads	120.680	6.481	0.000	0.000	0.000
Res.Supporting Facilities		390.679	20.982	128.128		125.320
Total Residential		906.269	48.672	626.828		624.020
B1.1	Open spaces	8.530	0.458	0.000	0.000	0.000
B1.2	Commercial spaces	26.000	1.396	21.330	4.000	21.330
B1.3	Comm. Low turnover	3.640	0.195	2.980	2.000	2.980
B1.4	Cultural Spaces	3.640	0.155	2.980	4.000	2.980
B1.5	Facilities	4.160	0.223	3.420	2.000	3.420
B1.6	Residential	3.640	0.195	2.980	3.000	2.980
B1.7	Utilities	0.520	0.028	0.430	**0.000	**
Total Dist. Centre		50.130	2.692	34.120	-	33.690
B4.1	Commercial Spaces	9.693	0.521	9.693	4.000	9.693
B4.2	Commercial Low turnover	3.230	0.173	3.230	2.000	3.230
B4.3	Facilities Plus Cultural	2.754	0.148	2.754	4.000	2.754

Use code	Use	Gross area (in HA)	% of total area	Disposable area (in ha)	* Ratio/rate & per acre	Saleable total area
B4.4	Utilities	0.482	0.023	0.482	**0.000	**
Total Community		16.159	0.868	16.159		15.677
C1.1	Circulation/Parking	13.500	0.725	0.000	0.000	0.000
C1.2	Public & Semi Public	1.350	0.073	1.350	2000000.000	1.350
C1.3	Commercial	0.900	0.048	0.900	2.00	0.900
C1.4	Utilities	0.450	0.024	0.450	**0.000	**
C1.5	Net Industrial Plots	28.800	1.547	28.800	1.250	28.800
Total Industrial						
D1.0	Colleges/Hospital/other	146.210	7.862	146.210	0.300	146.210
D2.0	Integrated School	33.500	1.799	33.500	0.300	33.500
D3.0	Socio-cultural	10.000	0.537	6.000	0.500	6.000
D4.0	Circulation	0.000	0.000	0.000	0.000	0.000
Total Public & Semi Public		189.710	10.189	185.710		189.710
E1.0	Utilities	41.280	2.217	41.280	**0.000	**
F1.0	Recreation	241.959	12.995	0.000	0.000	0.000
G1.0	Transportation Railway	132.343	7.108	132.343	1.000	132.343
H1.0	Circulation	176.340	93487	0.000	0.000	0.000
I1.0	Government	62.5410	3.357	62.510	200000.000	62.510
	Others	654.732	31.806	236.133		194.853
	Grand Total	1862.000	100.00	1130.450		1085.000

% age of total project area 58.271

* The figure in this column indicates the factor with which the breakeven price to be multiplied for the specific land use indicated in column no.2 (e.g. price of land for coop. housing would be the breakeven price multiplied by 1.500). Wherever price per acre are indicated in column 5 it indicates the proposed sale price as has been laid down by government.

** Land for the utilities is non-saleable and is allotted on license fees of Rs.1/acre.

*** For alternative plots the multiplier in column 5 is only 1.000 as per Nazul rules. The cost of internal development shall be extra.

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