POST OCCUPANCY MAINTENANCE MANAGEMENT OF LOW INCOME HOUSING AREAS OF DELHI

A DISSERTATION

submitted in partial fulfilment of the requirements for the award of the degree of

MASTER OF ARCHITECTURE

By

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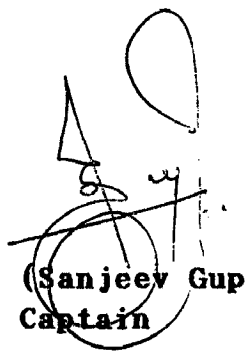
JANUARY, 1996

CANDIDATES DECLARATION

I hereby certify that the work which is being presented in the dissertation entitled **POST OCCUPANCY MAINTENANCE MANAGEMENT OF LOW INCOME HOUSING AREAS OF DELHI** in the partial fulfillment of the requirements for the award of the degree of **MASTER OF ARCHITECTURE** submitted in the Department of Architecture and Planning, University of Roorkee, Roorkee is an authentic record of my own work carried out during the period from July 1995 to January 1996 under the supervision of **Mr. Prabhubhai K. Patel**, Department of Architecture and Planning, University of Roorkee, Roorkee.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree or diploma.



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This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

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A C K N O W L E D G E M E N T S

At the outset I wish to express my sincere thanks and gratitude to Mr. Prabhubhai K. Patel of Department of Architecture and Planning, University of Roorkee, Roorkee for his valuable guidance and encouragement during the course of this study culminating into this dissertation.

I am greatly indebted to Dr. Najamuddin, Prof. & Head of the Department, Dr. (Mrs.) S. Sahu, Prof and other faculty members who have encouraged and helped me at every stage during this thesis.

My special thanks are due to Prof. D.S. Bhargava, Department of Civil Engineering, University of Roorkee, Roorkee, Dr. Saxena, Efficiency Department, C.B.R.I. , Roorkee, Mr. D.C.Mathur, Asst. P.R.O., M.C.D., Mr. Subhash, Engineer Officer to E-in-C, D.W.S.S.D.U., Ms Ritu Kapila, Dy Arch, C.P.W.D. and the residents of Trilokpuri, Kalkaji and Sewanagar who helped me by providing valuable literature, information and reports relevant to the subject matter of the study.

I am also thankful to officers and staff of the following Government departments and organisations for providing valuable data, information and reference material.

(a) MUNICIPAL CORPORATION OF DELHI, DELHI.

(b) DELHI ELECTRIC SUPPLY UNDERTAKING, DELHI.

(c) DELHI WATER SUPPLY AND SEWAGE DISPOSAL UNDERTAKING, DELHI

(d) C.P.W.D., DELHI

Last but not the least I thank my family member for their morale support for forbearance and encouragement.

(Sanjeev Gupta)
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Date : January 1996

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8. This study endeavors to identify, the various actors, responsible for maintenance inputs, in the delivery of essential services and upkeep of common areas, roads etc. It takes notice of their constraints, studies urban policies and politics which affect maintenance management and discusses ideas and philosophies of numerous individuals and institutions who work to find ways to ensure a satisfactory home life for the family and to promote community life in relation to a well maintained environment, not so much behind the front doors of the house but rather outside of it.

1.2 THE NEED OF THE STUDY

1. The objectives of the administration in any democratic set-up restrict social orientations. In the case of housing too, the social objective is just not to put a cover over the heads, but to create an environment which is physically and mentally acceptable as healthy and which ensures a certain degree of residential satisfaction. However, such are the approaches of our city administration that it would strongly lead us to believe that there exists with them, a certain obsession for quantity rather than quality. While the city's housing stock continues to rise, though not appreciably, the standards of existing areas are deteriorating because of the lack of adequate care in the post occupancy period.

2. And therefore, while the Government and Administration's big heads pat themselves on the back, for this lop sided sense of achievement, smartly backed by a generous use of statistics, the citizens continue to struggle amidst filth , squalor and neglect that plagues most residential areas of the city. The apparent losses in the richer residential areas find documentation in complaint offices, newspaper reports etc., but the low income residential areas remain neglected without care.

3. A need was felt to conduct an empirical study and document reports and literature, through primary and secondary surveys so as to

(a) IDENTIFY LAPSES IN MAINTENANCE MANAGEMENT OF AREA LEVEL, FACILITIES AND UTILITIES OF LOW INCOME RESIDENTIAL AREAS.

(b) ANALYSE THE FINDINGS SO AS TO IDENTIFY THE CAUSES OF SUCH LAPSES AND CATEGORIZE THEM.

(c) SUGGEST CHANGES IN PHYSICAL PLANNING, POLICIES, ADMINISTRATION & STRUCTURE, SO AS TO MINIMISE THE OCCURRENCE OF SUCH LAPSES IN BOTH EXISTING AND FUTURE PROVISIONS.

Ultimately to reasonably aim to achieve the objectives of housing in latter and spirit.

CHAPTER 1

INTRODUCING THE STUDY

1.1 GENERAL

1. Housing is not merely blocks of brick and mortar woven in labyrinthine fabric of services, but a live network of socially interdependent men and women; whose basic shelter needs are to be met in a manner that will synthesize with their work their daily lives. Housing has advanced from the concept of shelter through the objectives of provision of comfort and contentment, prevention of diseases and maintenance of physical health & aesthetic considerations to that of nurturing social health of the community.

2. Therefore if we contend by definition that housing should ensure residential satisfaction and in design should help achieve it, then like other designed products, it should be accompanied by some sort of a guarantee to back it by a scheme of after sales service, that helps achieve its original objective. In other words, the physical task and social responsibility of development authorities and local bodies does not culminate with the mere provision of housing, but goes on to maintain it in a habitable and socially acceptable condition in the post occupancy period.

3. However, the urban scenario does not always project the ideal - rather, we observe a profound city scene, complete with abject levels of poverty and inhuman living conditions of residential areas.

4. On the face of it, it appears that the entire spectrum of urban services have collapsed or are on the verge of breaking down - leaving behind a herd of dissatisfied population. What we lack today is the requisite attention to the town dweller and his precise needs.

5. In the case of the low income residents, these needs are limited, restricted to a mere want of essential facilities and an environment, that makes day to day living healthy, both physically and mentally.

6. Authorities in philosophy, are concerned with the discomforting problems of urban living, but in task, are more obsessed with the limitations of incomes and resources, using it as a pretext for shirking their responsibility of maintenance management, developing thereby a lackadaisical attitude to these pressing problems and taking advantage of the poor man's poor awareness and indifferent mannerism.

7. Economically too, how important is maintenance management in the post occupancy period ? It would not be absurd to assume that provision followed much later by acts of improvement and renewal could be substantially economised by timely interventions through continued management and timely maintenance. Therefore, provision of shelter is not the ultimate solution to our housing problems - what is most needed is to make possible some degree of residential satisfaction in housing areas.

1.3 OBJECTIVES OF THE STUDY

1. TO IDENTIFY AND STUDY THE VARIOUS COMPONENTS OF MAINTENANCE MANAGEMENT OF SPECIFIC FACILITIES AND UTILITIES IN LOW INCOME HOUSING AREAS.

2. TO STUDY THE FUNCTIONS, ORGANISATIONAL SET UP OF VARIOUS AGENCIES INVOLVED IN AND RESPONSIBLE FOR MAINTENANCE MANAGEMENT OF SPECIFIC FACILITIES AND UTILITIES IN LOW INCOME HOUSING AREAS IN URBAN DELHI AND TO IDENTIFY THEIR POTENTIALS AND CONSTRAINTS.

3. TO STUDY MAINTENANCE MANAGEMENT OF SPECIFIC FACILITIES AND UTILITIES IN VARIOUS LOW INCOME HOUSING AREAS IN URBAN DELHI AND TO IDENTIFY ISSUES OF MAINTENANCE MANAGEMENT.

4. TO STUDY VARIOUS OPTIONS FOR IMPROVEMENTS OF MAINTENANCE MANAGEMENT OF LOW INCOME HOUSING AREAS IN URBAN DELHI WITH RESPECT TO SPECIFIC FACILITIES AND UTILITIES AND TO EVOLVE A SERIES OF GUIDELINES FOR IMPROVEMENT OF MAINTENANCE MANAGEMENT OF SPECIFIC FACILITIES AND UTILITIES IN LOW INCOME HOUSING AREAS IN URBAN DELHI.

1.4 SCOPE AND LIMITATIONS OF THE STUDY

1. Maintenance in the strict sense of term would mean upkeep of that which is already existing. Maintenance management would therefore mean, the administration of the business of maintenance. In other words, maintenance management could be defined as the system of organised upkeep or support of that which has already been provided for.

2. Maintenance management in the context of residential areas can occur in two stages:

(a) PRE OCCUPANCY STAGE and

(b) POST OCCUPANCY STAGE.

However, only maintenance management in the post occupancy stage is the subject of interest in this study. Since such maintenance management is generally less perceivable and efficient in the case of lower income residential areas, it is felt that there is need for intervention through planning in the post occupancy maintenance management of lower income housing areas.

3. It is important, at this point to clarify, what maintenance management of residential areas in post occupancy would entail. It would involve the organised upkeep of:

(a) The dwelling unit, and that of

(b) Social and physical infrastructure.

OBJECTIVES

7. The objectives of this study are :

(a) To identify and study the various components of maintenance management of specific facilities and utilities in low income housing areas.

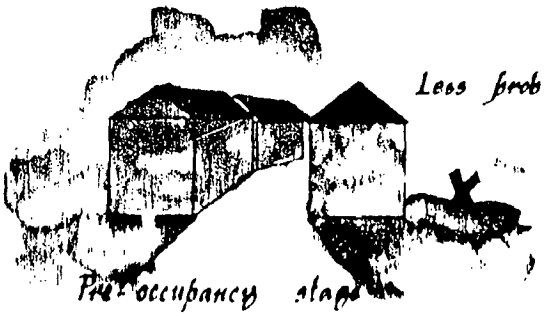
(b) To study the functions, organisational set up of various agencies involved in and responsible for maintenance management of specific facilities and utilities in low income housing areas in urban Delhi and to identify their potentials and constraints.

(c) To study maintenance management of specific facilities and utilities in various low income housing areas in urban Delhi and to identify issues of maintenance management.

(d) To study various options for improvements of maintenance management of low income housing areas in urban Delhi with respect to specific facilities and utilities and to evolve a series of guidelines for improvement of maintenance management of specific facilities and utilities in low income housing areas in urban Delhi.

SCOPE AND LIMITATIONS

Maintenance management of housing areas occurs in two stages.



Post-occupancy stage

However problems are more manifest in this stage and this study is devoted to it.

This thesis essentially deals with the maintenance management of :

- electric supply,
- water supply,
- conservancy and sanitation,
- roads and street lighting, and
- formal open spaces.

Post occupancy maintenance management involves the organised upkeep of

Dwelling units

INVOLVES only one actor who is the owner/occupier

Physical and Social Infrastructure

INVOLVES several actors which makes the job more difficult.

This study has limitations as it does not study the sociological and psychological factors of maintenance management of housing areas

and

Sociological Psychological

4. Upkeep of the Dwelling Unit is normally an individual affair, and as such, subject to availability of resources, the occupants in general are capable of undertaking the job of maintenance management. However, when the need to organize the upkeep of common and public facilities and utilities are concerned, there are several actors involved which makes the job difficult.

5. This thesis, only involves itself in the post occupancy maintenance management of those facilities and utilities, which are of common need of all the residents of the housing areas. These facilities and utilities are as listed below :

(a) **WATER SUPPLY,**

(b) **ELECTRIC SUPPLY,**

(c) **CONSERVANCY AND SANITATION,**

(d) **ROADS AND STREET LIGHTING, and**

(e) **FORMAL OPEN SPACES.**

6. The author, has limitations, being an architect, to delve and deal with sociological and psychological factors of maintenance management in low income housing areas. Moreover, the limitations in time has curtailed the scope of work by cognizable extent.

1.5 METHODOLOGY OF THE STUDY

1. This study is primarily empirical in approach. However, to initiate the process and establish the need, it was necessary to base it on certain philosophies, propagated by various professionals, expressed with conviction, but not proven through experiment. This has come essentially through a fairly exhaustive overview of literature having realised the need and consequently established the objectives of the study, it was felt that the study should attempt to answer some basic questions, through surveys, analysis and recommendations. Model Questionnaire is attached as Appendix.

2. The questions that arose were :

   (a) **WHAT IS TO BE DONE AND WHY SHOULD IT BE DONE ?**

   (b) **WHAT CAN BE DONE ?**

   (c) **WHO DOES IT ?**

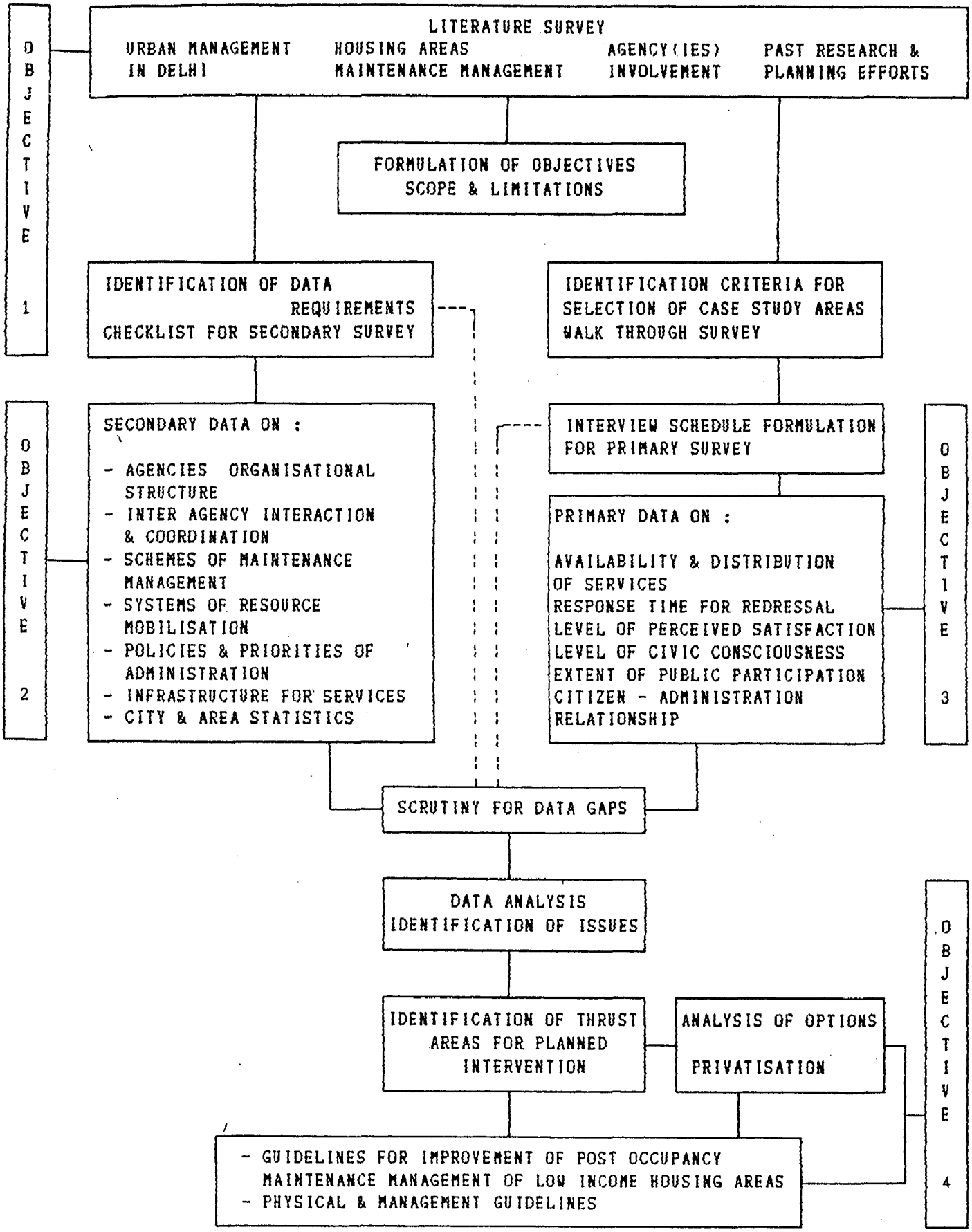
   (d) **HOW IT IS BEING DONE ?**

   (e) **HOW IT IS DONE ?**

   (f) **HOW SHOULD IT BE DONE AND WHO SHOULD DO IT ?**

3. In an attempt to answer these questions, in a streamlined manner, the need for a research methodology arose. It was felt that the methodology should successfully try to achieve the objectives set at the outset of the study. The resultant methodology, therefore attempts to fulfill these needs, by attempting to achieve the various objectives, one by one, at various stage of the study.

METHODOLOGY



CHAPTER 2

MAGNITUDE OF PROBLEM

2:1 OVERVIEW OF LITERATURE

1. In today's world, every designed product in a competitive market comes with a guarantee card and is backed by a scheme of after sales service, that evokes a certain amount of confidence in the consumer, to dare a deal with his purse. Unfortunately however, when the product is Housing - the compound aggregate of house and infrastructure, neither the guarantee card accompanies nor is the service guaranteed, resulting in a profound city scene - complete with abject levels of poverty and inhuman living conditions of city dwellers. Yet we seem to contend with growth and strongholds of economic development.[1]

2. It is not that prosperity is by-passing cities, but rather it is prosperity in terms of more jobs and more attractive facilities that is leading to agglomeration of poor people in cities. On the face of it, it appears that the entire spectrum of services in urban areas have collapsed, or are on the verge of breaking down. This is attributed to the fast growth of urban population. However, there could be other reasons, less apparent to us. For instance, it is often said that the problem is not so much of absolute shortage of services but of their inequitable distribution among the different sections of the population. Some areas are better served than others. [2]

3. Southern Delhi is better equipped with services and infrastructural facilities as compared to the eastern or western parts of Delhi. Apart from the inequitable distribution, there is also the question of the access of the various sections of the population to these services. Clearly services do not reach the poor. These services would include :

(a) WATER SUPPLY, SEWERAGE & SANITATION,

(b) POWER SUPPLY,

(c) SOLID WASTE DISPOSAL,

(d) ROADS & BRIDGES, STREET LIGHTING,

(e) UPKEEP OF FORMAL OPEN SPACES.

4. In reality, municipal agencies and other institutions cannot adequately provide required services to the housing. In most agencies, the delivery systems are rather poor. Presently the tasks of urban and housing management have been assigned to different institutions and organisations. But the extent of the overlap is such that these organisations cannot really work in isolation and lack of proper coordination between various agencies, ills the management area.

5. While on one hand, despite a system of taxation and legislation, organisation is not able to arrive at a meeting point between individual prosperity and city development, posing a serious resource limitation. On the other hand, community development forms no part of housing programmes.[3] Open spaces are not maintained.

6. But that is, however, not the only constraint. A regular lack of efficiency, coupled with failure in resource mobilisation and complimented with a lack of civic and aesthetic consciousness on the part of housing area residents, plagues the system. When municipalities do not do their jobs well, new levels are created i.e. a development authority, a board, a corporation; rather than making better use of the existing system network. That seems to be happening at a large scale in the country, no one sees some rethinking by the Government on this issue.[2]

7. It is also seen that cities are replete with examples of uncoordinated development even at project level, because priorities of different organisations do not match and are rather divergent. A properly worked out programme would ease the bureaucratic difficulties in taking over assets & facilities by various agencies in the post project implementation stage. Maintenance programmes should also be build into the fabric of the urban & housing management programme, as creation of assets do not have much meaning, if we cannot mobilize resources and effectively work out an up-keep programme. The soft options of the institutional configuration are often linked with hard decisions regarding investment and resource generation & mobilisation. The world bank contends that people must pay for services which they make use of and in order that people are able to pay, services must be affordable. Only then costs can be recoverable. This would also raise the level of civil consciousness necessary[2] as people are more conscious when they have had to pay for it.

8. Community development is one more aspect which requires closer inspection than an area,[4] where local bodies and the Government should pay more emphasis. And, how does one get masses involved in the process of development of the community level ? Some local bodies have tried this out during the last few years, but efforts have been limited to the community level and to the extent where people provide free labour (Self Help), to cut down costs providing the "Sweat equity", doesn't always mean participation.

9. We need to constantly ask: What are the ways to bring people, particularly the urban poor, into the main stream of decision making at the community level ? Most local bodies suffer from resource constraints. Working with limited resources should necessarily mean enlisting and mobilizing the support of every body in the city. Instead of this, the local authority feels it should run the services by taking over the responsibilities which others can perform, even in a limited manner. Then the facilities will continue to be inadequate and things would not be any better than what they are today. Pouring resources into urban development programs may not help that much, if the cities and the public sector in general do not have the management capabilities and delivery systems to use them effectively. More generally, providing additional resources is much too simplistic for improving the delivery of needed services in housing areas. One way to facilitate change is to improve the quality of information we have about how well or poorly services are being delivered.[4]

10. Availablility of much data, might serve several functions like :

(a) Provide Managers with ways of controlling the organisations they presumably lead - like spotting both weaknesses and strengths.

(b) Performance data could allow individuals or work groups to adjust their own behavior to better achieve the goals, with which they identify.

(c) Each information might provide some basis for legislative services.

(d) Performance data may provide interest groups and other citizens with a way to hold Government officials responsible / accountable.

(e) Information on the amount, quality and impact of services being delivered allow agencies to be more efficient and effective and respond to attack by those unhappy with the services being received.

11. But information about performance of urban delivery options, is a political source of change and improved performance in urban service delivery. This kind of information should be based and derived from measuring public service quality and it can serve a number of potential uses.[5]

12. Performance evaluation of any project is rarely done. Users dissatisfaction is never known, which could form valuable feedback for future reference.

13. Also, we have a bit of a lackadaisical attitude.[6] If something is not working well, we are quite content to do a minimal repair rather than look for the cause of the problem and do a lasting job.

14. There has also been a gradual taking-over by the state of many roles that the people and the community plan, and as a result in many situations, nobody feels that he or she has a stake in the maintenance or in the efficient use of services. For example in the large cities, where 30 % of the garbage remains uncollected,[@] there is no citizens committee that has been formed which says, "We are going to ensure that we get this garbage collected".

15. Civic management also needs trained people,[1] as maintenance of existing assets such as parks, open spaces, roads, water supply and sewerage networks are considered more important than provision of goods and services. This is not simply engineering, but also includes raising the right level of civic consciousness and organised public participation, as experience shows that the latter is an effective tool for civic and public utilities maintenance. Population otherwise considered as burden could be innovatively turned into an asset, making them contribute positively in city management to

(a) indicate where problems exist. Measurement results will often suggests where Government action and attention should be directed.

@ Data collected from Mr Subhash, Engineer Officer to E-in-C, D.W.S.S.D.U., New Delhi.

(b) permit greater community involvement in determining the priorities of Government activities.

(c) provide feedback to Government officials on the performance of programmes and policies. This can be particularly instructive after new services or bound programmes have been initiated. In so far, as the measurements, focus on specific programmes, the examination is commonly labeled "Programme Evaluation"

(d) assist in determining priorities for allocating Government funds and man-power. This, of course, follows from the two previous points; in directions of problem areas, on the success or failure of specific programmes, will be among the key elements that guide the responsible from setting new budgets and plans.

(e) help evaluate Government management and establish employee initiatives. Quality of service measurement can serve this function if they are undertaken regularly and systematically. As reliable and comprehensive measurement become available, their use in incentive programmes for management and employees are likely to mark an important new trend in local Government.

16. Various aspects of "Quality of Service" [5] in Government services are outlined as below :

(a) Intended purposes of the service activity.

(b) Negative effects that may be involved in the provision of the service.

(c) Adequate quantities of the service.

(d) Equitable distribution of the service.

(e) Courtesy and respect to citizens receiving the service.

(f) Response time in providing the service.

(g) Amounts of citizen use of a service.

(h) Perceived Satisfaction among citizens receiving service.

(i) Efficiency (Productivity, Economy or Cost).

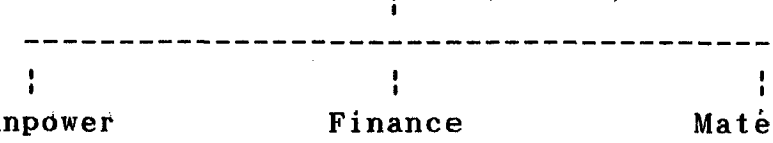
17. In retrospection, one would agree that the interphase between Citizens and City Administration in the prominent issues of maintenance and management deserves close attention. Perception of this problem and the interphase vary. There often comes the crucial question of, "Who does", and "For Whom". In reality, citizens and administration are not two separate entities, but they are the same set of people playing different roles in different capacities. In a democratic system of Government [6] no man is free from responsibility which is exactly proportional to his capacity, to his experience in life, to his disinterestedness, to the capacity of leadership - in brief to his equipment for effective action in a great struggle that a continually going on to determine, the preponderance of good and bad

forces in Government, and upon the issues on which depends results so momentous and mankind. On the other hand, in the administration itself, there is a lack of coordination which impedes the flow of work, causes delays, promotes red-tapism and encourages, "Buck Passing". Under these circumstances interest to all big and complex organisations, administration tends to "divide people into departmental slices instead of treating them as unity". There exists also a singular lack of commitment of duty, because in a vicious circle of administration and polity, it is difficult to pin point who is exactly at fault.

2.2 DIMENSIONS OF SERVICE DELIVERY SYSTEM

1. The delivery of services though presently a responsibility of the local bodies, their efficiency of functioning is dependent on several factors, they can be broadly outlined as :

(a) Availability of resources



(b) Efficiency of the use of the resources

(c) The perceptions & attitudes of citizens receiving service.

(d) Political environment (Politics and political)

(e) Commitment of the personnel, responsible for delivery of the service.

(f) Citizen - Administration Relationships.

2. This could be developed to form the criteria for evaluation of the system at fault. The reasons are many, the solutions are yet to be propounded and tested. This study is a step towards the solution.

2.3 DEFINING STANDARDS OF MAINTENANCE MANAGEMENT OF LOW INCOME HOUSING AREAS

1. This study dwells upon issues of maintenance management of low income residential areas. While the scope of this study, clearly delineates the extent and parameters of study, concentrating only upon the organisation of upkeep of certain specific facilities and utilities in a low income housing area, it is essential at this point to clearly define broad standards of maintenance management of those utilities and facilities, for further evaluation. Standards of maintenance management vary from context to context. Our context comprises of low income residential areas in urban Delhi and therefore fixation of broad standards should be within usual constraints.

2. A "well maintained" low income housing area would therefore have, for all its formal residents :

(a) Adequate (optimum) supplies of good quality, municipal filtered water at sufficient pressure, at appropriate timings and not subject to frequent breakdowns and errant & irregular billing.

(b) Availability of contigency service, in event of breakdown and prompt problem rectification & complaint redressal.

(c) Continuous supply of electricity with minimum voltage fluctuations & breakdowns and not subject to errant & irregular billing. Prompt problem rectification & complaint redressal.

(d) Adequacy of garbage bins in number and capacity. Spatially distributed at strategic locations complemented by a regular and complete removal for disposal.

(e) Efficiently working sewerage system with optimum provision of community toilets, with adequate supply of water and light and subject to regular cleaning and other maintenance.

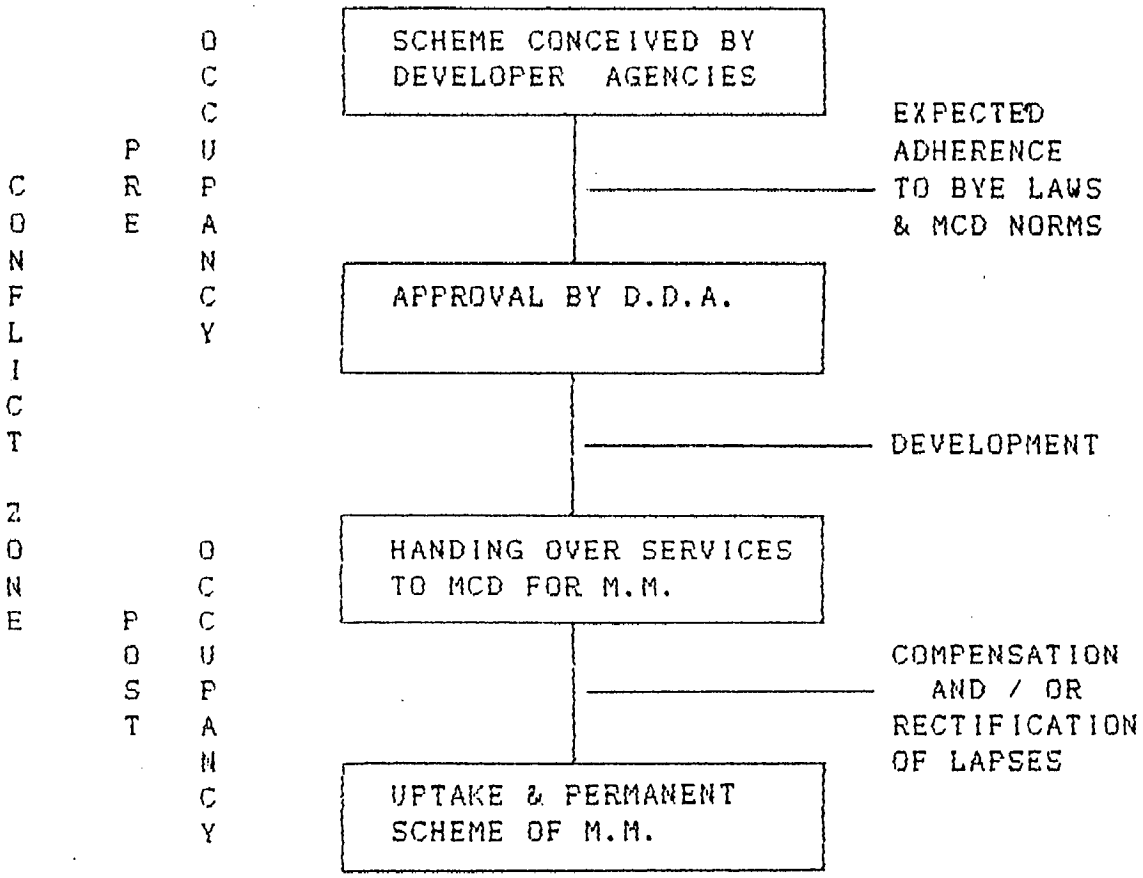
(f) Roads having level surface and satisfactory gradient and not prone to regular water logging, devoid of unhealthy encroachments blocking smooth access and also subject to regular upkeep of neccesary road furniture, street lighting and prompt restoration in event of excavation.

(g) Parks, playgrounds and other open spaces, complete with necessary furniture and subject to regular upkeep and capable of satisfactory and intended use.

In all cases, the complaint office is within conveniently accessible reach of the residents, and need of residents with demographic charges are augmented periodically.

2.4 FROM CONCEPTION TO CARE – UNDERSTANDING THE PROCESS

1. The entire gamut of maintenance management of housing areas cannot be studied in isolation. Much depends on the means in which the housing areas are developed, and then taken up for maintenance. To understand the scheme and to identify the problem areas - the total development process is studied :



2. In the conflict zone of the housing process, the residents often become the only target of conflict and buckpassing between the developer agency and the local body, responsible for maintenance management of various facilities and utilities. This results in inefficiency in maintenance management and subsequent deterioration of the housing area management.

2.5 FACTORS INFLUENCING POST OCCUPANCY MAINTENANCE MANAGEMENT OF HOUSING AREAS

1. Housing areas - subset of City set.

Therefore, city level factors will have the bearing on the housing area.

2.5.1 CITY LEVEL FACTORS

1. Physical Characteristics

- Climate, Topography,Physical features etc.

[will affect availability of sources of water, power, wind direction etc.]

2. Socio - Economic Characteristics

- Types of citizens, Income groups, occupational structure etc.

[will affect revenue generation, level of consumption of services, external diseconomies like pollution etc.]

3. City Planning

- Physical planning of city, location of infrastructure etc.

[will affect efficiency of infrastructure utilisation etc]

4 Organisational set-up & administrative structure

- Local bodies, Agencies involvement etc.

[will affect efficiency of Public Service Delivery System, decision making, time taken for problem rectification etc.]

5. Infrastructure Provision

[will affect extent of service provision.]

6. Policies and Politics

[will affect priorities, supply and pricing policies, administrative setup, expenditure pattern, locational differentials, equity, citizen -administration relationships]

In addition to these CITY LEVEL FACTORS, affecting and influencing the quality of post occupancy maintenance management of housing areas - individual housing areas will have their own inherent characteristics, that will affect its maintenance management.

2.5.2 HOUSING AREA LEVEL FACTORS

1. Location

   - Geographical location within city .

   [will affect stress on infrastructure, through squatters, non residents etc. & efficiency of service delivery with respect to distance from service reservoirs, socio economic composition of adjacent housing areas etc.]

2. Physical planning of layout

   - Location of infrastructure, complaint offices etc.

   [will affect efficiency of infrastructure utilization]

3. Socio - economic Characteristics

   [will affect level of civic awareness, accountability of utilities, consumption levels, citizen administration relationships]

4. Type of development and extent of provision .

   [will affect public accountability of public utilities.]

5. Organisations

   - Residents association, Community units.

CHAPTER 3

CITY LEVEL SCENARIO

3.1 URBAN DELHI

1. The study of the maintenance management of various facilities and public utilities, without any discussion on Urban Delhi in terms of its physical setting, growth of population, socio-economic characteristics and the political and the administrative set up will be meaningless. It will not be irrelevant to emphasise that the organisation, management, distribution of public utilities and number & type of consumers to a great extent determine the type of maintenance management, that is practiced in various areas. On the other hand, all the above are affected by environmental conditions, and locale. Therefore, a proper understanding and appraisal of the service delivery structure neccesitates some discussion of the physical and social condition, prevailing in Delhi.

3.1.1 LOCATION, AREAS POPULATION

1. Delhi metropolis forms the central core of a larger metropolitan Area which comprises of Delhi and six other urban centers in the adjoining states of Uttar Pradesh and Haryana, viz., Loni and Ghaziabad (U.P.), Ballabhgarh, Bhadurgarh, Faridabad and Gurgaon (Haryana). It is divided into three municipal jurisdictions (Fig. 3.1) of which the largest is the Municipal Corporation of Delhi (M.C.D.) covering an urban area of 1397.3 Sq. Km (94.73 % of Urban Delhi Area)

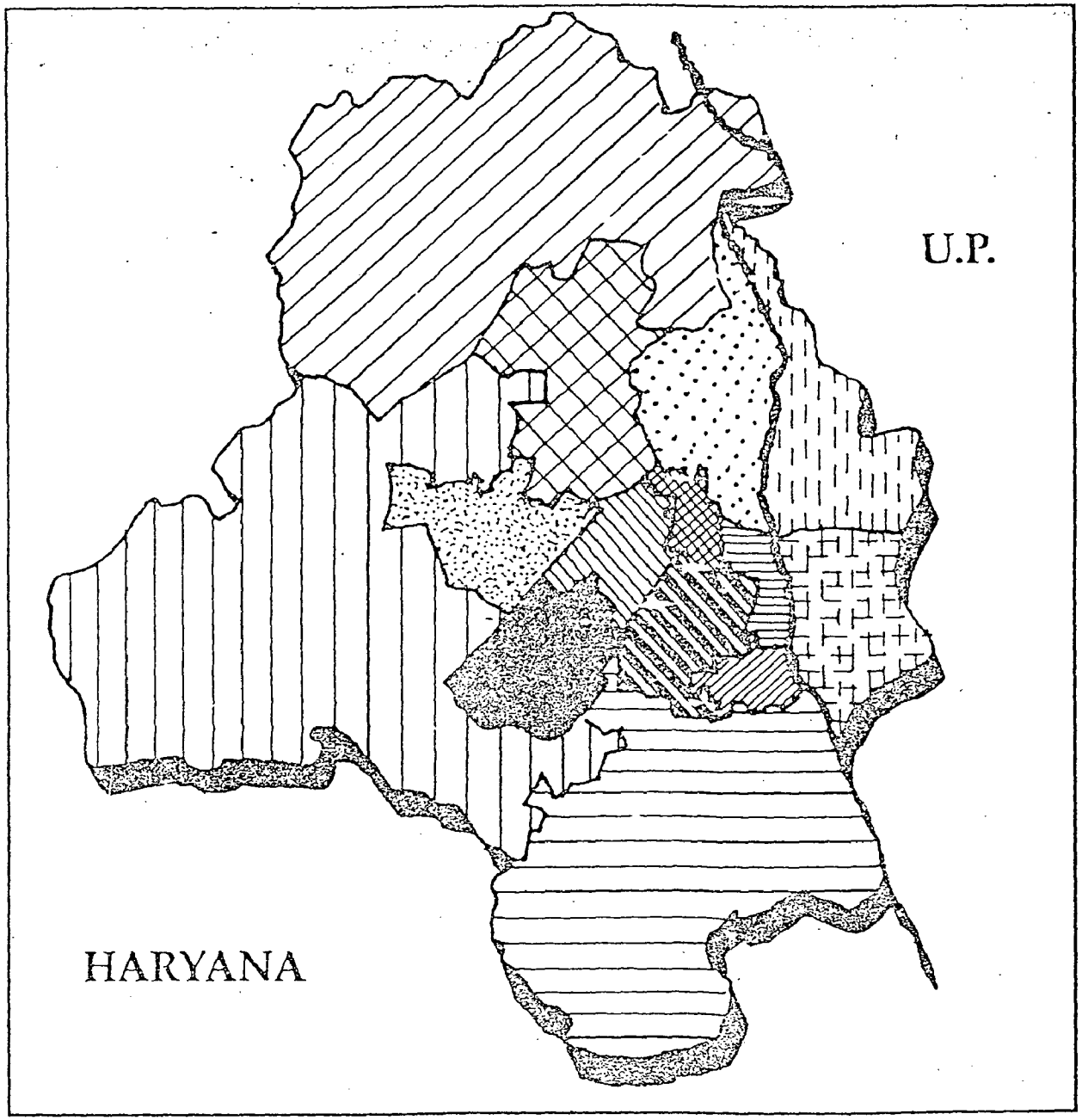
and holding an urban population of 90,24,954 (95.8 % of Urban Delhi Population) as per the 1991 census[7]. The remaining urban area is shared between two smaller local bodies, namely the New Delhi Municipal Corporation (N.D.M.C.) & Delhi Cantonment Board (D.C.B.).

2. The area under study is surrounded on the North and West by the rural component of the M.C.D., in the East by U.P., and South by the state of Haryana. The river Yamuna, which is the most important source of water supply, flows along its eastern border in the North South direction.

3. Over the last three decades, the area of the zones under the M.C.D. has undergone a considerable expansion of its urban area , with the inclusion of new areas. With such an increase, the administrative network has become by far too spread to deal with specific issues.

3.1.2 SOCIO ECONOMIC CHARACTERISTICS

1. The provision of public utility services and their subsequent maintenance management, is to a large extent influenced by socio economic characteristics, of the people whom by they are meant to serve. Therefore, it is considered essential to discuss some of these characteristics to appreciate the problems involved in providing and administering the various services and of course the maintenance management of residential areas within the city.



CIVIL LINES ZONE
CITY ZONE
KAROL BAGH ZONE
NAJAFGARH ZONE
NARELA ZONE
NEW DELHI ZONE
NORTH WEST ZONE (ROHINI)
SADAR PAHARGANJ ZONE
SHAHADARA (NORTH) ZONE
SHAHADARA (SOUTH) ZONE
SOUTH ZONE
WEST ZONE

MCD TOTAL AREA: 1397.3 SQ KMS

NDMC AREA: 42.74 SQ KMS

CANTONMENT AREA: 42.89 SQ KMS

2. The sex ratio (as per 1991 census) was 830 females per 1000 males in the M.C.D. area.[7]

3. Delhi presents a striking contrast to other cities in the country in terms of the age distribution of its population. Considering 15 to 59 years as the working age group and the rest as dependents for every 100 persons in the working age group, there were 68 dependents, compared to 51 dependents in Bombay.[7] This has a very serious implication.

(a) The working population has to support relatively large number of dependents, particularly younger ones.

(b) The Local administration has to provide for greater facilities for education, recreation and medical aid for people in the age group, which cuts down substantially the financial resources for maintenance management of residential areas.

4. The literacy rate has registered increase during the last few decades, but unfortunately the area under the M.C.D. displays a lower percentage than that of N.D.M.C. and D.C.B. areas,[7] which may imply that the general awareness of the population in the M.C.D. area is lower than that in the other areas, meaning that citizen inputs in maintenance management of residential areas, is likely to be different. Moreover, as a matter of fact, Delhi has been predominantly a 'service class city'.

5. Also, 49% of the working population in Delhi are engaged in service, followed by 26% in commerce.[7]

3.1.3 PHYSICAL FEATURES

1. The altitude of Delhi ranges between 213 M.S.L. and 30 M.S.L.. Physically it can be divided into three parts i.e. the plain, the Ridge and the Yamuna Flood plain. It is situated on the watershed dividing two mighty river systems of the Ganga draining into the Bay of Bengal and of the Sindh falling in the Arabian Sea.

2. The mountain wall has greatly affected the physical environment of Delhi, keeping away from severe cold winds from Central Asia and Tibet in winter & imbibing the moist kinds from the Southern seas that bring heavy rains during the monsoon.

3. The rivers flowing from these mountains are constantly fed by the melting snow and rain. In contrast with these favorable conditions, the Rajasthan deserts make the winds hot and dry, resulting in an extremely hot and dry climate during summer and excessively cold climate during winters. The monsoons are unpredictable.

4. At this point, it is essential to study the role of the Ridge & of the rivers in provision of service and growth of the city.

5. The ridge, which is the culminating spur of the Mewat branch of the Aravallis, constitutes the most significant feature of the region. It enters the area from the South and extends like a lean but wiry finger in a north easterly direction - skirting the city on the north

west and west appearing almost like a rampart of a huge fort. The entire slope of the area is downward ridge towards the Yamuna. With the extension of Delhi across the ridge, the draining of the water into the Yamuna has become a problem. The water is now first drained through Najafgarh drain into the river and then again transmitted to the ridge site, for its supply to different localities on the other side of the ridge.

6. The ridge is fairly dissected and storm water nullahs have etched into its rounded contours. The ridge achieves a height of 860 M.S.L. in some places. A break in it occurs at Subzimandi and Sadar Bazar. In some parts, the ridge has branched out & the valley thus formed provides site for habitation - e.g. Karolbagh located between Anand Parbat and the Jhandewalan Ridge. On reaching Munirka, it branches out into two.

7. The next important physical feature is the Yamuna, it has a broad valley subjected to floods every year, that submerge large low lying areas in the Trans Yamuna colonies.

8. The terrain of Delhi, thus enables us to understand its influence on the existing system of water supply. The gradual slope of the land from the ridge towards the south eastern direction, has an important bearing on the natural drainage, water supply & sewage disposal.

3.1.4 POLITICAL & ADMINISTRATIVE SET-UP

1. The administration of Delhi rests with the President, acting through the Lt. Governor, as Administrator. To achieve a democratic & representative character in the set-up, the Delhi Legislative Assembly consisting of elected members has been created. The Assembly has a tenure of five years and is headed by the Chief Minister, elected from among its members. The number of Assembly seats is 70. Council of Ministers includes six other Ministers. The Assembly has all the powers, except Law & Order and Land & Buildings, which come under the control of Lt. Governor, who is the Administrator.

2. At the local Government level, there is a Municipal Corporation with jurisdiction over the entire area of Delhi except for the areas under the jurisdiction of N.D.M.C. & D.C.B..

3. To achieve a democratic character in the local bodies, representatives of the public are members of the 3 local bodies also.

4. Interestingly, Delhi presents a character of administrative set-up, significantly different from other cities in India. Being the seat of the National Government, while it has an extra source of funds, much of the priorities and policies of the city administration is dictated by the ideas and the philosophies of the members of the ruling party at the Centre. This considered in the context of provision of services & utilities and subsequent maintenance management in the post occupancy period, makes it subject to locational biases and differentials.

3.1.5 POLICIES & PRIORITIES OF THE LOCAL ADMINISTRATION

1. As in the case of other arenas of urban affairs, in housing areas maintenance management too, much depends upon the policies and priorities of the local administration. The policies, shape the approach to problems and priorities, decide the extent to which such problems are looked into. These policies and priorities are on the other hand, much dictated by the social and political orientation of the administration.

2. In the specific case of Delhi, where the Municipal Administration is in the hands of 3 local bodies, each having separate areas under its jurisdiction, locational differentials clearly indicate the impact of policies & priorities of the local bodies, on the delivery of service. This is clearly evident from the nature and pattern of expenditure of the local bodies. (See Figures on Page Nos 35 to 37)

INFERENCES FROM EXPENDITURE PATTERN OF THE M.C.D.

3. The figures denote a steady increase in expenditure.[8] However, it can be asserted that such an increase in expenditure is due to:

(a) Suburbanisation : The fringe areas of the city have become developed, and house population that commutes to and from the main city for work, putting more stress on infrastructure, in turn incurring higher expenditure.

(b) Income & Wealth has increased over the period requiring more quantum of services & therefore more expenditure.

(c) Technological Changes have taken place, which has brought in external diseconomies like pollution etc. - needing greater expenditure.

(d) Rising Prices over the years has increased the expenditure in figures, but not in real terms. In other words, due to inflation and consequent erosion in the value of money, the economic significance of public expenditure becomes rather hazy unless changes in price level are properly taken into account.

THE TRENDS ARE :

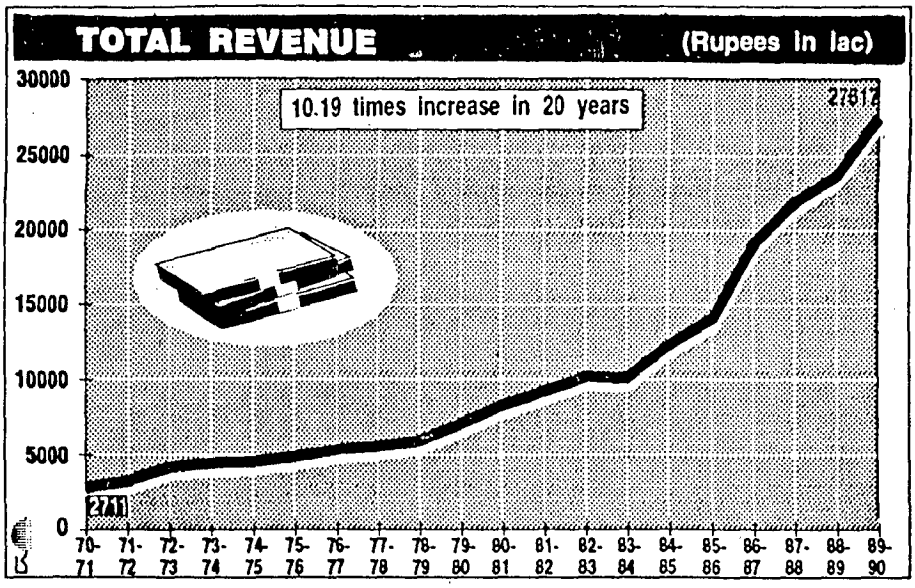
4. (a) Negative growth rate - seeming high percentage of growth in other years should imply a rising level of expenditure

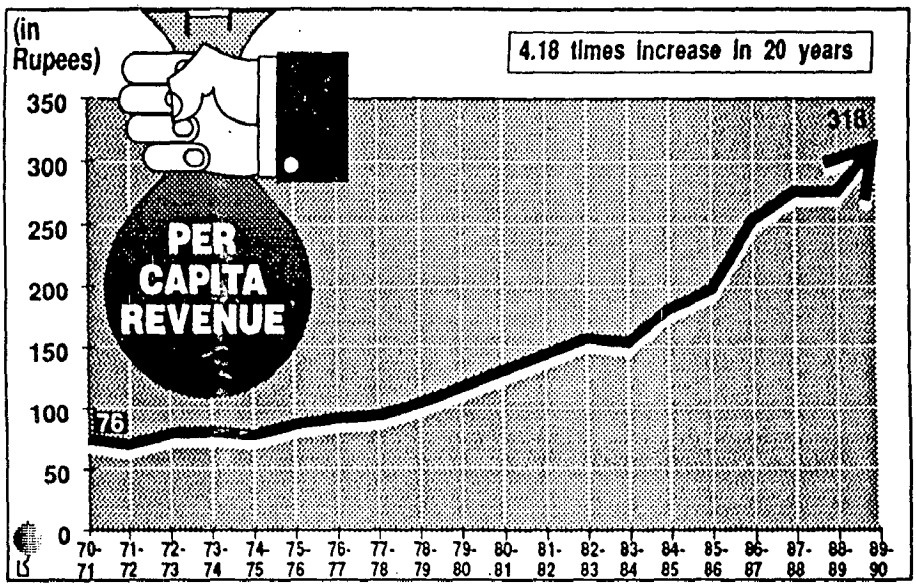
(b) Keeping in view, the observation of a larger share of establishment expenditure in the M.C.D.'s total expenditure, it is safe to conclude that the M.C.D. has been spending less per capita for the improvement of services.

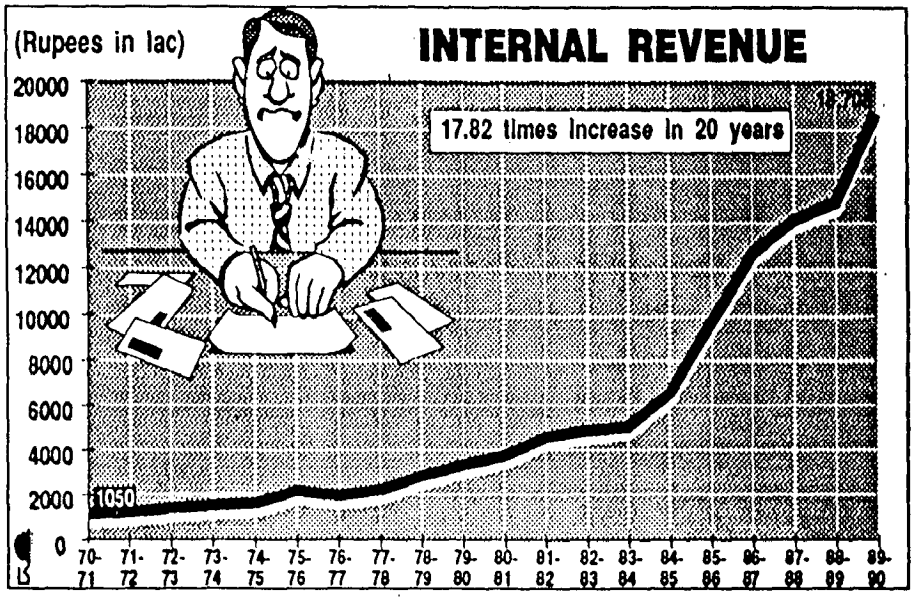
(c) The proportion of expenditure in essential municipal services like scavenging, fire brigade, gardens and open spaces has been allocated a lower percentage of the total expenditure.

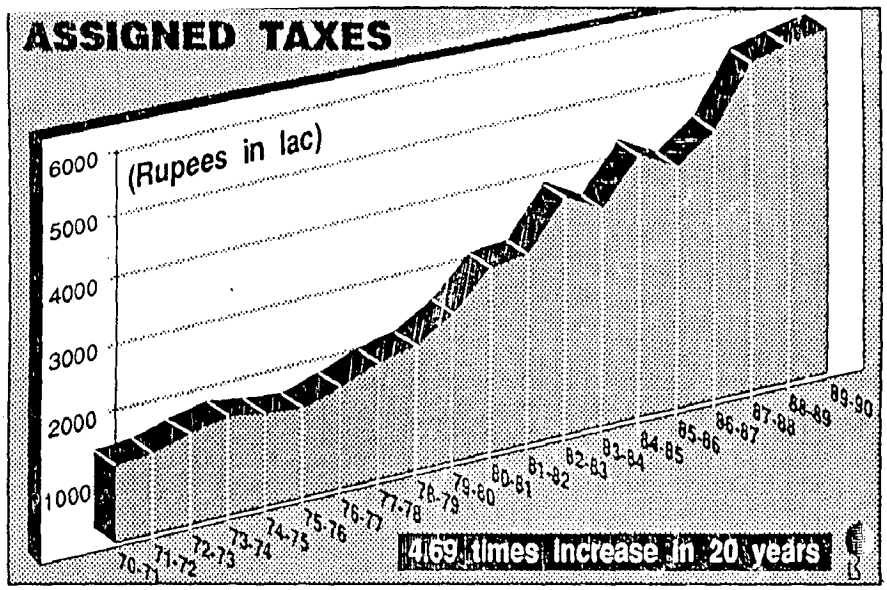
(d) Constituency Fund - determined by the councillors is queer and not found anywhere else.

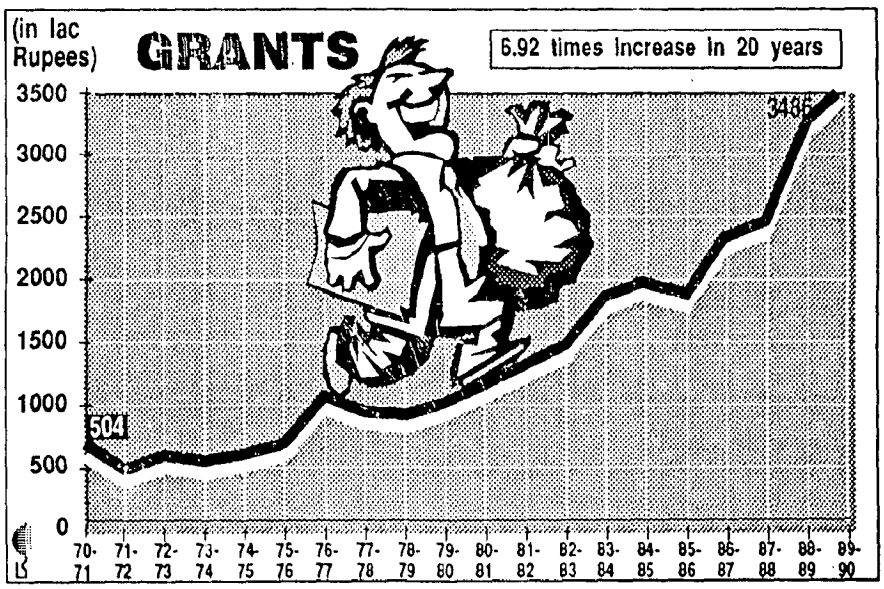
(e) Low levels of total revenue expenditure in real terms and the lower per capita expenditure in the case of the M.C.D. is basically due to manifold increase in the expenditure on establishment.

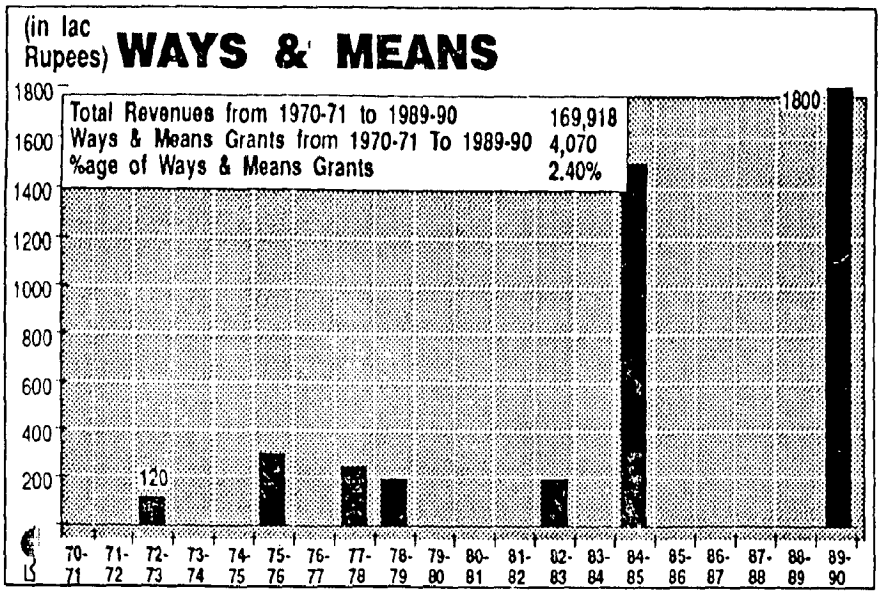

TOTAL REVENUE
(Rupees in lac)
10.19 times increase in 20 years
27512
2711
30000
25000
20000
15000
10000
5000
0
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90

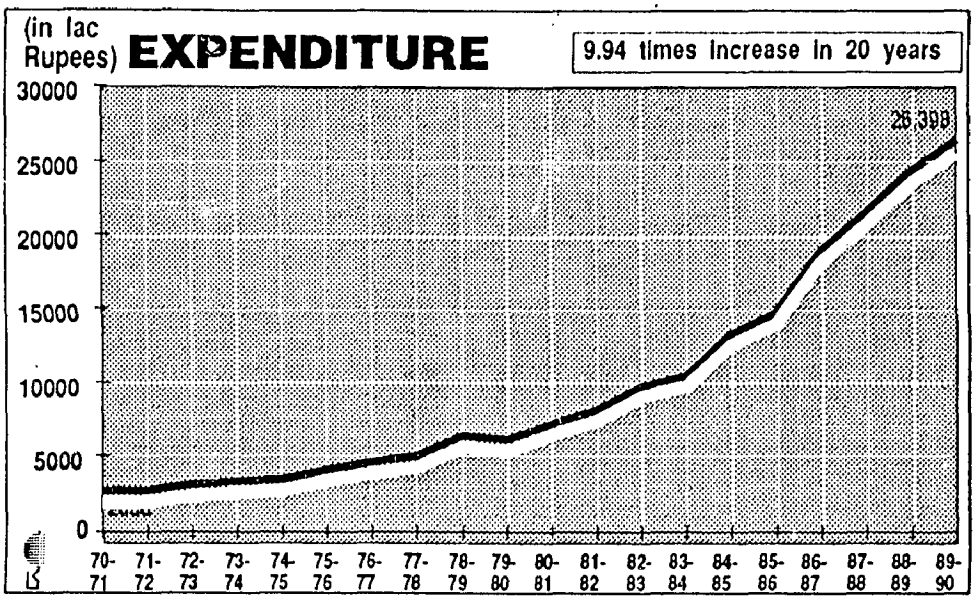

(in Rupees)
4.18 times increase in 20 years
318
PER CAPITA REVENUE
76
350
300
250
200
150
100
50
0
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90

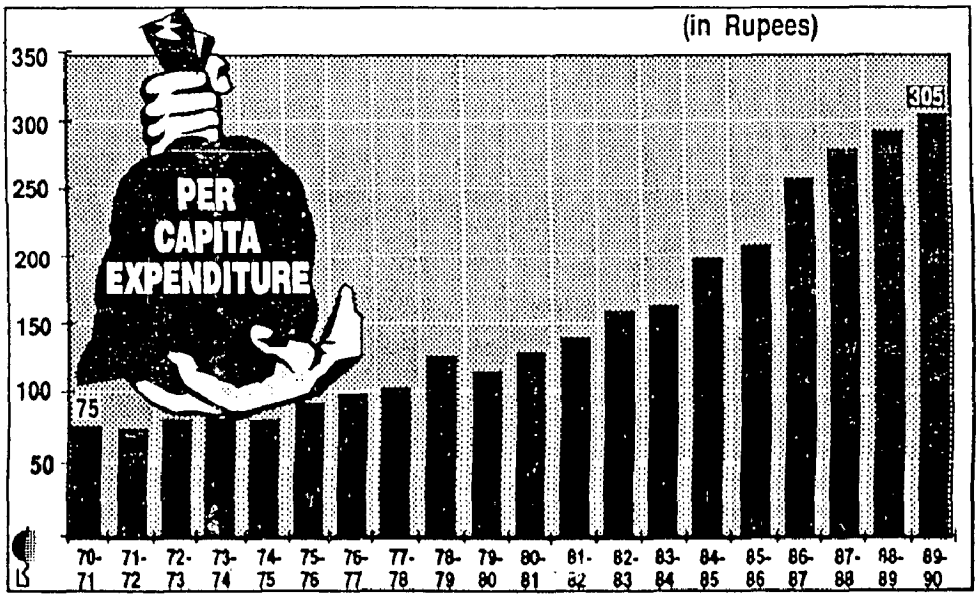

(Rupees in lac)
INTERNAL REVENUE
17.82 times increase in 20 years
1050
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90


ASSIGNED TAXES
(Rupees in lac)
6000
5000
4000
3000
2000
1000
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90
4.69 times Increase in 20 years


(in lac Rupees)
GRANTS
6.92 times Increase in 20 years
3500
3000
2500
2000
1500
1000
500
0
3485
504
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90


(in lac Rupees)
WAYS & MEANS
1800
1600
1400
1200
1000
800
600
400
200
Total Revenues from 1970-71 to 1989-90 169,918
Ways & Means Grants from 1970-71 To 1989-90 4,070
%age of Ways & Means Grants 2.40%
120
1800
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90


(in lac Rupees)
EXPENDITURE
9.94 times increase in 20 years
30000
25000
20000
15000
10000
5000
0
25,398
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90


(in Rupees)
350
300
250
200
150
100
50
PER CAPITA EXPENDITURE
75
305
70-71 71-72 72-73 73-74 74-75 75-76 76-77 77-78 78-79 79-80 80-81 81-82 82-83 83-84 84-85 85-86 86-87 87-88 88-89 89-90

(f) Continuous enhancement in the wages and salaries paid to the Municipal employees does not leave enough funds to be spent on the augmentation of services.

(g) A most interesting feature is that both the Master Plans (1961-81 & 2001 A.D.) were proposed by the DDA and were totally outside the MCD's purview, except marginal involvement in minor capital projects, relating to roads, unauthorised colonies etc.

This necessarily indicates that the Capital Development Programme of the DDA, directly impinges on the finances of the M.C.D..

3.2 INFRASTRUCTURE FOR SERVICES — CITY LEVEL ISSUES

3.2.1 ISSUES OF WATER SUPPLY

1. With a population of 94.2 Lakhs (1991 Census) Delhi's Water requirement is 750 million gallon per day (M.G.D.) as against this, installed capacity of Delhi Water Supply and Sewage Disposal Undertaking (D.W.S.S.D.U.) is 575 M.G.D.. (optimum 600 M.G.D.) with a net shortfall of 150 M.G.D..#

DATA collected from Mr Subhash, Engineer Officer to E-in-C, D.W.S.S.D.U., New Delhi.

2. The failure of the concerned authorities to check heavy losses of water from Delhi's entitlement of Ravi Beas for Wazirabad treatment plant is another reason which leads to water shortage during summers. About 400 Cusecs water is let off into the Yamuna from Ravi Beas at Munak. The water losses in summer are over 50 % of this quarter.

3. The present faulty system of distribution of the obsolete pipeline network also has bearing on the water supply position. The analysis of water supply reveals :

(a) The supply of water is inadequate in view of needs.

(b) Whatever quantity of water is produced and supplied, its quantum is further reduced owing to wastage and leakage in the distribution system (there is no mechanism to detect this) and

(c) There exists a lot of disparity in the distribution system.

4. Analysis of per capata quantum supplied, worked out on the basis of mid year population estimates reveals that M.C.D. areas get 40 gallons per capita per day compared to 78 gallons per capita per day of the N.D.M.C. areas. Thus, there is a disparity between New Delhi which happens to be an affluent area and the M.C.D. areas where the majority of inhabitants belong to middle and low income groups.

5. The only preventive maintenance, that is done regularly is the annual flushing out and cleaning of the service reservoirs.

TYPE OF PROBLEMS CONNECTED WITH WATER SUPPLY

1. SHORT SUPPLY OF WATER
2. LOW WATER PRESSURE
3. NO WATER
4. DAMAGE, TAMPERING, BURST, LEAKAGE IN THE WATER SERVICE, VALVE etc
5. QUALITY OF WATER SUPPLY (MUDDY, BAD ODOURS etc.)
6. EXCESSIVE BILLING
7. IRREGULAR BILLING
8. WRONG BILLING

CLERICAL OR BECAUSE OF FAULTY METERS

3.2.2 ISSUES OF ELECTRIC SUPPLY

1. PEAK HOUR LOAD[9,10]

A.	DESU's own sources : I.P. Thermal Power Station, Gas Turbine Plant & Rajghat Power House generate	300.0 M.W.
B.	IMPORTS (Badarpur Thermal Power Station + Northern Grid)	1254.4 M.W.
C.	DESU (A + B)	1554.4 M.W.
D.	EXPORT	54.0 M.W.
E.	DELHI'S PEAK HOUR LOAD	1850.0 M.W.
F.	DESU AT BEST (C - D)	1500.0 M.W.
G.	SHORTFALL (E - F)	350.0 M.W.

2. I.P.Thermal Power Station constructed in 1963 (life was 25 years) is on the last leg of life. The first unit is already 7 years beyond its normal life and so far there is no plan to replace it

3. On the micro level pilferage of power is said to be DESU's real problem. According to an estimate, illegal connections, thefts, overdrawing both by unauthorised jhuggi clusters and illegal concerns and industrial units accounts for a loss of 40 to 45 % power. In terms of revenue this accounts for a loss of approximately Rs. 2 Crores a day. The undertaking annually looses Rs. 700 Crores due to power thefts - 44 % percent of electricity supplied to the City by DESU in July 1995 was lost to power thefts, called transmission losses.[11]

4. Over the years while Delhi has grown prosperous, it has virtually stolen power, than it has been allowed, resulting in frequent voltage fluctuations & breakdowns of power. Any consumers complaint of breakdown of gadgets and equipments due to erratic voltage, draws no attention of DESU, whatsoever.

5. The other energy guzzler in Delhi is the plethora of steel furnaces all over particularly in Okhla and Wazirpur. Illegal power amounting to Rs. 550 Crores annually, is being consumed by this sector because of unauthorised crucibles that are not apparently visible.

6. But over the years D.E.S.U. has become a power house of corruption. It is common knowledge how palms have to be greased to get a connection - legal as well as illegal. The Undertakings billing system is in a mess. Overcharging is only an obvious problem but the

real issue is that D.E.S.U.'s own staff resisted the system and tried their best to sabotage it - with considerable success.

7. Recently, DESU had set up BIJLI ADALATS for settling grievances of consumers. These Adalats have besides DESU Officers, retired Engineers and Civil Servants for an impartial " on-the-spot " settlement of problems. Bijli Adalats are to hear / redress the grievances of the consumers who have failed to get relief / satisfaction from the concerned DESU Officers / grievance cell regarding complaints of electricity supply, excess or incorrect billing, delay in provision of electric connection etc.[12]

3.2.3 ISSUES OF SEWERAGE

1. Whatever may be the undertakings claim about the existing sewerage facilities, these need improvement to a large extent. There are many areas, particularly in Kashmere Gate, Chandni Chowk, Karol Bagh where the sewerage lines are very old. They need immediate replacement in view of the coming up of the unauthorised multistorey buildings and rise in population. The sewerage lines need to be broadened to carry the sewerage. Mostly the sewers are blocked in almost all the areas. The situation is worst during the rainy seasons.

2. Presently the old sewerage lines are in the process of being changed. The total cost of the project is estimated to be approximately Rs. 300 Crores, out of which works worth Rs. 150 Crores have already been allotted.[#] The capacity of the new sewerage system

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DATA collected from Mr Subhash, Engineer Officer to E-in-C, D.W.S.S.D.U., New Delhi.

will be 280 M.G.D. to 500 M.G.D.. Within the next two years the projects are planned to be completed. In view of the expanding city, it will be next to impossible to provide satisfactory sewerage facilities to the people.

3. Another interesting feature of the sewerage system is that there are no pipelines in the walled city area including Chandni Chowk, Fatehpuri and Ajmeri Gate. The effluent is carried through sewerage system constructed of bricks about 100 years ago. During the rainy season at some places the bricks come under water pressure and cause blockage to the system. There is a backflow of sewerage water in the houses. In a phased manner it is being done up.

4. The existing facilities are not maintained properly. There is no proper cleaning of the sewerage lines and at many places manhole covers are missing. In such cases, people dump garbage in the uncovered manholes causing blockage of sewerage line. According to Undertaking officials, the field staff has to be alert and visit their areas regularly and if any deficiency is detected, steps are taken to remove it.

3.2.4 ISSUES OF GARBAGE

1. There is no locational policy with regard to waste dumps in housing areas. There is no provision w.r.t. number, capacity, location and spatial distribution of collectors in the planning stage.

2. Staffing policy[8] - the entire city has been divided and categorised w.r.t. population diversities and staffing is accordingly done. For :

High Density Area - 1 Safai Karamchari per 30000 Sq.ft.

Medium Density Area - 1 Safai Karamchari per 60000 Sq.ft.

Low Density Area - 1 Safai Karamchari per 100000 Sq.ft.

3. Considering that the productivity and commitment of the staff is low, this kind of categorisation is far too broad.

4. Shortage of Fleet for garbage removal has been plaguing the M.C.D.. Of the fleet of trucks that exists, most are out of order at any given point of time.

5. The present facilities for garbage collection i.e. concrete bins, dumper placers and masonry dalaos seem to lack adequate design innovation and become subject to misuse and disuse.

6. The collectors because of this design are incapable of satisfactory and complete use and attract animals and rag pickers, who enhance the extent of nuisance in the area.

7. The management information system is poor and is subjected to intentional changes to suit the end of the agency's administration - as quantum of garbage generated and collected cannot be precisely assessed.

8. Senior Administrators indicate extreme lack of commitment and excessive politicking among agency's field staff.

9. Recently MCD was in News, with their plans to go global to clean Delhi & also, for introduction of polythene bags for garbage disposal. M.C.D. started thier environment friendly scheme from Jan 1,1996.[13,14]

10. In their attempt to give a clean look to the Capital, MCD are going global in search of advanced technology for hassle free disposal of waste and garbage. MCD is proposing to float global tenders for the import of the technology, plant and machinery for the disposal of tonnes of waste collected everyday from streets of Delhi.

11. The proposals of having transportable metal garbage bins and door to door collection of garbage have not been found viable by MCD. However MCD is " NIGHT CLEANING " the city these days. MCD's " CLEAN DELHI PROJECT " is ready to take off anytime.

12. Also, MCD is all prepared to supply polythene bags, on experimental basis, in selected areas to keep the Capital garbage free. Although the polythene bags may not be environmentally very suitable, it will be helpful in behavior changes of the residents regarding the disposal of the Household solid waste.

13. Households generate " Bio-degradeable " solid waste like Kitchen waste and " Non Bio-degradeable " waste like plastic, glass, bottles, tin containers, plastic containers and paper.

14. While only two bags a week are required for disposal of non bio - degradeable solid waste as Indian Household produce very little or negligible waste of this kind, a bag daily would be needed for bio - degradeable waste. The non bio-degradeable waste could could be kept in a bag for quite sometime without producing even the foul odour.

15. Two kinds of bags in different colours would be required for bio degradeable and non non bio-degradable waste. The plastic bags would be made available at subsidised price.The residents are expected to deposit the solid waste in the nearest MCD receptacle.

3.2.5 ISSUES OF ROAD MAINTENANCE

1. The Engineering Department of the M.C.D. is responsible for road maintenance. In case if repair of any underground service line becomes necessary, the concerned agency is required to submit an application for permission to excavate, indicating location & extent and time required for the job to the Engineering Department. The Department personnel then assess and prepare a bill for restoration charges, which has to be paid in advance to produce the "No Objection" Certificate.[8]

2. While procedural bottlenecks delay the process, excavation work is never carried out as per written intent. This not only increases the restoration expenditure but also further delays the process. Restoration work is also not carried out promptly.

CHAPTER 4

AGENCIES IN HOUSING AREAS

MAINTENANCE MANAGEMENT

4.1 MUNICIPAL CORPORATION OF DELHI

1. The MUNICIPAL CORPORATION OF DELHI (M.C.D.) took its birth on April 7,1958 A.D. under the M.C.D. Act of the same year and was constituted through the amalgamation of all the Municipal Committees and Notified Areas Committees, except the New Delhi Municipal Corporation (N.D.M.C.) and the Cantonment Board.[8]

2. N.D.M.C. was excluded as it was felt that, "the standard of health, of cleanliness, of sanitation, of education and of almost everything for this area required a special treatment", which was not possible through the inclusion of this agency in a larger body like the M.C.D.. Cantonment Board on the other hand justified its exclusion on the grounds of safety and public interest.[8]

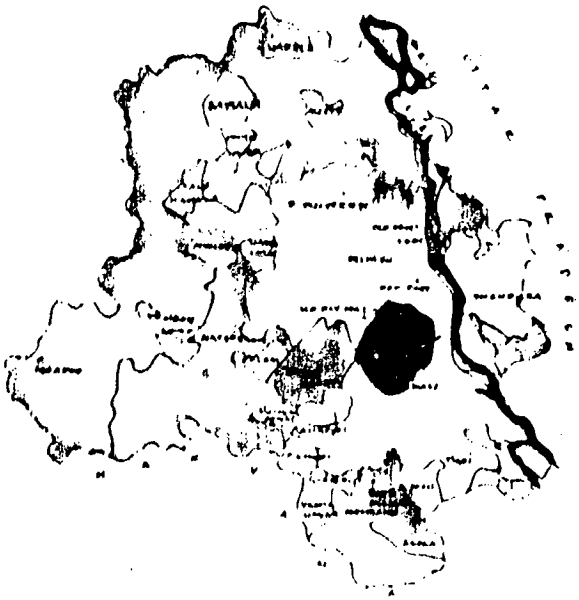
3. It was also felt that the surrounding areas (rural) lacked the development because of the limited resources of the District Board and so these areas were also brought under the jurisdiction of the M.C.D. after abolition of the Board. Also included were the Public Utility Undertakings viz. Electricity Board, Road Transport Authority and the Joint Water and Sewerage which were renamed Delhi Electric Supply Undertaking (D.E.S.U.), Delhi Transport Undertaking and Delhi Water Supply and Sewerage Disposal Undertaking (D.W.S.S.D.U.) respectively. In structure they constituted an integral part of the M.C.D. but enjoyed a fair degree of autonomy.[8]

4. Later the Ordinance of November 3, 1971 resulted in the expulsion of the Delhi Transport Undertaking. The Delhi Improvement Trust was also abolished and its functions were entrusted to the D.D.A. which was setup in 1957 A.D.. The amalgamation of 1958 A.D. reduced the area under the jurisdiction of the N.D.M.C. to about half and that under the Cantonment Board was also reduced marginally.[8]

5. The Corporation is responsible for the provision of civic services and amenities in its areas and these are outlined & listed in Sections 42 and 43 of the Act. These can be summarised as :

(a) <u>OBLIGATORY FUNCTIONS</u>[8] of sanitation and cleanliness, public health; medical relief through establishment and maintenance of hospitals, dispensaries, health centres etc.; maintenance of fire services, generation and supply of electricity, supply of wholesome water; slum clearance; disposal of the dead, registration of births and deaths; construction and maintenance of public streets, bridges & culverts; primary education etc. and

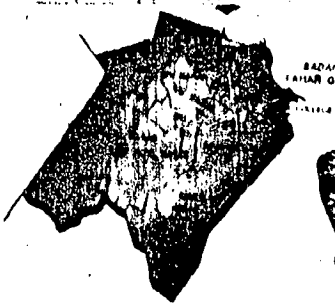
(b) <u>DISCRETIONARY FUNCTIONS</u>[8] of furtherance of education in general, cultural activities, social welfare, housing, improvement schemes, organisation of fairs and exhibitions, relief to destitutes, organisation and maintenance of laboratories for examination and analysis of water, food and drugs etc.



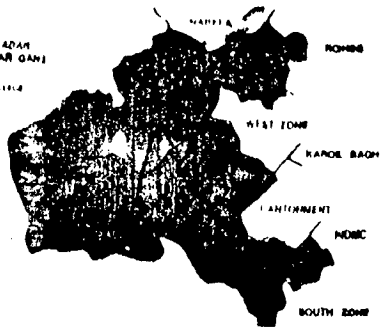
BOUNDARY OF NCT DELHI
M C D RURAL
NDMC
M C D URBAN
DELHI CANTT
YAMUNA RIVER

ZONAL SET UP OF DELHI

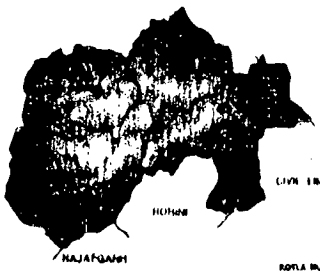
KAROL BAGH ZONE



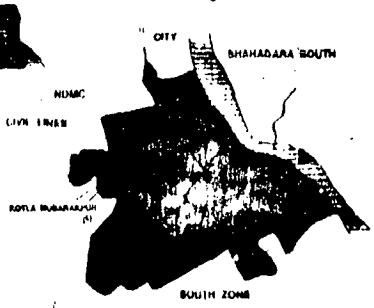
NAJAFGARH ZONE



NARELA ZONE



NEW DELHI ZONE

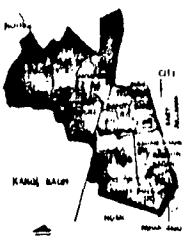


CITY ZONE

CIVIL LINES ZONE
CITY ZONE
KAROL BAGH ZONE
NAJAFGARH ZONE
NARELA ZONE
NEW DELHI ZONE
NORTH WEST ZONE (ROHINI)
SADAR PAHARGANJ ZONE
SHAHADARA (NORTH) ZONE
SHAHADARA (SOUTH) ZONE
SOUTH ZONE
WEST ZONE

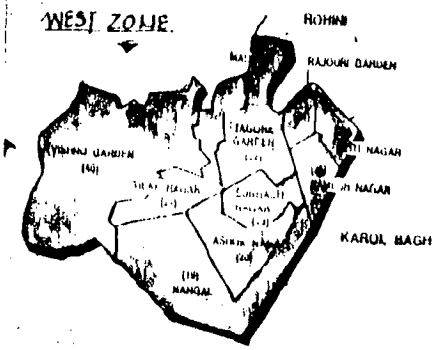
MCD TOTAL AREA : 1991.3 SQ KMS
UDMC AREA : 43.74 SQ KMS
CANTONMENT AREA : 42.89 SQ KMS

NORTH WEST ZONE

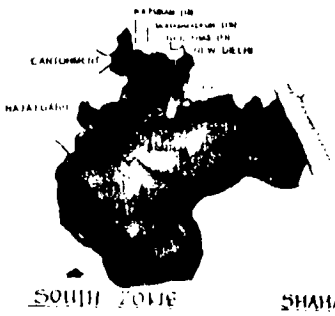


SADAR PAHARGANJ ZONE

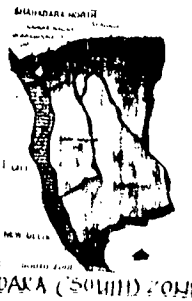
WEST ZONE



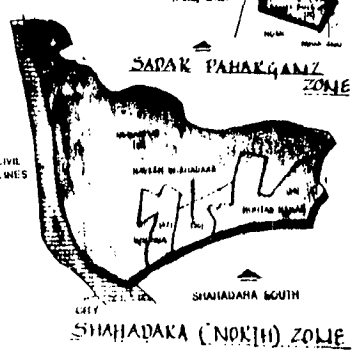
SOUTH ZONE



SHAHADARA (SOUTH) ZONE



SHAHADARA (NORTH) ZONE



4.1.1 ORGANISATIONAL SET-UP FOR TASK PERFORMANCE

(Reference Organisation Charts Figure Nos 4.1 to 4.9)

1. The M.C.D. Act broadly follows the Bombay pattern with separate deliberate and executive wings. Although the Mayor happens to be the Head and Presiding Officer, entire executive powers and functions rest in the Commissioner.[8] The necessary functions are carried out by five statutory authorities, viz :

(a) The Standing Committee

(b) The Delhi Electric Supply Committee

(c) The Delhi Water Supply & Sewage Disposal Committee

(d) The Education Committee

(e) The Rural Area Committee

2. In order to decentralise Municipal Administration over such an extensive jurisdiction, the entire M.C.D. area has been divided into 12 Zones, each in charge of a Zonal Committee.[8] These Zones are :

(a)	CIVIL LINES ZONE	(b)	CITY ZONE
(c)	KAROL BAGH ZONE	(d)	NAJAFGARH ZONE
(e)	NARELA ZONE	(f)	NEW DELHI ZONE
(g)	NORTH WEST ZONE (ROHINI)	(h)	SADAR PAHARGANJ ZONE
(i)	SHAHADARA (NORTH) ZONE	(j)	SHAHADARA (SOUTH) ZONE
(k)	SOUTH ZONE	(l)	WEST ZONE

3. These Zonal Offices inspect and settle the day to day problems like sewer blockage, insanitation, water logging, disruption in water supply, dangerous buildings, unauthorised constructions etc.

4. The Municipal Corporation Body consists of 134 elected Councillors, 10 persons nominated by the Administrator, Delhi Lok Sabha members, Rajya Sabha members enrolled as voters in Delhi and one fifth members of the Legislative Assembly. The size of the Corporation is nearly 168. The Corporation is headed by a Mayor and a Deputy Mayor who are elected annually. The Municipal Commissioner who as stated before is the Executive Chief, is appointed by the Central Government, for a period of five years. The executive powers of the Commissioner do not extend to the D.E.S.U. - which is under the executive charge of a General Manager, who is appointed by Corporation with the approval of the Central Government. The Commissioner is assisted by a number of Additional / Deputy Commissioners, Additional Dy Commissioners, Assistant Commissioners and Heads of different Departments. The main sources of revenue, for the Corporation are Government Grants, Shares of assigned Central Taxes, Municipal Rates, Taxes, Rents, Fees, Fines and other Miscellaneous Receipts. Despite it being an elected body, it is highly dependent on the Central Government and the Delhi Administration for is financial resources, which consequently undercuts its autonomy.

DELIBERATE WING

MUNICIPAL CORPORATION OF DELHI

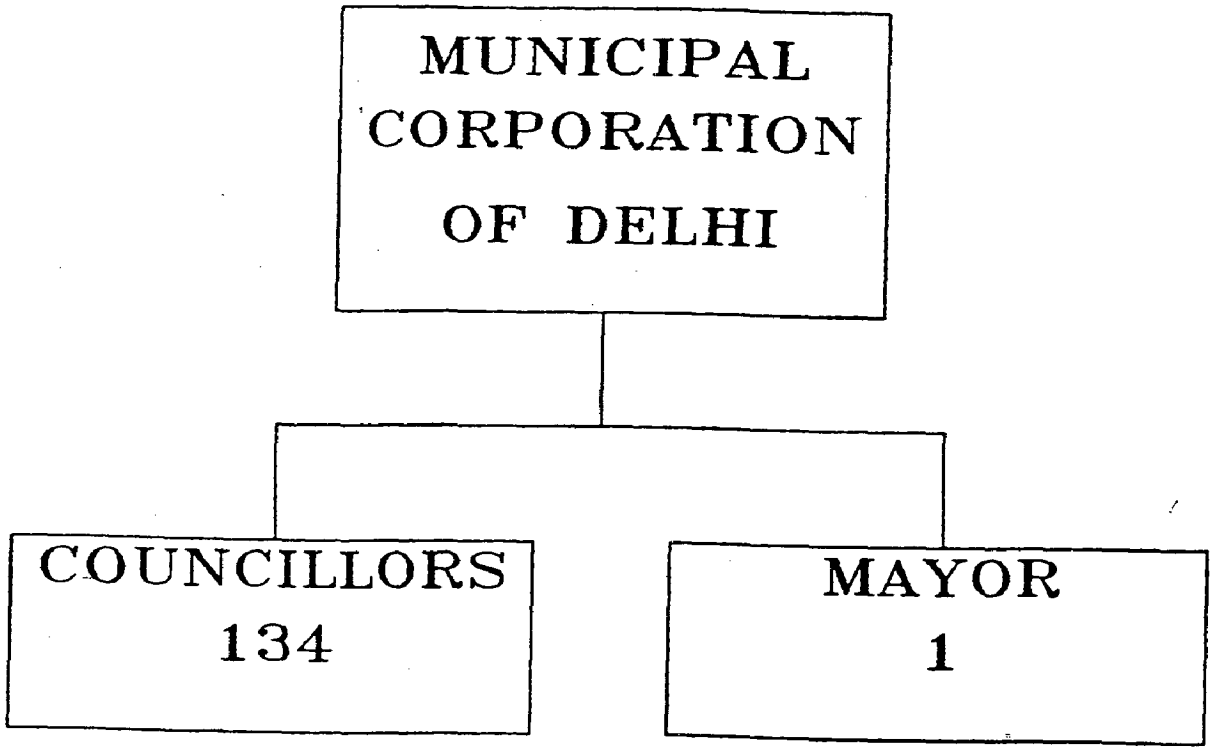


FIGURE 4.01

DELIBERATE WING
MUNICIPAL CORPORATION OF DELHI

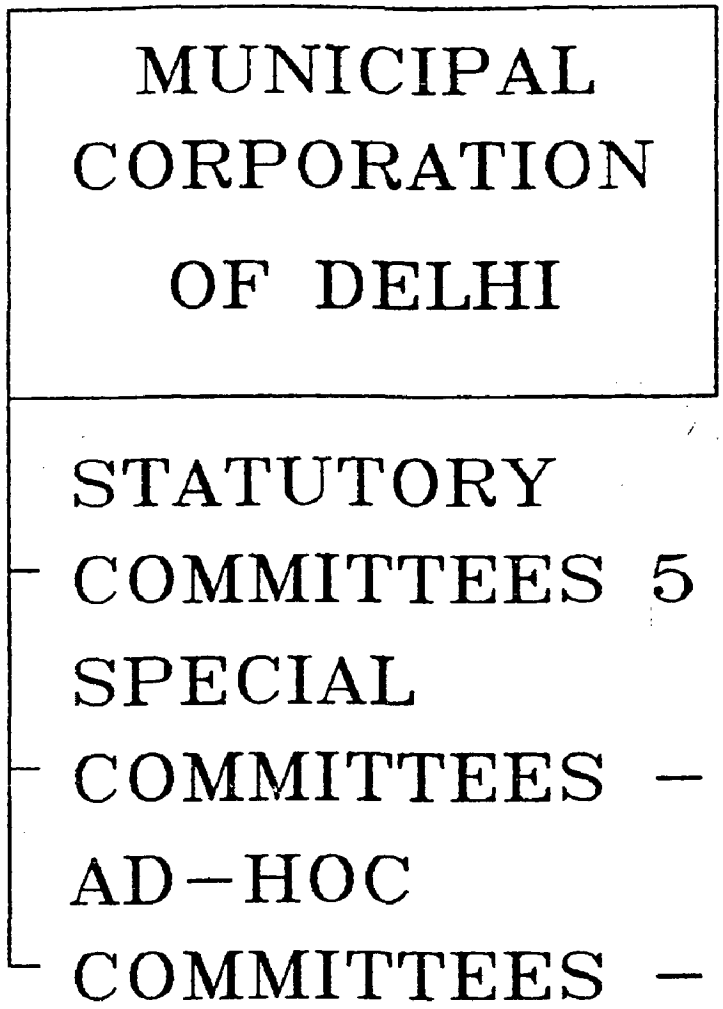
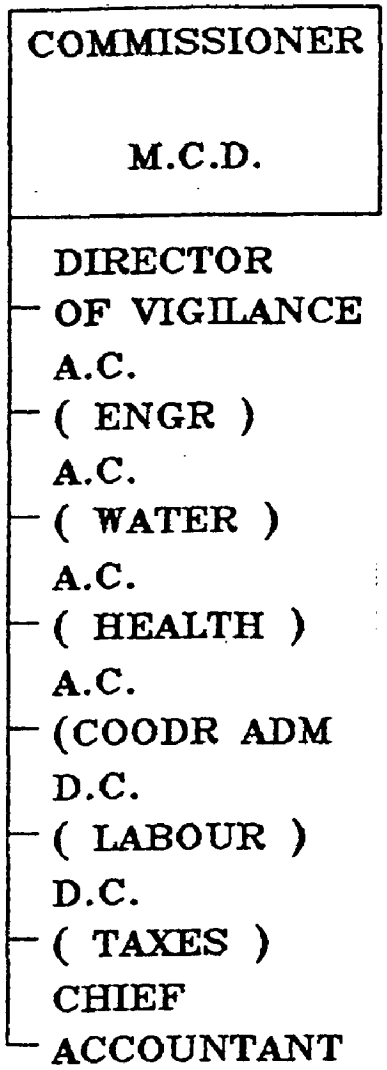


FIGURE 4.02

- 53 -

EXECUTIVE WING

MUNICIPAL CORPORATION OF DELHI



PLEASE SEE FIGs 4.4 – 4.9 FOR DETAILS

FIGURE 4.03

EXECUTIVE WING

ORGANISATION ADDL COM (WATER)

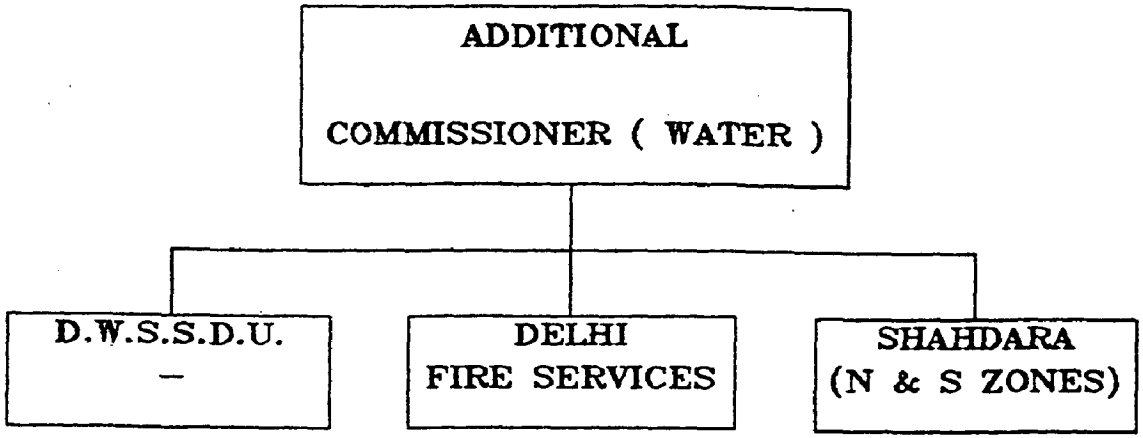


FIGURE 4.04

EXECUTIVE WING

ORGANISATION ADDL COM (ENGINEERING)

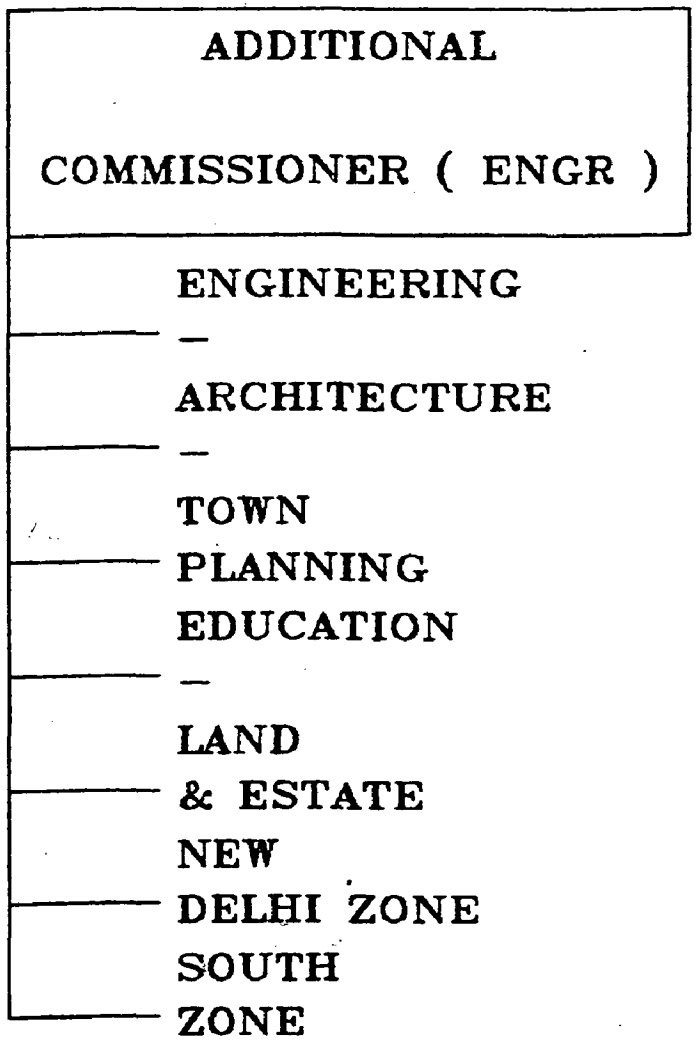


FIGURE 4.05

EXECUTIVE WING

ORGANISATION ADDL COM (HEALTH)

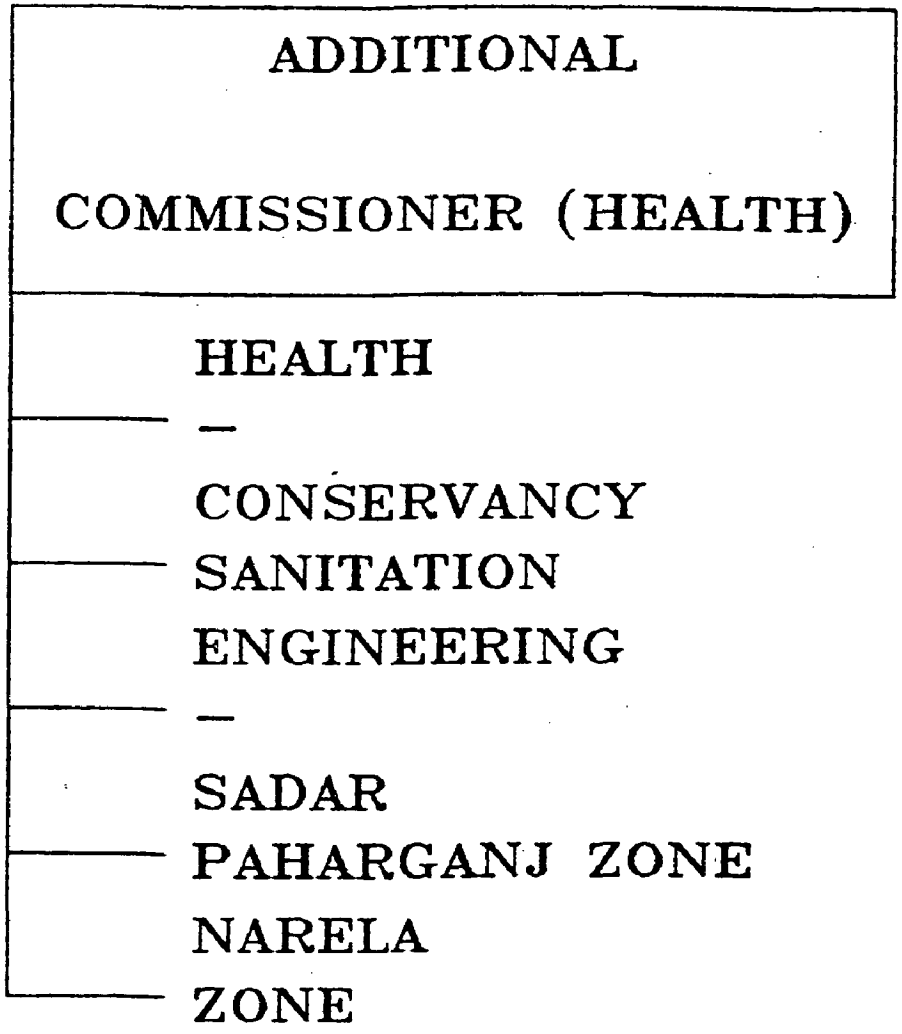


FIGURE 4.06

EXECUTIVE WING

ORGANISATION ADDL COM (COORD & ADMN)

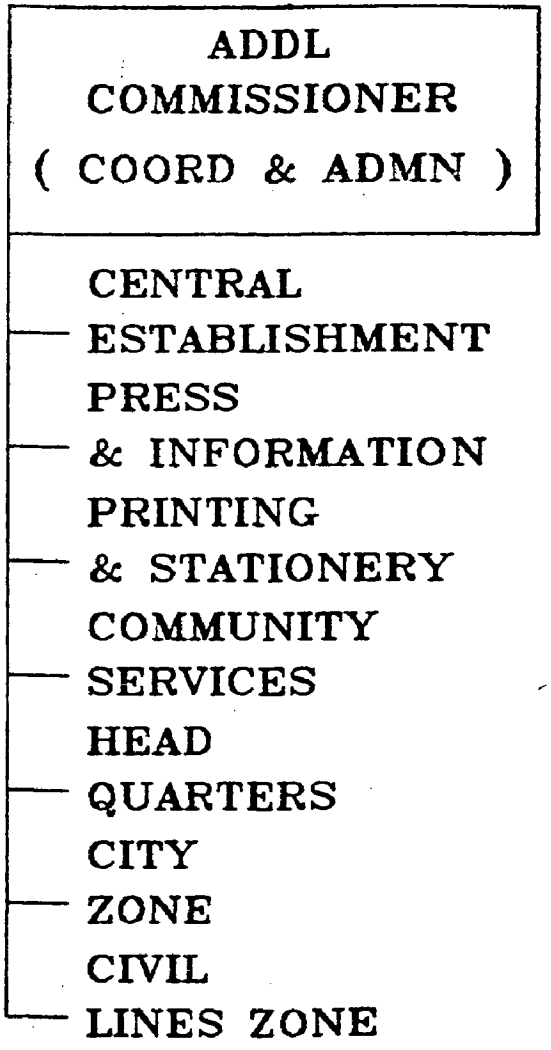


FIGURE 4.07

EXECUTIVE WING

ORGANISATION DY COMMISSIONER (LABOUR)

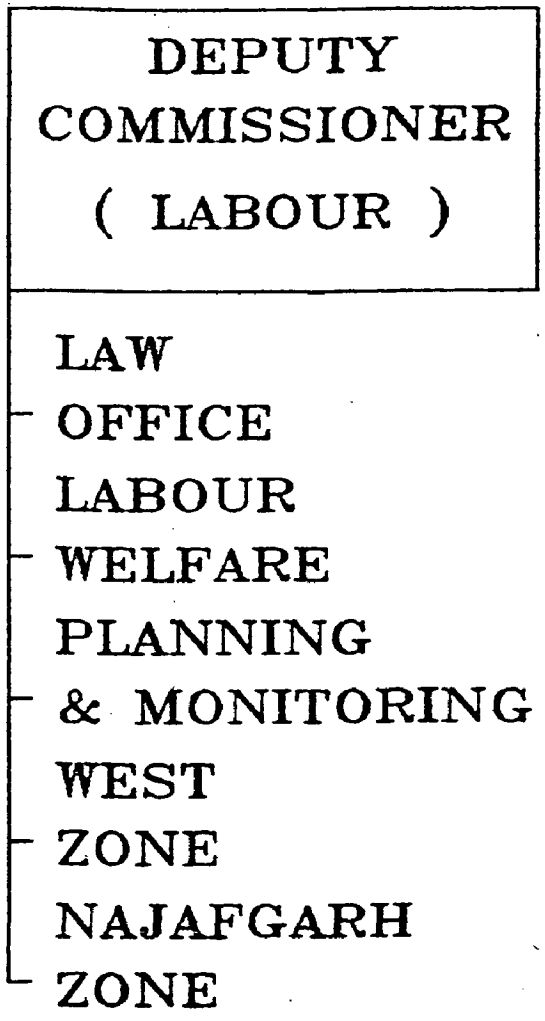


FIGURE 4.08

EXECUTIVE WING

ORGANISATION DY COMMISSIONER (TAXES)

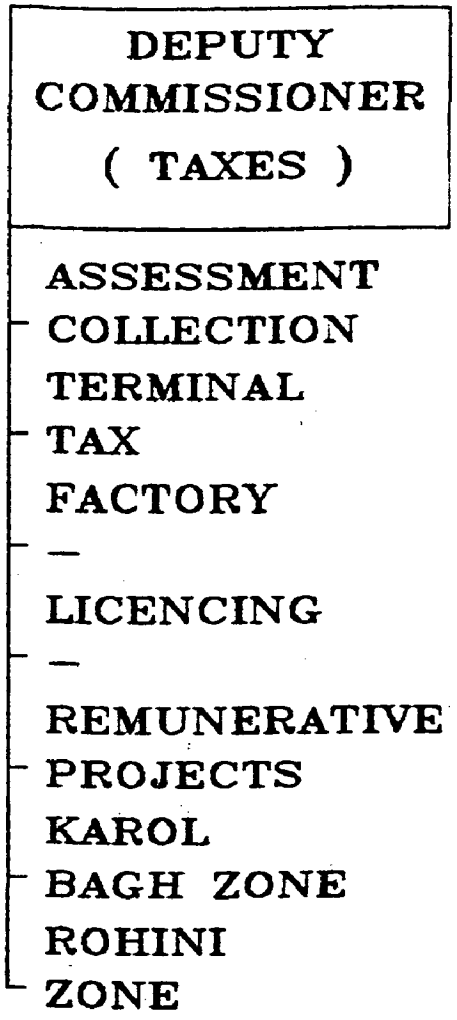


FIGURE 4.09

4.1.2 LINKAGES

1. Under the Corporation Act, the relationship between the Central Government and the Corporation is similar to that between a State Government and a Municipal Body - the Administration of the National Capital Territory of Delhi in liaison between the Corporation and the Government.

2. The Central Government plays an important role in the affairs of the Corporation through certain important constitutional functions. The rules and regulations to provide for matter of detail and to set the machinery in motion were framed by it and some of the important bye laws, which are required by the different sections of the Corporation Act are drawn up by it. Even the bye law and regulations framed by the Corporation, need to be approved by the Central Government, comes in also as an arbitrator in disputes between the Corporation and other local public agencies in respect of water supply, sewage disposal and cost and supply of electricity. All appointments of principal officers and specialists in the various committees need a Central Government Approval. The Central Government reserves the right and power to interfere in all matters, and enforce if in its view it considers the affairs of the Corporation undesirable, to the extent that it can as a last resort superseed the Corporation & take over its functions and report to Parliament.[8]

4.2 DELHI WATER SUPPLY & SEWAGE DISPOSAL UNDERTAKING

1. The D.W.S.S.D.U. is a wing of the M.C.D.. It had taken over charges of performing functions of the erstwhile JOINT WATER SUPPLY & SEWAGE DISPOSAL BOARD (which had been constituted under the Delhi Joint Water & Sewage Board Act 1926 A.D. and had performed as an autonomous body for over three decades).[8]

2. The functions of the D.W.S.S.D.U. are defined under Section 2(14) of the 1957 Act to mean, "..... all undertakings vested in or acquired, managed or conducted by the Corporation for the purposes of providing filtered and unfiltered water supply and for the purpose of collection, treatment and disposal of sewage.....". The Undertaking has also been entrusted with the additional functions of distribution of water supply and maintenance of sewers and drains in the areas under the jurisdiction of M.C.D..[8]

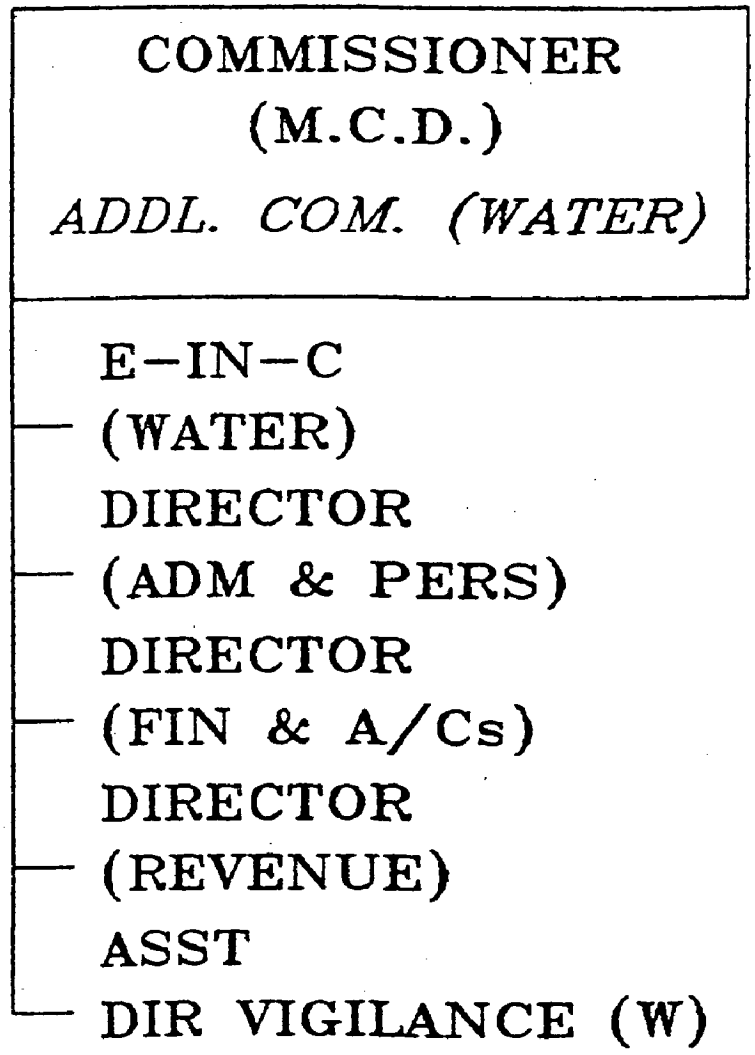
4.2.1 ORGANISATIONAL SET-UP FOR TASK PERFORMANCE

(Reference Organisation Charts Figure Nos 4.10 to 4.14)

1. The water supply and sewage disposal committee of the Corporation has the responsibility of conducting and managing the day to day working of the D.W.S.S.D.U., for which it draws powers under Section 53 of the M.C.D. Act of 1957. Since the Corporation is superseded the powers of the committee are given to a senior I.A.S. Officer called Special Officer having delegated powers of D.W.S.S.D.U. under Section 514 A of the M.C.D. Act.[8]

D.W.S. & S.D. UNDERTAKING

ORGANISATIONAL SET UP



PLEASE SEE FIGs 4.11 – 4.14 FOR DETAILS

FIGURE 4.10

D.W.S. & S.D. UNDERTAKING

ORGANISATIONAL SET UP E–IN–C (WATER)

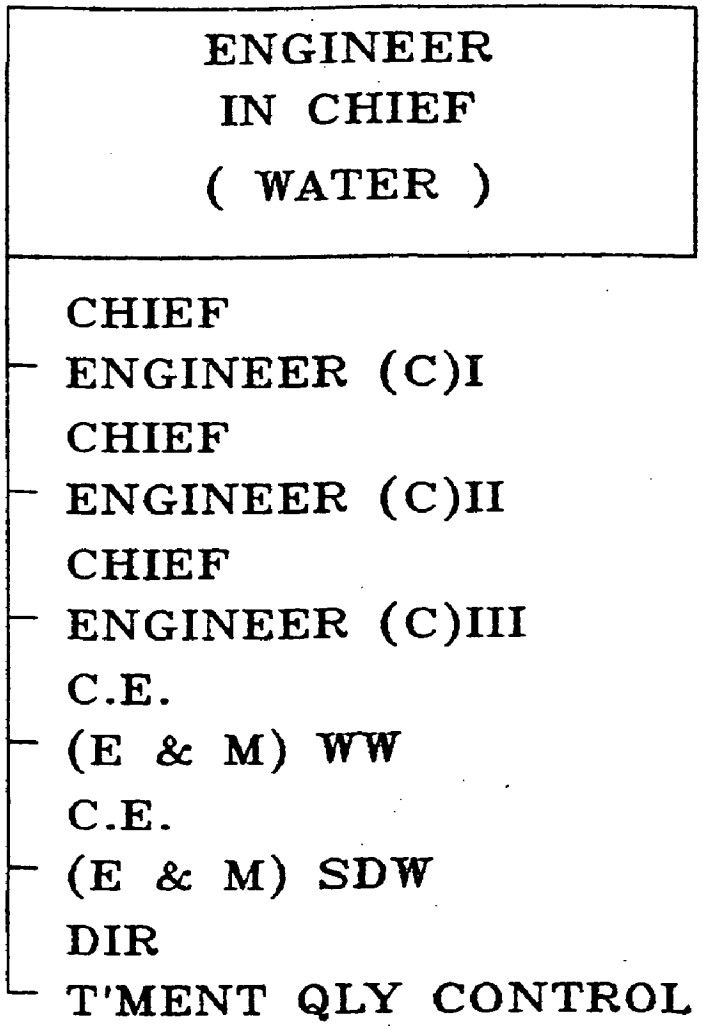


FIGURE 4.11

D.W.S. & S.D. UNDERTAKING

ORGANISATIONAL SET UP DIR (ADM & PERS)

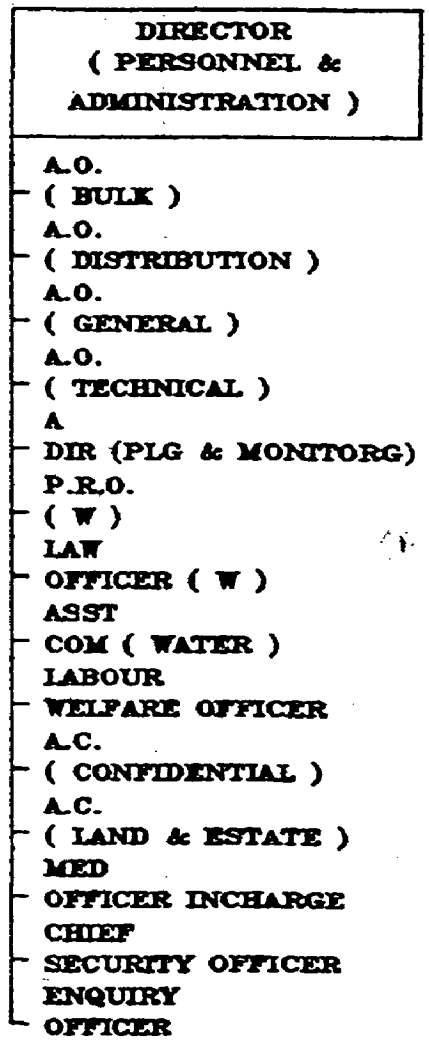


FIGURE 4.12

D.W.S. & S.D. UNDERTAKING

ORGANISATIONAL SET UP DIR (FIN & A/Cs)

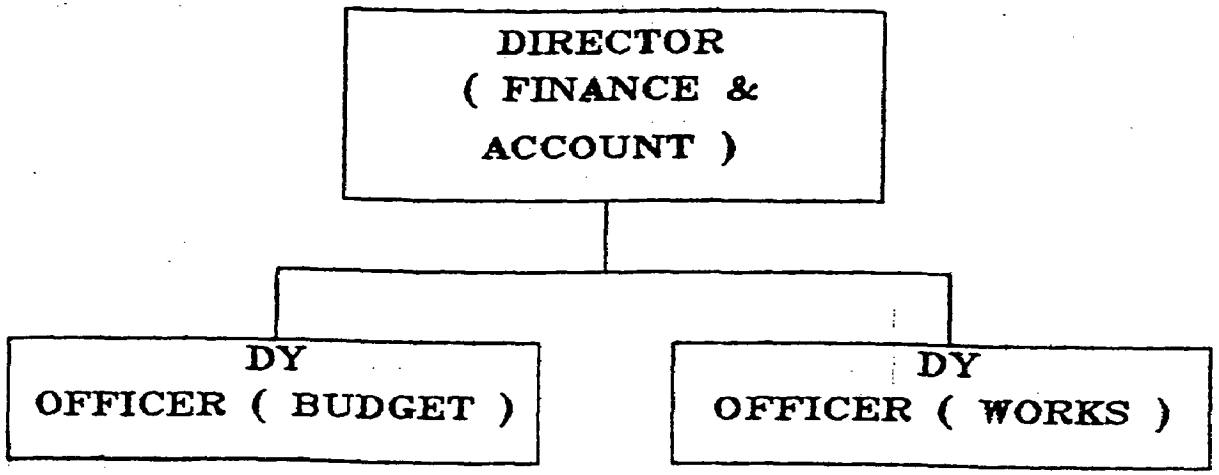


FIGURE 4.13

D.W.S. & S.D. UNDERTAKING

ORGANISATION SETUP DIR REVENUE (WATER)

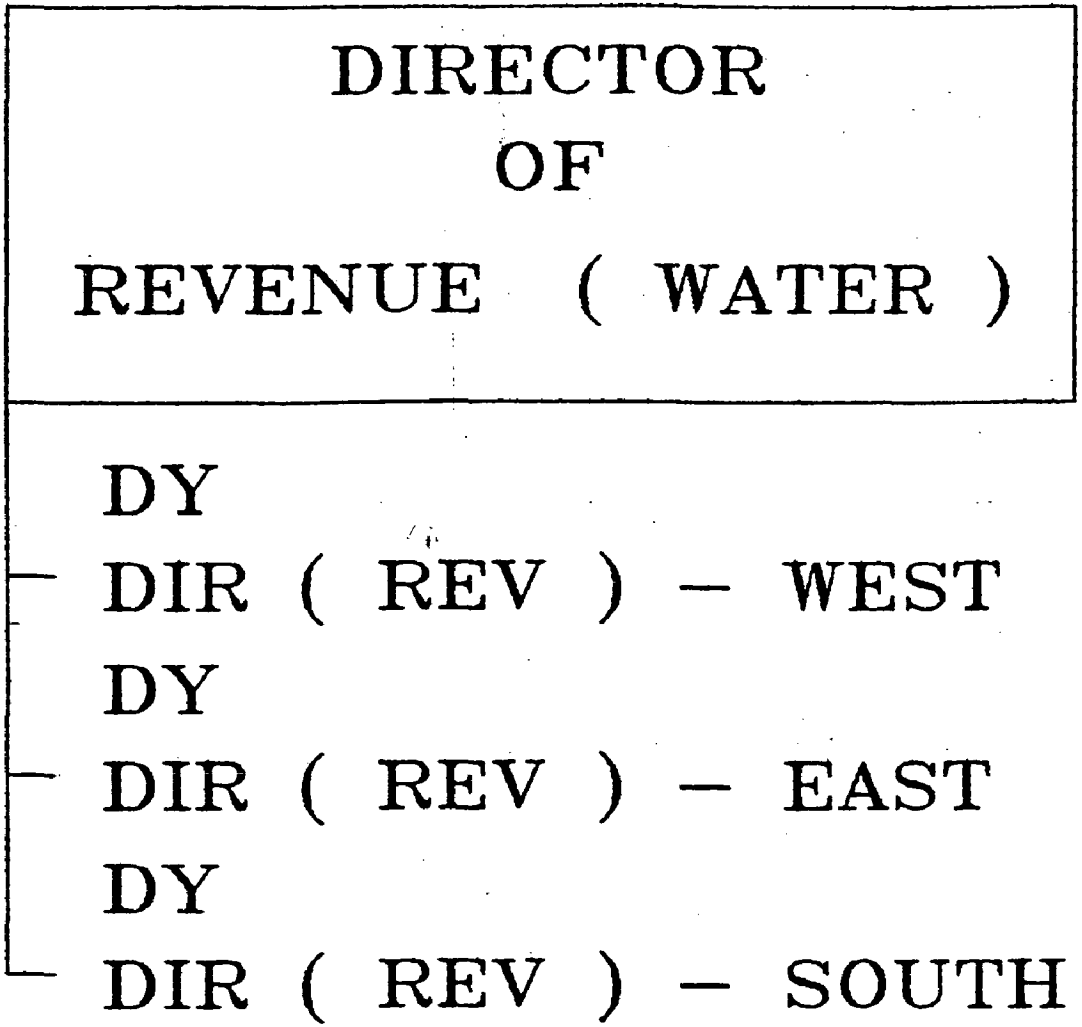


FIGURE 4.14

2. The committee is required to perform the following functions:

(a) To ascertain the sufficiency and wholesomeness of water supplies, within Delhi (Section 213).

(b) To provide a supply of wholesome water for domestic consumption to every part of Delhi (Section 213), to supply water in bulk to the N.D.M.C. and M.E.S. Delhi Cantonment (Section 259) and

(c) To receive the bulk and dispose off all sewage delivered. However, unlike other undertakings of the Corporation, the D.W.S.S.D.U. is directly under the executive control of the Commissioner M.C.D.. He can even, if the situation requires, issue notices to individuals or concerns :

(i) To take connection from the Municipal water adequate for the requirement of the persons occupying or employed in the premises, or to take such additional or enlarged connections or connections from the Municipal Water Works and

(ii) To provide supply pipes and water fittings, install and work a pump and do all such works and take all such measures as may in the opinion of the Commissioner be necessary for the above purposes.

3. This Organisational setup determines planning, policy making and management of water supply and sewerage disposal in Delhi.

4. The activities of the Undertaking are broadly covered by its following departments :

(a) General Department

This includes the following activities :

(i) Operation & Maintenance

(ii) Revenue & Medical

(iii) Distribution

Operation and maintenance are under the direct control of the Chief Engineer, while the remaining three are under the control of Additional Chief Engineer.

(b) Labour Welfare Department

(c) Legal Department

(d) Finance & Accounts Department

(e) Administration Department

(f) Public Relation Department

5. As there are no feeders for separate uses, the timings of water supply for domestic, commercial and industrial purposes are the same, though individual and commercial concerns are requested to store water and make their own internal arrangement. The supply hours are dependent upon the type of system and availability of water.

6. Generally there is no provision for providing unmetered water supply connections. However for poor people there is a policy provision for availing water supply through a free hydrant at a limited scale. Apart from water charges, the D.W.S.S.D.U. collects water tax and scavenging tax also. These taxes are levied as a percentage of the ratable value of the buildings and lands situated in the area notified under Section 114 read with Section 115 of the M.C.D. Act for the year 1977-78. Scavenging tax is levied at the rates under Section 114 read with Section 118 of the M.C.D. Act.

4.2.2 LOCATION & SUPPLY POLICIES

1. A service reservoir, a ground reservoir or a field reservoir is located on the basis of topographical conditions. Presently, the Undertaking is using ground reservoirs with booster pumping stations to meet the requirements of the residents. These ground reservoirs have a 6 hours storage capacity and cater for the first floor residents.

4.2.3 LINKAGES

1. The main sources of finance are consumers and the Ministry of Works and Housing. The finance comes in the form of Revenue (water tax & water charges) and loan from the Ministry, meant for maintenance purposes and execution of water supply schemes respectively. The D.W.S.S.D.U. generally does not get grants.

2. Loans are sanctioned subject to the following conditions :

(a) Loans are sanctioned only when a particular scheme is approved by the committee.

(b) Loans are received in installments. All subsequent installments are sanctioned on the basis of the progress report. The amount received have to be paid back in installments with interest within a period of 30 years.

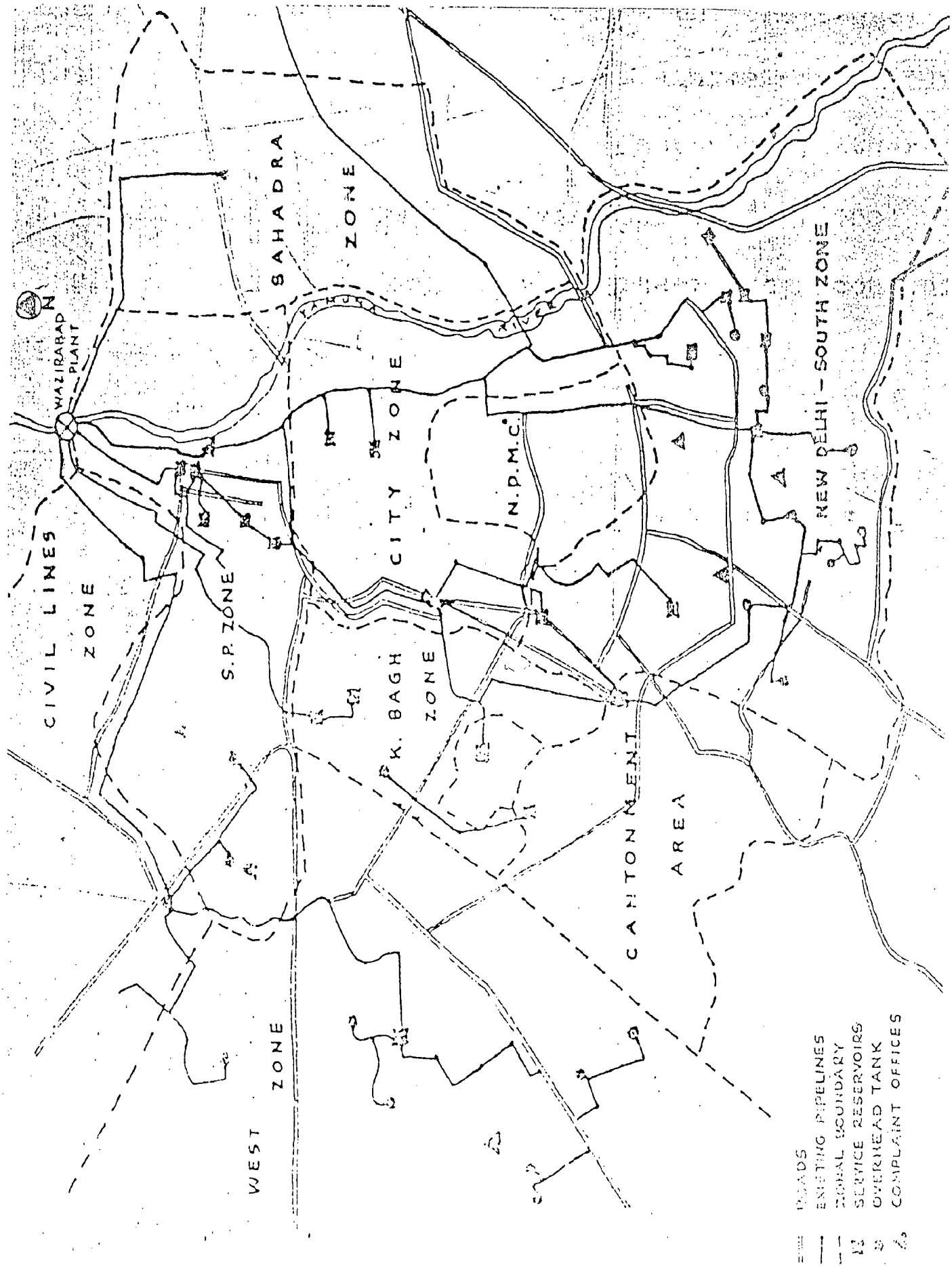
3. The Planning Commission formulates and sanctions all plans and the Commissioner and Deputy Commissioner of the M.C.D. and D.W.S.S.D.U. respectively implement them. All financial matters are moved through the Delhi Administration.

4. The role of the Committee is restricted to make appointments and to sanction money for expenditure on various schemes whose budget have been previously approved by the Standing Committee.

4.2.4 ADMINISTRATIVE STRUCTURE AND SPATIAL LINKAGES FOR MAINTENANCE MANAGEMENT

1. In the urban area of the MCD there are 12 zones for the purposes of administration of water supply and sewerage disposal. Each zone is headed by an Executive Engineer (who alone has financial discretion) with 4 Zonal Engineer (water) & 4 J.E.'s with each Zonal Engineer. There are 4 Superintendent Engineers (3 Civil - to look after distribution & leakages and 1 Electrical - to look after the booster pumping stations, tubewells etc.) under the C.E. (water supply).

WATER SUPPLY – DELHI



2. Each zone has 2 or 3 Control Rooms / Complaint Offices, which attend to different types of field problems as stated in table 3.1. The maintenance of all big transmission mains etc. is under the charge of water works. They have emergency staff round the clock.

4.3 DELHI ELECTRIC SUPPLY UNDERTAKING

1. Delhi State Electricity Board was created in 1952 A.D., under the provisions of the Electric (Supply) Act 1948. This was succeeded by the present D.E.S.U. in 1958 under the M.C.D. Act 1957. For the efficient performance of electric supply in Delhi the D.E.S.U. was made one of the constituents of M.C.D..

4.3.1 ORGANISATIONAL SET-UP FOR TASK PERFORMANCE

(Reference Organisation Charts Figure Nos 4.15 to 4.18)

1. The activities of the Undertaking are broadly covered by its following departments :

(a) Engineering

(i) Generation

(ii) Distribution

(iii) Civil

(iv) Planning and Construction

(b) Stores

(c) Commercial

(d) Finance and Accounts

(e) General Administration

2. The Statutory Authority i.e. the General Manager, D.E.S.U. is responsible for :

(a) Generation & Supply of Electricity

(b) Providing Supplies of Electricity for licensees.

(c) Preparing and carrying out schemes for the generation and supply of electricity in accordance with the rules.

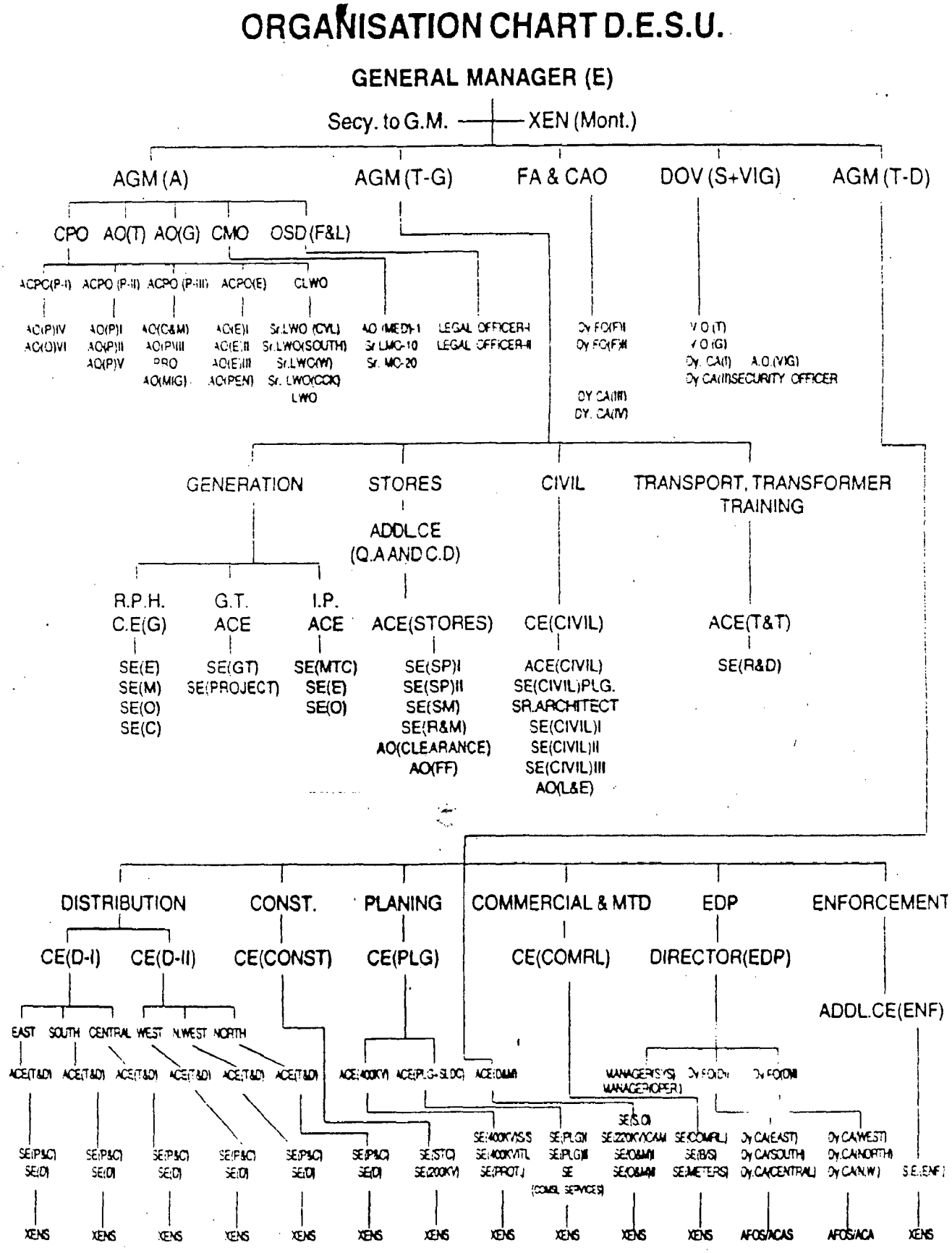
4.3.2 LOCATION & SUPPLY POLICIES

1. The transmission and distribution system comprise of the means by which electric energy is conveyed from a power station to the consumers. Power in bulk is transmitted from the generating stations to distribution centres with voltage stepped up through high voltage transformers, by transmission lines which are connected to sub stations enroute or at terminal point where the voltage is reduced and adjusted to varying voltage for distribution to consumers distribution to primary and secondary sub stations by overhead lines and to consumer lines or underground cables. The location of the sub stations of requisite capacity is mandatory in the planning stage itself. The D.E.S.U. itself undertakes all installation works.

4.3.3 LINKAGES

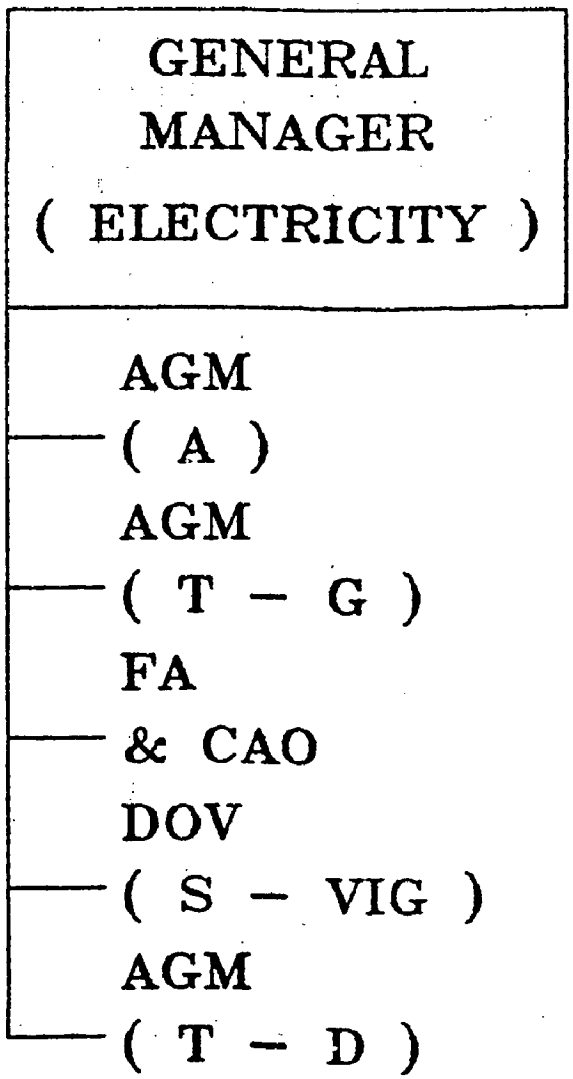
1. D.E.S.U.'s source of receipts are from the sale of electricity, meter rent, security deposits etc. Generally loans are available, the source being the Ministry of Energy and Ministry of Home Affairs and through the Delhi Administration according to the terms and condition of the Central Government and these are repayable with interest.

FIGURE 4.15


ORGANISATION CHART D.E.S.U.
GENERAL MANAGER (E)
Secy. to G.M.
XEN (Mont.)
AGM (A)
AGM (T-G)
FA & CAO
DOV (S+VIG)
AGM (T-D)
CPO
AO(T)
AO(G)
CMO
OSD (F&L)
ACPC(P-I)
ACPO (P-II)
ACPO (P-III)
ACPO(E)
CLWO
AO(P)IV
AO(O)VI
AO(P)II
AO(P)III
AO(P)V
AO(C&M)
AO(P)VIII
PRO
AO(MIG)
AO(E)I
AO(E)II
AO(E)III
AO(PEN)
Sr.LWO (CVL)
Sr.LWO(SOUTH)
Sr.LWO(W)
Sr. LWO(COK)
LWO
AO (MED)-I
Sr LMC-10
Sr. MC-20
LEGAL OFFICER-I
LEGAL OFFICER-II
Dy FO(F)I
Dy FO(F)II
DY CA(III)
DY. CA(IV)
V O (T)
V O (G)
Dy. CA(I)
A.O.(VIG)
Dy CA(II)SECURITY OFFICER
GENERATION
STORES
CIVIL
TRANSPORT, TRANSFORMER TRAINING
ADDL.CE (Q.A AND C.D)
R.P.H. C.E(G)
G.T. ACE
I.P. ACE
ACE(STORES)
CE(CIVIL)
ACE(T&T)
SE(E)
SE(M)
SE(O)
SE(C)
SE(GT)
SE(PROJECT)
SE(MTC)
SE(E)
SE(O)
SE(SP)I
SE(SP)II
SE(SM)
SE(R&M)
AO(CLEARANCE)
AO(FF)
ACE(CIVIL)
SE(CIVIL)PLG.
SR.ARCHITECT
SE(CIVIL)I
SE(CIVIL)II
SE(CIVIL)III
AO(L&E)
SE(R&D)
DISTRIBUTION
CONST.
PLANING
COMMERCIAL & MTD
EDP
ENFORCEMENT
CE(D-I)
CE(D-II)
CE(CONST)
CE(PLG)
CE(COMRL)
DIRECTOR(EDP)
ADDL.CE(ENF)
EAST
SOUTH
CENTRAL
WEST
N.WEST
NORTH
ACE(T&D)
ACE(400KV)
ACE(PLG+SLDC)
ACE(O&M)
MANAGER(SYS)
MANAGER(OPER.)
Dy FO(D)I
Dy FO(D)II
SE(P&C)
SE(D)
SE(STC)
SE(200KV)
SE(400KV/SS
SE(400KV/TL
SE(PROT.)
SE(PLG)I
SE(PLG)II
SE
(COMRL SERVICES)
SE(S.O)
SE(220KV/OAM
SE(O&M)I
SE(O&M)II
SE(COMRL)
SE(B/S)
SE(METERS)
Dy CA(EAST)
Dy CA(SOUTH)
Dy.CA(CENTRAL)
Dy.CA(WEST)
Dy.CA(NORTH)
Dy CA(N.W.)
S.E.(ENF.)
XENS
AFOS/ACAS
AFOS/ACA

D.E.S.U.

ORGANISATIONAL SET UP



PLEASE SEE FIGs 4.16 – 4.18 FOR DETAILS

FIGURE 4.16

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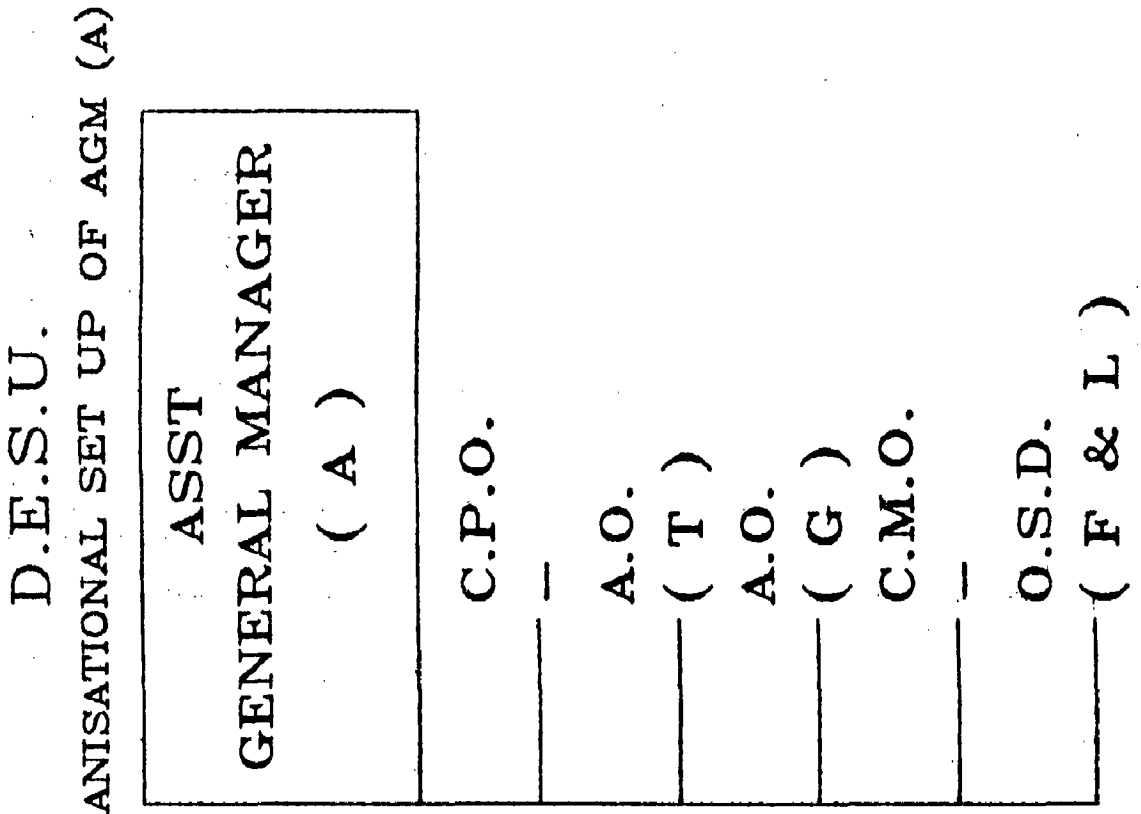


FIGURE 4.16

D.E.S.U.

ORGANISATIONAL SET UP OF AGM (T–G)

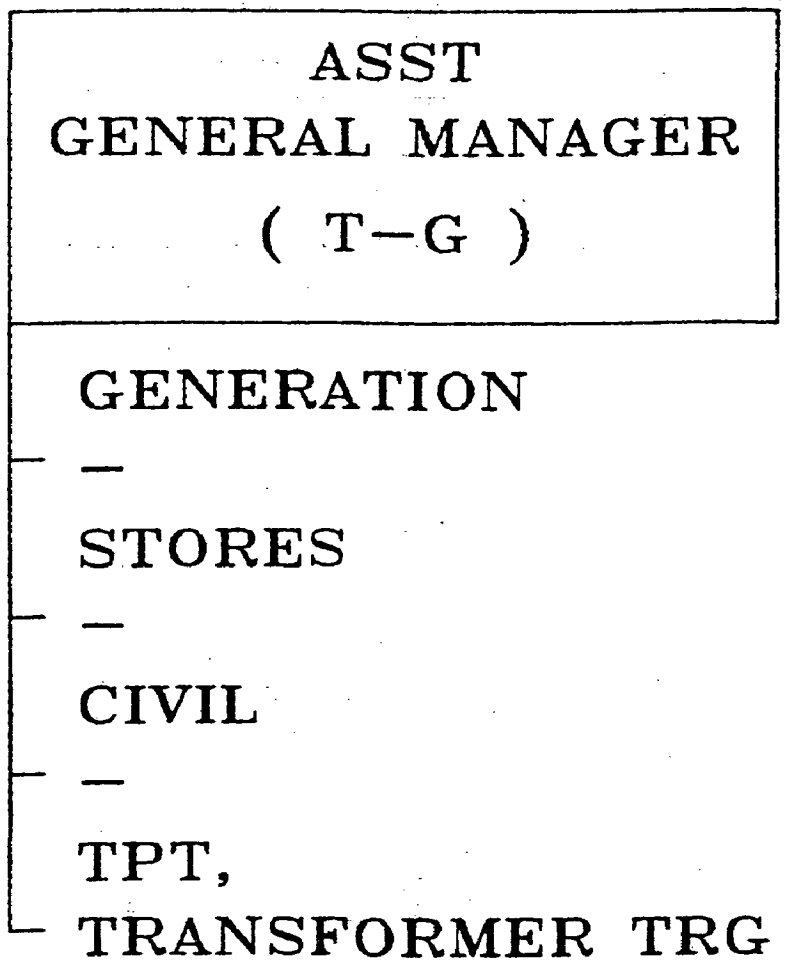


FIGURE 4.17

D.E.S.U.

ORGANISATIONAL SET UP OF AGM (T–D)

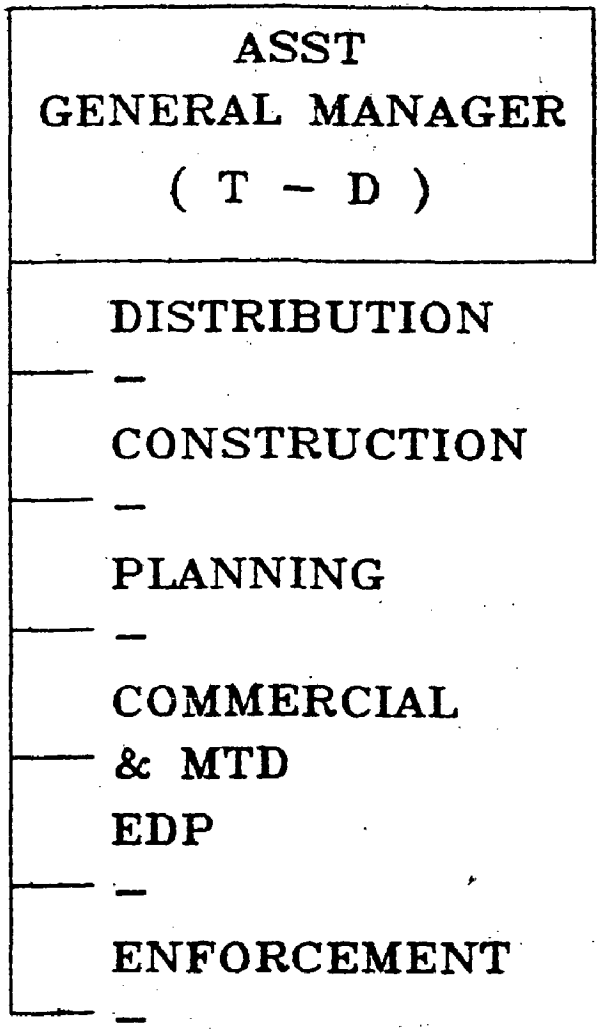


FIGURE 4.18

2. Policy decisions are mainly taken by the Delhi Electric Supply Committee whereas the plans are formulated by the Planning Department of D.E.S.U. which is under the Deputy Chief / Engineer (Planning). Sanctioning Authority is the Planning Commission in this regard, but the implementing authority of plans is the General Manager, D.E.S.U..

4.3.4 ADMINISTRATIVE STRUCTURE AND SPATIAL LINKAGES FOR MAINTENANCE MANAGEMENT

1. The responsibility of operation and maintenance of entire distribution network rests with the Distribution Wing of the Engineering Department. There are 26 Distribution Districts - each headed by an Executive Engineer. The Distribution Wing is divided into five independent circles - each under the charge of an Additional Chief Engineer.

2. There are 160 Complaint Officers functioning in the Distribution Wing for attending to "no current" complaints of the consumers. The incharge of "no current" complaint office is an Area Inspector assisted by a Telephone Operator. The Area Inspector has under him "no current" staff as well as maintenance staff.

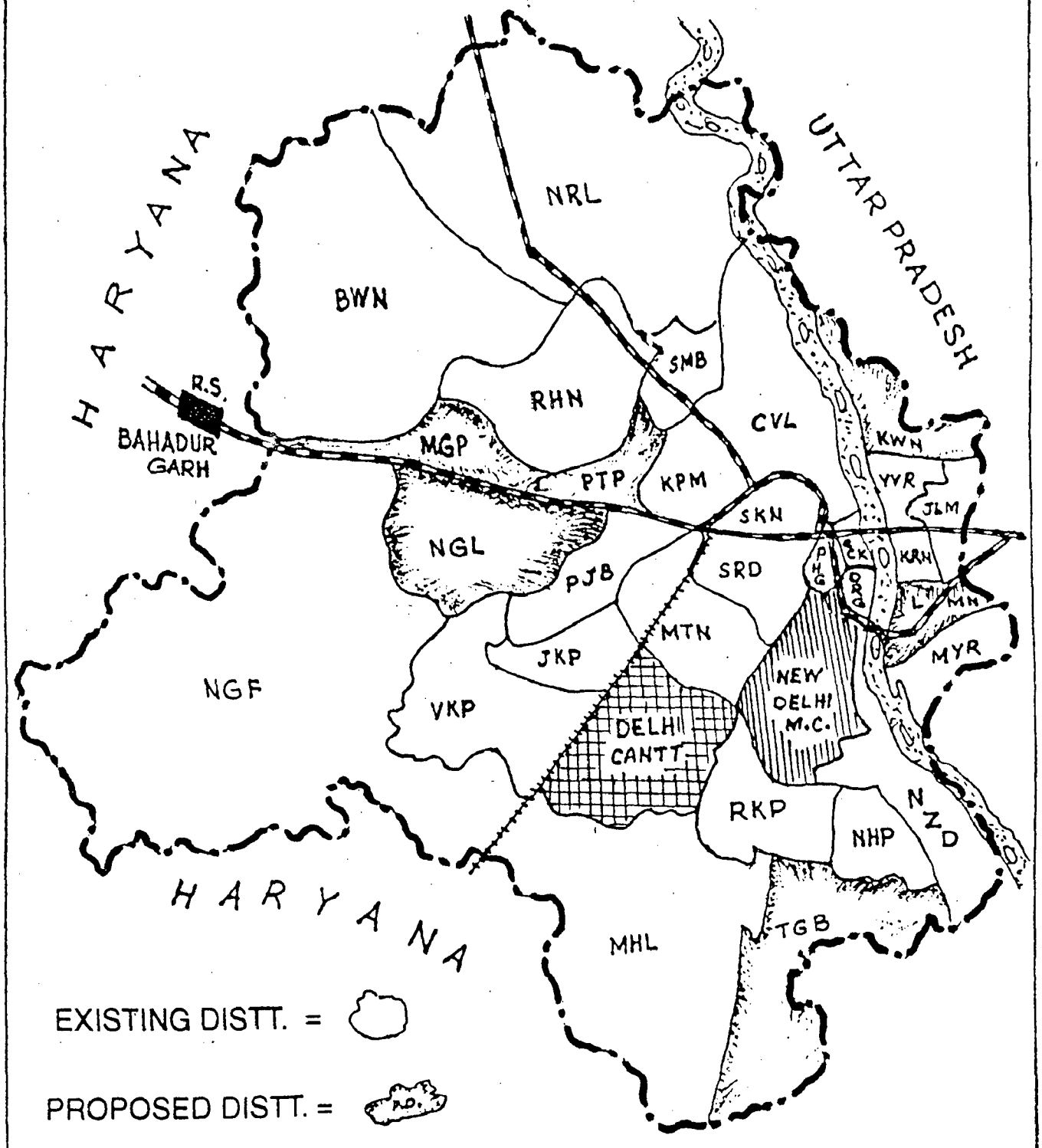
3. The complaints are first lodged with the Telephone Operator. A Mistry of the Maintenance Staff is then sent to the spot to examine the defect. If the staff at the "no current" office fails to overcome

the fault in the supply, the complaint is passed on to the District Office where it is attended by a Superintendent Engineer. All the complaints regarding staff as well as current failures are investigated and then supervised by him. District Engineers are instructed to remain in the office for attending public complaints between 12 to 1 p.m. on every working day. Sometimes petty faults are made complicated, that even a small breakdown will require at least 4 hours because of procedural bottlenecks. Nobody is authorised to attend to these petty faults without getting clearance from the system control, as a matter of fact one has to initiate the system from all other possible sources of power supply. Due to lack of an inadequate distribution system - there is a growing need for additional staff for providing better and personalised service to consumers.

4. For power breakdowns and H.T. fuse, complaints are lodged at the district level where a gang headed by an Executive Engineer (Emergency) takes care of such complaints. The information about such breakdowns can be received by the "no current" office from system control, which in turn gets much information from the Grid Power House. In case the current is failed due to certain internal faults, the consumer is informed to get it rectified from somewhere else. D.E.S.U. is however responsible only when there is no current available to the meter.

DELHI ELECTRIC SUPPLY UNDERTAKING

JURISDICTION OF EXISTING/PROPOSED DISTT.



4.4 LEGEND OF DISTRICTS (EXISTING AND PROPOSED)

S.NO.	CIRCLE/DISTT	NAME OD THE DISTT.
	NORTH WEST	
1.	SMB	SHALIMAR BAGH
2.	RHN	ROHINI
3.	NRL	NARELA
4.	BWN	BAWANA
5.	MGP	MANGOL PURI *
	NORTH	
1.	SKN	SHAKTI NAGAR
2.	KPM	KESHAV PURAM
3.	CVL	CIVIL LINES
4.	MTN	MOTI NAGAR
5.	PTP	PRITAMPURA
	WEST	
1.	JKP	JANAK PURI
2.	PJB	PUNJABI BAGH
3.	VKP	VIKAS PURI
4.	NGF	NAJAFGARH
5.	NGL	NANGLOI *
	SOUTH	
1.	RKP	R.K. PURAM
2.	MLI	MEHRAULI
3.	NZD	NIZAMUDDIN
4.	NHP	NEHRU PLACE
5.	TGB	TUGALAKABAD *
	CENTRAL	
1.	CCK	CHANDNI CHOWK
2.	DRG	DARYA GANJ
3.	PHG	PAHARGANJ
4.	SRD	SHANKAR ROAD
	EAST	
1.	KRN	KRISHNA NAGAR
2.	JLM	JHILMIL
3.	MVR	MAYUR VIHAR
4.	YVR	YAMUNA VIHAR
5.	KWN	KARAWAL NAGAR *
6.	LMN	LAXMI NAGAR

* PROPOSED

4.4 MANAGEMENT INFORMATION SYSTEM

1. The existing management information system is poor and inefficient. Coupled with the lack of a suitable criteria for evaluation of task performance, it offers negligible feedback to senior administrators and policy makers, resulting in poor task performance and sub standard maintenance management of residential areas. The present system of M.I.S. has three sources, as follows :

MANAGEMENT INFORMATION SYSTEM

Feedback from on field staff	Complaints by residents	Media Reports
- Poor Commitment of staff and indifferent attitude.	- Poor Awareness.	- Selective Reporting only.
	- Higher Tolerance Levels.	- Politically motivated.
- Procedural Bottlenecks delaying information transfer	- Poor Resident Administration Relationship.	- Reported only in case of Severe Crisis

4.5 INSTITUTIONAL CONFIGURATION IN POST OCCUPANCY MAINTENANCE MANAGEMENT OF HOUSING AREAS

1. Provision and maintenance management of services in the areas is a complex task, more so because :

(a) Some services like water supply, electric supply are delivered through a city level grid; while others like upkeep of gardens and parks etc. are locally restricted.

(b) Services are primarily financed by revenues generated by the local bodies at the city level and this enables the administration in principle to ensure some sort of an equity in the distribution of services among various economic groups.

(c) Many of these services are interlinked, the inadequate provision of one could grossly offset the efficiency of performance of the other services.

2. These services therefore, both in provision as well as their in maintenance management need to have an institutional setup for efficient performance. In Delhi, under the monitoring aegis of the M.C.D. various services are delivered by the following departments :

(a)	Water Supply	- DELHI WATER SUPPLY & SEWAGE DISPOSAL UNDERTAKING (D.W.S.S.D.U.)
(b)	Sewage Disposal	- D.W.S.S.D.U..
(c)	Electric Supply & Street Lighting	- DELHI ELECTRIC SUPPLY UNDERTAKING
(d)	Drainage	- Engineering Department of the M.C.D. for Repairs & Maintenance.
		- Conservancy and Sanitation Department of the M.C.D.for Cleaning / Desilting.
(e)	Garbage Collection	- Conservancy & Sanitation Department of the M.C.D..
(f)	Roads	- Engineering Department of the M.C.D..
(g)	Street Cleaning	- Conservancy & Sanitation Department of the M.C.D..
(h)	Parks, Playgrounds & Open Spaces	- Horticulture Department of the M.C.D..

Coordination among various Departments is essential.

CHAPTER 5

FIELD STUDY

5.1 RATIONALE FOR SELECTION OF CASE STUDY AREAS

1. For the express purpose of conducting an empirical study after having evolved a logical criteria, three case study areas were selected namely :

(a) Trilokpuri Resettlement Colony

(b) Kalkaji LIG Housing and

(c) Sewanagar - C.P.W.D. Housing.

2. Maintenance Management of Residential Areas in the post occupancy period is largely dependent, among other things, on the following :

(a) Type of development and level of provision of utilities and services.

(b) Institutional involvement in the delivery of services and maintenance of utilities.

3. For this reason, four criteria were fixed for selection of the case study areas, to ensure :

(a) Uniform institutional canvas for assessment & comparison.

(b) Different locations to provide an insight into locational differentials.

(c) Different types of developments - plotted & / or flatted.

(d) Differentials in level of provisions of utilities and services, that need to be maintained.

4. Thus all the areas are under the jurisdiction of M.C.D.. Trilokpuri is plotted development with poor provision of services and is located in the Trans-Yamuna area in the East Delhi, while Kalkaji has flatted development, with matured and higher level of services and is located in South Delhi. The third study area i.e. Sewanagar, was chosen to give an insight into a third dimension - where maintenance management of utilities and services by the M.C.D. is monitored and supervised by another body, the Government run C.P.W.D..

5. Other points of merit were the different articles and notes in various dailies and periodicals published in the city, which highlighted these areas as crisis areas. This point was ultimately and exactly responsible to conduct studies in these areas with a rational conviction.

5.2 PROFILE OF CASE STUDY AREAS

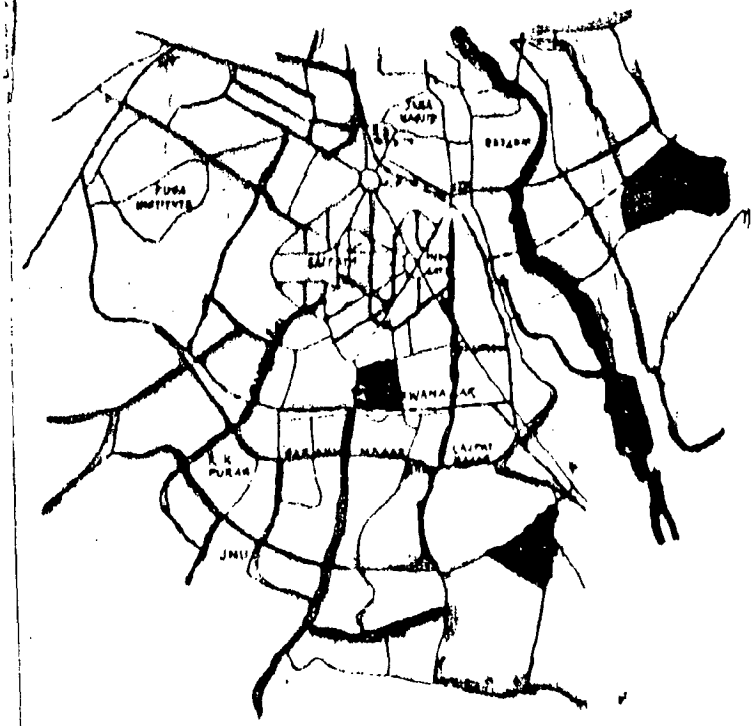
5.2.1 TRILOKPURI

BACKGROUND & LOCATION

1. The colony is a part of the Patparganj Complex in the Trans Yamuna area, Ward No. 52 of Shahdara (South) zone housing 3 Squatter resettlement colonies - Kalyanpuri, Khichripur & Trilokpuri, developed by D.D.A.. It came up in 1975-76 A.D. as part of a bigger Squatter resettlement programme. Maintenance Management of the area has changed hands between the D.D.A. & M.C.D. several times.

CASE STUDY

RATIONALE FOR SELECTION OF THE CASE STUDY AREAS



1. Post occupancy maintenance management activities dependent on :
   (a) type of development and level of provision of utilities and facilities.
   (b) Institutional involvement in the delivery of services and maintenance management.
   (c)

2. Criteria for selection of case study areas. Criteria were to ensure :
   (a) Uniform institutional canvas. for assessment and comparision.
   (b) Different locations to provide insight into locational differentials
   (c) Different types of development - plotted and/or flatted
   (d) Differentials in level of provision of utilities and facilities that need to be maintained.

3. All areas, under jurisdiction of the MCD. Trilokpuri is plotted development with poor provision of services and is located in east Delhi. Kalkaji is flatted, with higher level of provision and is located in south Delhi. Sewanagar was chosen to give into another dimension - role of extra agency C.P.W.D.

4. All three are not only low cost areas, but also low income.

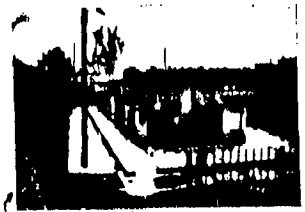
TRILOKPURI RESETTLEMENT COLONY



Developement - Mostly Multi-Storeyed


Platforms and other structures Constructed over the Drains.

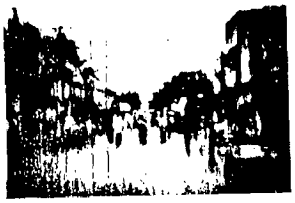

Only step to the Limit

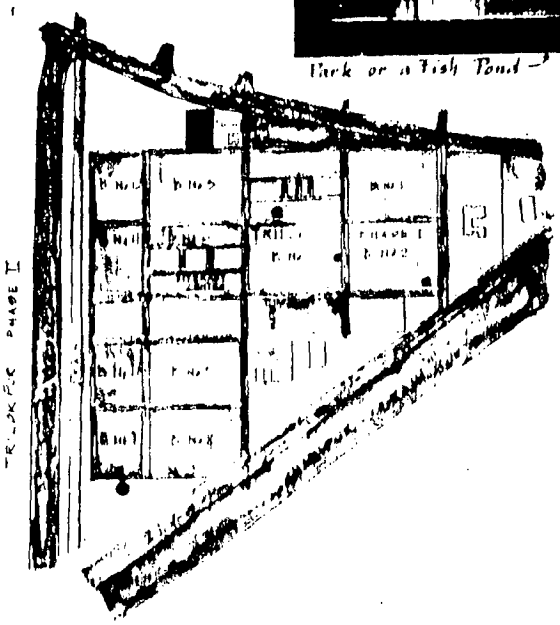

MCD Toilets
- No water no light
- Defaecating outside is certainly preferable.


Park or a Fish Pond


Encroachments
Roads or no Roads
- Who Cares ?


Garbage dumps
- A Heaven for pigs





TYPES OF DEVELOPMENT

2. Consists of only plotted development of 21 sq. mtrs each (3m x7m) with 500 plots approximately in each of its 12 blocks. The houses were constructed by the allottes, on plots with no setbacks on any side. Now, most of the houses are multi storeyed (upto 4 Storeys) and a few are single storeyed.

SOCIO ECONOMIC PROFILE

3. Majority of the residents are low income, and first generation rural migrants, they are primarily service class, or are engaged in informal trades and about 35 % of the original allottes have sold off their plots and moved out. Level of literacy is low. There are various residents associations in the area. There is a sizable squatter population in the area.

WATER SUPPLY

4. The area does not have a water storage facility. Originally, the water supply was from tube wells. Later after the breakout of an epidemic in the late 1980's each plot was provided a single tap facility on the roadside and the handpumps became redundant, though they continue to be used for non-cooking purposes. The water supply is for 24 hours, though in summers the water only trickles. The area has a water supply office. Water charges are highly subsidised and residents have to pay a flat monthly rate of Rs. 8 only.

SEWERAGE

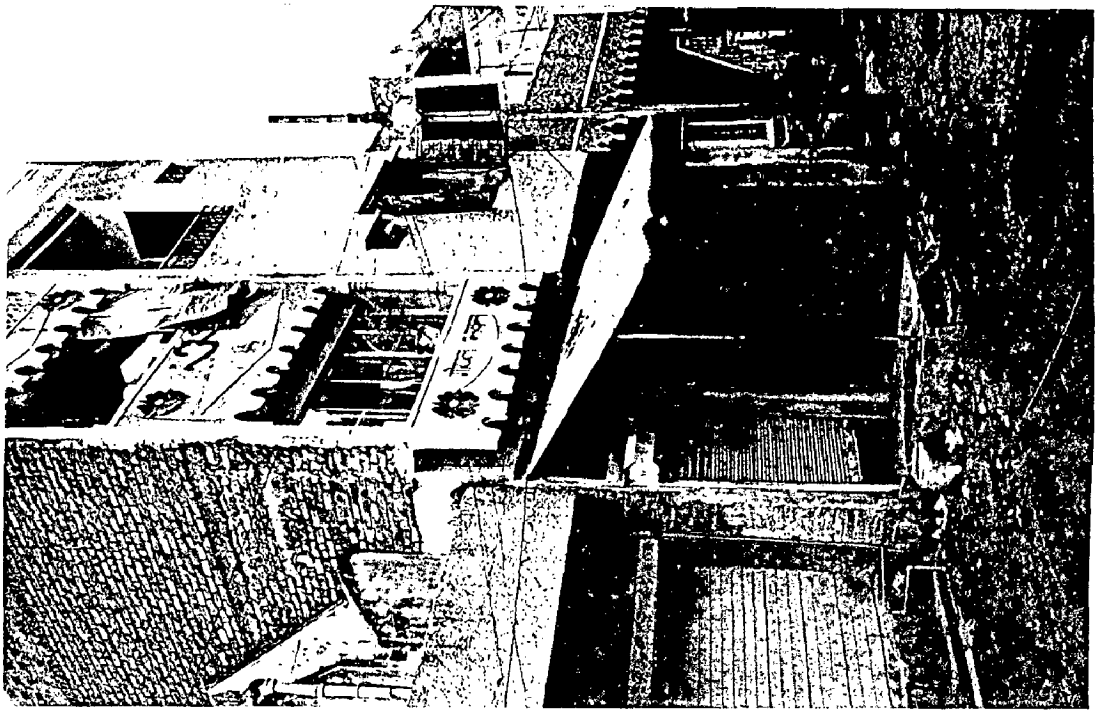
5. The entire area is being provided with Sewerage system, which is not yet functional. As of now, the entire area is unsewered. But for a few stray cases, none of the plots have individual toilet facility and the residents have to depend on M.C.D. provided 12 seater community toilets. Each block has two of such toilets. Additionally blocks 1, 2, 3, 4, 9 & 12 have Sulabh Community toilets. None of the M.C.D. toilets have water supply or lighting provision and are connected to septic tanks, which are cleaned only once a year or when the need arises. In blocks 9, 10, 11 & 12 M.C.D. Community toilets have been closed down. The agency has two Schorling sewer cleaning equipments.

DRAINAGE

6. Drains are brick-lined, but with absolute lack of maintenance. None of the drains are covered and are on the side of the road just in front of the houses. Most of the residents have covered them by building platforms over them, resulting in hindrances in cleaning. With the lack of sewerage system, all waste water flows into the drains. The drains are subject to much misuse by residents and agency complains of resident hostility in case of a cleaning programme. All the drains are subject to regular choking and overflowing, though there is a provision of desilting them once a year, before monsoons.

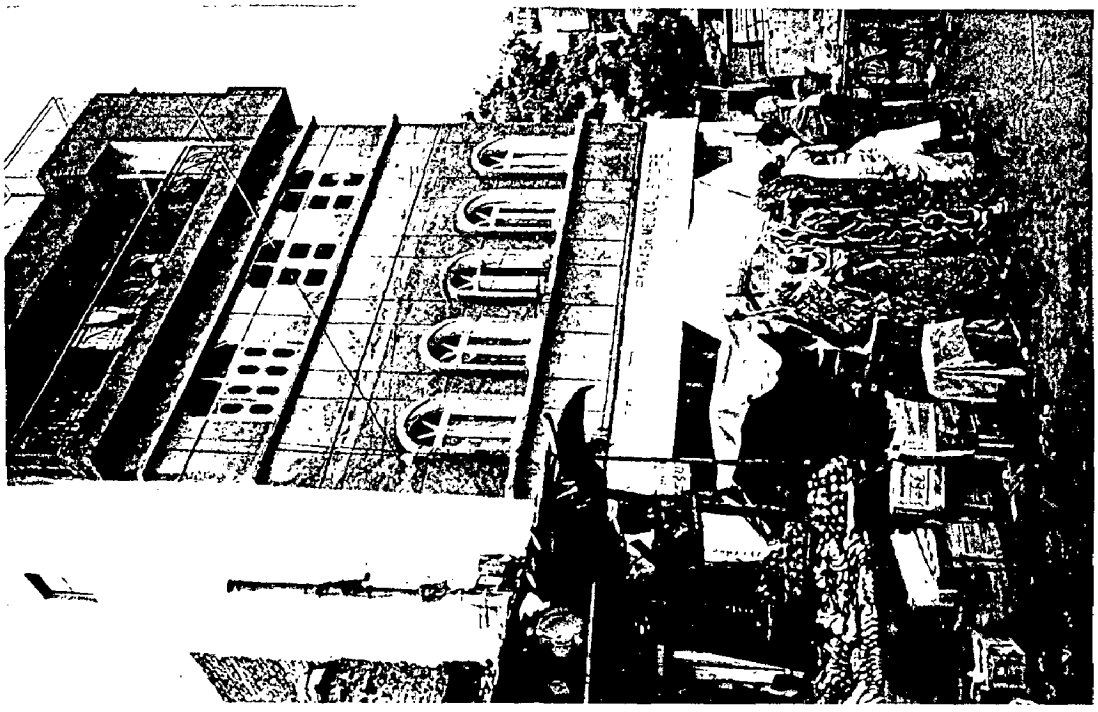
CASE STUDY – TRILOKPURI

PLATE NO. 5.1



DEVELOPMENT - NOW MOSTLY MULTISTOREY

PLATE NO. 5.2

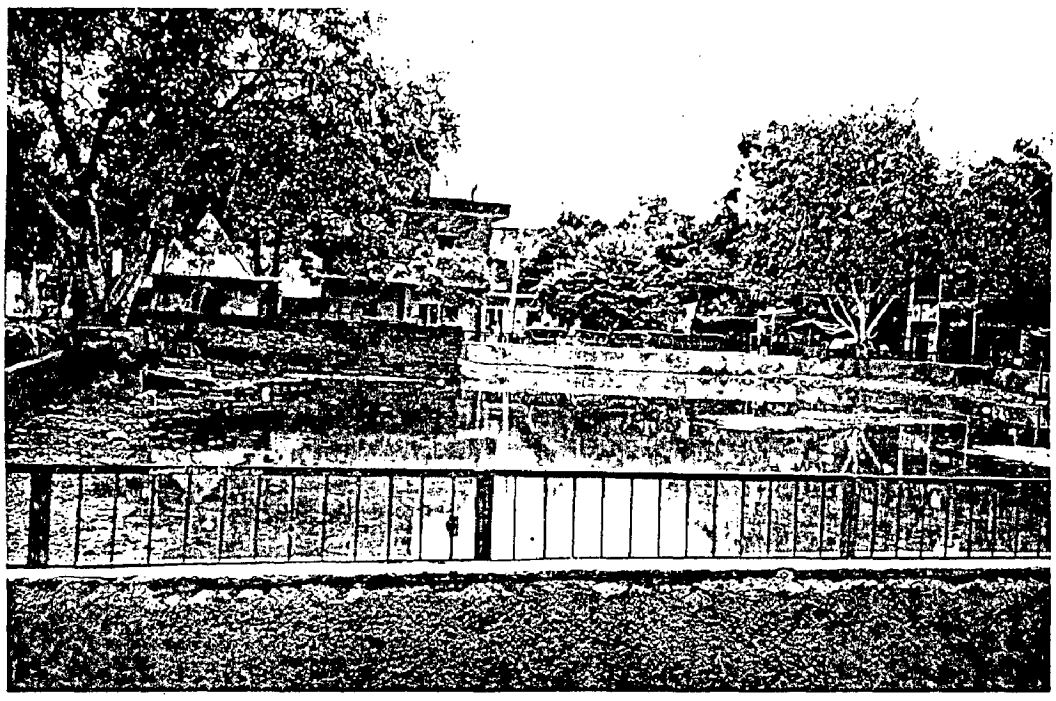


ONLY SKY IS THE LIMIT

PLATE NO. 5.3

WATER SUPPLY - SINGLE TAP CONNECTION IN FRONT OF HOUSES
DRAINAGE - PLATFORMS AND OTHER STRUCTURES CONSTRUCTED OVER DRAINS

PLATE NO. 5.4



GUESS WHAT - A PARK OR A FISH POND

PLATE NO. 5.5

M.C.D. TOILETS - IN THE STATE OF RUINS

PLATE NO. 5.6

SULABH COMMUNITY TOILETS - NEAT AND CLEAN

PLATE NO. 5.7

STREET CORNERS AS GARBAGE SPOTS

PLATE NO. 5.8

GARBAGE SPOTS - A HEAVEN FOR PIGS

PLATE NO. 5.9

ENCROACHMENTS ON EITHER SIDES OF THE MAIN ROAD.

PLATE NO. 5.10

ROAD OR NO ROAD - WHO CARES ?

GARBAGE COLLECTION

7. There are six garbage dumps in the area, inadequately used, subject to poor and infrequent collection which attracts stray animals, pets and rag pickers who enhance the nuisance by spreading the waste all over. The access to some of the dumps have been blocked by squatters, making collection difficult. Garbage dumping at unintended spots is very common.

ROADS

8. The main roads are 60 feet R.O.W. and are heavily encroached on either sides by squatters and informal establishments. There exists 5.04 miles of asphaltic roads. Internal roads are 3.6 m wide, brick paved and these too are also heavily encroached by residents. The road surfaces are very poor and subject to water logging in every monsoon. Street cleaning is rare.

ELECTRIC SUPPLY AND STREET LIGHTING

9. Electric supply is a rare commodity in this area. Non availability of electricity for a period of 15 to 20 days at a stretch, is a very common experience. At times, electricity is available only for 2 hours in the morning and 2 hours in the evening.

10. Though provision of Street lighting is there, none of them are working since the beginning, instead it is a source for residents to tap electricity illegally from the poles. Recently on one or two occasions when V.I.P.'s visited the area these street lights were made functional by D.E.S.U..

PARKS AND PLAYGROUNDS

11. Parks and playgrounds are very badly maintained and are incapable for being satisfactorily used for intended purposes. No horticulture is done and no park furniture exists. They are mostly located at the edge of each block along the roads. The one's at the interior are housed alongside the community toilets and are infested with garbage, stray animals etc.

AGENCY INVOLVEMENT IN MAINTENANCE MANAGEMENT

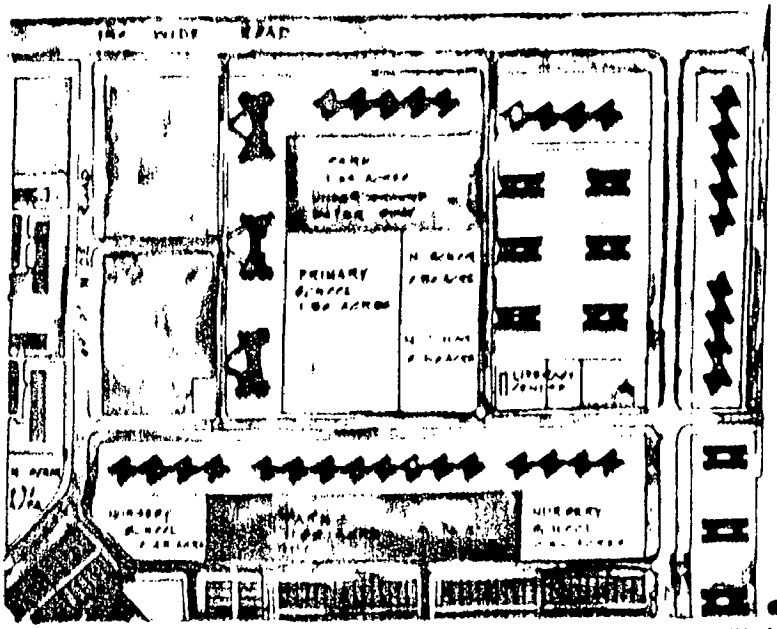
12. The M.C.D. works department office in the area, headed by an Assistant Engineer and a Junior Engineer is responsible for upkeep of roads, lanes, drains and the community toilets. Drains above 4'0" width are maintained by the D.W.S.S.D.U. who have Sanitary Inspector deputed for the purpose. There are 120 safai karamcharis and 51 beldars for 4 colonies put together. Sulabh International Limited maintains six toilets in the area.

5.2.2 PROFILE OF KALKAJI D.D.A. FLATTED TENEMENTS

BACKGROUND & LOCATION

1. The colony is adjacent to Alaknanda in South Delhi; in Ward No. 11 of South zone of the M.C.D.. It came up in 1971 A.D. and was developed by the D.D.A..

CASE STUDY
THE GLIMPSES



Roads water topped

Type of development originally 4, now 5-6 storeyed

Shops & - Mix housing on a shopping street

KALKAJI D.D.A. L.I.G. FLATS

Water Storage tank near block L-2

Street runners as dumping spot

Shops well maintained

Open Areas adjacent to flats - Shrubs maintained

Type of development - Double Storeyed flats with open roads - roads maintained

Heavily encroached roads

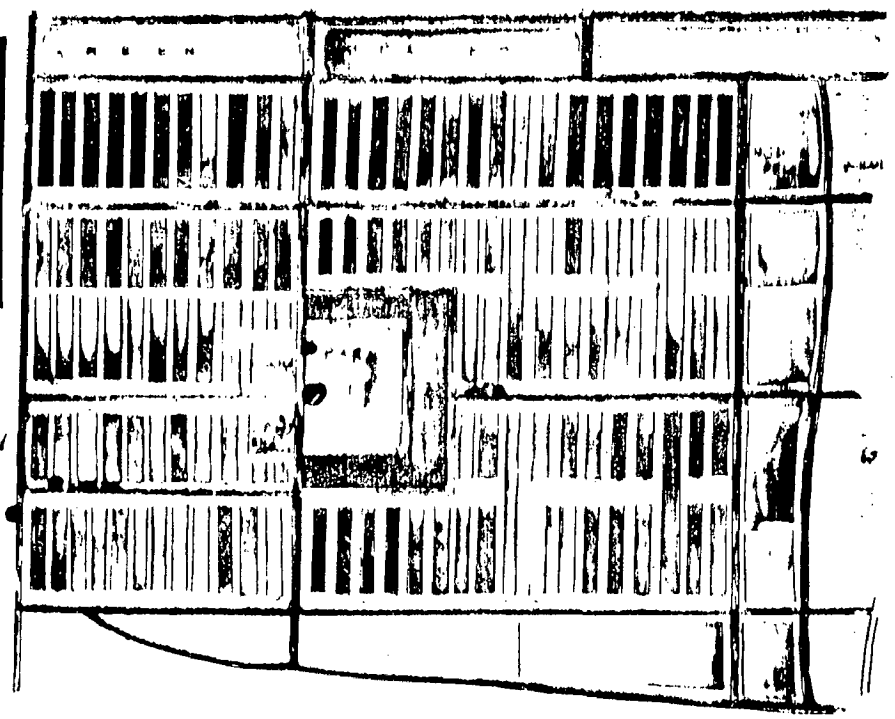
A Public Urinal

SEWANAGAR C.P.W.D. TYPE 1 HOUSING

One of the four water topped roads

Garbage Dumps

Shops well maintained and well defined



TYPES OF DEVELOPMENT

2. Consists of four storeyed tenements, (53 in numbers and consisting of 1248 flats, clustered around open courts) and LIG flats in two storeyed low housing.

SOCIO ECONOMIC PROFILE

3. Most of the residents are low income, a few are of middle income category. A sizable number of flats (200 numbers) are with Indian Airforce for housing their lower ranks. Very few of the original allottees remain. Many of the ground floor flats have been partially converted into commercial establishments. Most of the LIG flats are now occupied by middle income group. There is no resident association of the occupants of 4 storeyed tenements.

WATER SUPPLY

4. Water supply is by the D.W.S.S.D.U. at restricted timings. Because of poor pressure, most of the upper floor residents have installed boosters, which affects the water supply of lower floor residents too. This problem is not so apparent in the LIG flats. There are water storage tanks near Block L-2.

SEWERAGE

5. All tenements have independent toilets attached to the sewers.

DRAINAGE

6. Open, bricklined drains run along the road. These are in a bad state of maintenance and are prone to chocking and overflowing.

GARBAGE COLLECTION

7. Originally there were two masonry dalao type of garbage collectors in the area, which were demolished by the residents and converted into commercial establishments. Most of the domestic disposal is through private arrangements.

ROADS

8. The roads, after a lot of complaining, are in a much improved state now. All the roads are tarred. They are prone to severe water logging during monsoons. Roads are not frequently cleared and are encroached upon in many portions.

ELECTRIC SUPPLY AND STREET LIGHTING

9. The condition of street lighting in terms of maintenance is good.

PARKS AND PLAYGROUNDS

10. Parks in the area are very well maintained. The cluster courts are in a shabby condition and not subjected to intended uses.

AGENCY INVOLVEMENT IN MAINTENANCE MANAGEMENT

11. The entire area is absolutely under the control of M.C.D..

CASE STUDY – KALKAJI

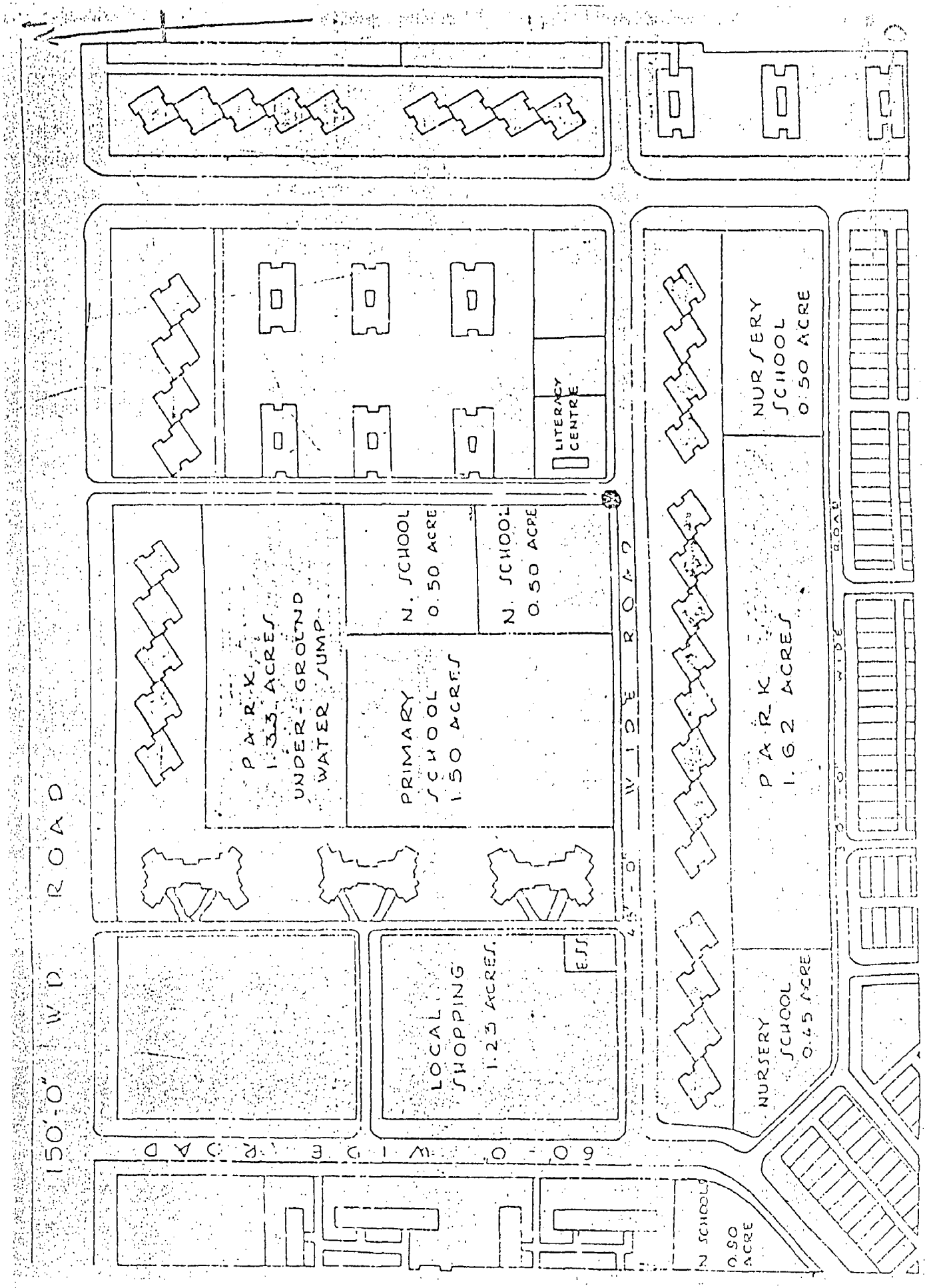
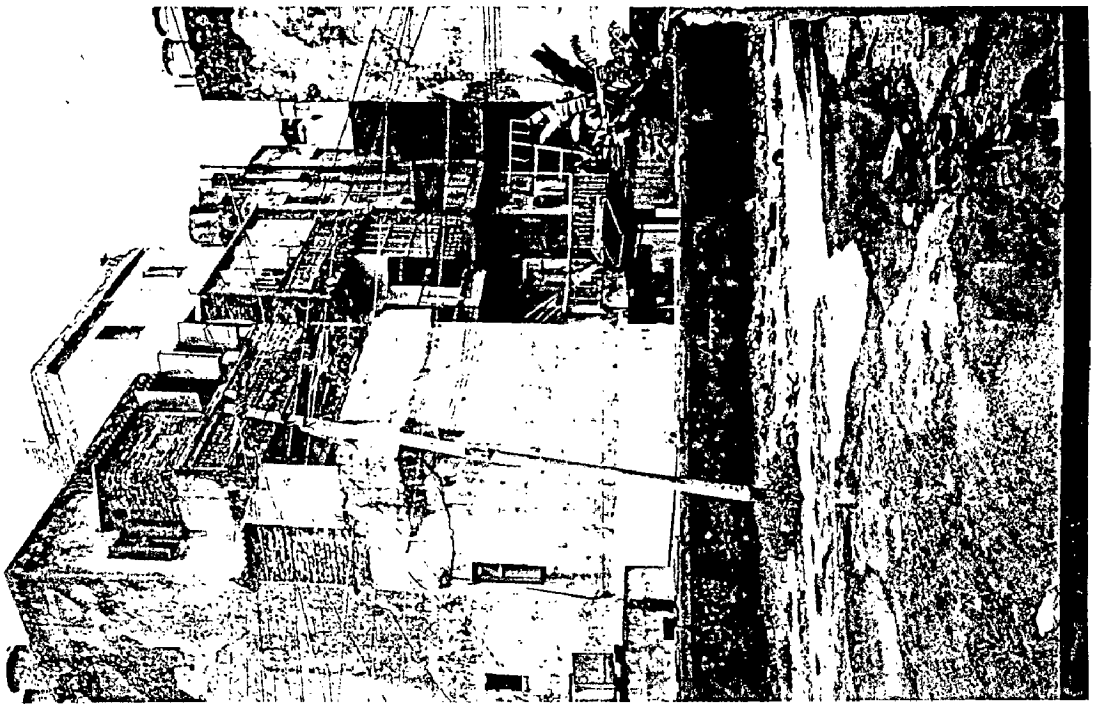


PLATE NO. 5.11



DEVELOPMENT - ORIGINALLY 4 STOREY, NOW 5-6 STOREY

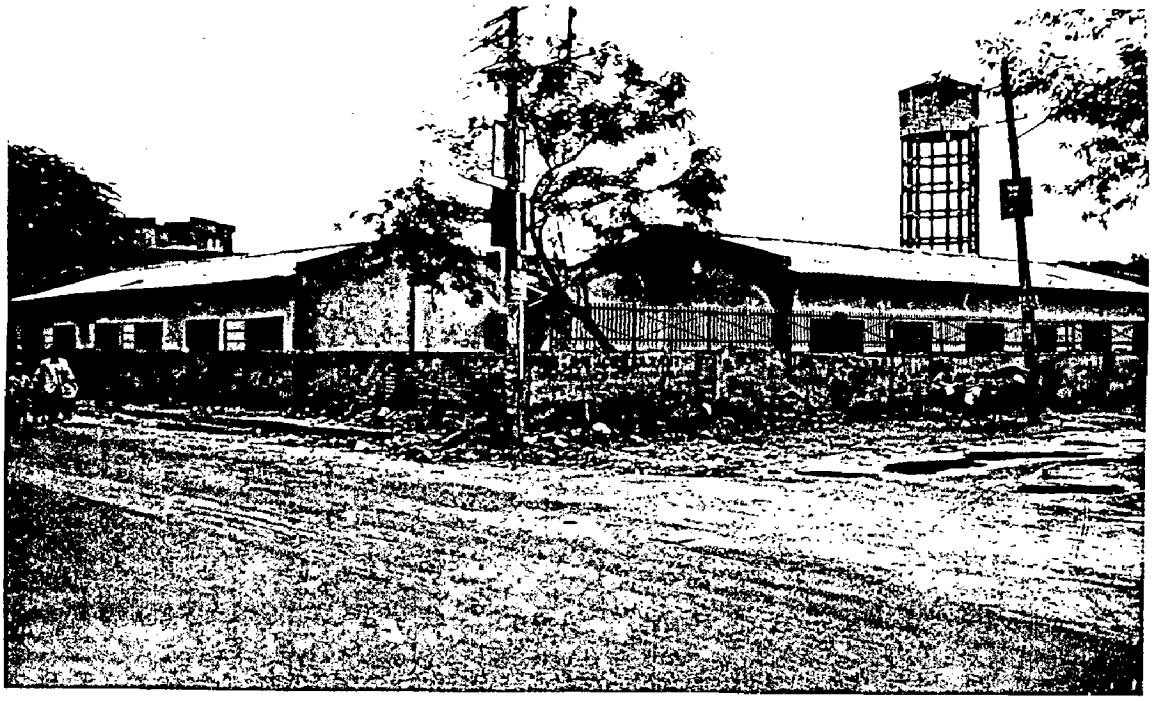
PLATE NO. 5.12

ROADS - WATER LOGGED

PLATE NO. 5.13

A WELL MAINTAINED PARK

PLATE NO. 5.14

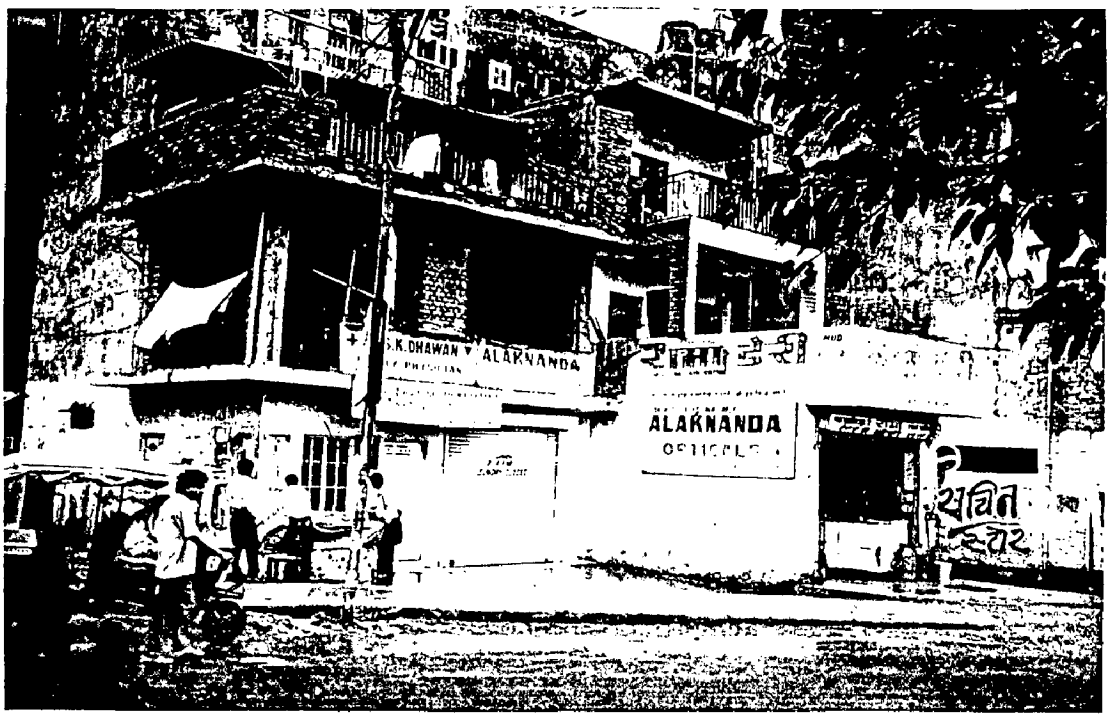


STREET CORNERS AS DUMPING SPOTS

PLATE NO. 5.15

GUESS LIG HOUSING OR A SHOPPING STREET

PLATE NO. 5.16



ENCROACHMENTS – NO BOUNDARIES NO LIMITS

5.2.3 PROFILE OF SEWANAGAR

C.P.W.D. TYPE 1 HOUSING

BACKGROUND & LOCATION

1. The colony is adjacent to Defence Colony, South Delhi, in Ward No. 5 of New Delhi Zone of the M.C.D.. It came up in 1948 A.D., developed by the Central Public Works Department and was intended to have Class IV Staff of the Central Government.

TYPES OF DEVELOPMENT

2. Consists of only double storeyed flatted development with 2480 Type 1 flats in 310 blocks, having wide open spaces between them.

SOCIO ECONOMIC PROFILE

3. Most of the residents are Class IV Government Employees, while a few others are sub tenants belonging to the lower income group. There are two residents associations in the area.

WATER SUPPLY

4. Water supply by the M.C.D., though internal maintenance is done by the C.P.W.D.. The area has no water storage facility and is served by the service reservoirs at Greater Kailash. There are very few handpumps in the area. The supply lines are subjected to frequent chokage and leakage, which is due to rusting and age.

SEWERAGE

5. The area is sewered. There are no community toilets. However a set of bath and W.C. is shared by the occupants in each floor. There is a public urinal adjacent to the park within the market. Chokage complaints in the sewer are frequent, as the lines have become very old.

DRAINAGE

6. All the drains are covered and therefore less subject to misuse or problems. There are drains on both sides of the road.

GARBAGE DISPOSAL

7. Garbage disposal is done through private arrangement by the residents. There are two Masonry Dalaos in the area, but no concrete bins. The garbage collection is entirely manned by the M.C.D..

ROADS

8. All roads are asphalted, though there are pedestrian walkaways which are concreted. On the C.G.H.S. Dispensary side, they have been encroached upon by informal commercial establishments. The roads are in a fair state of maintenance though they sometimes get water-logged during the monsoons. Street cleaning is regularly done.

CASE STUDY – SEWANAGAR

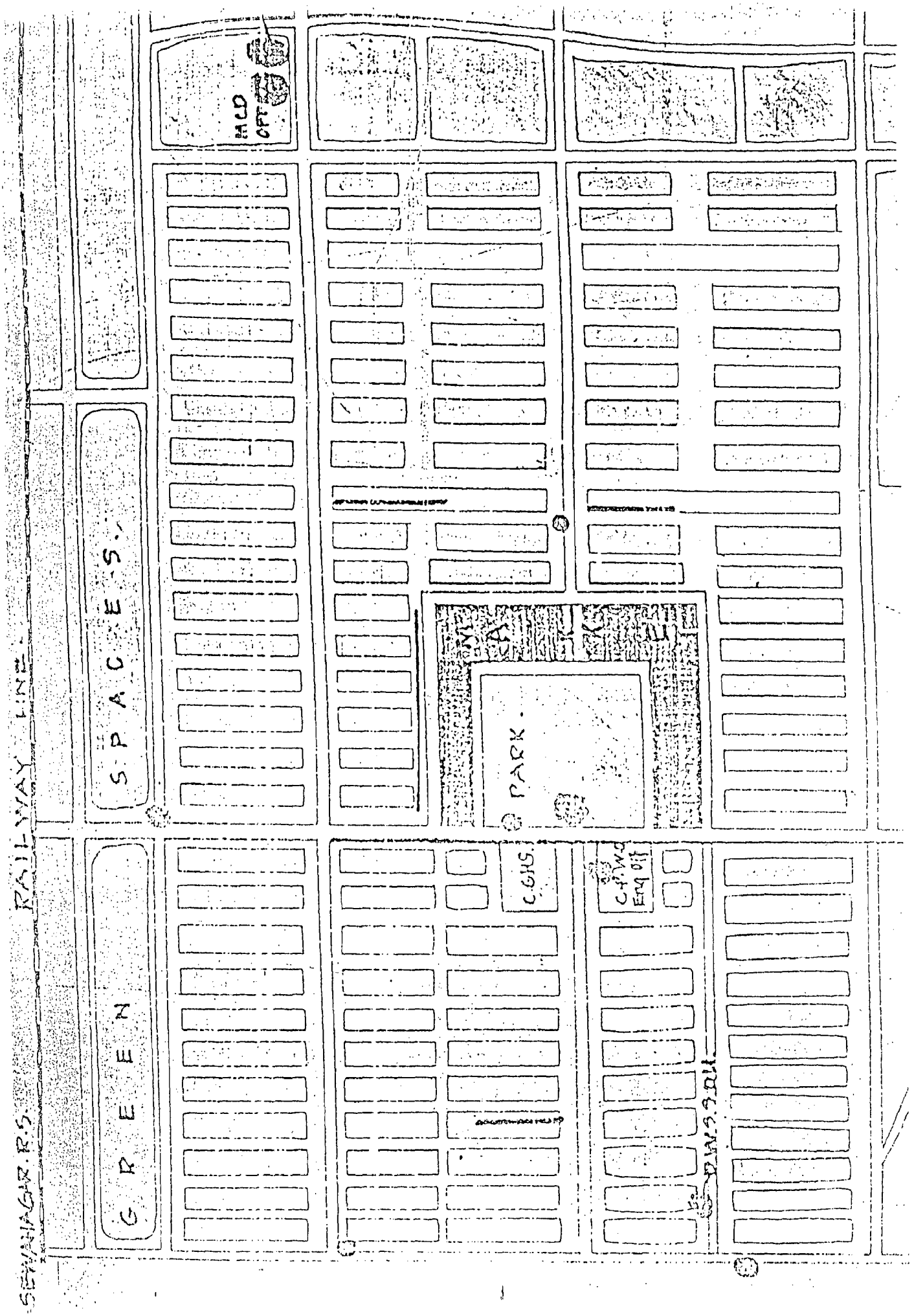


PLATE NO. 5.17

DEVELOPMENT - DOUBLE STOREY FLATS WITH WELL MAINTAINED WIDE ROADS

PLATE NO. 5.18

OPEN AREAS ADJACENT TO FLATS - POORLY MAINTAINED

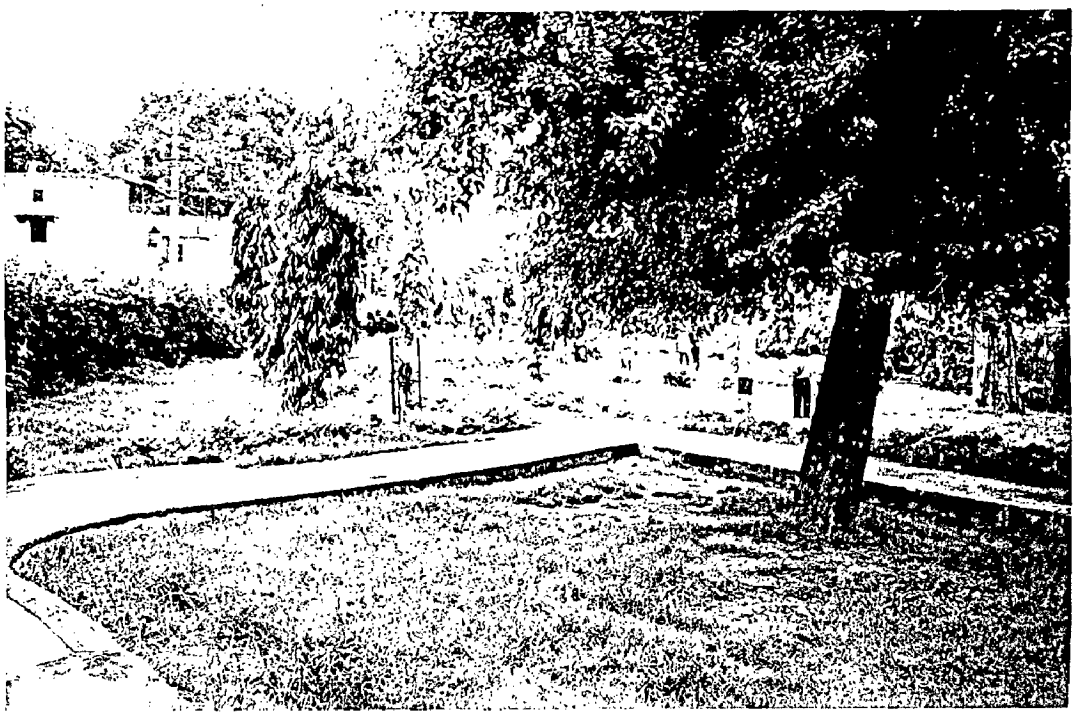
PLATE NO. 5.19

A HEAVILY ENCROACHED ROAD

PLATE NO. 5.20

A PUBLIC URINAL

PLATE NO. 5.21



A WELL MAINTAINED PARK

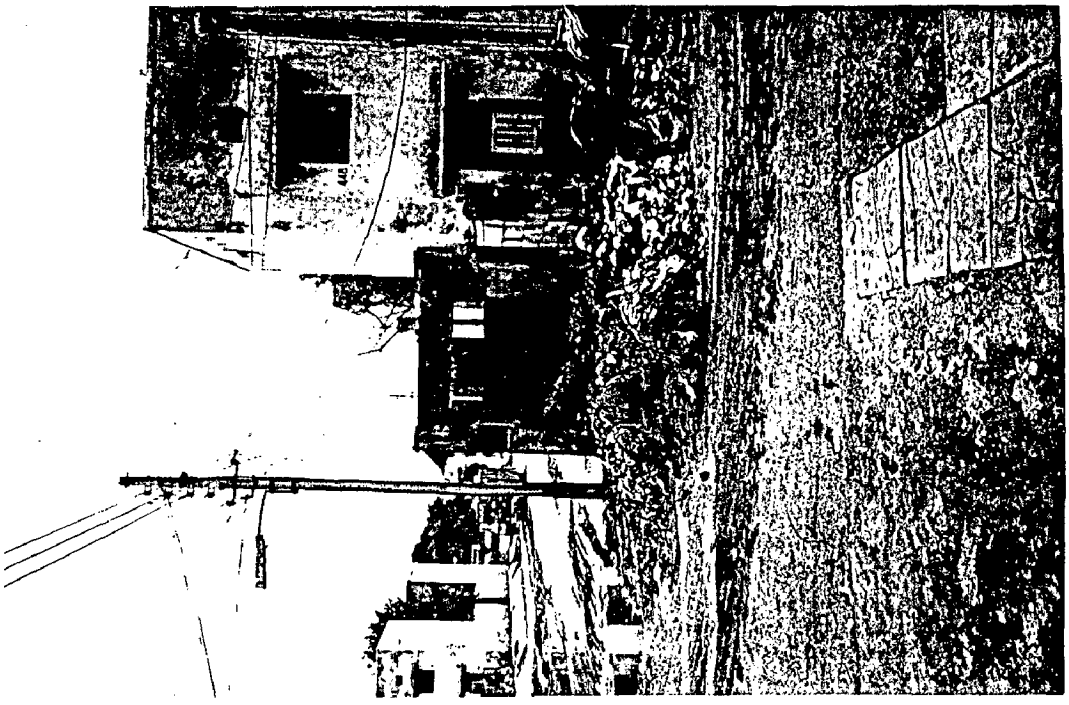
PLATE NO. 5.22

A WELL MAINTAINED LADIES PARK

PLATE NO. 5.23

ONE OF THE FEW WATER LOGGED ROADS

PLATE NO. 5.24



A GARBAGE DUMP

ELECTRIC SUPPLY AND STREET LIGHTING

9. Though all the blocks are electrified, complaints of failure due to faulty and poor condition of wiring are frequent. There is no separate sub station for this colony. Street lighting facilities exist, but are in an unsatisfactory state of maintenance.

PARKS AND PLAYGROUNDS

10. There are only three formal parks in this area, newly developed by the C.P.W.D. and maintained by the M.C.D.. The state of maintenance is fair. Other open spaces are at places squatted upon, both by informal commercial establishments as well as by resident squatters.

AGENCY INVOLVEMENT IN MAINTENANCE MANAGEMENT

11. All internal services of water supply and sewerage are maintained by the C.P.W.D., whereas the trunk services are maintained by the M.C.D..

12. There is a complaint office of the C.P.W.D. in the area manned by one Assistant Engineer, two Junior Engineers, one Sub-Divisional Clerk, two Enquiry Clerks, five Masons, four Plumbers, four Sewermen and four Carpenters. There is an annual repair fund, which is based on a yardstick and does not change with age.

5.3 ANALYSIS & FINDINGS

(Based on the Questionnaire results obtained through survey)

5.3.1 MAINTENANCE MANAGEMENT OF WATER SUPPLY

(Reference Table 5.1)

ACCESS TO WATER SUPPLY

1. Almost all the respondents in all the three areas have access to municipal filtered water supply. A small percentage (5%) in Trilokpuri have not availed of the facility because of personal reasons. (Refer Figures 5.1 and 5.2)

NUMBER OF HOURS OF SUPPLY

2. Considering number of hours of supply as one of the measures of availability, it is observed that those excepts considerable inter-locality and intra-locality variations. As reported by the respondents in Trilokpuri Phase I, all the blocks get 24 hours water supply a day, compared to 2-4 hours in Kalkaji & 4-5 hours in Sewanagar. (Refer Figures 5.1 and 5.3) Results in

(a) excessive hoarding of water

(b) resultant wastage of water.

AVERAGE CONSUMPTION PER DAY

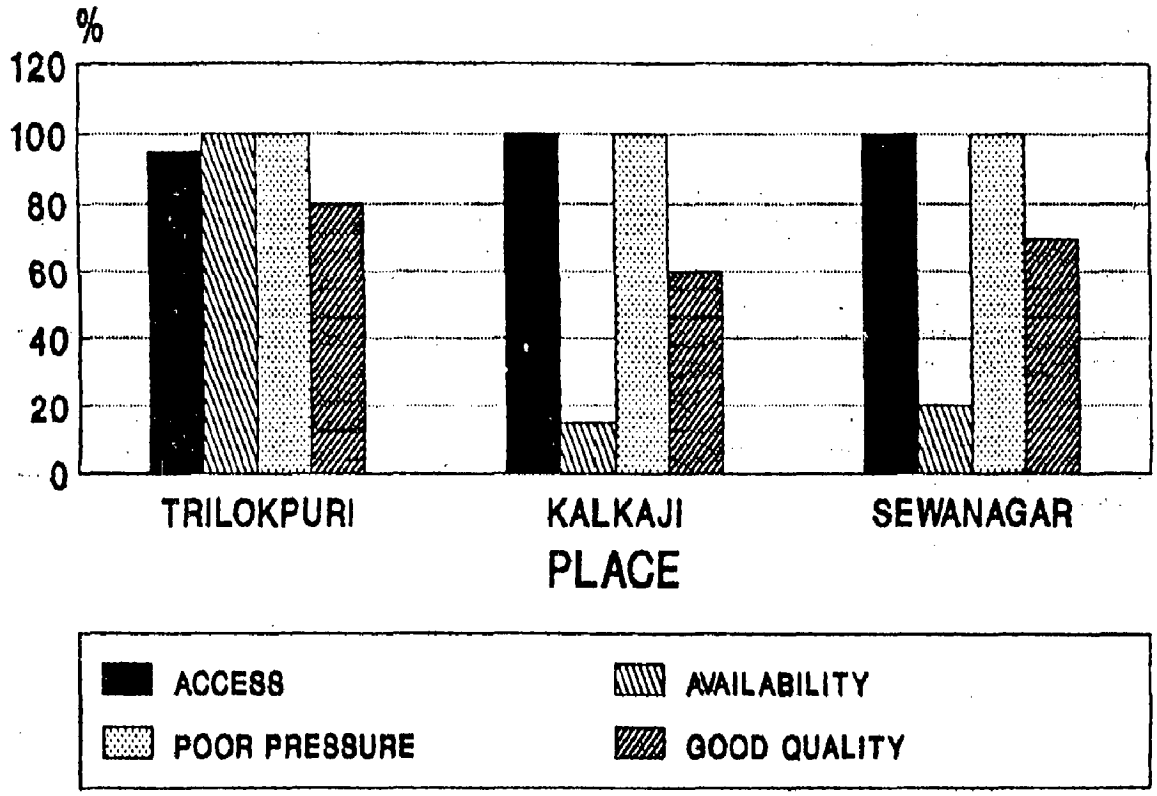
3. The average consumption per day as reported by the respondents, show only minor variation in the three localities. The average consumption of water (cooking and other activities, put together) works out to about 45 liters per capita, per day.

TABLE 5.1

RESIDENTS PERCEPTIONS OF WATER SUPPLY

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Access to Facility	95 %	100 %	100 %
2.	Inadequacy to Supply	50 %	100 %	100 %
3.	Poor Quality of Supply	20 %	40 %	30 %
4.	Inadequacy of Pressure of Supply	100 %	100 %	100 %
5.	Inappropriate Supply Timings	-	85 %	100 %
6.	Proper Collection & Storage Facility	10 %	100 %	35 %
7.	Metered Connectors	-	100 %	100 %
8.	Dependence on Public Stand Posts / Tubewells etc.	10 %	25 %	30 %
9.	Frequent Breakdowns in Water Supply	40 %	40 %	70 %
10.	Complained at Agency Office	20 %	20 %	70 %
11.	Delays in Complaint Redressal	100 %	70 %	40 %
12.	Errant / Irregular Billing	65 %	45 %	40 %
13.	Familiarity with Newspaper Announcements	20 %	60 %	60 %
14.	Television as Effective Media	90 %	100 %	100 %

WATER SUPPLY
ACCESS, PRESSURE, QUALITY & AVAILABILITY (NUMBER OF HOURS OF SUPPLY)



SOURCE : FIELD SURVEY

FIGURE 5.1

WATER SUPPLY - ANALYSIS

ACCESS TO WATER SUPPLY

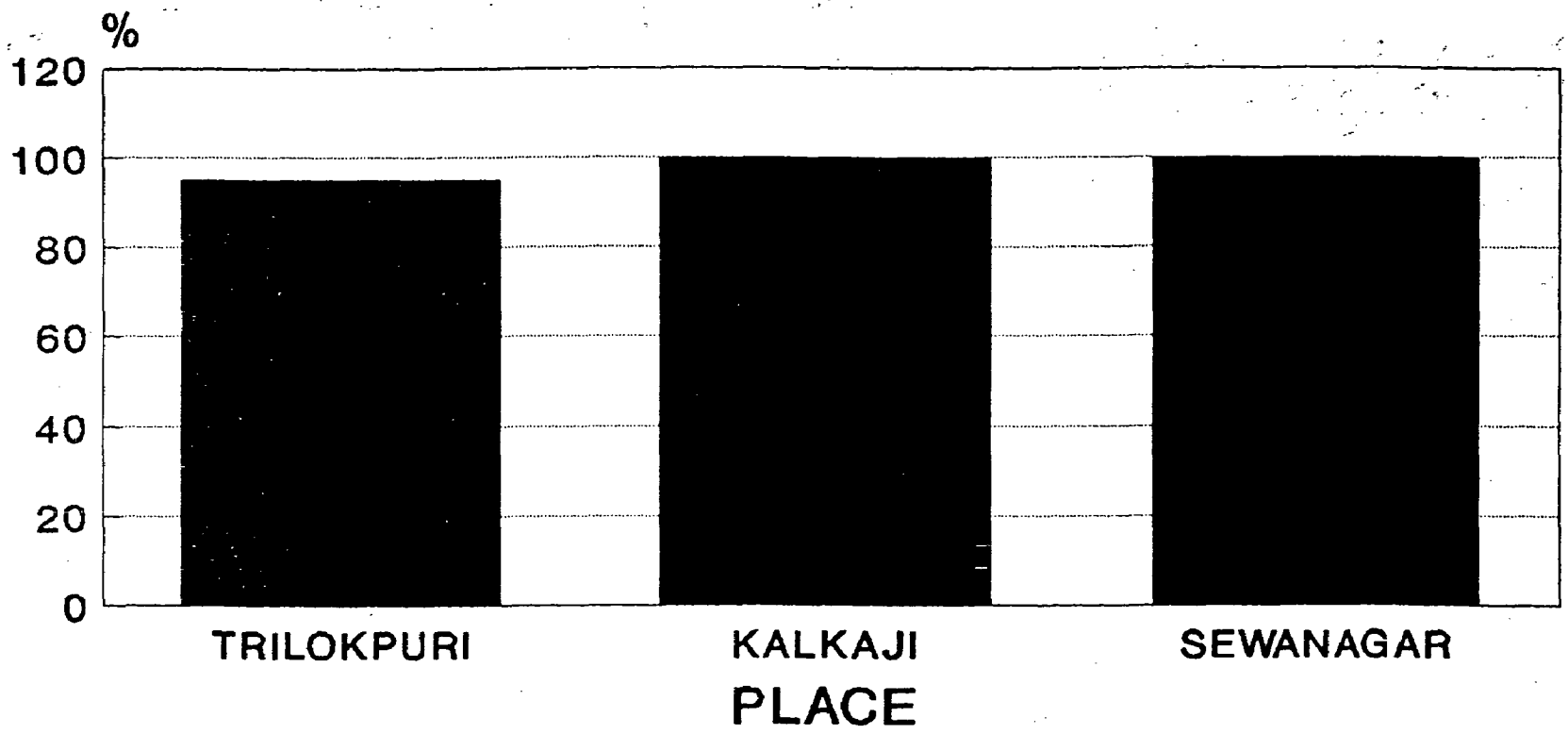


FIGURE NO : 5.2

EVERYONE HAS ACCESS TO THE FACILITY LESS A SMALL PERCENTAGE IN TRILOKPURI WHO DID NOT AVAIL OF IT DUE TO PERSONAL REASONS.

WATER SUPPLY - ANALYSIS

AVAILABILITY OF WATER SUPPLY

NUMBER OF HOURS OF SUPPLY

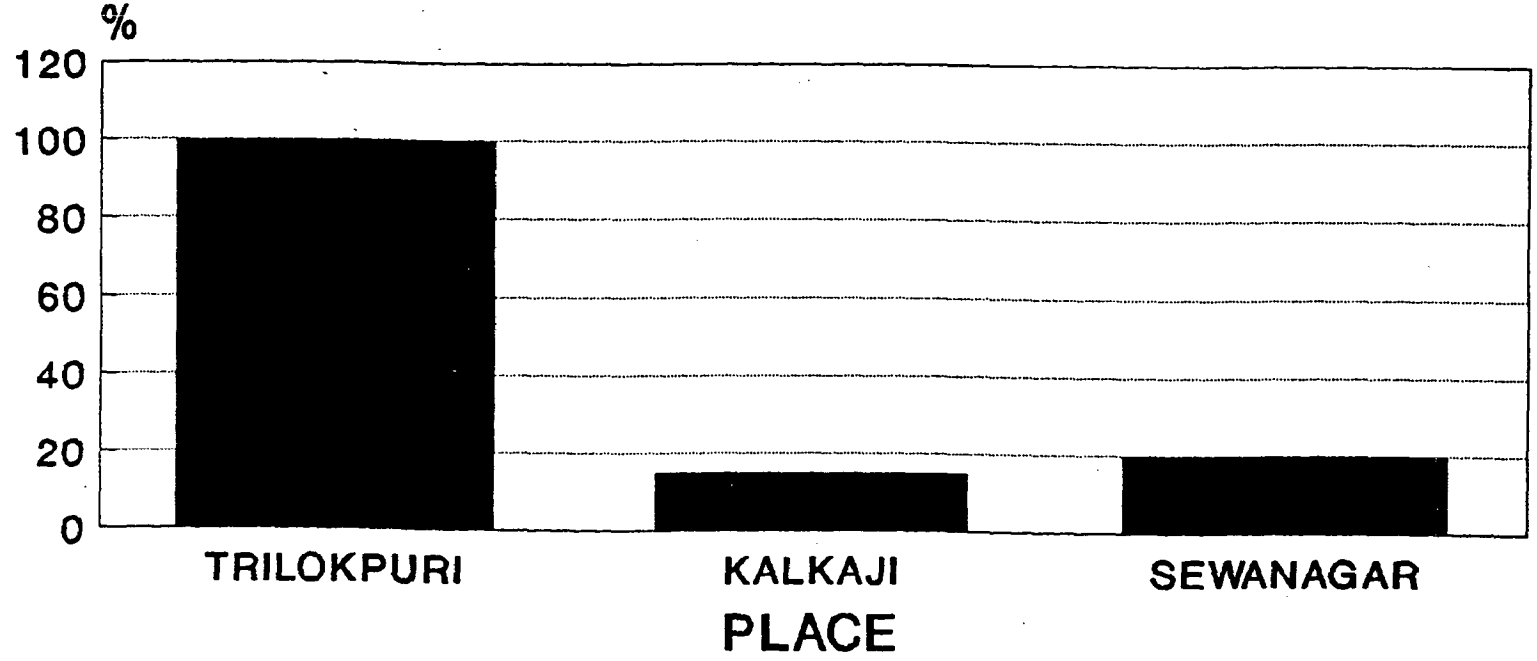


FIGURE NO : 5.3

KALKAJI & SEWANAGAR GET 2-4 & 4-5 HOURS SUPPLY RESP RESULTING IN (a) EXCESSIVE HOARDING & (b) RESULTANT WASTAGE

WATER SUPPLY - ANALYSIS

PRESSURE OF WATER SUPPLY

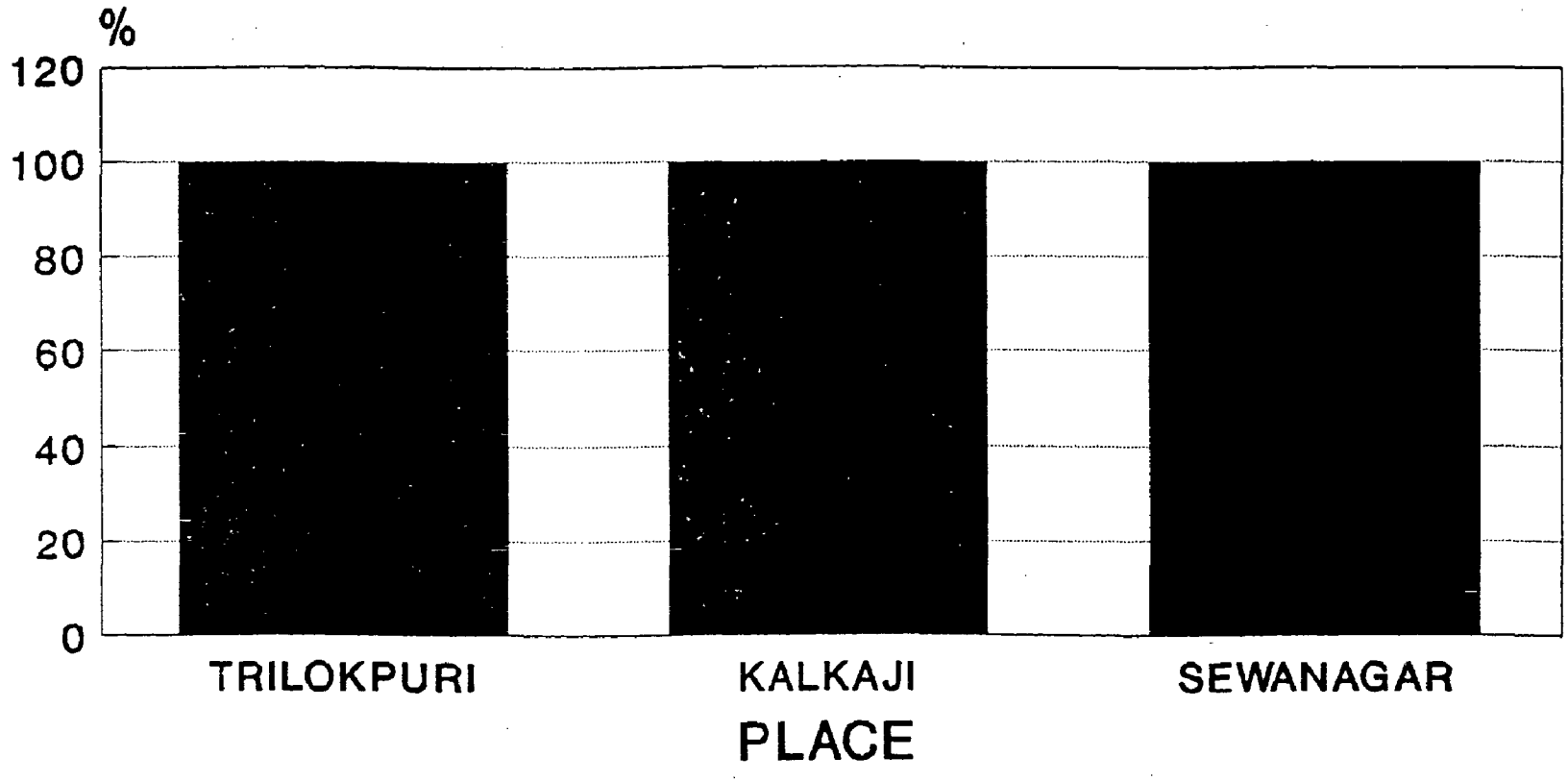


FIGURE NO : 5.4

POOR PRESSURE RESULTS IN (a) WASTAGE THRO SPILLAGE (b) INEFFICIENCY (c) INEQUITY THROUGH USE OF BOOSTERS

WATER SUPPLY - ANALYSIS

QUALITY OF WATER SUPPLY

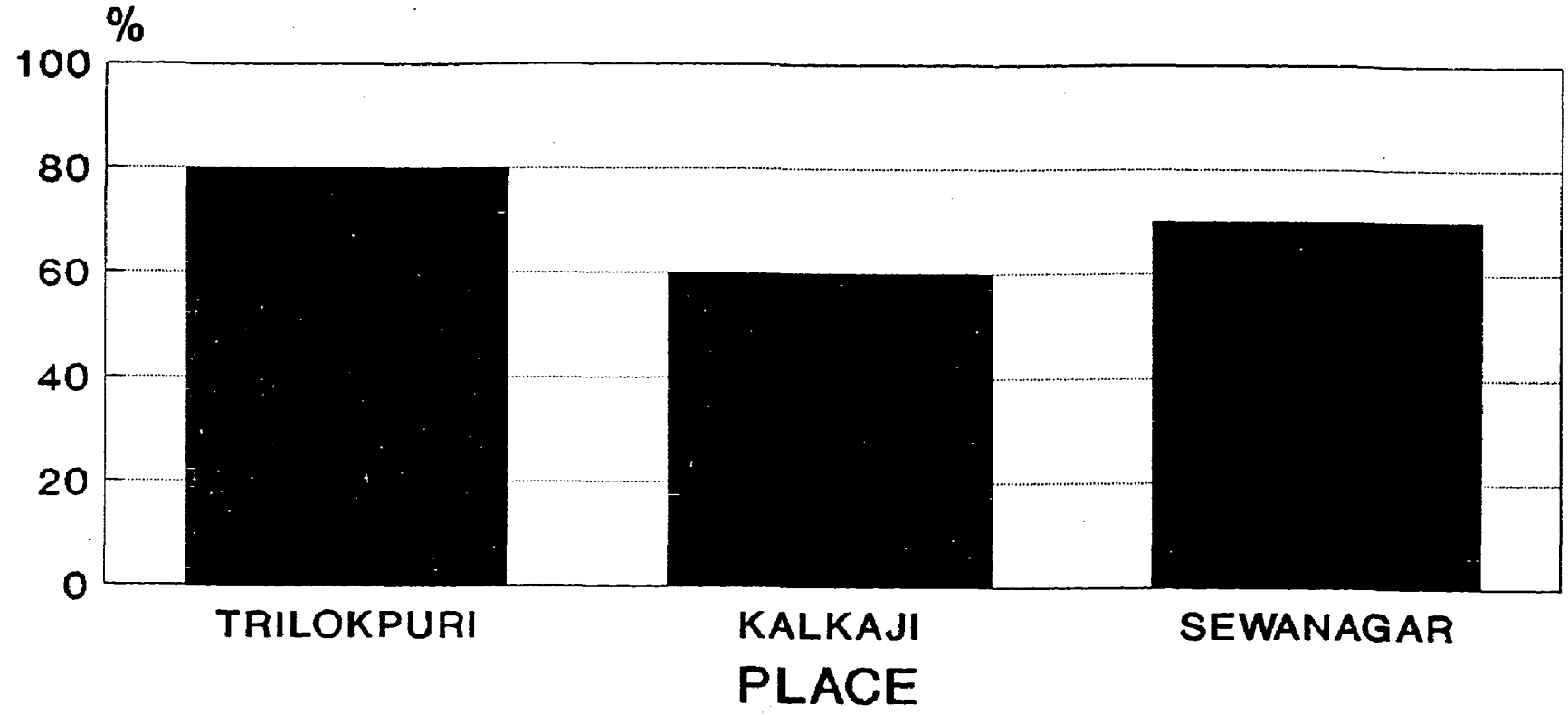


FIGURE NO : 5.5

PRIMARY SURVEYS DON'T INDICATE POOR QLTY BUT SECONDARY SOURCES REPORT FREQUENT INCIDENCE OF WATER BORNE DISEASES.

4. Though, not very reliable figures of break up are available, w.r.t. consumption in different uses, it dictates that in Trilokpuri Phase I the respondents use comparatively less amounted water in sewage related activities. This could be attributed to the absence of

(a) individual toilet.

(b) water supply in community toilets.

PRESSURE OF WATER SUPPLY

5. The pressure of water supply is very poor in all the three areas. (Refer Figures 5.1 and 5.4) This has resulted in

(a) Wastage of water - as most people do not wait and watch the containers filling and often spill over occurs.

(b) Inefficiency - under normal circumstances, a 20 litre bucket takes more than 15 minutes to fill,

(c) Installation of boosters - leading to shorter supply in other houses. In Kalkaji, this problem is very acute, where the upper floor residents, do not get adequate supply, due to low pressure, and therefore install boosters, leading to lower floor residents getting lower quantum of supply. This problem does not exist in Sewanagar, where the controlling authority, does not permit such installations.

QUALITY OF WATER SUPPLY

6. Though primary surveys conducted do not indicate poor quality of water supply in Trilokpuri (0%) Kalkaji (35%) and Sewanagar (15%), secondary information recorded from local health officials and

practicing physicians indicate regular incidence of minor water borne diseases among the residents. This can be taken to indicate as inferior quality of water supply. (Refer Figures 5.1 and 5.5)

COLLECTION AND STORAGE

7. Very few respondents in Trilokpuri and Sewanagar have arrangements for collection and storage of municipal water. In most cases (75%) water is collected in drums, buckets, kitchen utensils etc. This creates undue hardship in the event of breakdown. (Refer Figures 5.6 and 5.7)

NUMBER OF TAPS

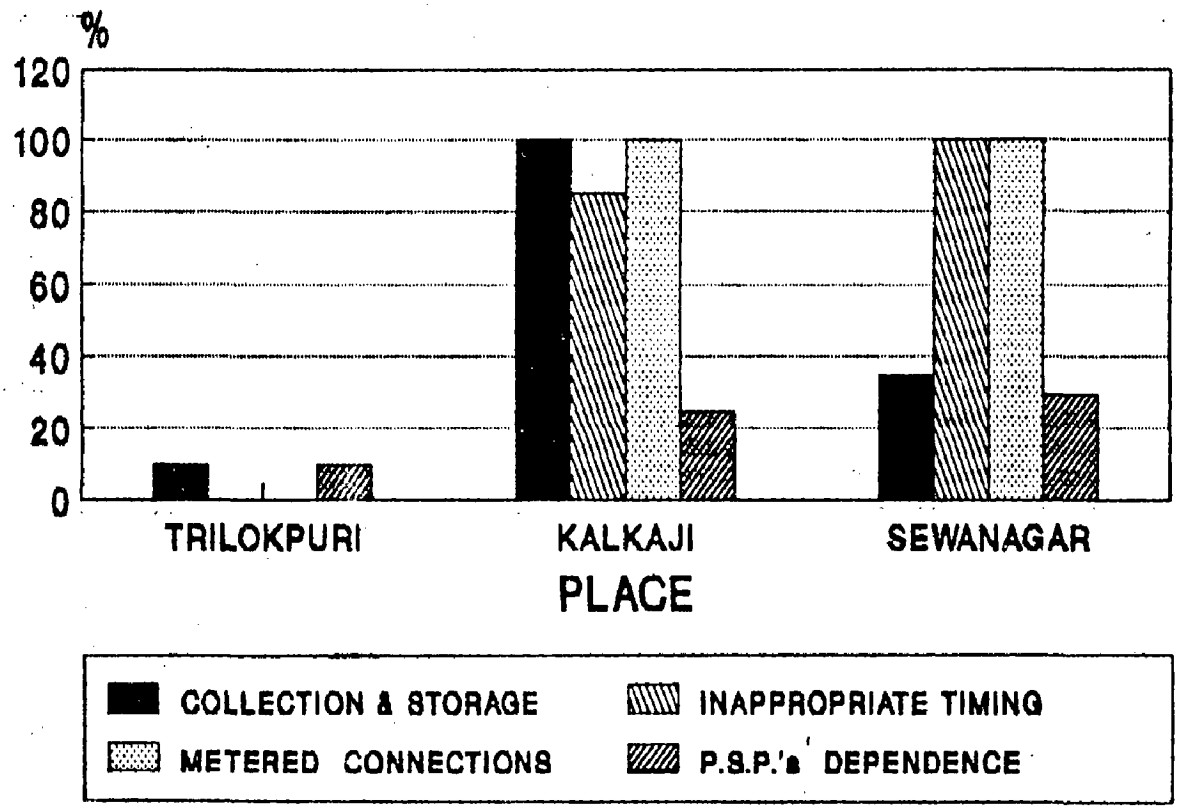
8. In Trilokpuri, barring a few stray cases, all the residents have provisions for one tap connection only, whereas in Kalkaji, most respondents (45%) have atleast 3 tap connections. In Sewanagar, where the toilets are shared by adjoining apartments, most respondents reported of only one tap in their kitchen, while the provision of one tap only creates problems, the provisions of a greater samples of taps leads to excess water outflow.

METERED CONNECTION

9. All the respondents in Kalkaji and Sewanagar have metered connections - while in Trilokpuri, all the respondents have to pay highly subsidized flat rate of Rs. 8/- per plot per month. This has led to an indifferent attitude to wastage of water. (Refer Figures 5.6 and 5.8)

WATER SUPPLY

COLLECTION / STORAGE, APPROPRIATENESS OF TIMINGS, METERED CONNECTIONS & PSPs



SOURCE : FIELD SURVEY

FIGURE 5.6

WATER SUPPLY - ANALYSIS
COLLECTION AND STORAGE

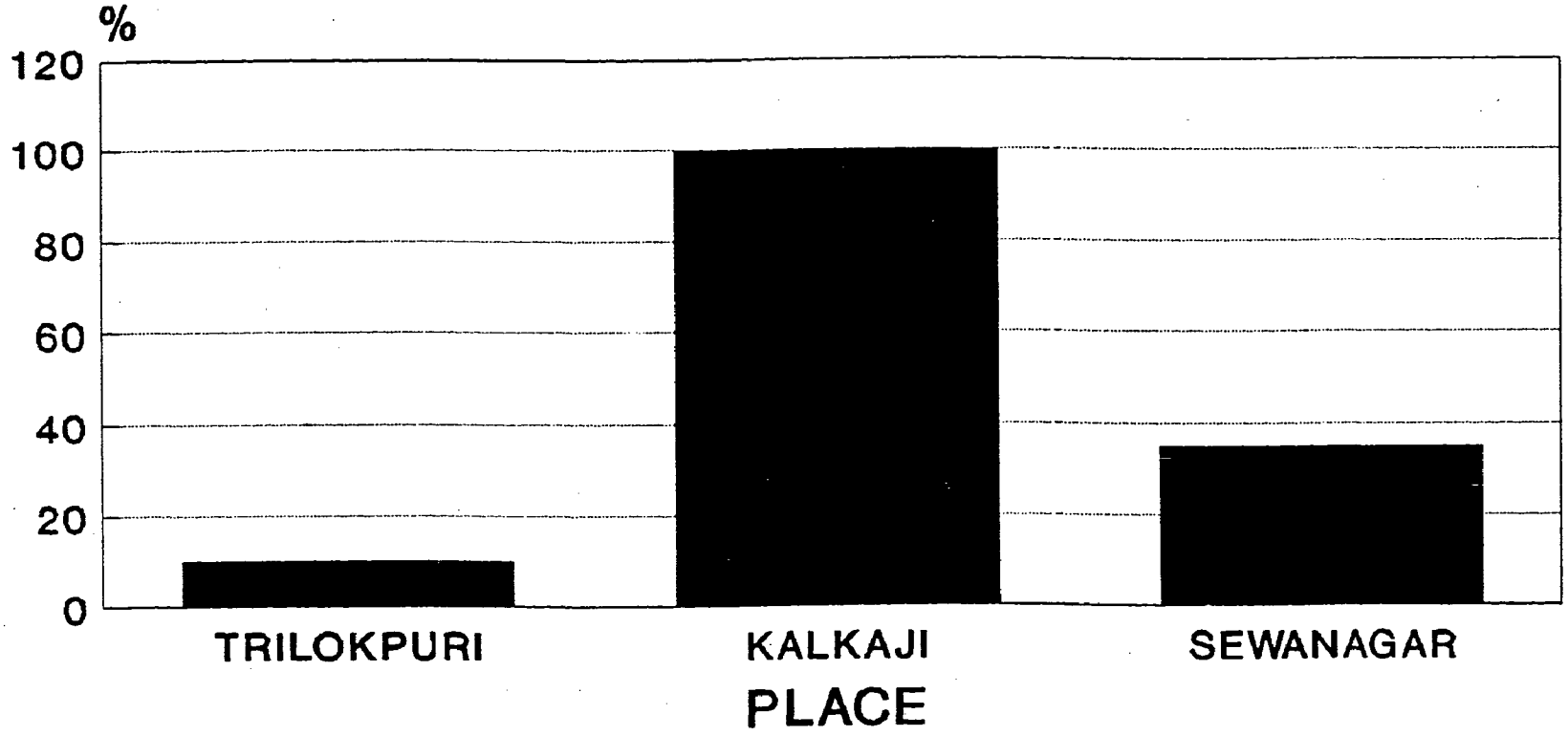


FIGURE NO : 5.7

VERY FEW IN TRILOKPURI & SEWANAGAR HAVE FACILITIES FOR STORAGE. THIS INDICATES HARDSHIPS EXPECTED IN EVENT OF BREAKDOW

WATER SUPPLY - ANALYSIS
METERED CONNECTIONS

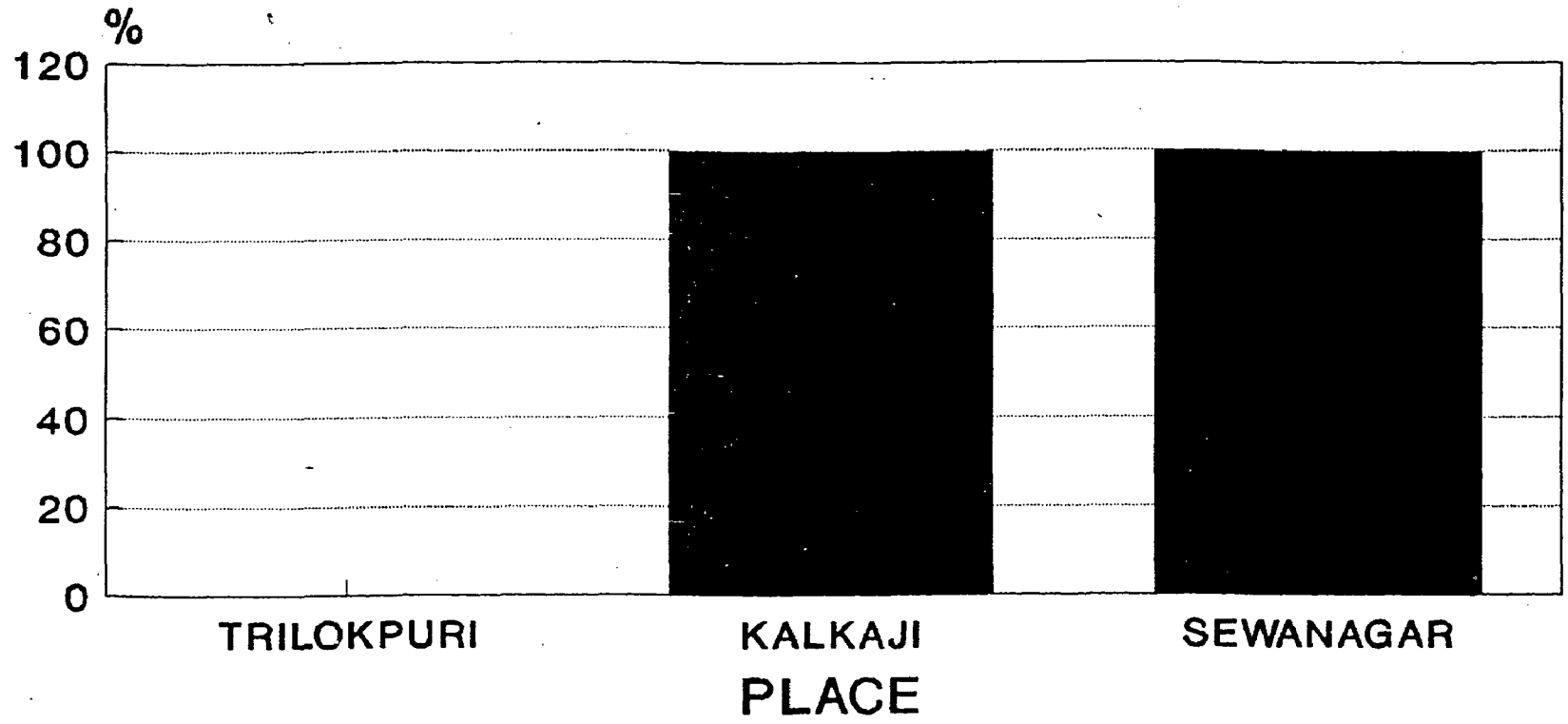


FIGURE NO : 5.8

KALKAJI,SEWANAGAR RESIDENTS OWN METERED CXNS, TRILOKPURI RESIDENTS PAY Rs 8 PM, LEADS TO INDIFFERENT ATTITUDE TO WASTAGE

WATER SUPPLY - ANALYSIS
DEPENDENCE ON PUBLIC STAND POSTS

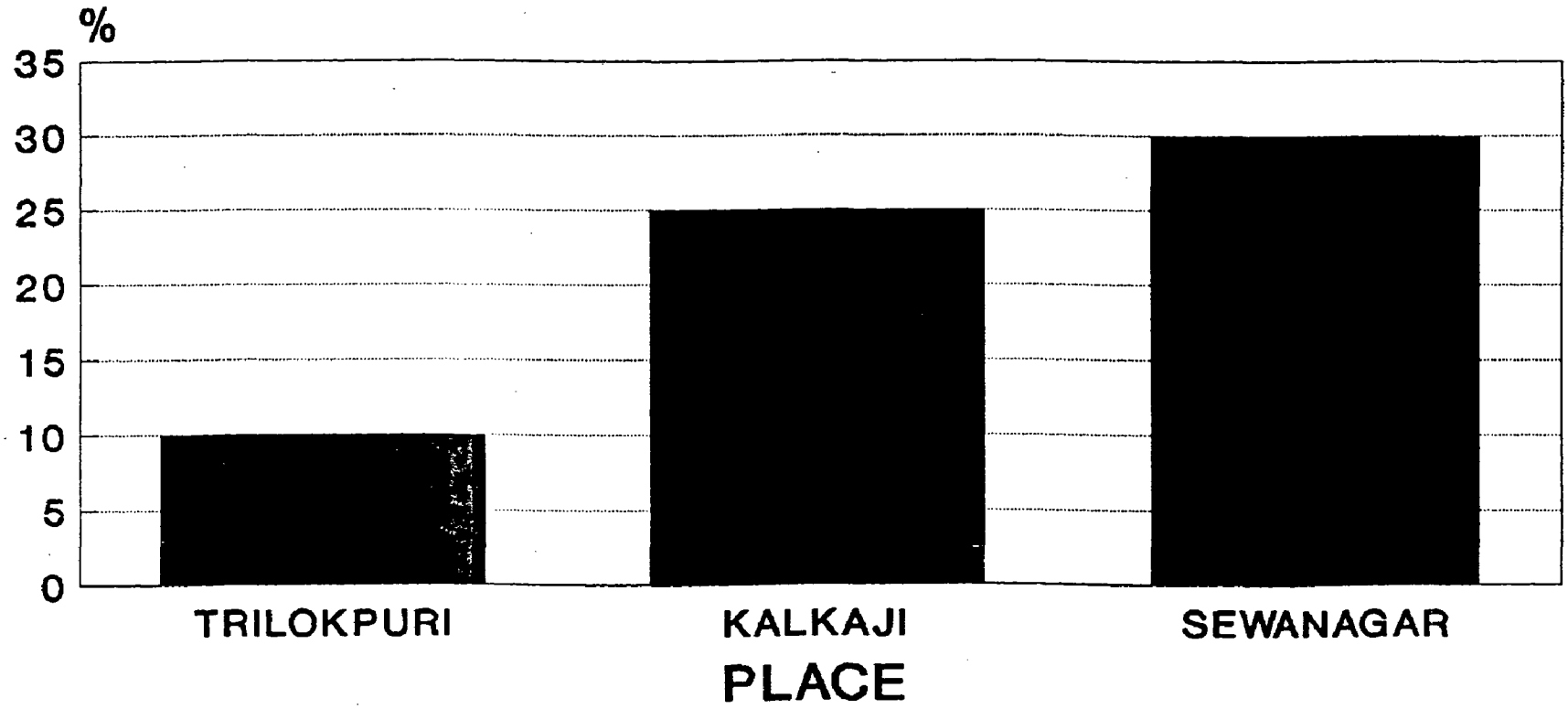


FIGURE NO : 5.9

EXCEPT TRILOKPURI, OTHER AREAS SHOW DEPENDENCE ON PSP'S. THIS INDICATES INADEQUACY OF FILTERED WATER SUPPLY.

WATER SUPPLY - ANALYSIS
APPROPRIATENESS OF SUPPLY TIMINGS

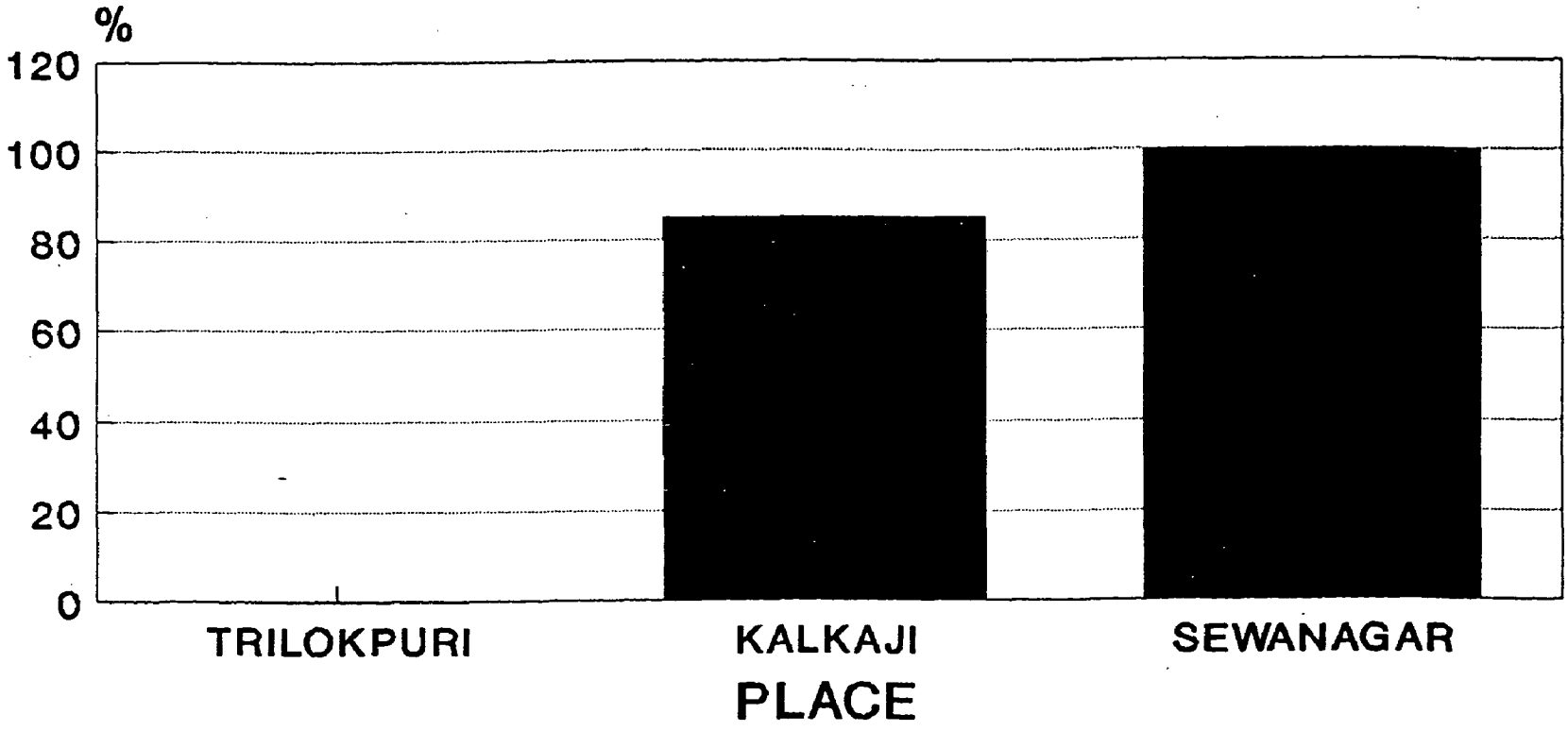


FIGURE NO : 5.10

SUPPLY TIMINGS ARE INAPPROPRIATE IN GENERAL RESULTING IN a. INEFFICIENCY & b. EXCESSIVE HOARDING LEADING TO WASTAGE

DEPENDENCE ON PUBLIC STAND POSTS ETC.

10. Very few respondents in Trilokpuri reported of dependence of Public stand posts. (Refer Figures 5.6 and 5.9) However in Kalkaji and Sewanagar, a seizable percentage (25% & 30% respectively) of respondents reported of depending on public stand posts and tube well facility. Also observed, were that

(a) number of such utilities are poor.,

(b) distance to these utilities in 60% cases were more than 150m.

11. The usual difficulties faced by the respondents, who draw water from stand posts and tube wells are

(a) long waiting time in queues.,

(b) water not supplied at due hours,

(c) overcrowding and quarrels at the public stand posts.

12. The poor number of these utilities also indicate that there are hardly any dependable contingency resources available within the locality, in the event of any breakdown is supply.

APPROPRIATENESS OF WATER SUPPLY TIMINGS

13. Most of respondents in Kalkaji feel that the present supply timings are inappropriate. (Refer Figures 5.6 and 5.10) In Sewanagar also, the entire sample of respondents complain of inappropriateness of supply timings inappropriate supply timings result in

(a) Inefficiency,

(b) Excessive hoarding of water, leading to wastage.

BREAK DOWNS IN WATER SUPPLY

14. In all three housing areas, a sizable percentage of respondents complained of frequent breakdowns in water supply in summer. (Refer Figures 5.11 and 5.12) This coupled with a lack of a dependable contingency service, creates undue hardship for the residents.

NUMBER OF COMPLAINTS

15. Except in Sewanagar, both in Kalkaji and Trilokpuri, most respondents do not complain in the event of breakdowns in supply, (Refer Figures 5.11 and 5.13) indicating

(a) Higher tolerance level, of the respondents and / or

(b) poor awareness of rights,

(c) Indifferent attitude of Agency Staff receiving complaints.

TIME TAKEN FOR RECTIFICATION/COMPLAINT REDRESSAL

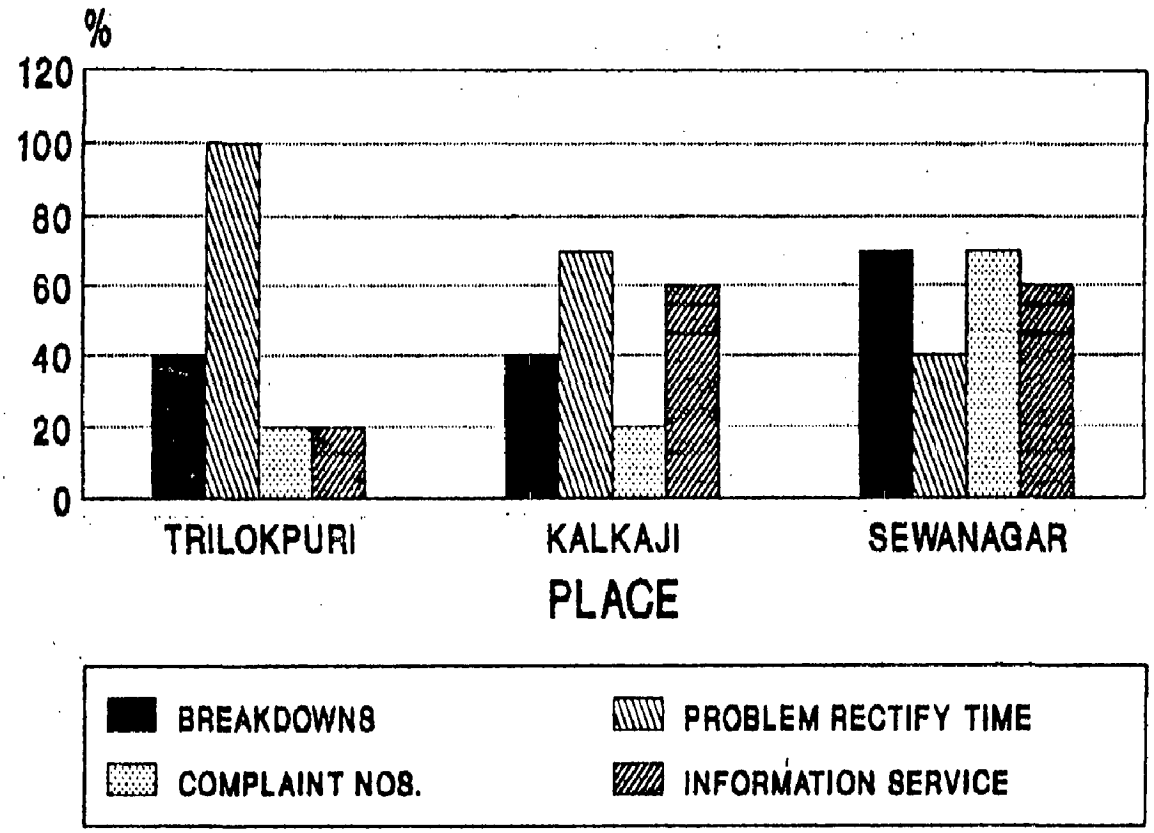
16. A majority of the respondents in Trilokpuri (95%) and Kalkaji complained of excessive delays in problem rectification and complaint redressal. In Sewanagar (40%) this percentage is less indicating a improved performance, because of the existence of an intermediary agency (C.P.W.D.). (Refer Figures 5.11 and 5.14)

ERRANT & IRREGULAR BILLING

17. A sizable percentage of respondents in Kalkaji & Sewanagar complained of irregular billing. This creates undue hardships, by not allowing residents to plan out expenditure budgets and often multi-month consolidated bills become difficult to pay up (Refer Figures 5.16 and 5.17)

WATER SUPPLY

BREAKDOWNS, TIME FOR RECTIFICATION, COMPLAINT, RESIDENT INFORMATION SERVICE



SOURCE : FIELD SURVEY

FIGURE 5.11

WATER SUPPLY - ANALYSIS

BREAKDOWNS IN WATER SUPPLY

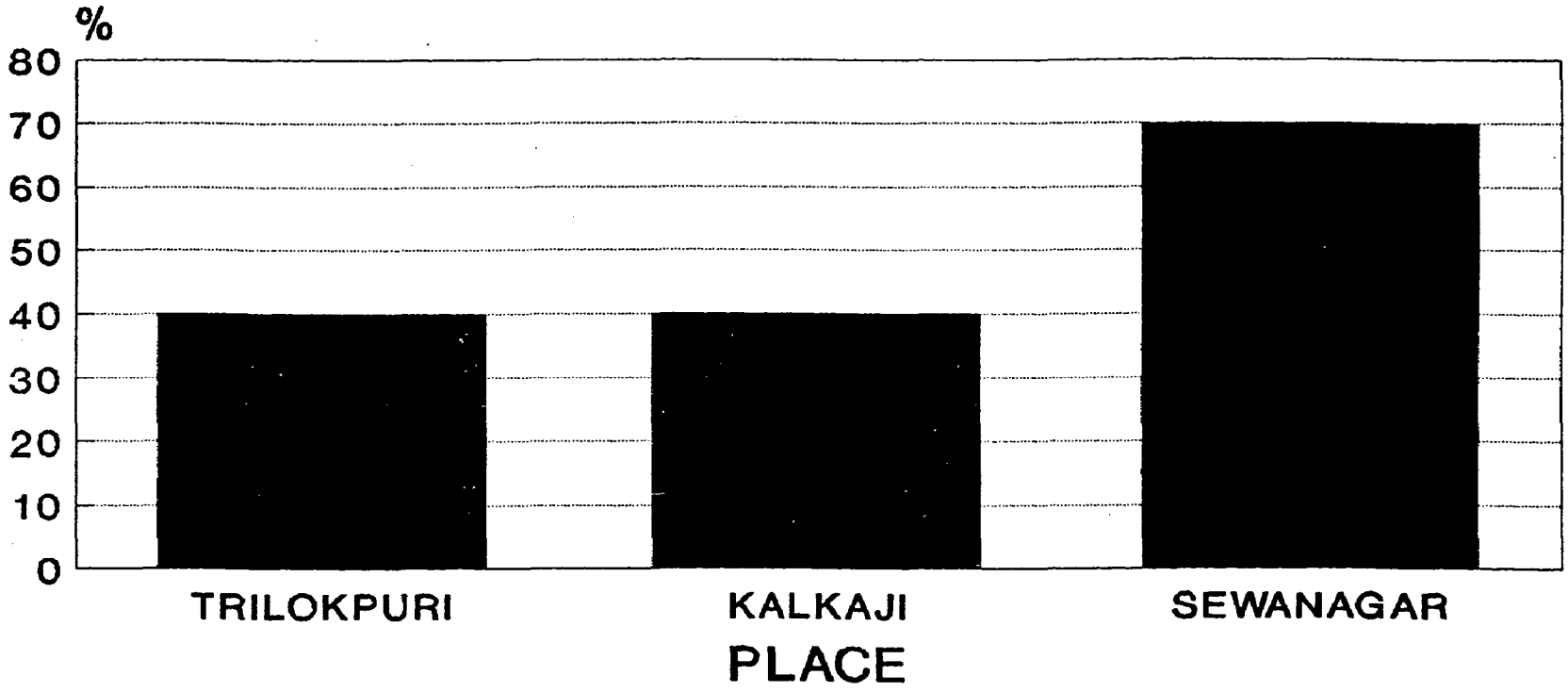


FIGURE NO : 5.12

RESIDENTS COMPLAIN FREQUENT BREAKDOWNS THIS COUPLED WITH ABSENCE OF A RELIABLE CONTINGENCY CREATES UNDUE HARDSHIPS.

WATER SUPPLY - ANALYSIS

NUMBER OF COMPLAINTS

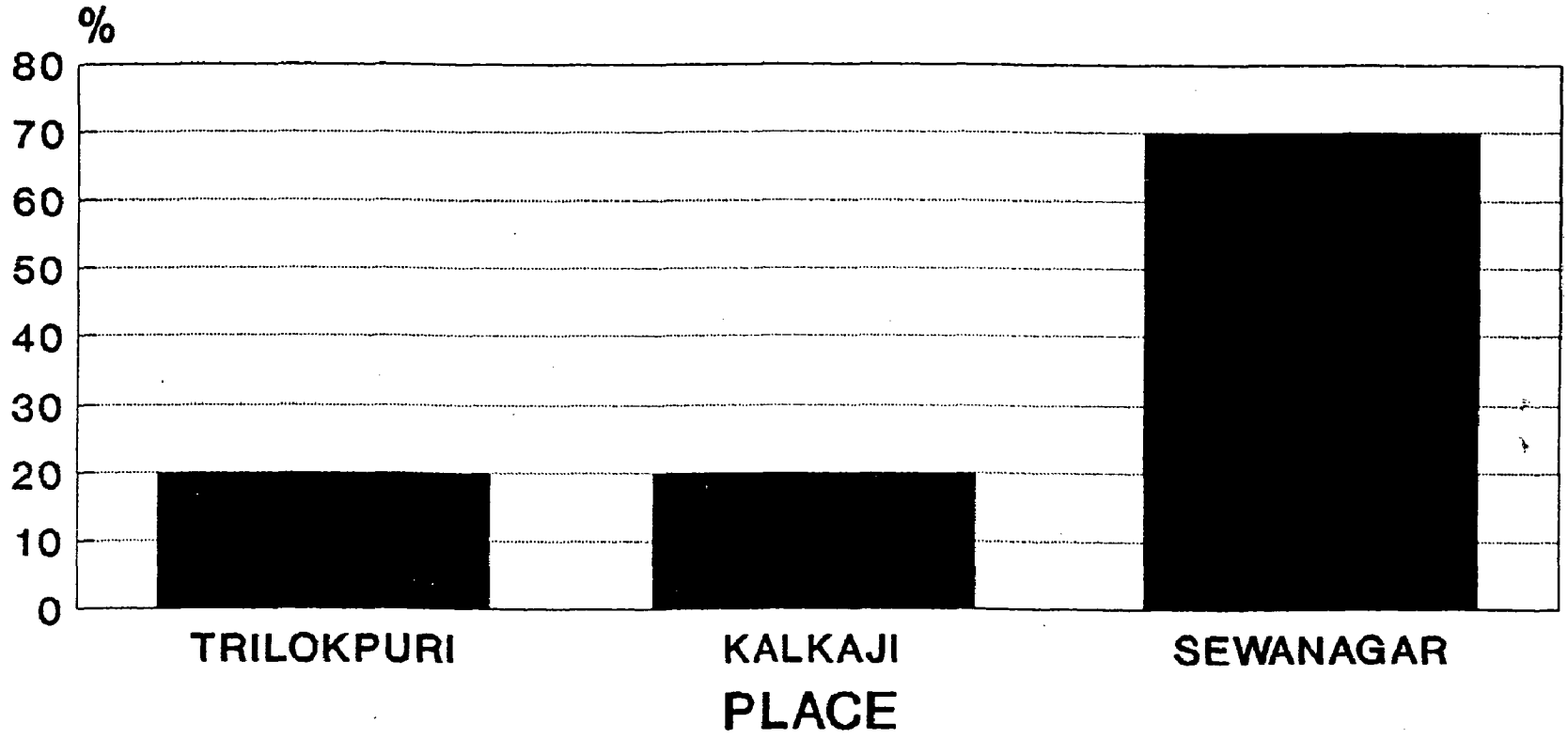


FIGURE NO : 5.13

FEW COMPLAIN OF BREAKDOWNS. INDICATES (a) HIGHER TOLERANCE LEVEL (b) POOR AWARENESS (c) LACKADAISICAL ATTITUDE.

WATER SUPPLY - ANALYSIS
TIME TAKEN FOR PROBLEM RECTIFICATION

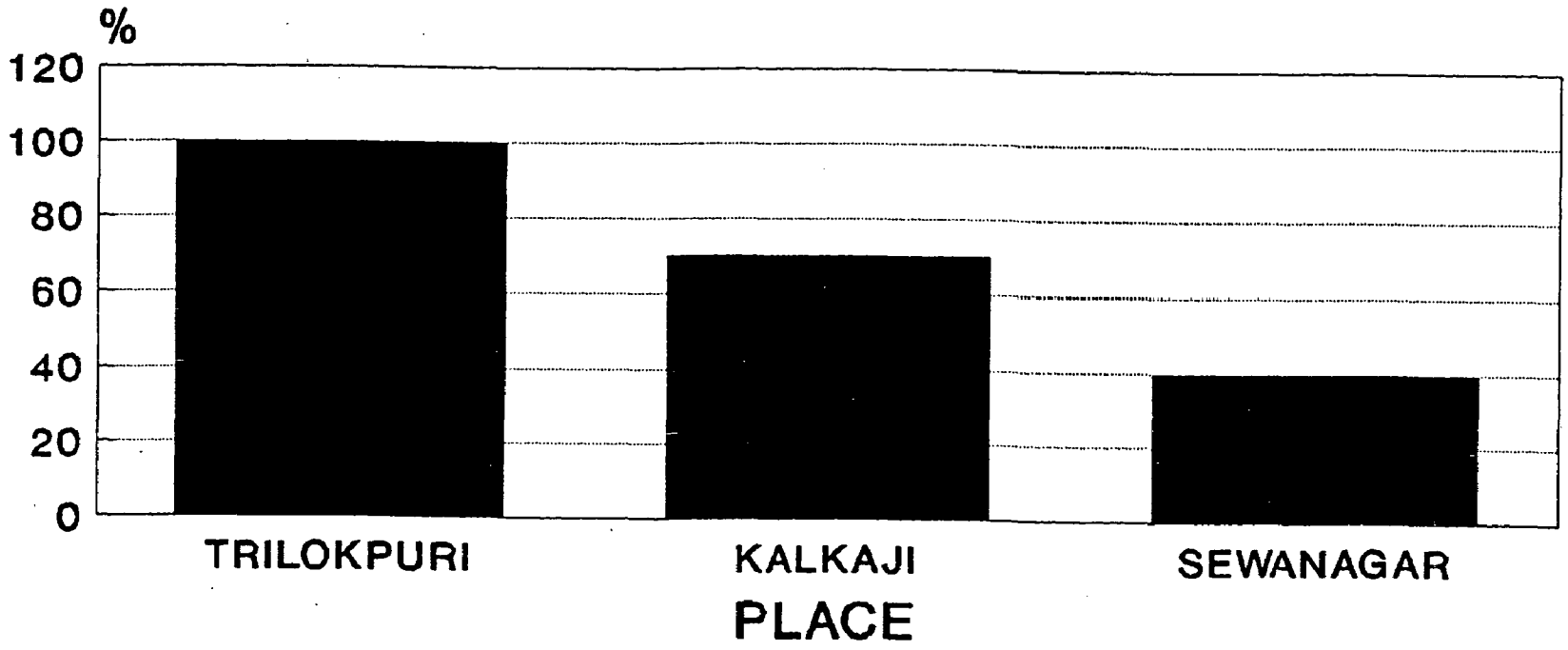


FIGURE NO : 5.14

RESIDENTS COMPLAIN EXCESSIVE DELAYS. S'NAGAR FIG INDICATES EXISTENCE OF ADDL AGENCY CPWD, IMPROVES TASK PERFORMANCE.

WATER SUPPLY - ANALYSIS
RESIDENTS INFORMATION SERVICE

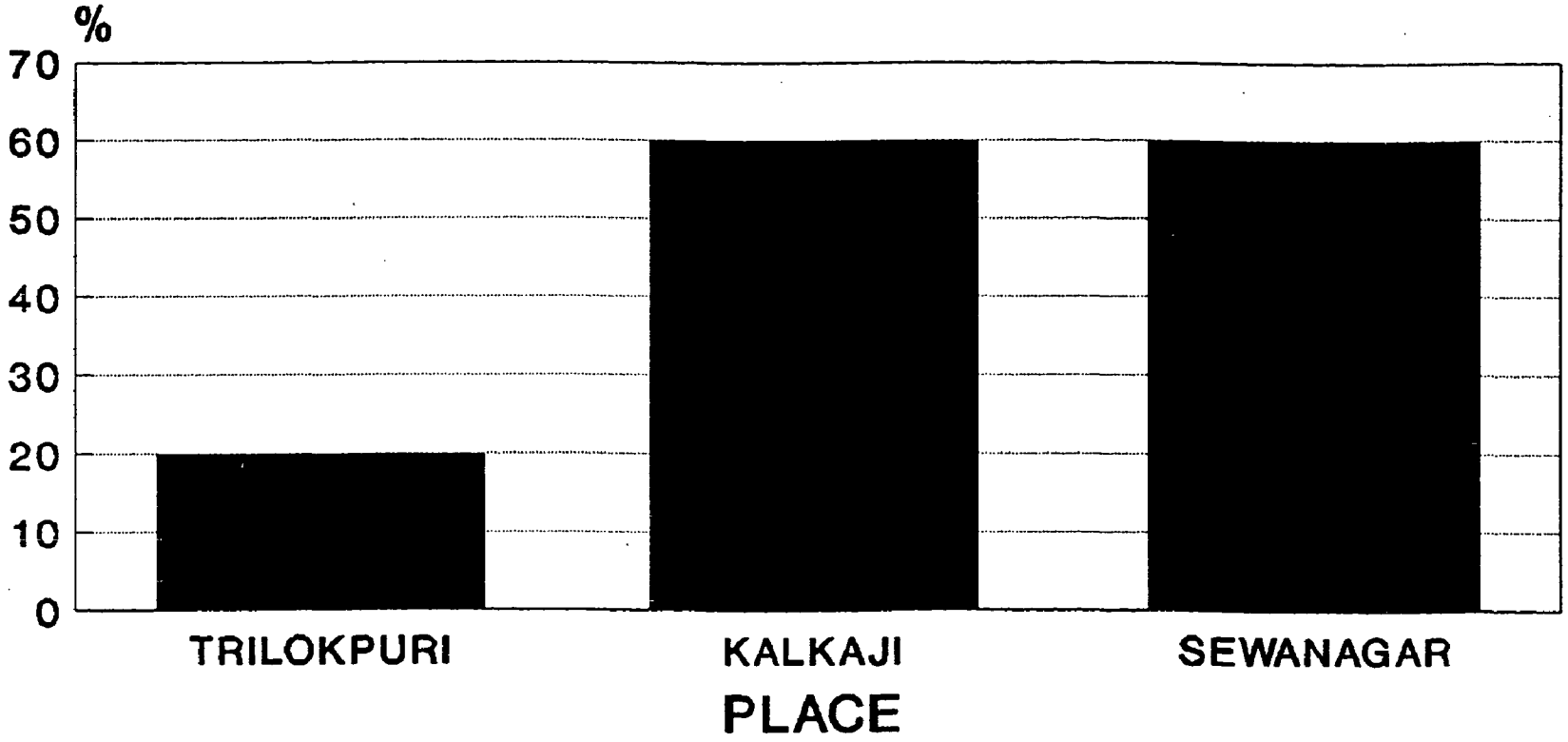
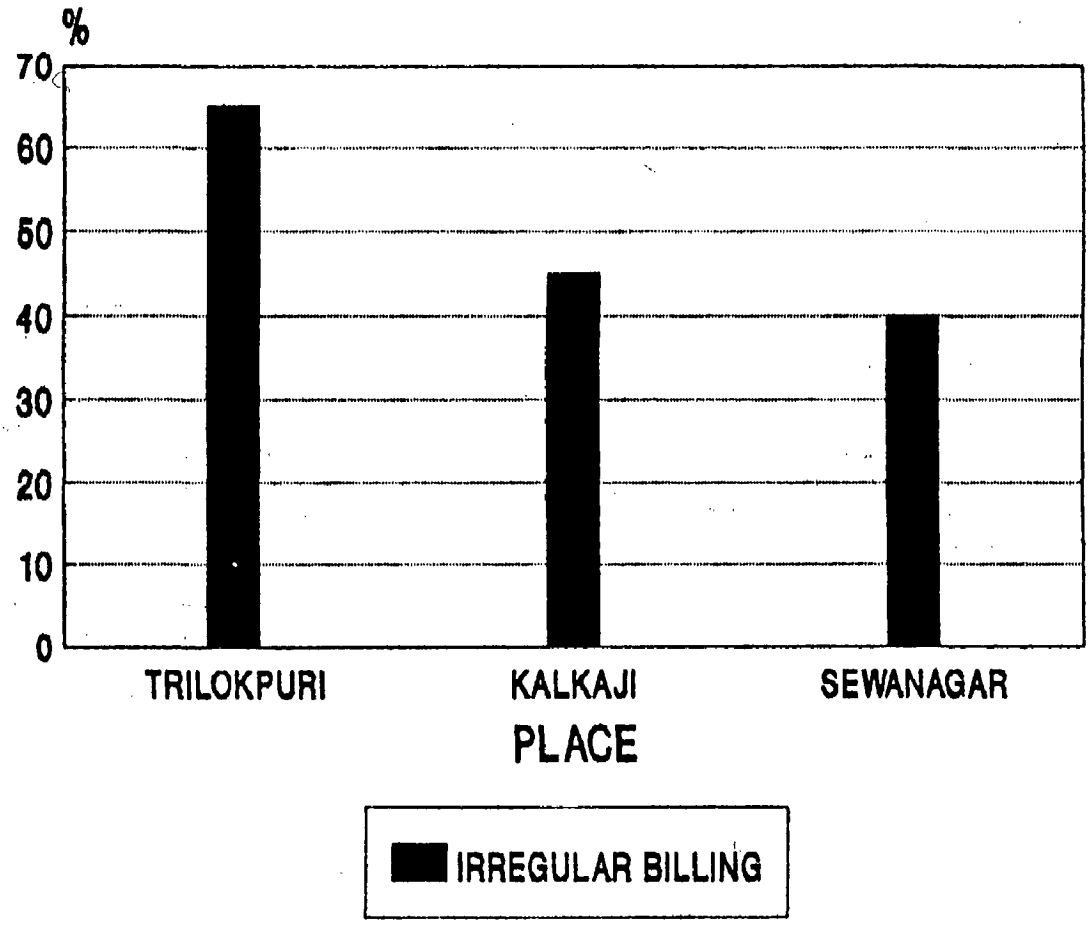


FIGURE NO : 5.15

VERY FEW IN T'PURI ARE AWARE OF B/DOWNs INDICATES (a) AWARENESS OF LOW INCOME RESIDENTS (b) IMPROPER CHOICE OF MEDIA.

WATER SUPPLY
ERRANT / IRREGULAR BILLING



SOURCE : FIELD SURVEY

FIGURE 5.16

WATER SUPPLY - ANALYSIS
ERRANT / IRREGULAR BILLING

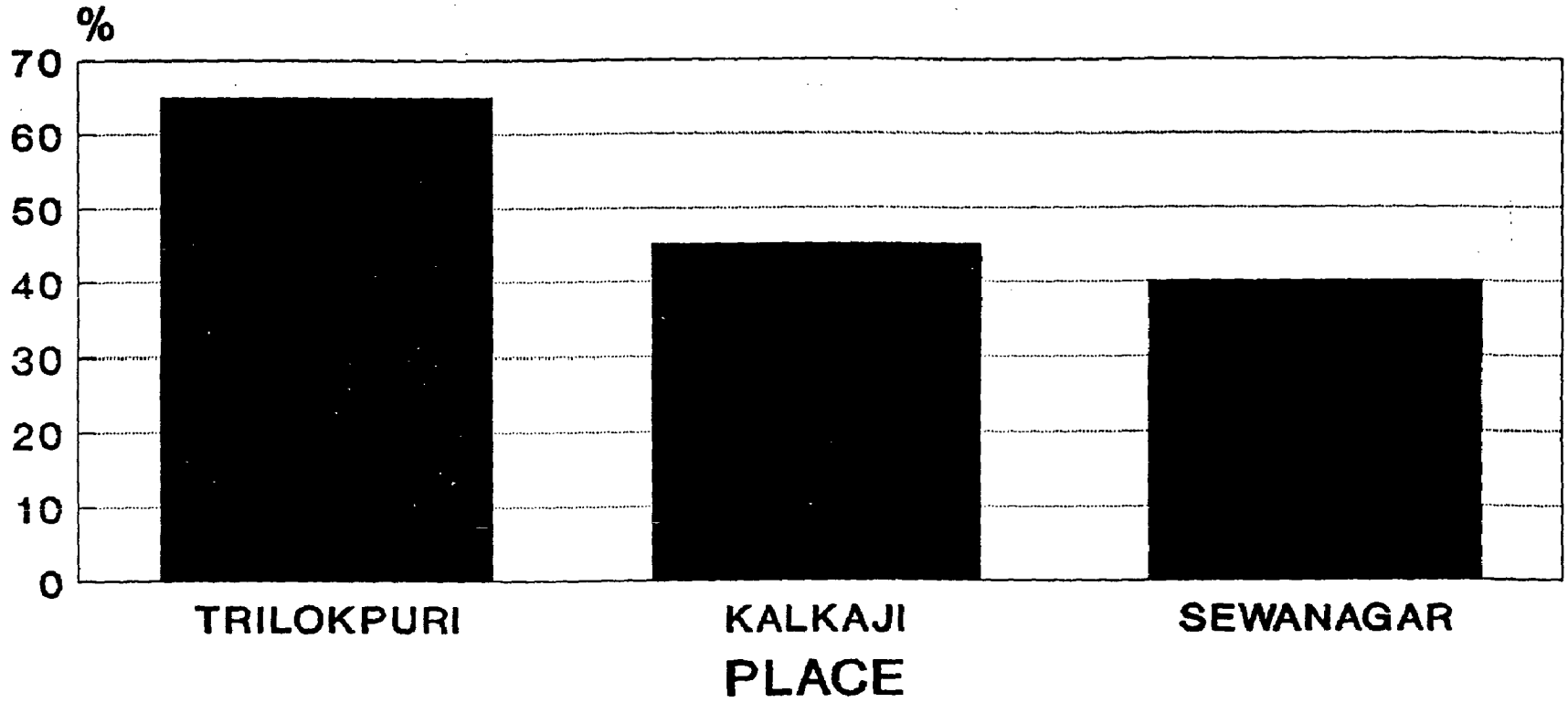


FIGURE NO : 5.17

INCIDENCE IS RAMPANT. RESIDENTS FACE UNDUE HARDSHIPS. INDICATES LACKADAISCAL ATTITUDE OF AGENCY PERSONNEL.

RESIDENT INFORMATION SYSTEM

18. In case of break downs, most residents are caught unawares, in the absence of an effective resident information system. A small percentage of respondents are aware of newspaper intimation (20%) in Trilokpuri. In Kalkaji & Sewanagar, the percentage of respondents who are aware of such intimations are 60% each. (Refer Figure 5.15)

5.3.2 MAINTENANCE MANAGEMENT OF ELECTRIC SUPPLY

(Reference Table 5.2)

ACCESS TO FACILITY

1. All the three housing areas have access to electric supply for domestic purposes. (Refer Figures 5.18 and 5.19)

ILLEGAL CONNECTIONS

2. A high percentage (40%) of the respondents in Trilokpuri do not have legal power connections. However in Kalkaji and Sewanagar, no such problems exist. (Refer Figure 5.18 and 5.20) This results in

(a) Poor Revenue Collection.

(b) Voltage fluctuations and accidents.

3. This is indicative of

(a) Corrupt nature of DESU personnel.

(b) Easy access to illegal connections.

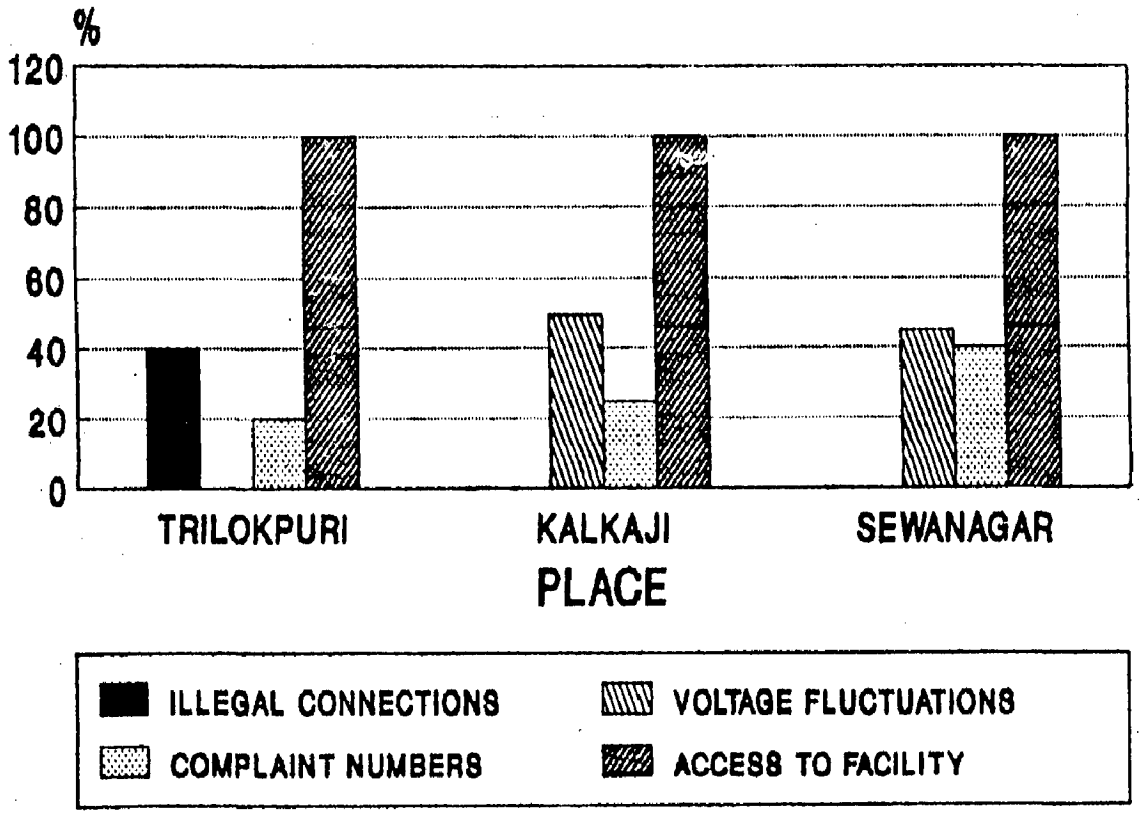
TABLE 5.2

RESIDENTS PERCEPTIONS OF ELECTRIC SUPPLY

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Illegal Connections	40 %	-	-
2.	Voltage Fluctuations	-	50 %	45 %
3.	Occasions to Approach DESU Officials	20 %	25 %	40 %
4.	Delays in Complaint Redressal	35 %	70 %	70 %
5.	Irregularity of Meter Reading	100 %	30 %	-
6.	Errant / Irregular Billing	50 %	50 %	35 %

ELECTRIC SUPPLY

ACCESS, ILLEGAL CONNECTIONS, VOLTAGE FLUCTUATIONS & NUMBER OF COMPLAINTS



SOURCE : FIELD SURVEY

FIGURE 5.18

ELECTRIC SUPPLY - ANALYSIS

ACCESS TO ELECTRIC SUPPLY

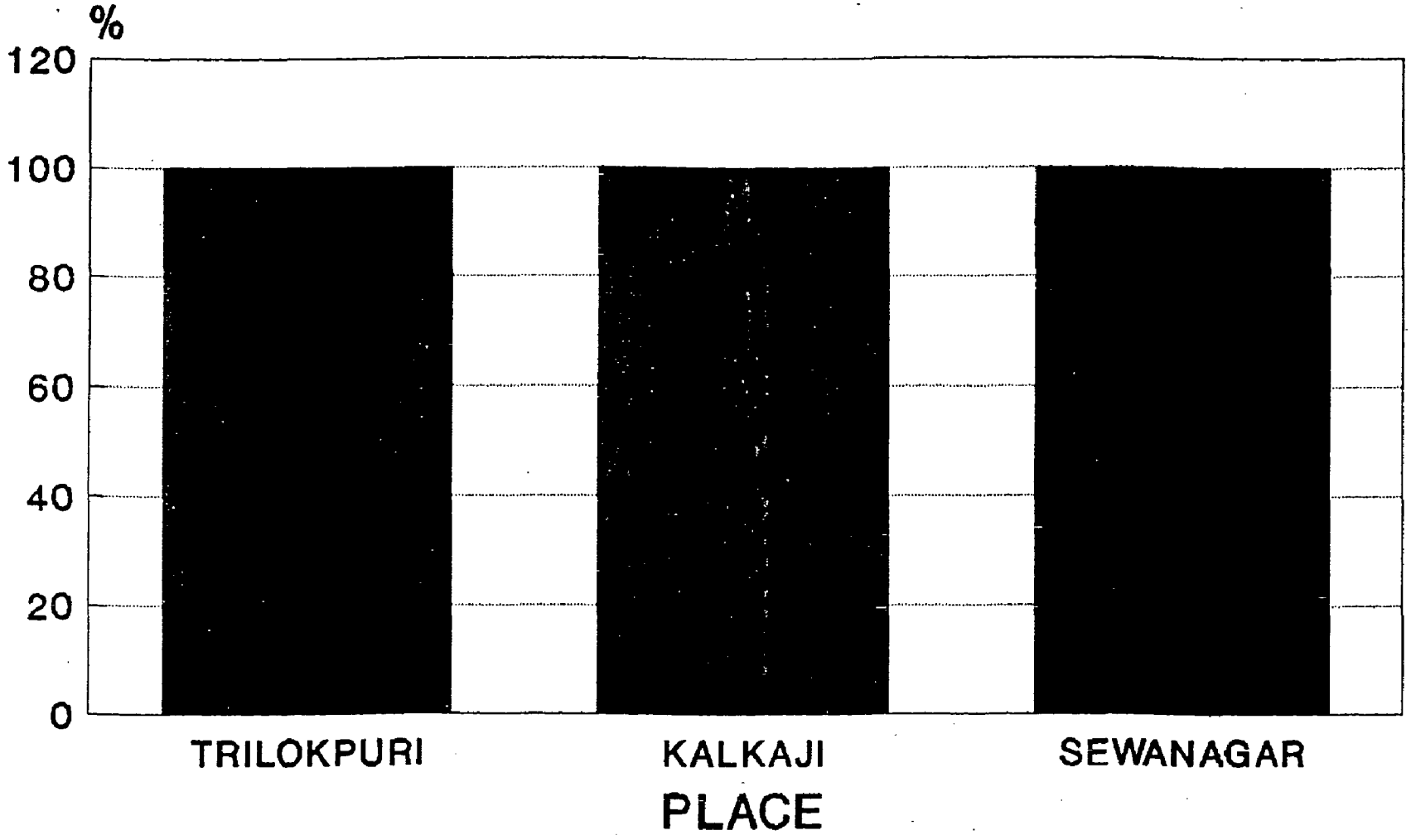


FIGURE NO : 5.19

ALL 3 AREAS HAVE ACCESS TO THE FACILITY.

ELECTRIC SUPPLY - ANALYSIS

ILLEGAL CONNECTIONS

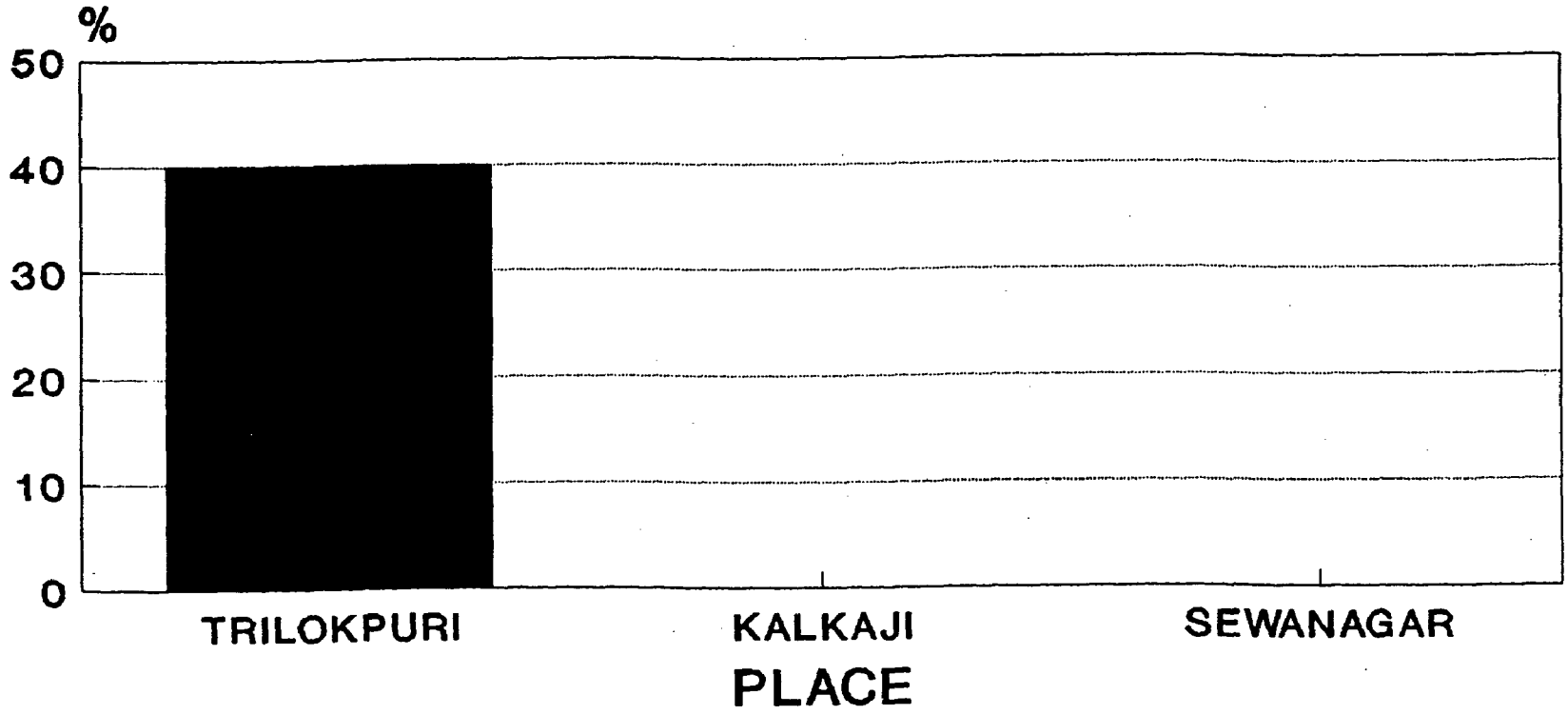


FIGURE NO : 5.20

RESULTS IN POOR REV COLLECTION, VOLTAGE FLUCTUATIONS & ACCIDENTS. SHOWS CORRUPT NATURE OF STAFF & EASY ACCESS TO TAPPING

ELECTRIC SUPPLY - ANALYSIS
VOLTAGE FLUCTUATIONS

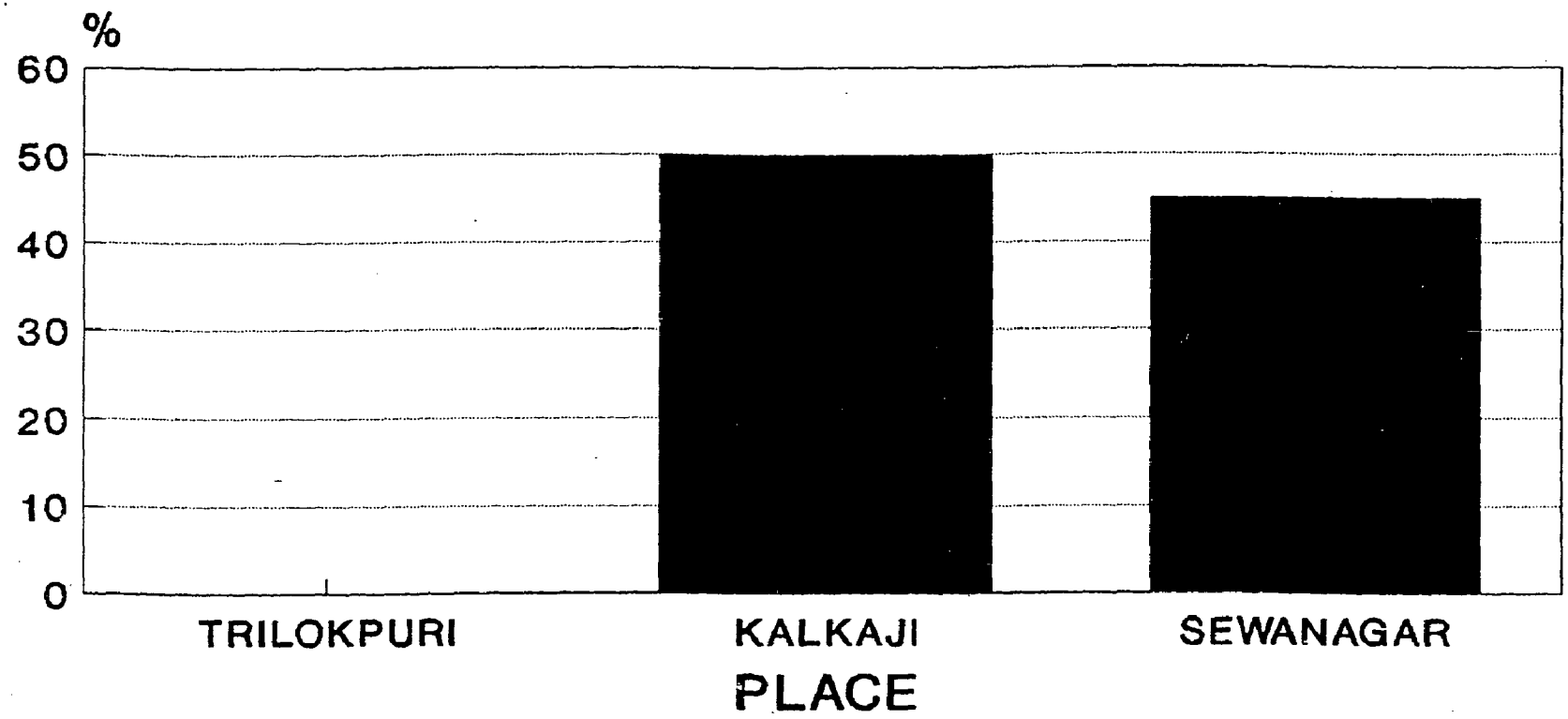


FIGURE NO : 5.21

INDICATE (a) POOR STATE OF EXISTING SUPPLY LINES (b) POWER CONSUMPTION HAS GONE UP, ADDING STRESS ON THE SYSTEM.

ELECTRIC SUPPLY - ANALYSIS
NUMBER OF COMPLAINTS

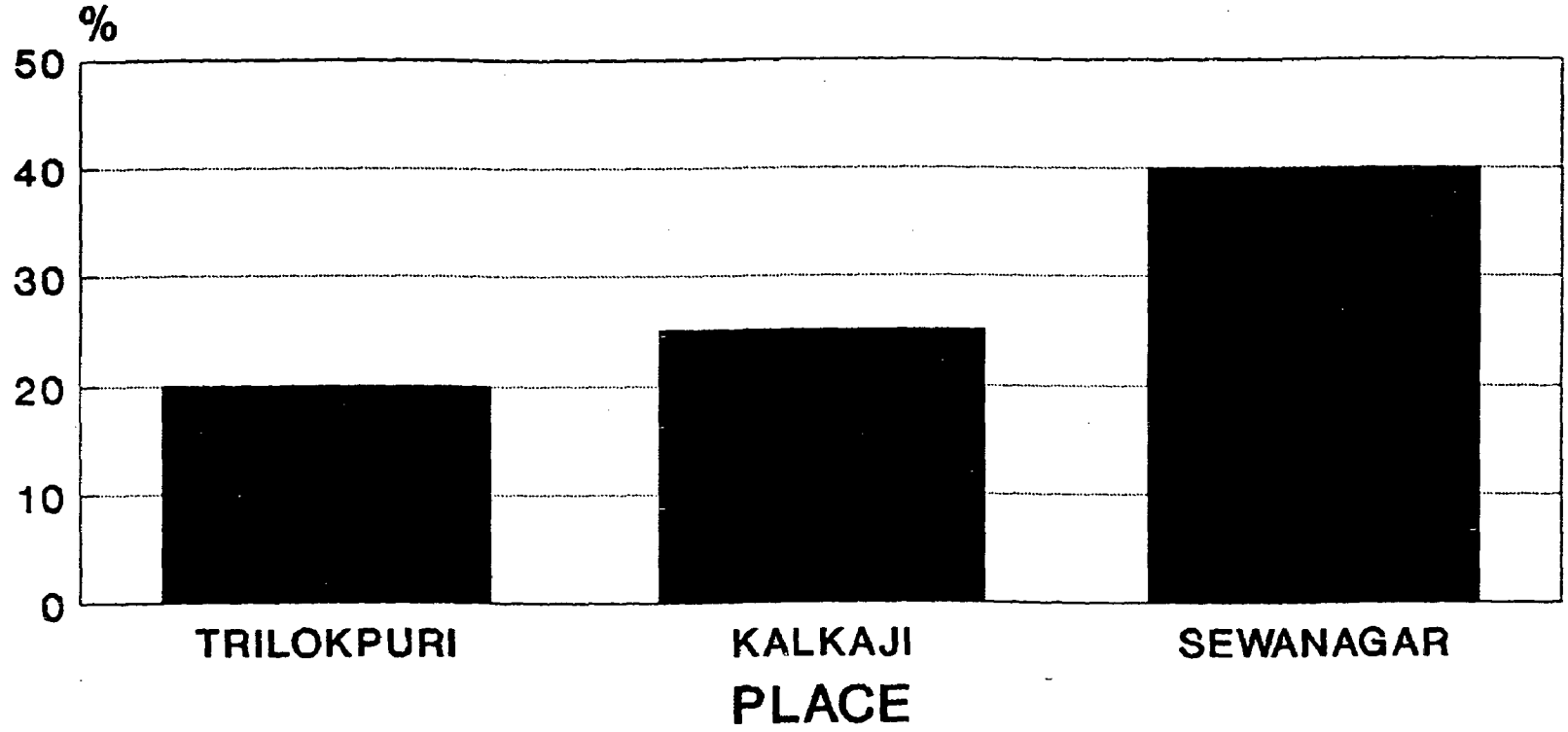


FIGURE NO : 5.22

INDICATES (a) INDIFFERENT & RUDE STAFFs MANNERISM (b) POOR AWARENESS (c) REDUCED DEPENDENCE ON AGENCY STAFF

VOLTAGE FLUCTUATIONS

4. One of the usual problems in Kalkaji and Sewanagar, are frequent voltage fluctuations. In Kalkaji about 50% of the respondents have this complaint, while in Sewanagar, 45% of the respondents complain similarly. (Refer Figures 5.18 and 5.21) This is indicative of

(a) Poor state of existing supply lines, and

(b) due to substantial improvement in living standards of residents, power consumption through use of multi gadgets is on the rise.

5. This problem is not often complained by respondents in Trilokpuri Phase I because of the low power requirements of the residents. This problem can damage expensive electrical gadgetry.

STABILITY IN POWER SUPPLY

6. An uninterrupted supply of power is one of the factors, which promotes residential satisfaction in the housing areas. However we see, that in all three case study localities, majority of the respondents complain of frequent power supply breakdowns especially in summers.

NUMBER OF COMPLAINTS

7. In all the three case study areas, the number of complaints (as reported by respondents) lodged do not match with the frequency of incidence of problems. (Refer Figures 5.18 and 5.22) This indicates

(a) The indifferent and rude mannerisms of the agency staff, discouraging people to complain.,

(b) The poor awareness of the low income residents and high levels of tolerance,

(c) Reduced dependence of residents on agency staff,

(d) Great distance of complaint office.

TIME TAKEN FOR PROBLEM RECTIFICATION AND COMPLAINT REDRESSAL.

8. Similarly as in water supply most of the respondents in Trilokpuri Phase I, Kalkaji and Sewanagar complain of delays in problem rectification and complaint redressal. (Refer Figures 5.23 and 5.24)

WEAK COMPLAINT REDRESSAL SYSTEM

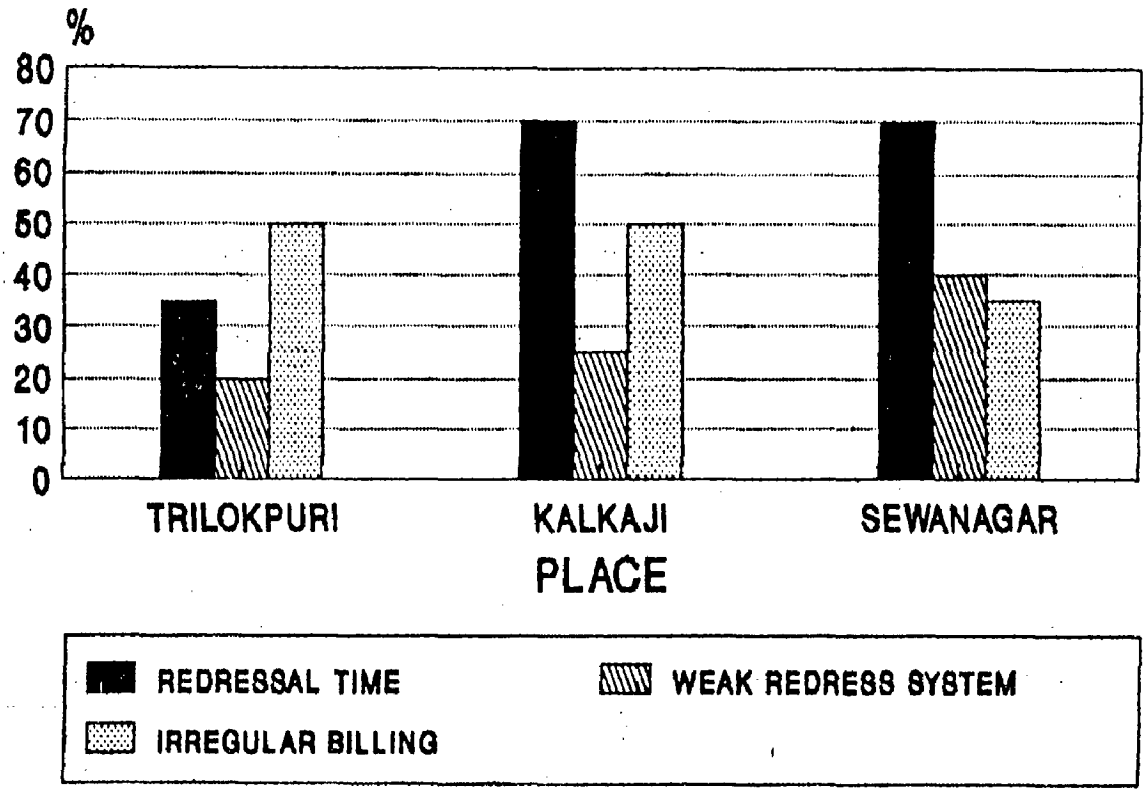
9. The figure is very low in the case of Trilokpuri Phase I, because of a significant percentage of illegal consumers who do not complain. It is low in Kalkaji, because of the improved socio economic status of the respondents, there is a reduced dependence on the agency for problem rectification. (Refer Figures 5.23 and 5.25)

ERRANT AND IRREGULAR BILLING

10. Errant and irregular billing is one problem that plagues the D.E.S.U. service delivery system. While on one hand, it indicates that the system is inefficient and corrupt, it treats undue hardships for the low income consumers. (Refer Figure 5.23 and 5.26)

ELECTRIC SUPPLY

COMPLAINT REDRESSAL TIME, REDRESSAL SYSTEM & IRREGULAR BILLING



SOURCE : FIELD SURVEY

FIGURE 5.23

ELECTRIC SUPPLY - ANALYSIS

TIME TAKEN FOR COMPLAINT REDRESSAL

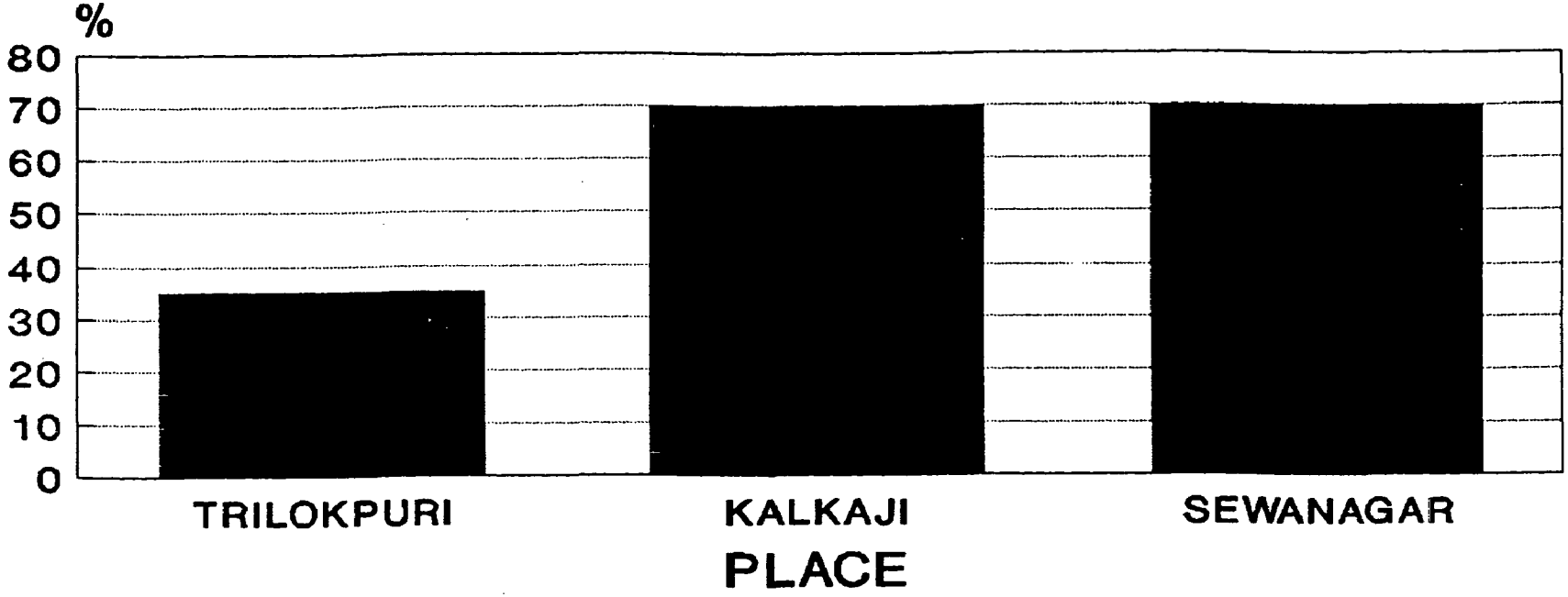


FIGURE NO : 5.24

RESIDENTS COMPLAIN EXCESSIVE DELAYS. INDICATIVE OF (a) WEAK REDRESSAL SYSTEM (b) INDIFFERENT CALLOUS STAFF ATTITUDE.

ELECTRIC SUPPLY - ANALYSIS

WEAK REDRESSAL SYSTEM

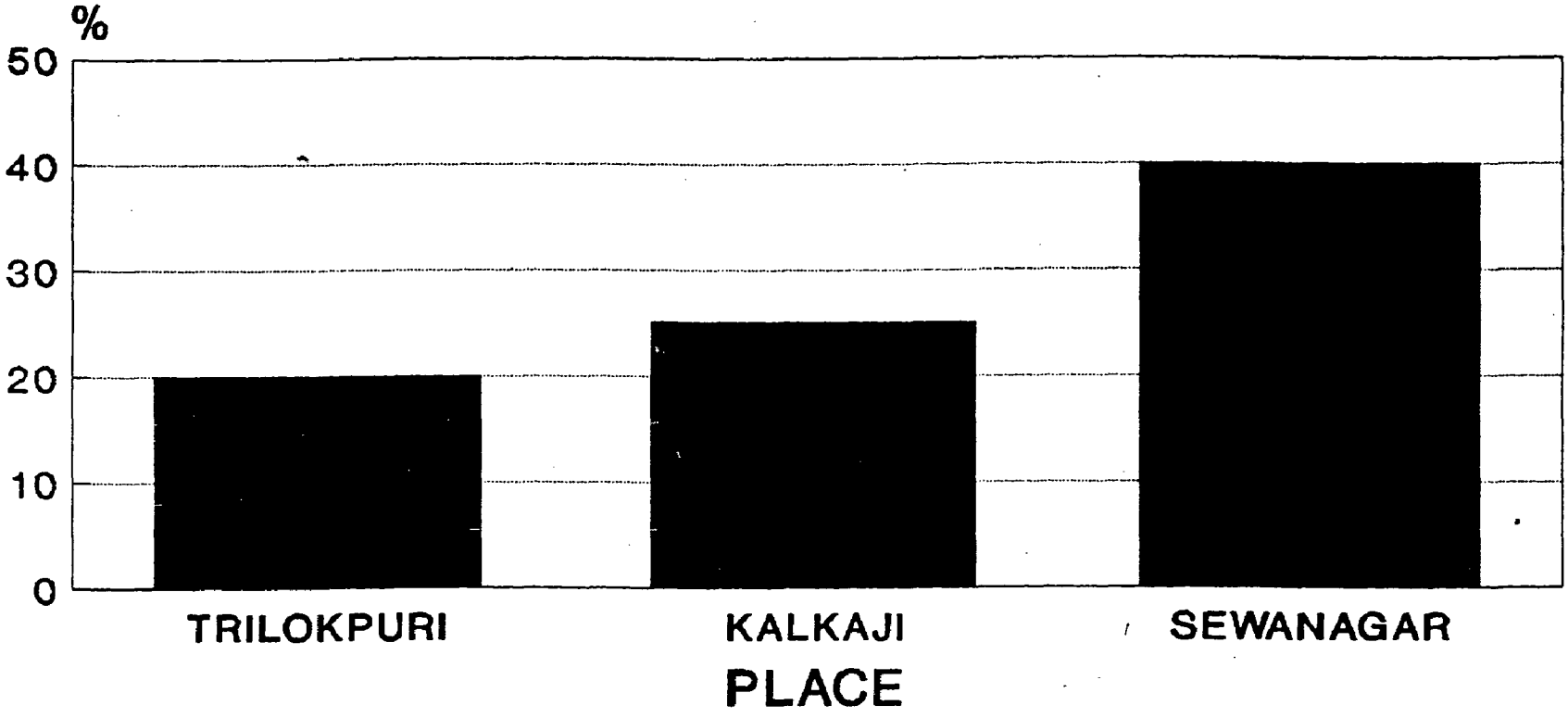


FIGURE NO : 5.25

(a) HIGH % OF ILLEGAL T'PURI CONSUMERS DON'T COMPLAIN (b) KALKAJI RESIDENTS IMPROVED ECO STATUS, LESS DEPENDENCE.

ELECTRIC SUPPLY - ANALYSIS
ERRANT AND / OR IRREGULAR BILLING

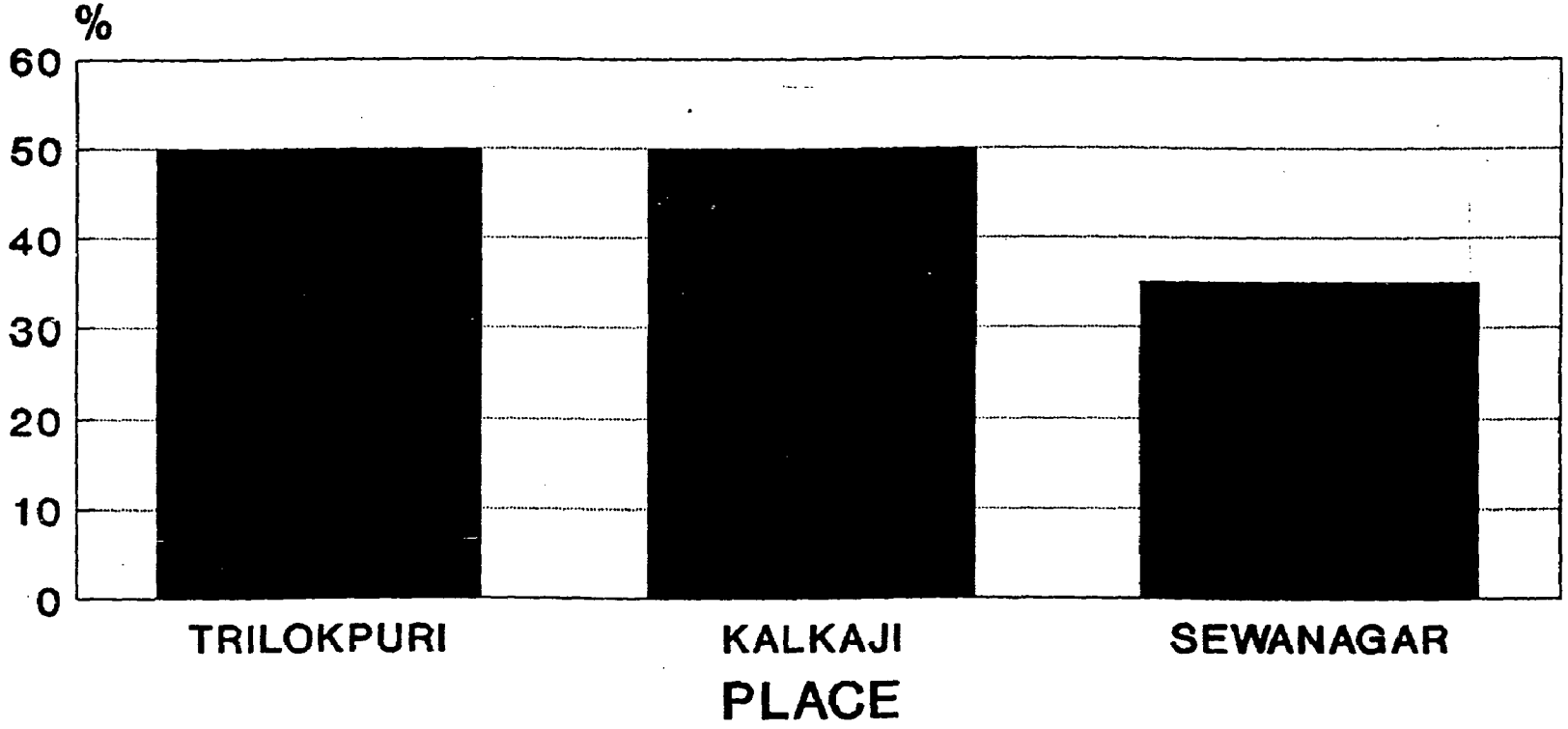


FIGURE NO : 5.26

PLAGUES RESI. RESULTS IN UNDUE HARDSHIPS POOR REVENUE GENERATION & INDICATES CORRUPT / CALLOUS ATTITUDE OF STAFF.

5.3.3 MAINTENANCE MANAGEMENT OF GARBAGE DISPOSAL & COLLECTION

(Reference Table 5.13)

GARBAGE DUMPING BY OTHERS

1. Most of the respondents in all the three case study areas, despite their income stature depend on privately employed individuals for collecting domestically generated garbage and dumping it elsewhere (in most cases again these individuals are the agency personnel).(Refer Figures 5.27 and 5.28) This indicates :

(a) the increased dependence on private arrangements for garbage disposal,

(b) the possibility of institutionalisation of garbage disposal from houses.

GARBAGE DUMPING AT UNINTENDED PLACES

2. One major reason for the nuisance area created by garbage is the dumping of garbage at unintended places. This problem is more noticeable in Trilokpuri and Kalkaji (35 % and 50 % respectively) indicating

(a) Poor civic awareness of the residents.

(b) Improper planning of placement of garbage bins in terms of distance etc.

(c) Improper utilisation of existing facility.

TABLE 5.3

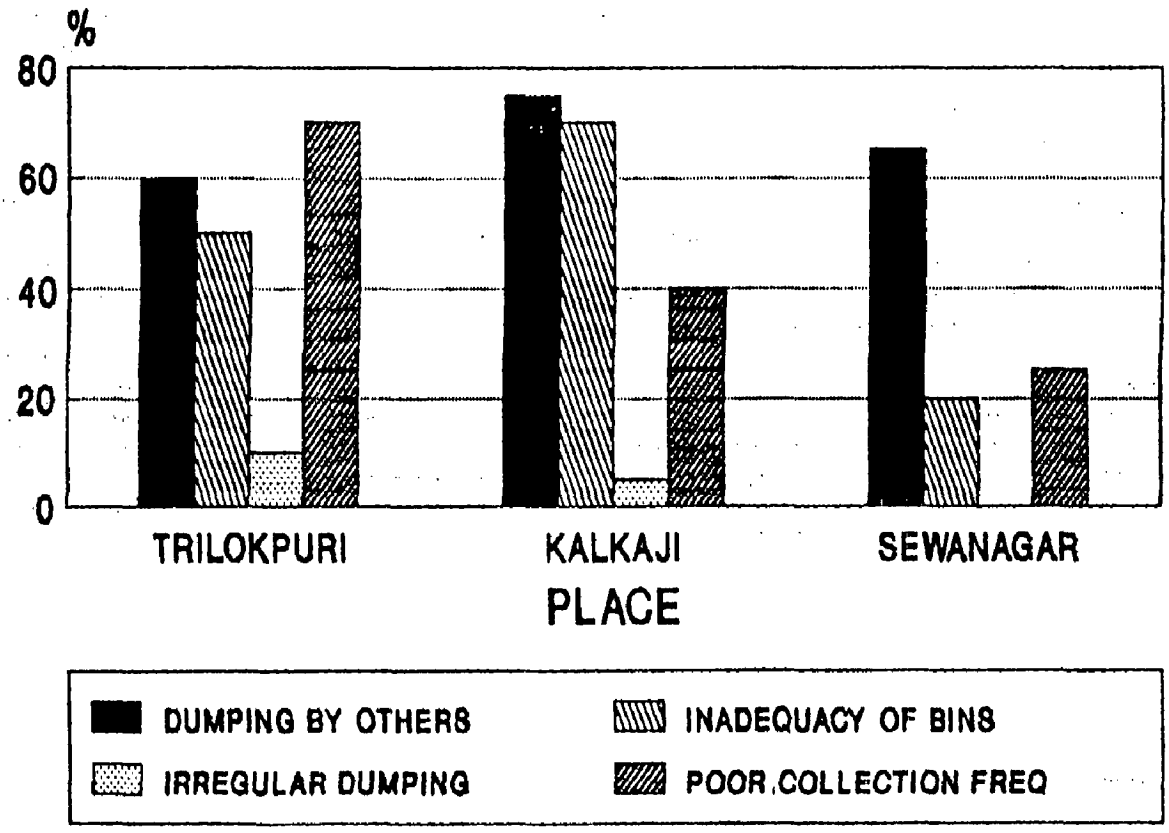
RESIDENTS PERCEPTIONS

OF GARBAGE DISPOSAL & COLLECTION

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Garbage Dumping by Others	60 %	75 %	65 %
2.	Garbage Dumping at Unintended Spots	35 %	50 %	20 %
3.	Inadequacy of Garbage Bins	50 %	70 %	20 %
4.	Irregularity in Dumping	10 %	5 %	-
5.	Poor Frequency of Collection	70 %	40 %	25 %

GARBAGE DISPOSAL

DUMPING BY OTHERS, BINS INADEQUACY, POOR COLLECTION FREQUENCY, IRREGULAR DUMPING



SOURCE : FIELD SURVEY

FIGURE 5.27

GARBAGE DISPOSAL-ANALYSIS

GARBAGE DUMPING BY OTHERS

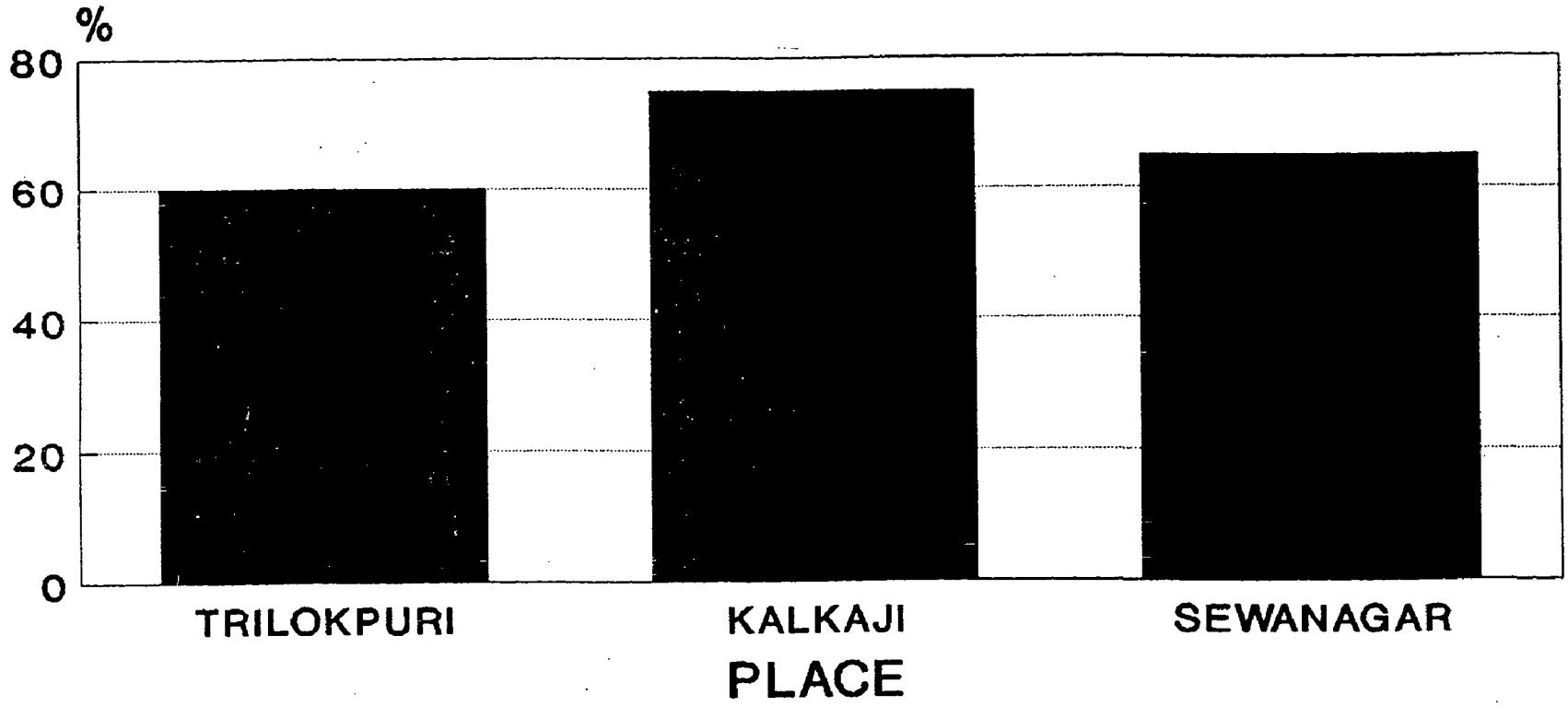


FIGURE NO : 5.28

RESIDENTS DEPEND UPON PRIVATELY EMP PERS INDICATES POSSIBILITY OF PRIVATISATION & INSTITUTIONALISING GARBAGE DISPOSAL.

GARBAGE DISPOSAL-ANALYSIS
INADEQUACY OF GARBAGE BINS

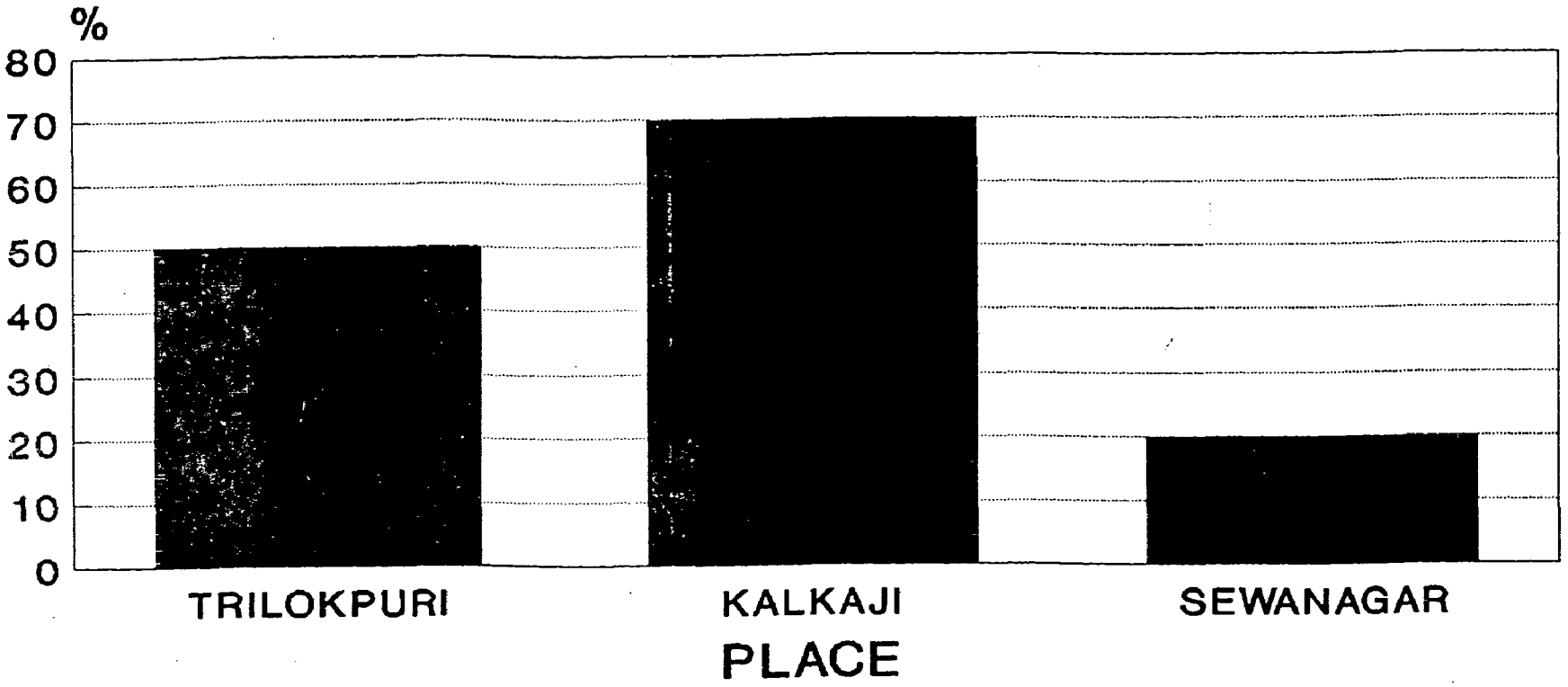


FIGURE NO : 5.29

FEW COMPLAIN DESPITE SHORTAGE. INDICATES a USE OF UNINTENDED SPOTS. b RESIDENTS NOT HAVING ACCESS COMPLAIN IMPROPER PLG.

GARBAGE DISPOSAL-ANALYSIS
IRREGULARITY OF DUMPING

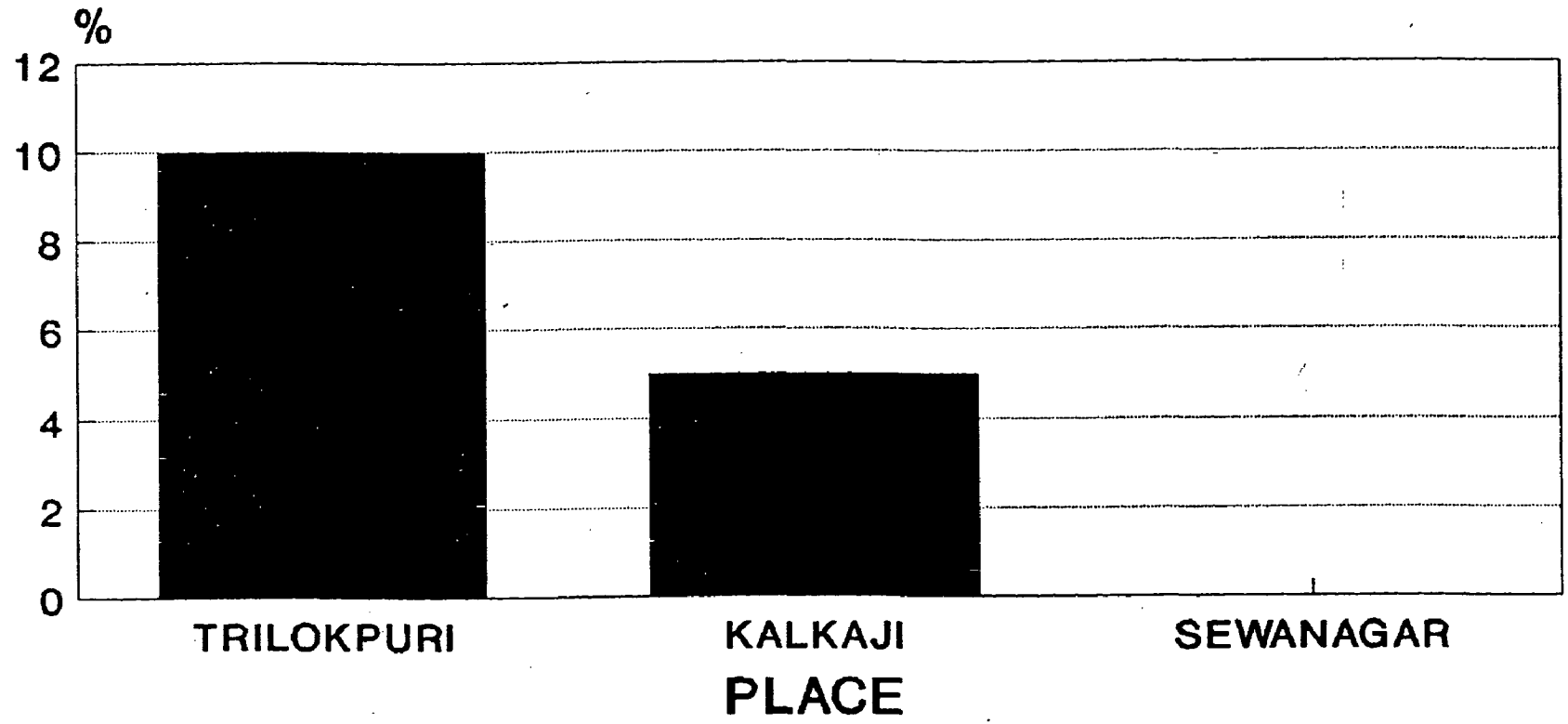


FIGURE NO : 5.30

FEW DO NOT DISPOSE OFF GARBAGE DAILY. INDICATES QUANTUM OF GARBAGE DUMPED DAILY IS FAIRLY UNIFORM.

GARBAGE DISPOSAL-ANALYSIS
POOR FREQUENCY OF COLLECTION

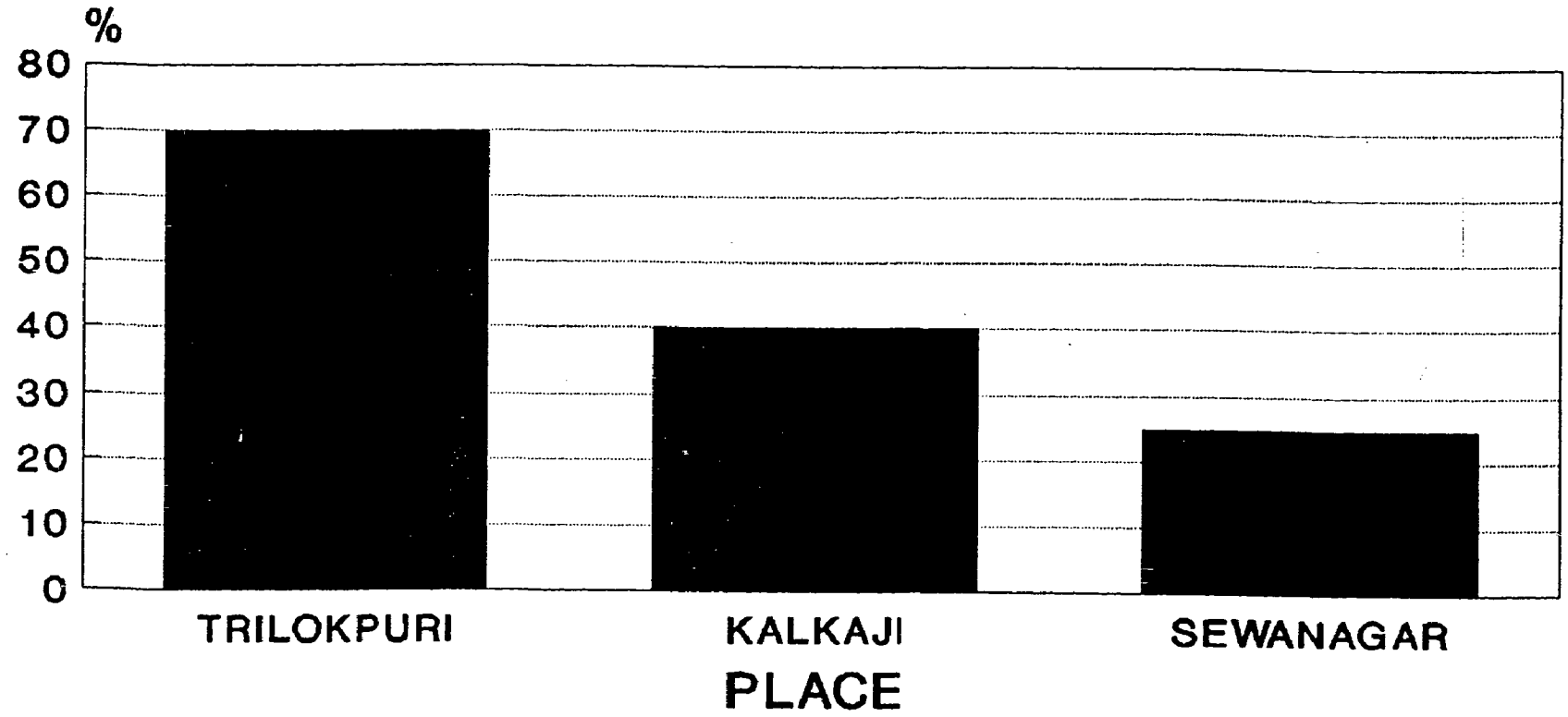
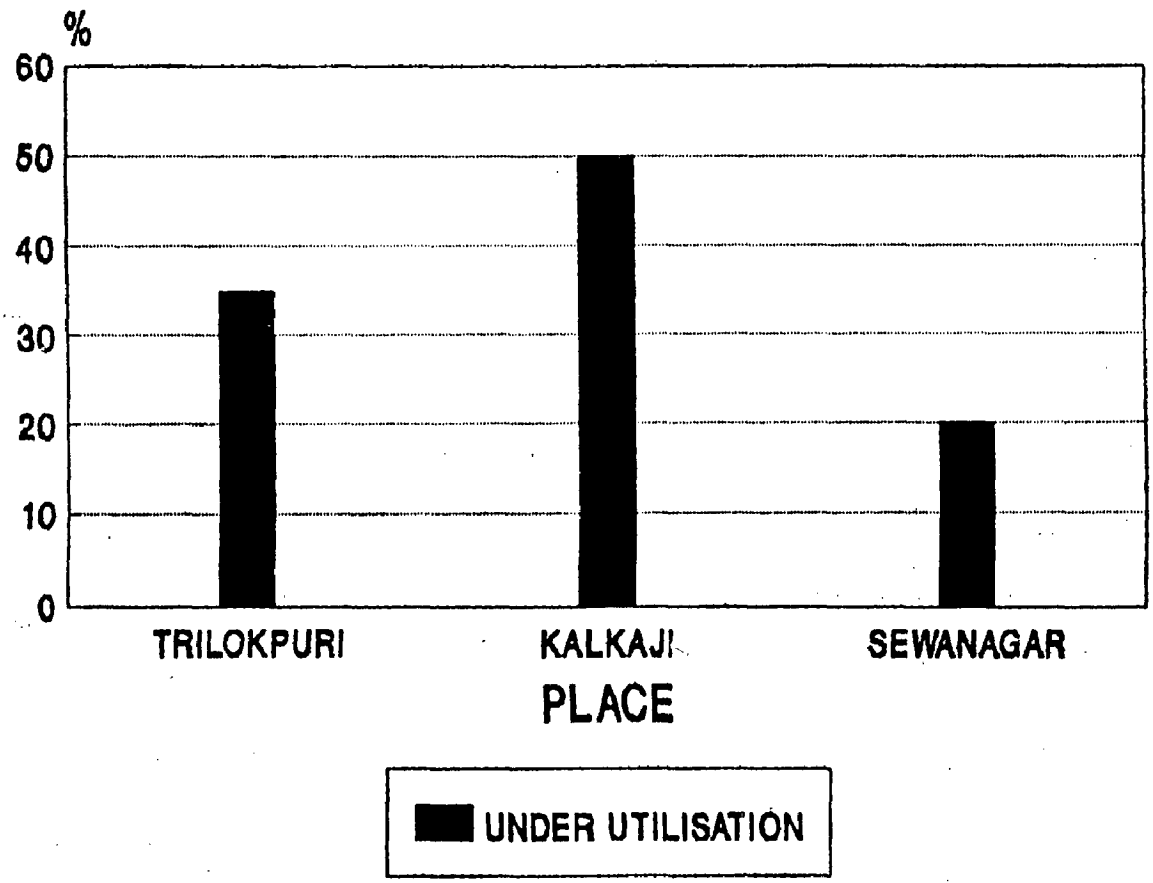


FIGURE NO : 5.31

S'NGRs LOW Figs SHOW BETTER STD OF TASK PERFORMANCE. RESULTS EXCESS LOAD ON FEW DAYS & UNNECESSARY STACKING & ROTTING

GARBAGE DISPOSAL
UNDER UTILISATION OF EXISTING FACILITY



SOURCE : FIELD SURVEY

FIGURE 5.32

GARBAGE DISPOSAL-ANALYSIS

UNDER UTILISATION OF EXISTING FACILITY

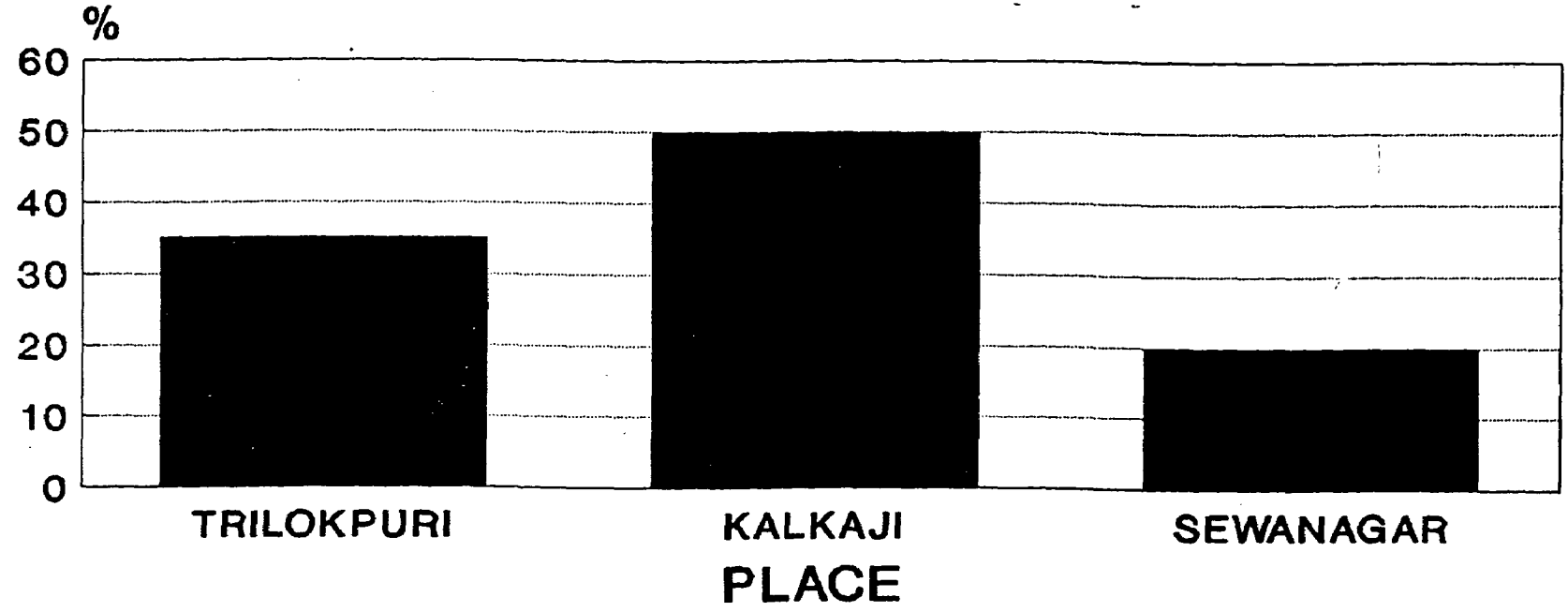


FIGURE NO : 5.33

MOSTLY UNDERUTILISED. DUE TO: UNINTENDED SPOTS DUMPING, SPILLAGE BY ANIMALS CAUSE NUISANCE, FAULTY DESIGN OF FACILITY.

PERCEIVED INADEQUACY OF GARBAGE BINS

3. 50% of the respondents in Trilokpuri, 70% of the respondents in Kalkaji & 20% of the respondents in Sewanagar complain of inadequacy of bins. (Refer Figures 5.27 and 5.29) This indicates :

(a) the respondents who dispose off garbage at unintended spots, do not complain of inadequacy, and

(b) The respondents, who do not have reasonable access to garbage bins complain, indicating improper planning in garbage bin placement.

INADEQUACY OF FORMAL DUMPING SPOTS

4. Only 10% of the respondents in Trilokpuri Phase I and 5 % of the respondents in Kalkaji, do not dispose off garbage daily. This indicates that quantum of garbage dumped daily is fairly uniform. (Refer Figures 5.27 and 5.30) This indicates :

FREQUENCY OF COLLECTION

5. 70% of the respondents in Trilokpuri Phase I, 40% of the respondents in Kalkaji and 25% of the respondents in Sewanagar complain of infrequent collection of garbage by agency staff. This figure is low in the case of Sewanagar indicating on better standard of task performance there. (Refer Figures 5.27 and 5.31) This also results in

(a) unnecessary stacking of garbage and subsequent rotting and nuisance and,

(b) excessive load on certain days,

UNDER-UTILISATION OF EXISTING FACILITY

6. Most garbage bins & dumps in all three case study areas are highly underutilised. (Refer Figures 5.32 and 5.33) This is attributed to

(a) Garbage dumping at unintended spots;

(b) Animals and Ragpickers spreading garbage all over creating an extended nuisance zone and hampering access;

(c) Faulty design of garbage collectors and bins; and

(d) Encroachments blocking access to garbage dumps affecting both disposal and and collection.

5.3.4 MAINTENANCE MANAGEMENT OF SEWERAGE AND DRAINAGE

(Reference Table 5.4)

USE OF COMMUNITY TOILETS PROVIDED BY M.C.D.

1. Despite very poor standards of the MCD provided community toilets, 75% of the respondents in Trilokpuri Phase I depend on them. This is also despite the fact that the community toilets provided by Sulabh International Limited are comparatively much cleaner and extremely cheap. (Refer Figures 5.34 and 5.35) This could be attributed to

(a) The residents are cleanliness conscious.

(b) Inadequacy of such toilets, making accessibility for most residents difficult.

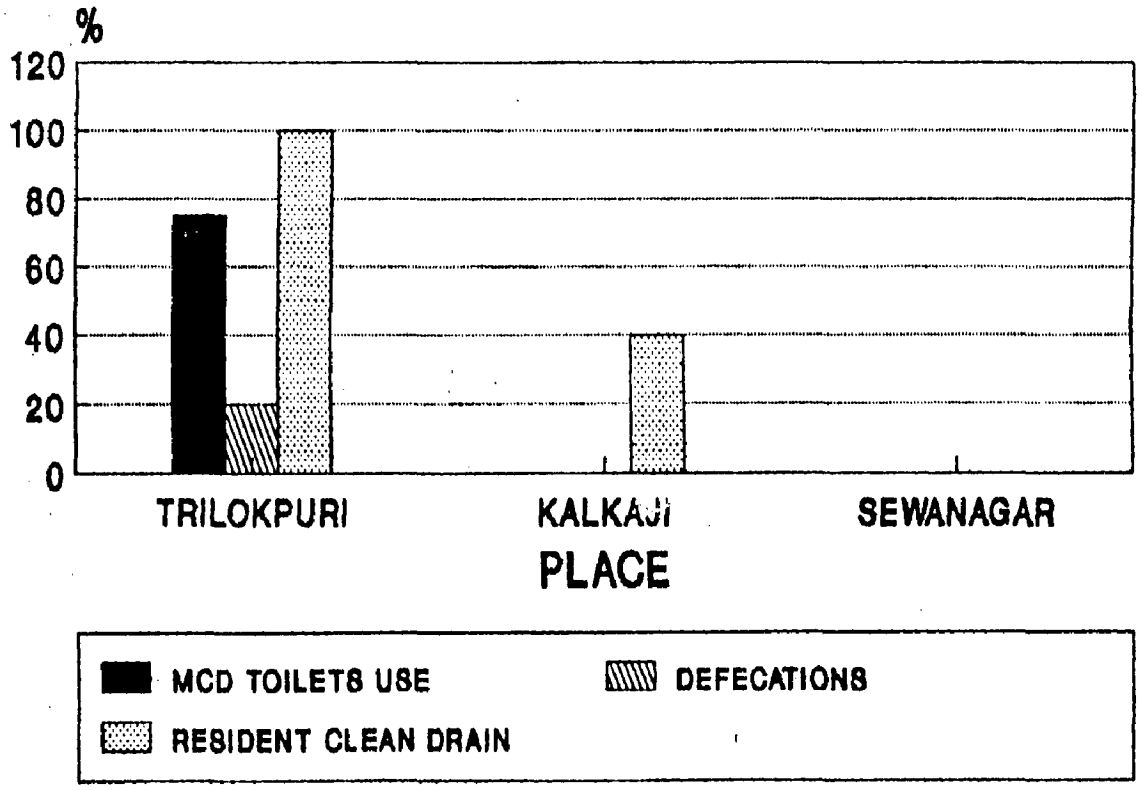
TABLE 5.4

RESIDENTS PERCEPTIONS OF SEWERAGE & DRAINAGE

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Use of MCD Community Toilets	75 %	-	-
2.	Defecation at Unintended Spots	20 %	-	-
3.	Private Initiative in Cleaning Toilets	10 %	-	-
4.	Private Initiative in Cleaning Drains	100 %	40 %	-
5.	Unintended Use of Drains	40 %	-	-
6.	Drains Clogged during Monsoons	100 %	75 %	-
7.	Irregular maintenance of Drains	100 %	100 %	20 %

SEWERAGE & DRAINAGE

MCD COMMUNITY TOILETS USE, UNINTENDED SPOTS DEFECATION & DRAIN CLEANING



SOURCE : FIELD SURVEY

FIGURE 5.34

SEWERAGE & DRAINAGE
ANALYSIS OF USE OF COMMUNITY TOILETS PROVIDED BY M.C.D.

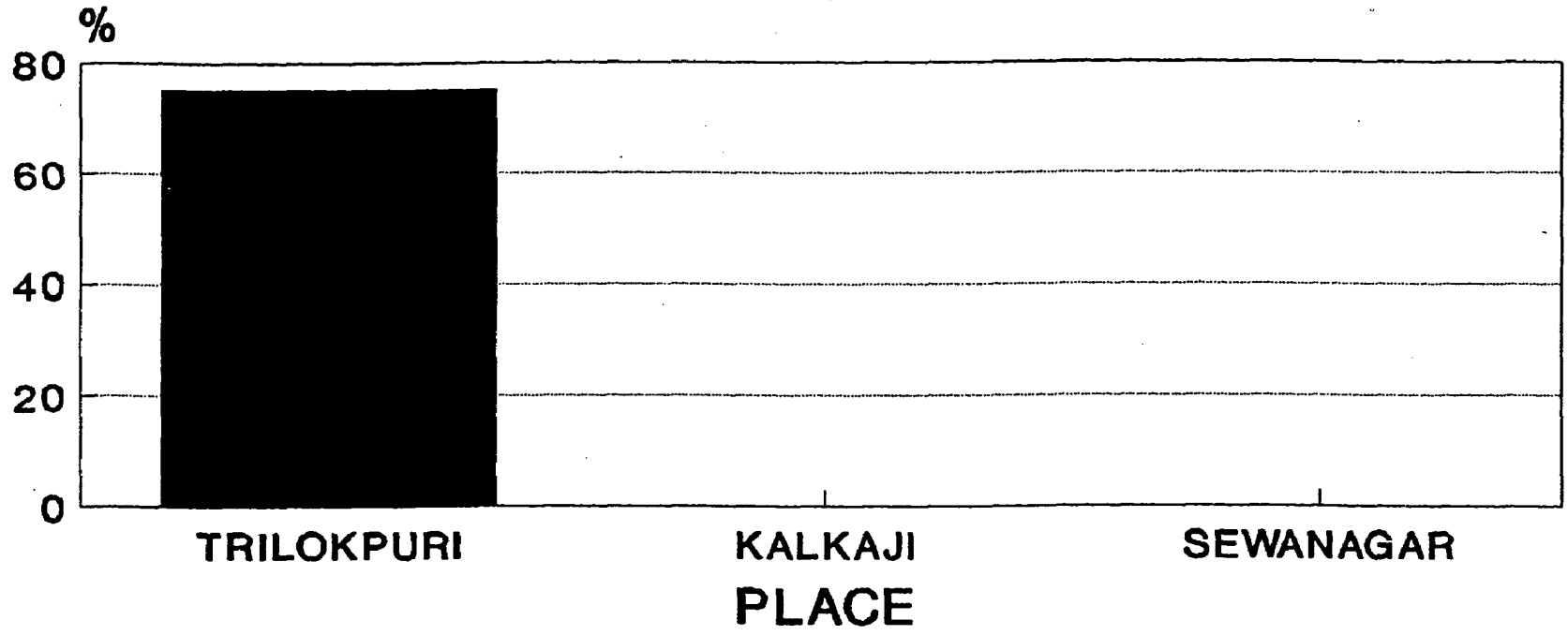


FIGURE NO : 5.35

PEOPLE PREFER THEM TO SULABHS. INDICATES RESIDENTS NOT CLEANLINESS CONSCIOUS, INADEQUACY & INACCESSIBILITY OF SULABHS.

SEWERAGE & DRAINAGE
DEFECATION AT UNINTENDED SPOTS
AN ANALYSIS

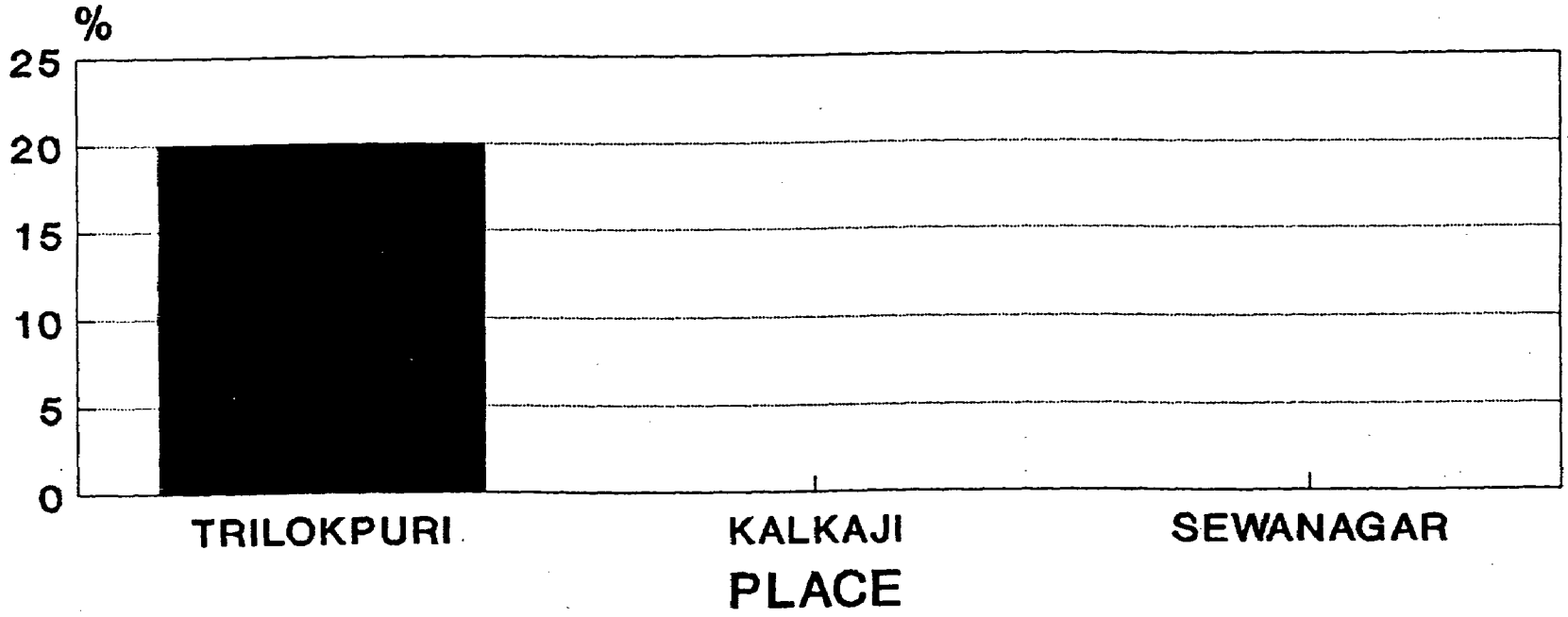


FIGURE NO : 5.36

INDICATES POOR STD OF COMMUNITY TOILETS, WATER / LIGHTs ABSENCE LEAVES NO OPTIONS & POOR CIVIC AWARENESS OF RESIDENTS

SEWERAGE & DRAINAGE
DRAIN CLEANING BY RESIDENTS
AN ANALYSIS

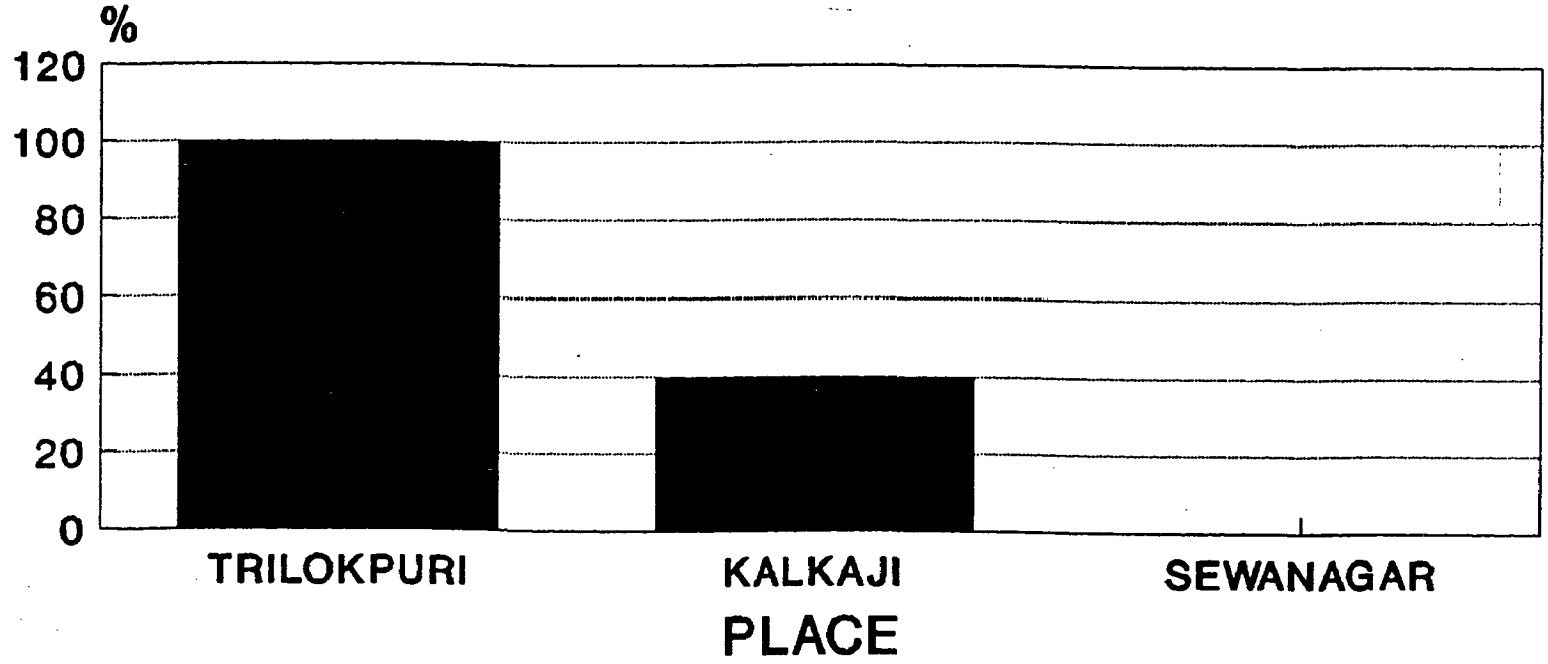


FIGURE NO : 5.37

INDICATES INEFFICIENCY OF AGENCY PERS IN TASK PERFORMANCE, PUBLIC PARTICIPATIONS POTENTIAL & DRAINS ARE NUISANCE PRONE.

DEFAECATION AT UNINTENDED SPOTS

2. 20% of respondents in Trilokpuri, defecate at unintended spots. (Refer Figures 5.34 and 5.36) This could be attributed to

(a) Poor standard of community toilets;

(b) Added with absence of water and lighting facility, leaving little choice to the residents (especially children) from doing otherwise;

(c) Poor civic awareness of the residents.

DRAIN CLEANING BY RESIDENTS

3. A very high percentage of the respondents in Trilokpuri (100%) and Kalkaji (40%) clean the drains in front of their houses themselves. (Refer Figures 5.34 and 5.37) This is indicative of :

(a) Inefficiency of Agency personnel in task performance;

(b) Potential of public participation in cleaning of drains etc.;

(c) The drains, being in the house fronts, are prone to nuisance creation, through clogging and subsequent overflow.

4. The figure is low in Sewanagar, which is indicative of -

(a) Better task performance by agency staff under effective supervision of the intermediary body of the C.P.W.D.

5.3.5 MAINTENANCE MANAGEMENT OF ROADS, STREET LIGHTING ETC.

(Reference Table 5.5)

WATER LOGGING OF ROADS

1. A very high percentage of the respondents in Trilokpuri (95%) and Kalkaji (70 %) contend that roads are water-logged during monsoon, creating difficulty in access. (Refer Figures 5.38 and 5.39) This could be attributed to :

(a) Poor and ill maintained drainage system.

(b) Improper road gradients and lack of rectification.

The problem is less severe in Sewanagar (20%) indicating better state of maintenance.

ENCROACHMENTS ON ROADS

2. All the respondents in Trilokpuri Phase I, and 60% of respondents in Kalkaji and Sewanagar complained of encroachments on roads, which narrow down access and hinder in road repairs etc. The problem is most rampant in Trilokpuri, where the socio-economic status of the area has created more informal sector encroachments.(Refer Figures 5.38 and 5.40)

TABLE 5.5

RESIDENTS PERCEPTIONS

OF ROADS, STREET LIGHTING ETC.

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Roads Water Logged During Monsoons	95 %	70 %	20 %
2.	Excessive Encroachment on Roads	100 %	60 %	20 %
3.	Delays in Post Excavation Road Repairs	60 %	50 %	20 %
4.	Roads not Repaired Regularly	70 %	50 %	20 %
5.	Lack of Maintenance of Street Lighting and Street Furniture	100 %	80 %	10 %

DELAYS IN POST EXCAVATION ROAD RESTORATION

3. One of the problems faced by residents are delays in post excavation road restoration. 60% of the respondents in Trilokpuri, 50% in Kalkaji and 20% in Sewanagar complained of delays. (Refer Figures 5.38 and 5.41) This could be attributed to

(a) Poor coordination between agencies, involved in the excavation restoration process;

(b) Inefficiency of agency personnel, responsible for road restoration; and,

(c) Improper planning of services and road layouts.

4. The figure is very high in Kalkaji indicating involvement of more number of agencies in the process and greater frequency of problem.

REGULAR ROAD REPAIR

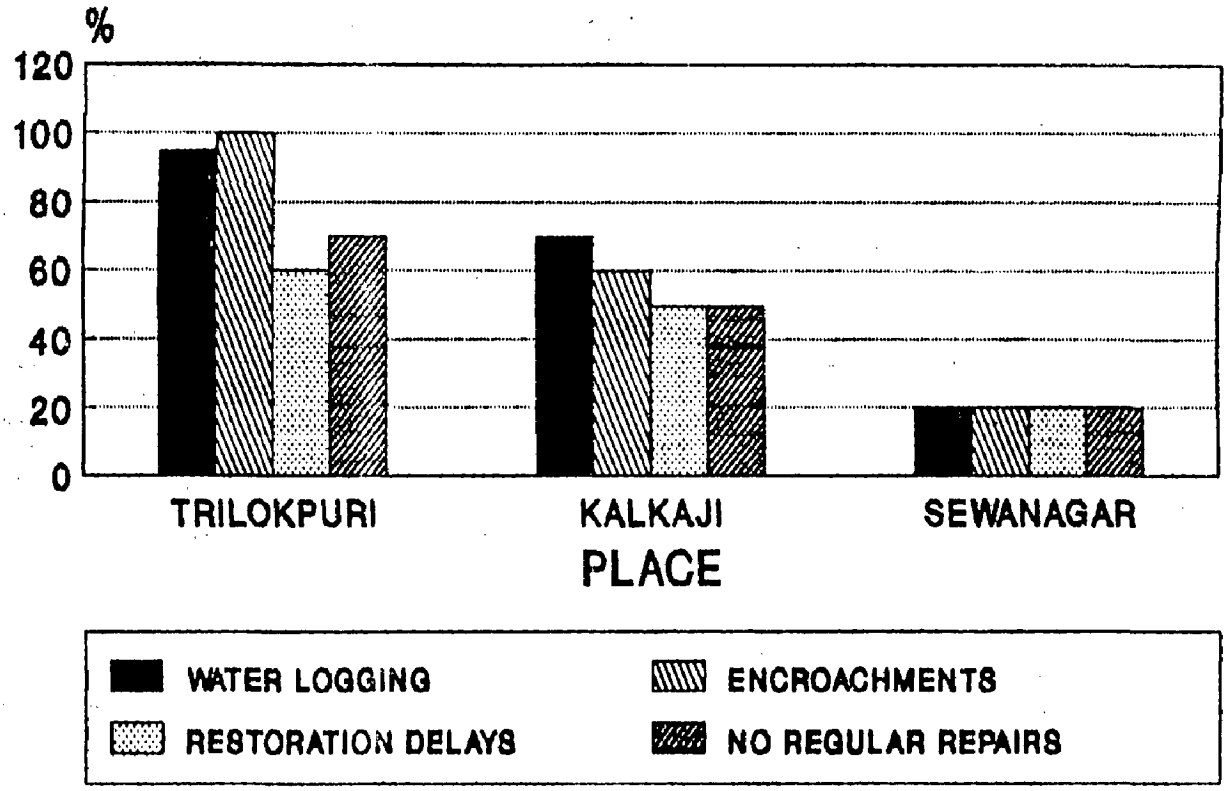
5. A high percentage of the respondents in Trilokpuri (70%) and Kalkaji (50%) contend that road repairs are not conducted periodically, resulting in cumulative increase in damages. (Refer Figures 5.38 and 5.42)

MAINTENANCE OF STREET LIGHTING, STREET FURNITURE ETC.

6. The maintenance of Street lighting, Street furniture etc. is hardly done according to all the respondents at Trilokpuri. Similarly in the case, with Kalkaji (80%). In Sewanagar, however, only 20% of the respondents have the complaint, indicating a better standard of task performance. (Refer Figures 5.43 and 5.44)

ROADS & STREET LIGHTING

ROADS - WATER LOGGING, ENCROACHMENTS, DELAYS IN RESTORATION & REGULAR REPAIRS



SOURCE : FIELD SURVEY

FIGURE 5.38

ROADS & STREETLIGHTING etc

WATER LOGGING OF ROADS

AN ANALYSIS

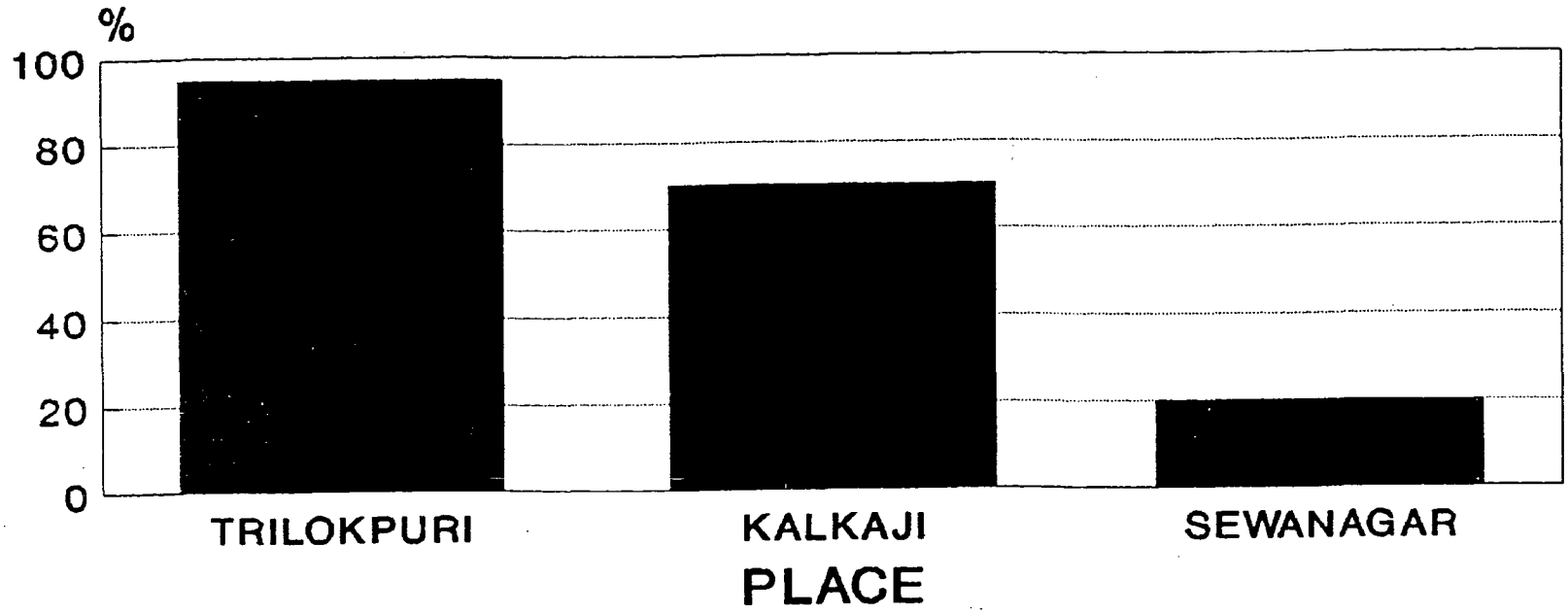


FIGURE NO : 5.39

DUE TO POOR/ILL MAINT DRAINAGE SYS, LACK OF RECTIFICATION & IMPROPER RD GRADIENT. SWNR Figs INDICATE BETTER MAINTENANCE.

ROADS & STREETLIGHTING etc

ENCROACHMENT ON ROADS

AN ANALYSIS

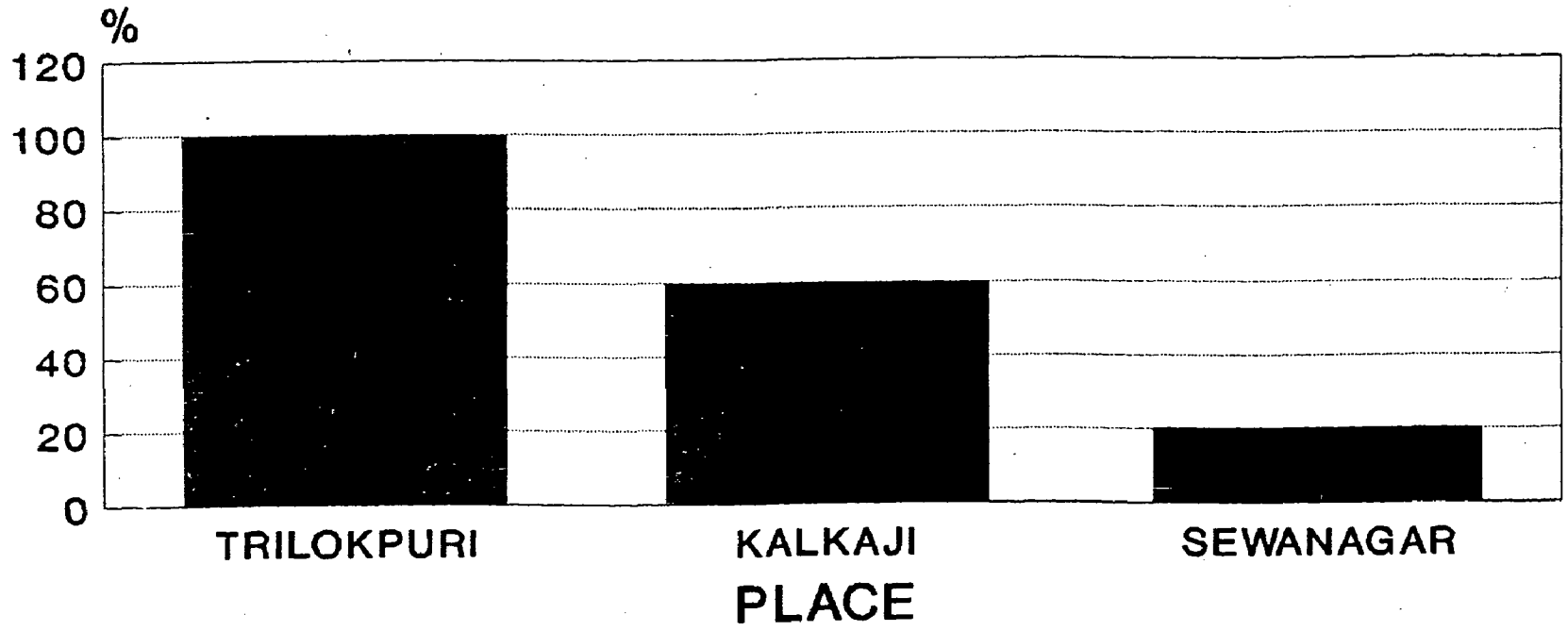


FIGURE NO : 5.40

RAMPANT PROBLEM IN T'PURI. BECAUSE SOCIO ECONOMIC STATUS OF AREA HAS CREATED MORE INFORMAL SECTOR ENCROACHMENTS.

ROADS & STREETLIGHTING etc

DELAYS IN RESTORATION

AN ANALYSIS

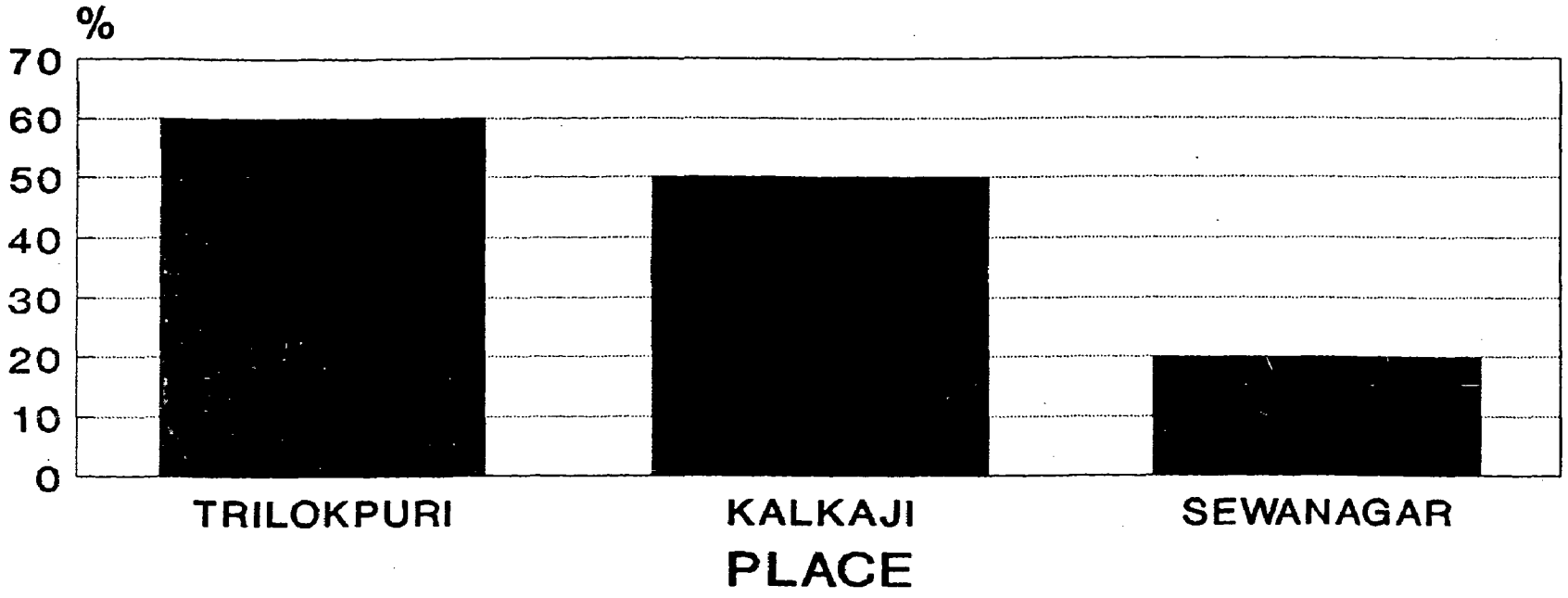


FIGURE NO : 5.41

ATTRIBUTED TO: a POOR COORDINATION AMONG AGENCIES, b INSUFFICIENCY OF AGENCY PERS c IMPROPER PLANNING OF SERVICES & LAYOUT

ROADS & STREETLIGHTING etc

ROADS NOT REPAIRED REGULARLY

AN ANALYSIS

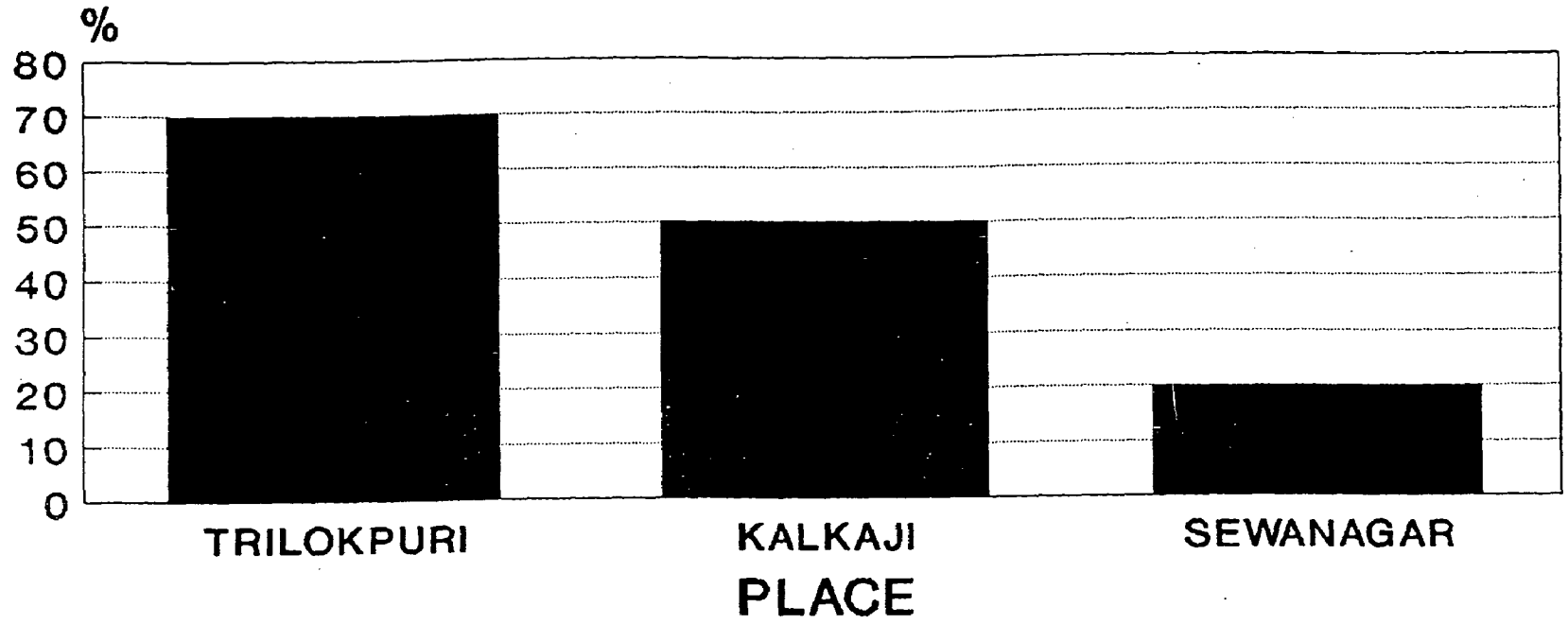
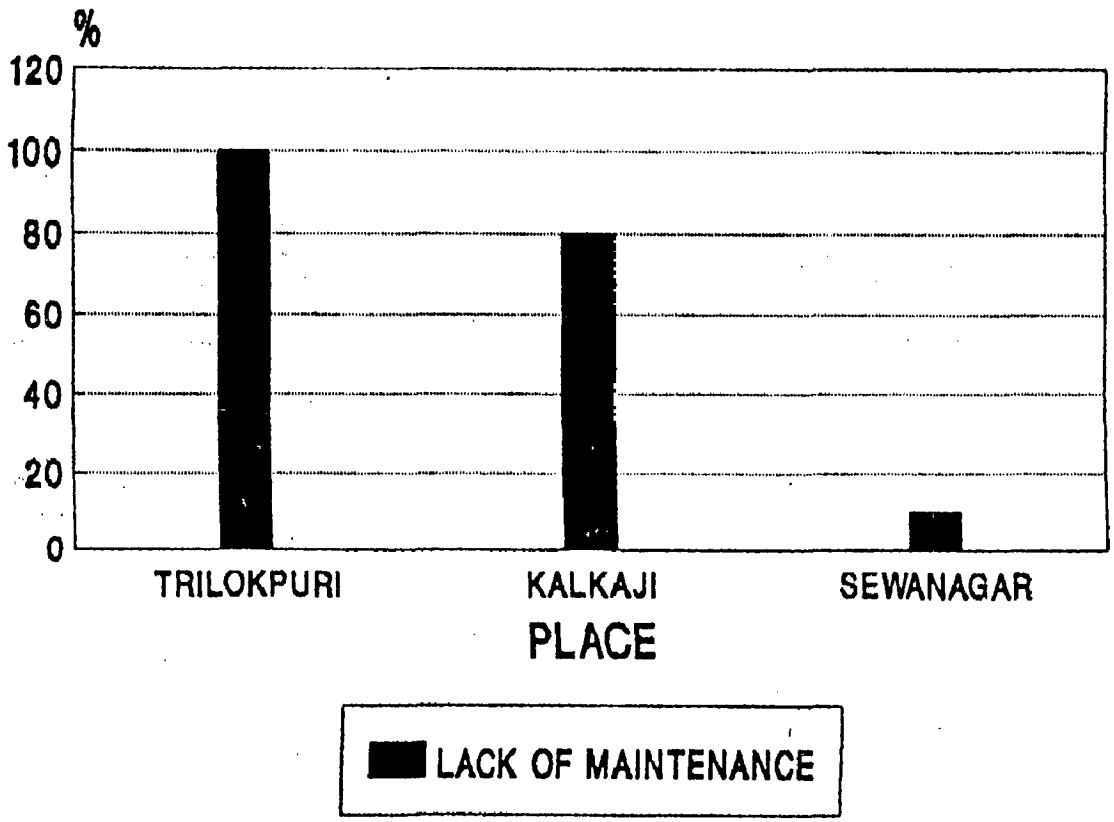


FIGURE NO : 5.42

IN T'PURI & K'JI ROAD REPAIR ARE NOT CONDUCTED PERIODICALLY RESULTING IN CUMULATIVE INCREASE IN DAMAGES.

ROADS & STREET LIGHTING

LACK OF MAINTENANCE OF STREET LIGHTING & STREET FURNITURE



SOURCE : FIELD SURVEY

FIGURE 5.43

ROADS & STREETLIGHTING etc

ANALYSIS - LACK OF MAINTENANCE OF STREET LIGHTING/ STREET FURNITURE

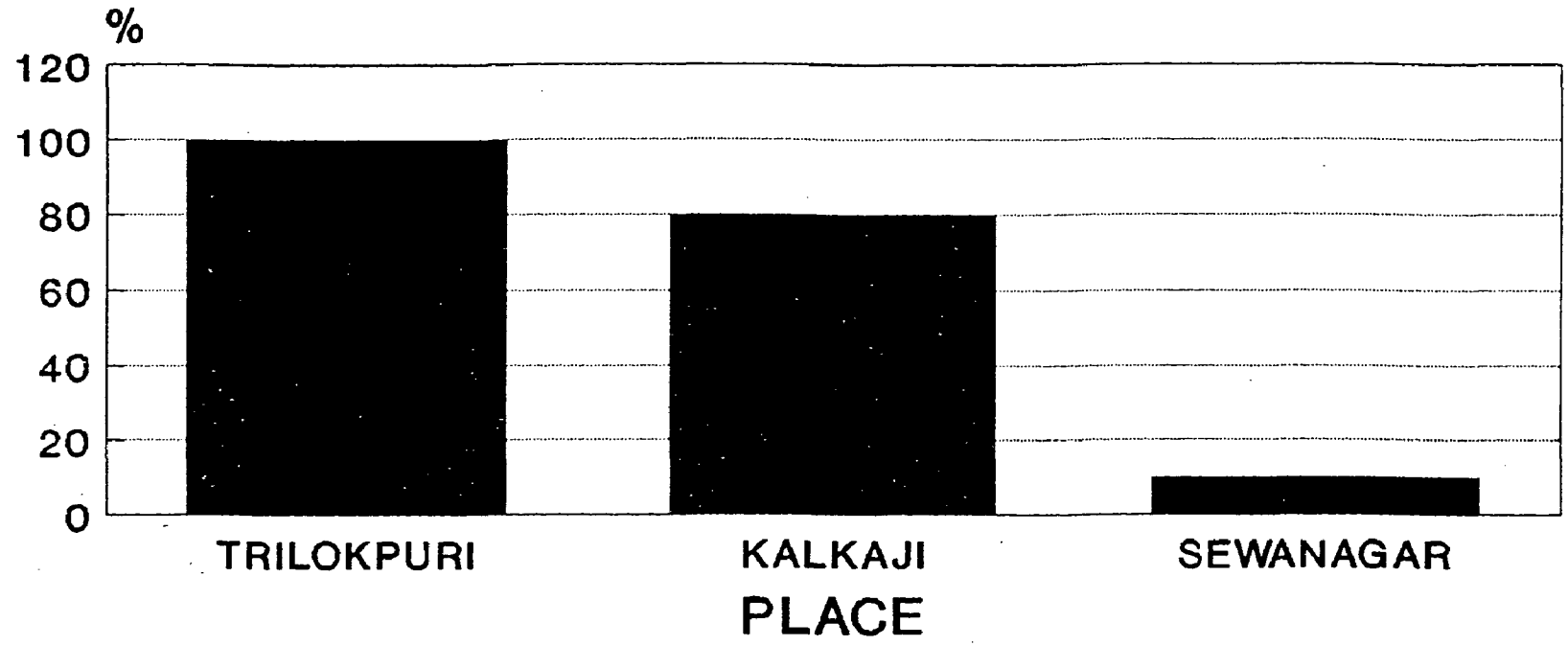


FIGURE NO : 5.44

INDICATES a. LACK OF MAINTENANCE IN T'PURI & KALKAJI.b SEWANAGAR INDICATES BETTER STATE OF MAINTENANCE.

5.3.6 MAINTENANCE MANAGEMENT OF FORMAL OPEN SPACES

(Reference Table 5.6)

UNINTENDED USE & DISUSE OF PARKS

1. 95% of the respondents in Trilokpuri do not either use the parks or subject it to unintended use. This number is lower in Kalkaji (25%) and Sewanagar (40%). (Refer Figures 5.45 and 5.46) This could be attributed to :

(a) Improved Civic Awareness of the residents

(b) Existence of a certain degree of social control.

UNINTENDED USE AND DISUSE OF PLAYGROUNDS & OTHER OPEN SPACES

2. The picture here is slightly different compared to Kalkaji and Sewanagar, in Trilokpuri, more misuse than disuse takes place. (Refer Figures 5.45 and 5.47) This could be attributed to a lower level of civic awareness there.

MAINTENANCE OF PARKS AND PLAYGROUNDS BY AGENCIES

3. In the case of maintenance managements of these spaces, we notice a substantial degree of locational differentials. In Trilokpuri, these spaces are not maintained at all and have now become defined nuisance spaces, plagued by filth, regular stray animals, vandalism and willful damage. In Kalkaji, the situation is marginally better.

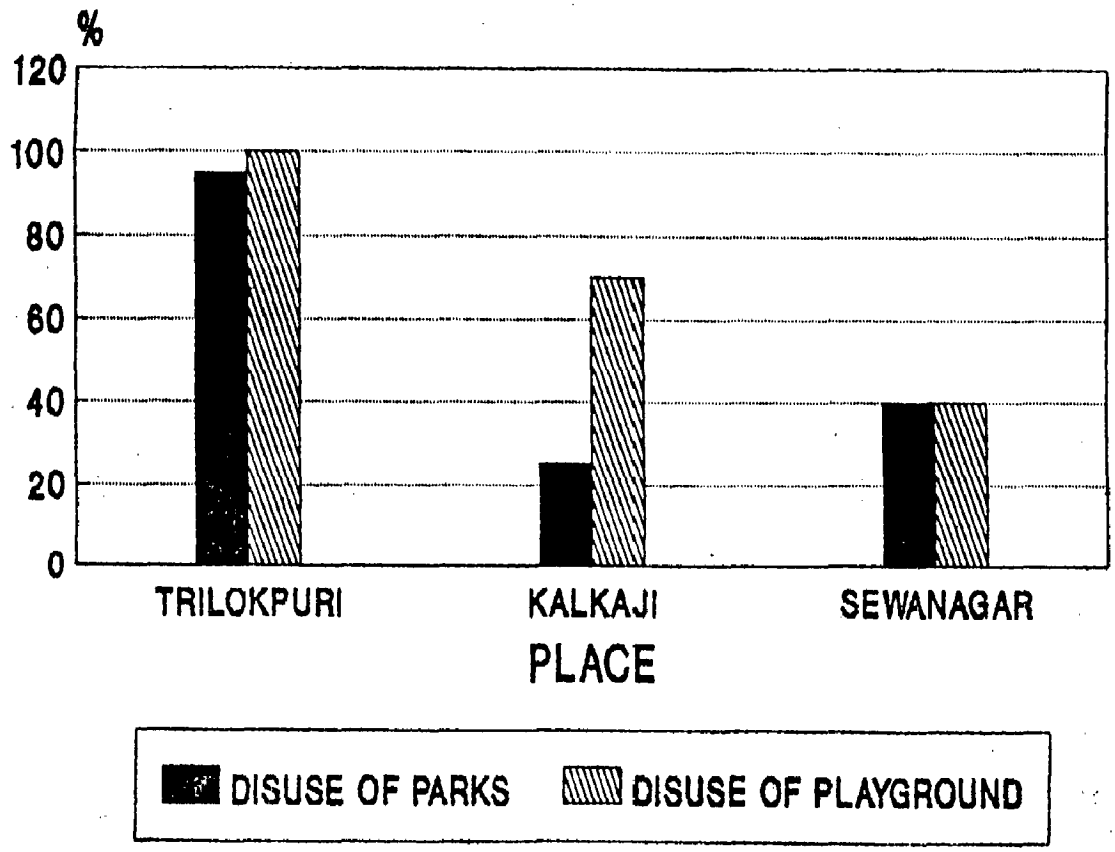
4. In Sewanagar, however, the open spaces (not the developed parks) are under the maintenance management of the CPWD and they displayed a marked difference in standards.

TABLE 5.6

RESIDENTS PERCEPTIONS OF FORMAL OPEN SPACES

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Unintended Use & Disuse of Parks	95 %	25 %	40 %
2.	Unintended Use & Disuse of Playgrounds	100 %	70 %	40 %

FORMAL OPEN SPACES
UNINTENDED USE & DISUSE OF PARKS AND PLAYGROUNDS

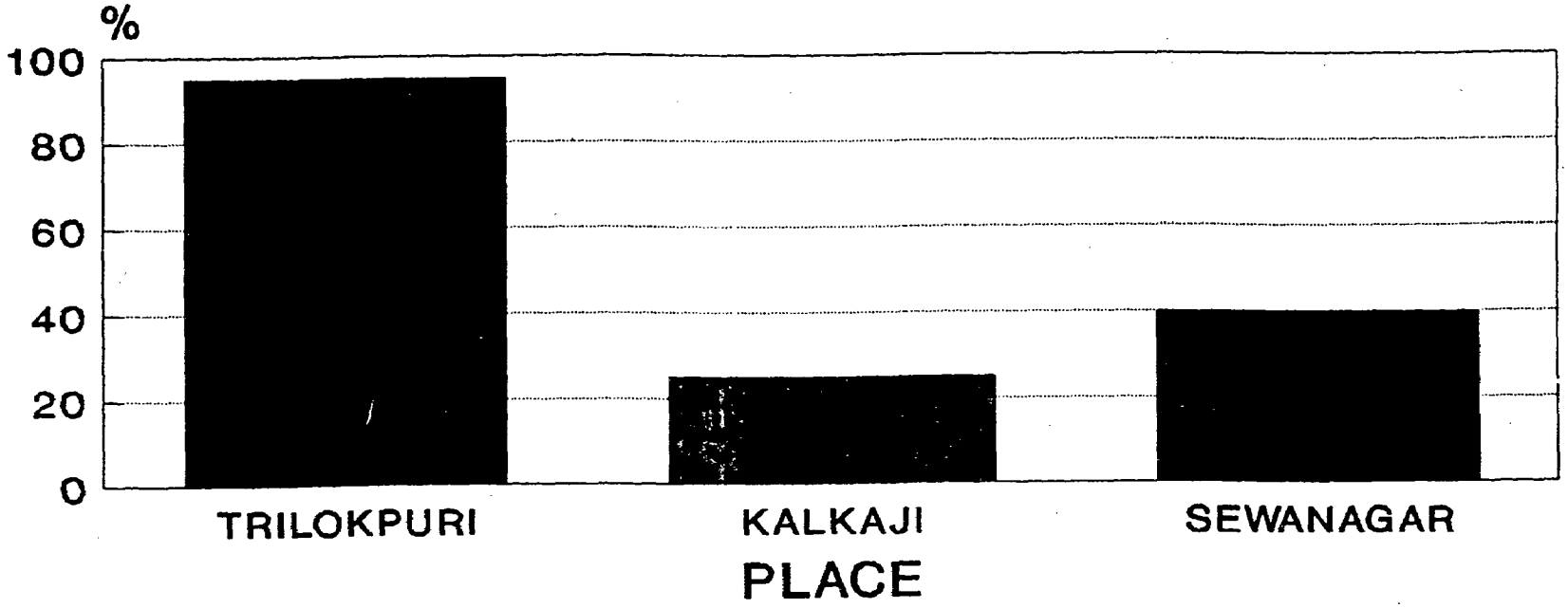


SOURCE : FIELD SURVEY

FIGURE 5.45

FORMAL OPEN SPACES
UNINTENDED USE & DISUSE OF PARKS
AN ANALYSIS

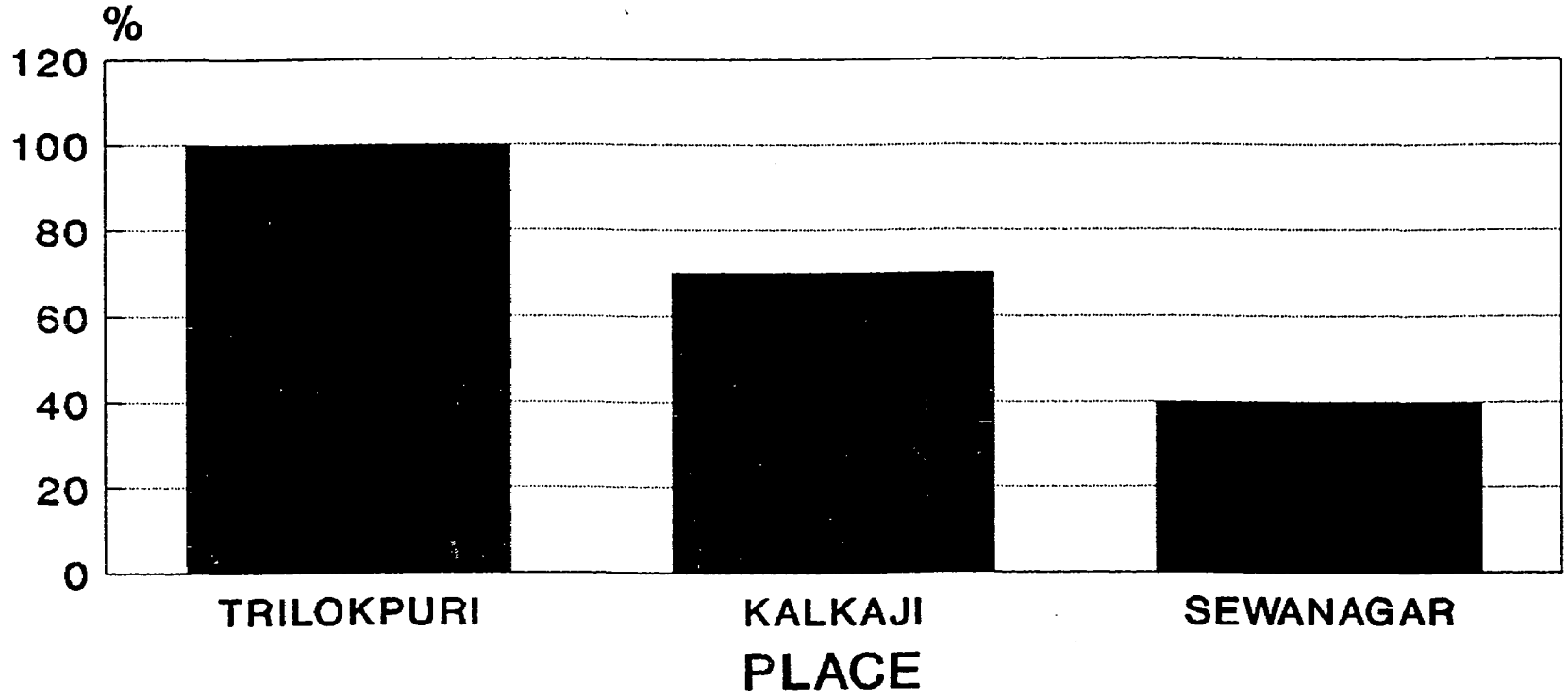
FIGURE NO : 5.46



HARDLY USED BY T'PURI PEOPLE. OTHERS INDICATE IMPROVED CIVIC AWARENESS & EXISTENCE OF SOCIAL CONTROL.

FORMAL OPEN SPACES
UNINTENDED USE & DISUSE OF PLAYGROUNDS - AN ANALYSIS

FIGURE NO : 5.47



T'PURI RESIDENTS MISUSE MORE THAN DISUSE DUE TO LOWER LEVEL OF CIVIC AWARENESS.

5.3.7 CIVIC AWARENESS, PUBLIC PARTICIPATION & COMMUNITY ACTION

(Reference Table 5.7)

1. Most respondents agree that housing area maintenance management is a joint responsibility of the residents and the local bodies (Refer Figure Nos 5.48 & 5.49). However, majority of the respondents do feel that the system of councilors is not effective in civic maintenance. (Refer Figure Nos 5.48 & 5.50) Barring a part 20% of the respondents in Trilokpuri 10% of the respondents in Kalkaji & 25% respondents in Sewanagar, others consider, that encroachment by the informal sector is a nuisance, however not denying their utility. (Refer Figure 5.51 & 5.52) The differential can be attributed to the percentage of respondents actually indulging in such actions. Despite the existance of residents welfare society in Kalkaji and Sewanagar, only 30 & 40% of the respondents in these two areas respectively feel that they serve there purpose, indicating the need for a consensus and proper structuring of such institutions, for proper functioning.

2. Despite, otherwise for aesthetic consciousness, most of the respondents in all three areas feel that poster sticking and wall writing is a nuisance. (Refer Figure Nos 5.51 & 5.53) Efforts and enterprise in tree plantation programs by respondents have failed because of vandalism by fellow residents, indicating the need for consensus and increased civic awareness for the success of such programs. (Refer Figs. 5.54 to 5.56)

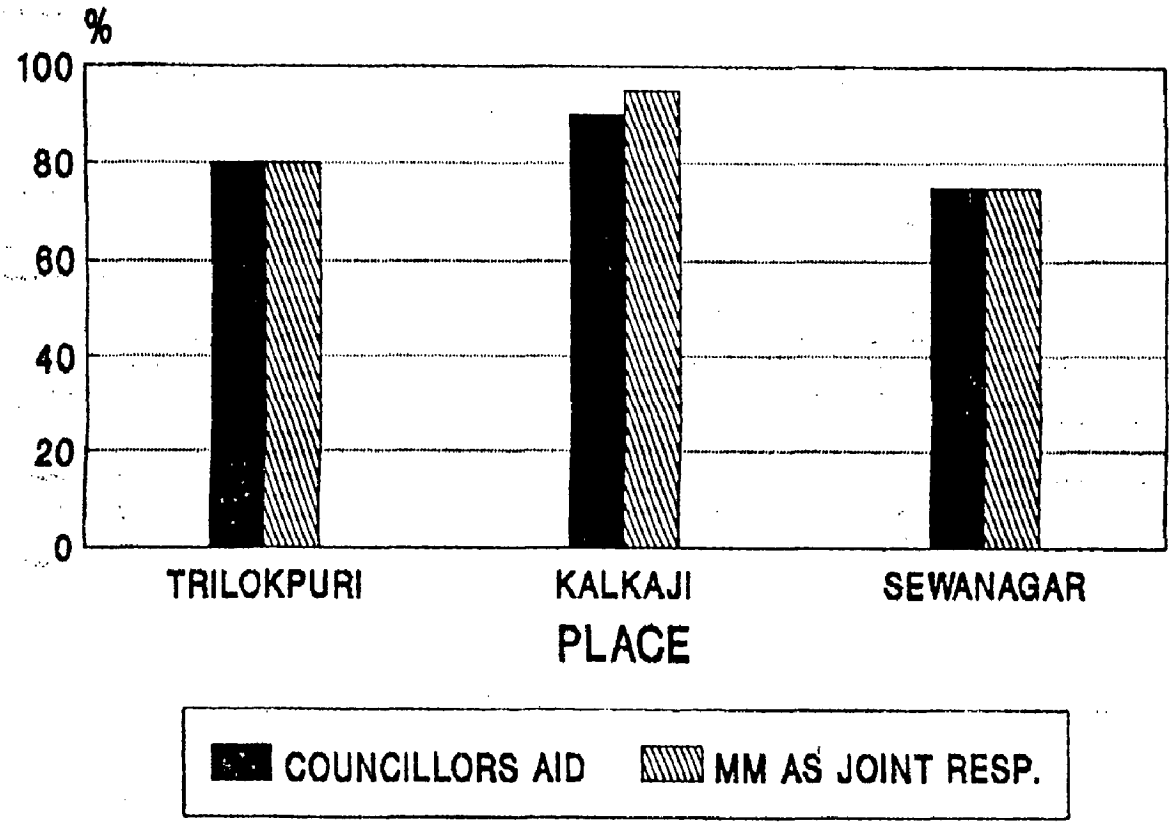
TABLE 5.7 -

RESIDENTS PERCEPTIONS OF CIVIC AWARENESS, PUBLIC PARTICIPATION, & COMMUNITY ACTION

S No	INDICATOR	TRILOKPURI	KALKAJI	SEWANAGAR
1.	Participation in Tree Plantation	10 %	-	20 %
2.	Society Serves its Purpose	-	30 %	40 %
3.	Councillors Aid in Civic Maintenance	20 %	20 %	15 %
4.	M.M. is a Joint Responsibility	70 %	100 %	100 %
5.	Encroachment by Informal Sector is a Nuisance	80 %	90 %	75 %
6.	Poster Sticking & Wall Writing is a Nuisance	80 %	95 %	75 %

COMMUNITY ACTION

COUNCILLORS AID IN CIVIC MAINT. & MAINT. MANAGEMENT AS JOINT RESPONSIBILITY.



SOURCE : FIELD SURVEY

FIGURE 5.48

COMMUNITY ACTION ANALYSIS

MAINTENANCE MANAGEMENT IS JOINT RESPONSIBILITY

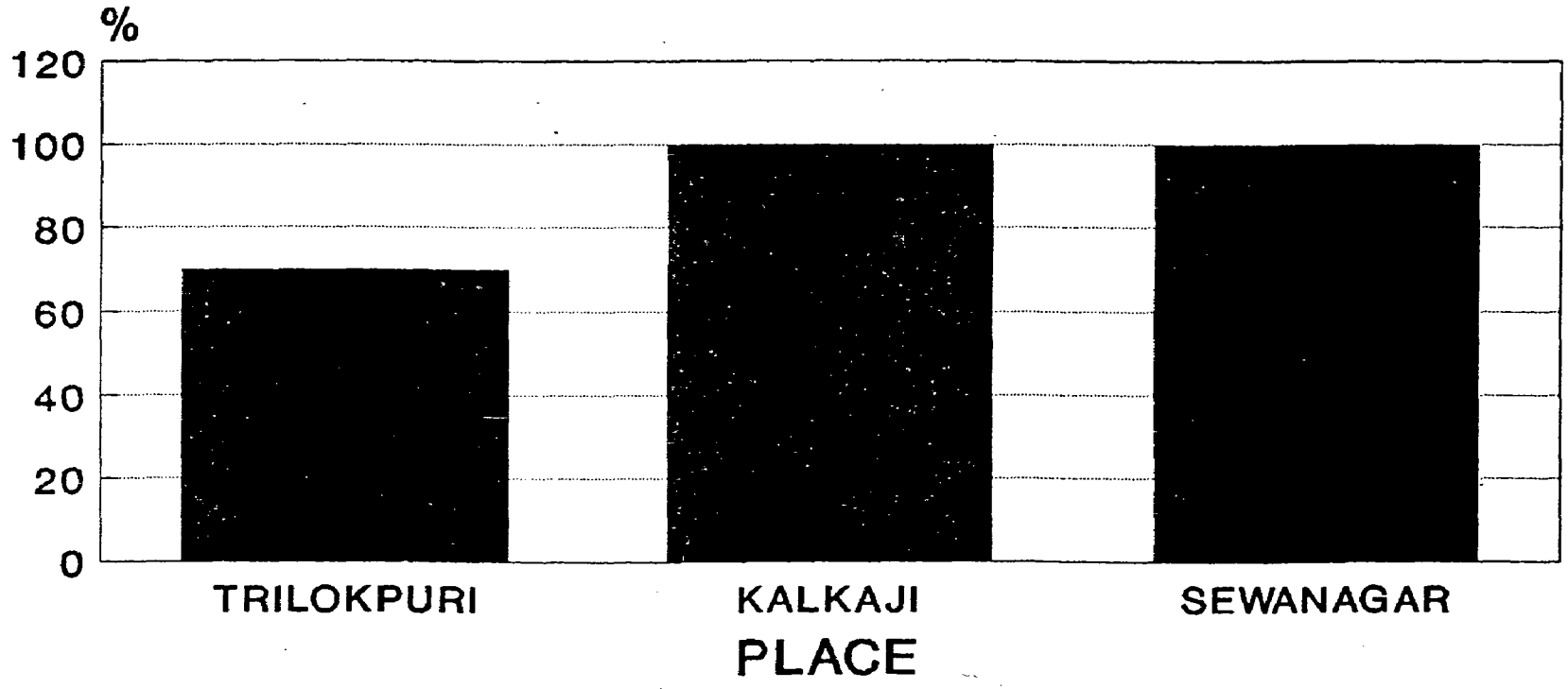


FIGURE NO : 5.49

MOST RESIDENTS AGREE. CAN BE CONSIDERED AS AN ASSET.

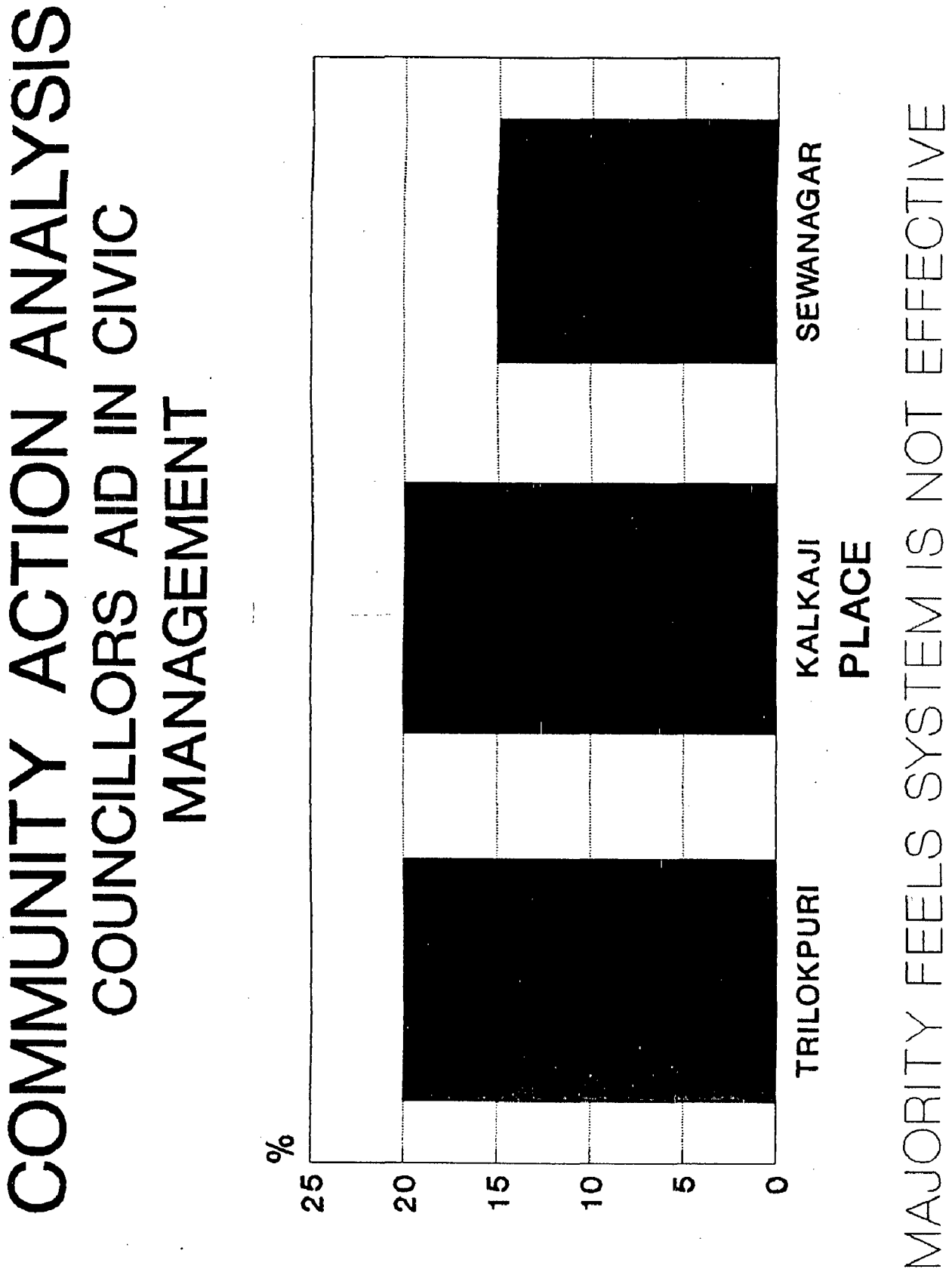
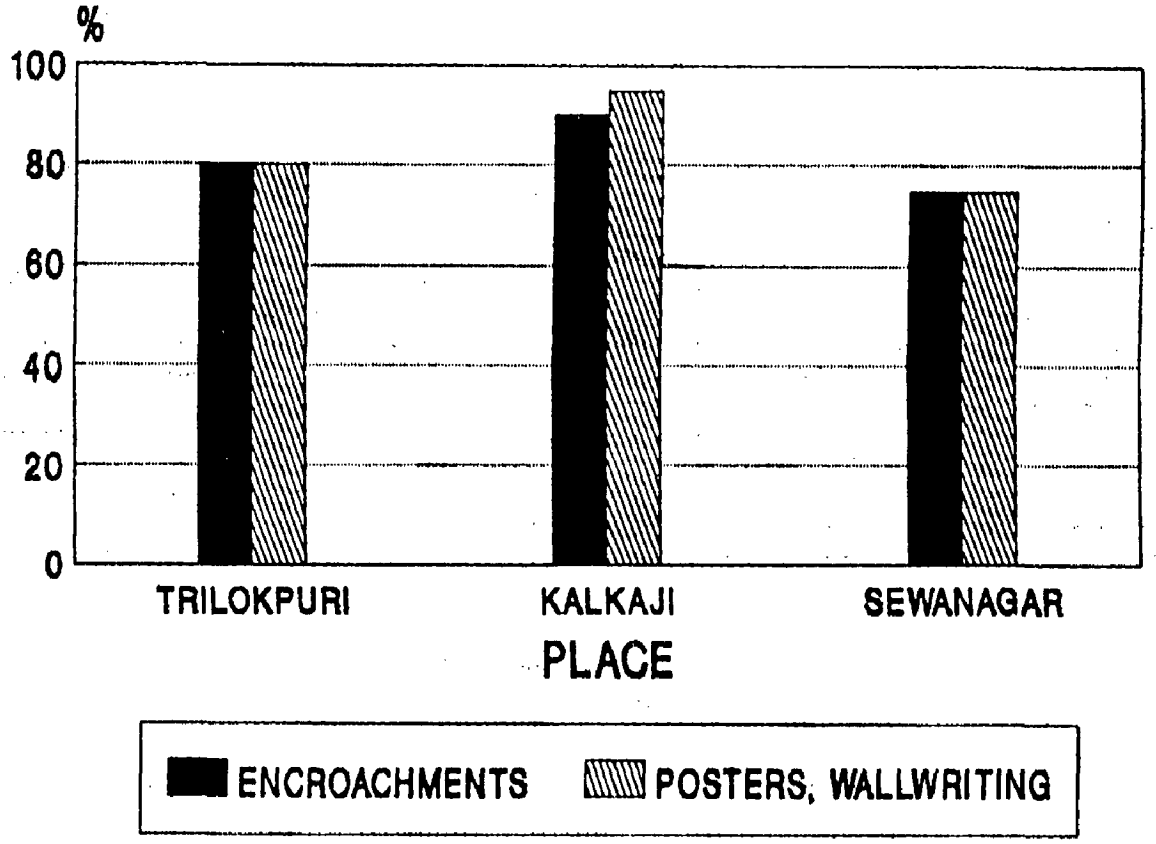


FIGURE NO : 5.50

CIVIC AWARENESS

NUISANCES - ENCROACHMENTS, POSTERS & WALL WRITING

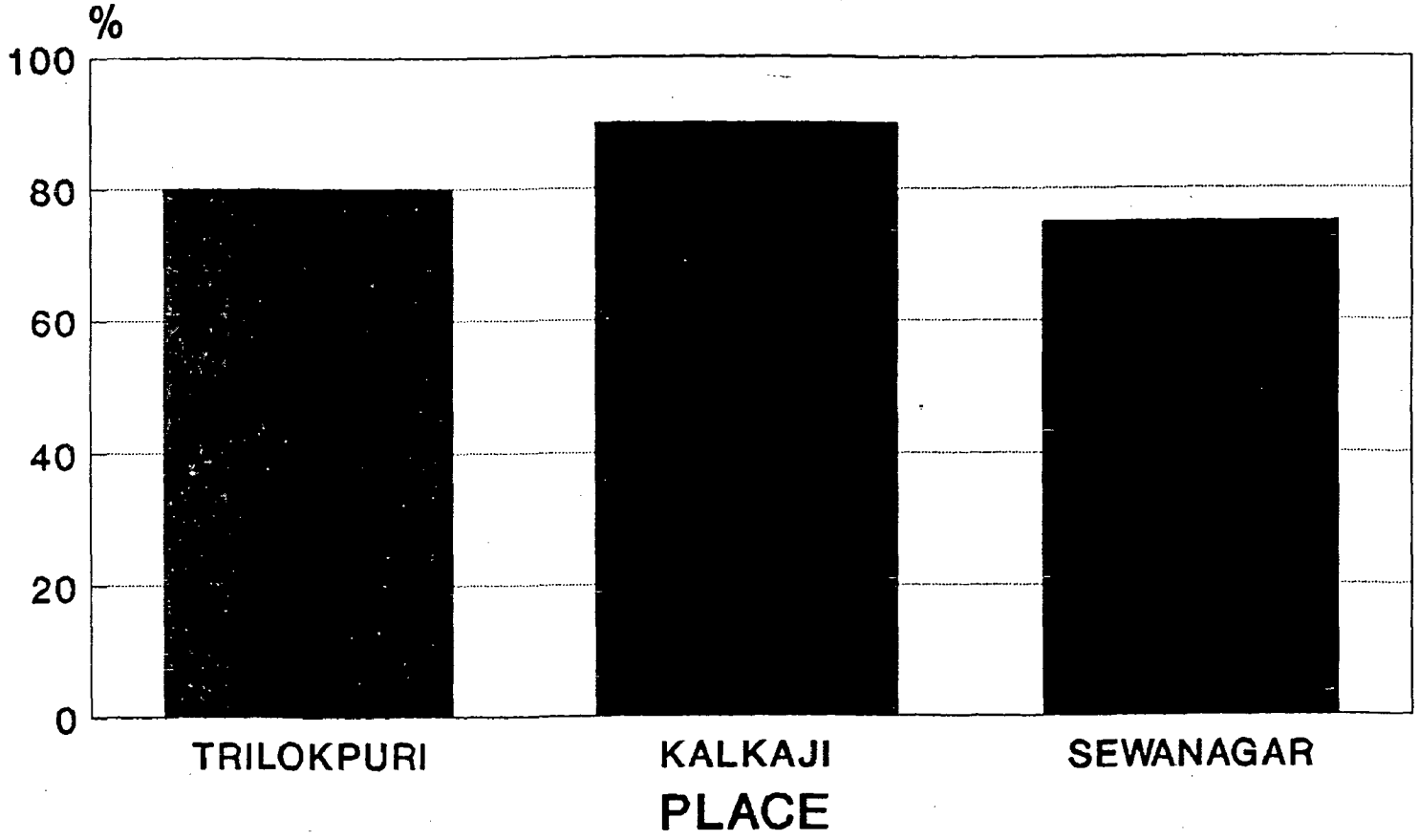


SOURCE : FIELD SURVEY

FIGURE 5.51

CIVIC AWARENESS - ANALYSIS

ENCROACHMENT IS NUISANCE



MOST AGREE, NOT DENYING RESPONSIBILITY

FIGURE NO : 5.52

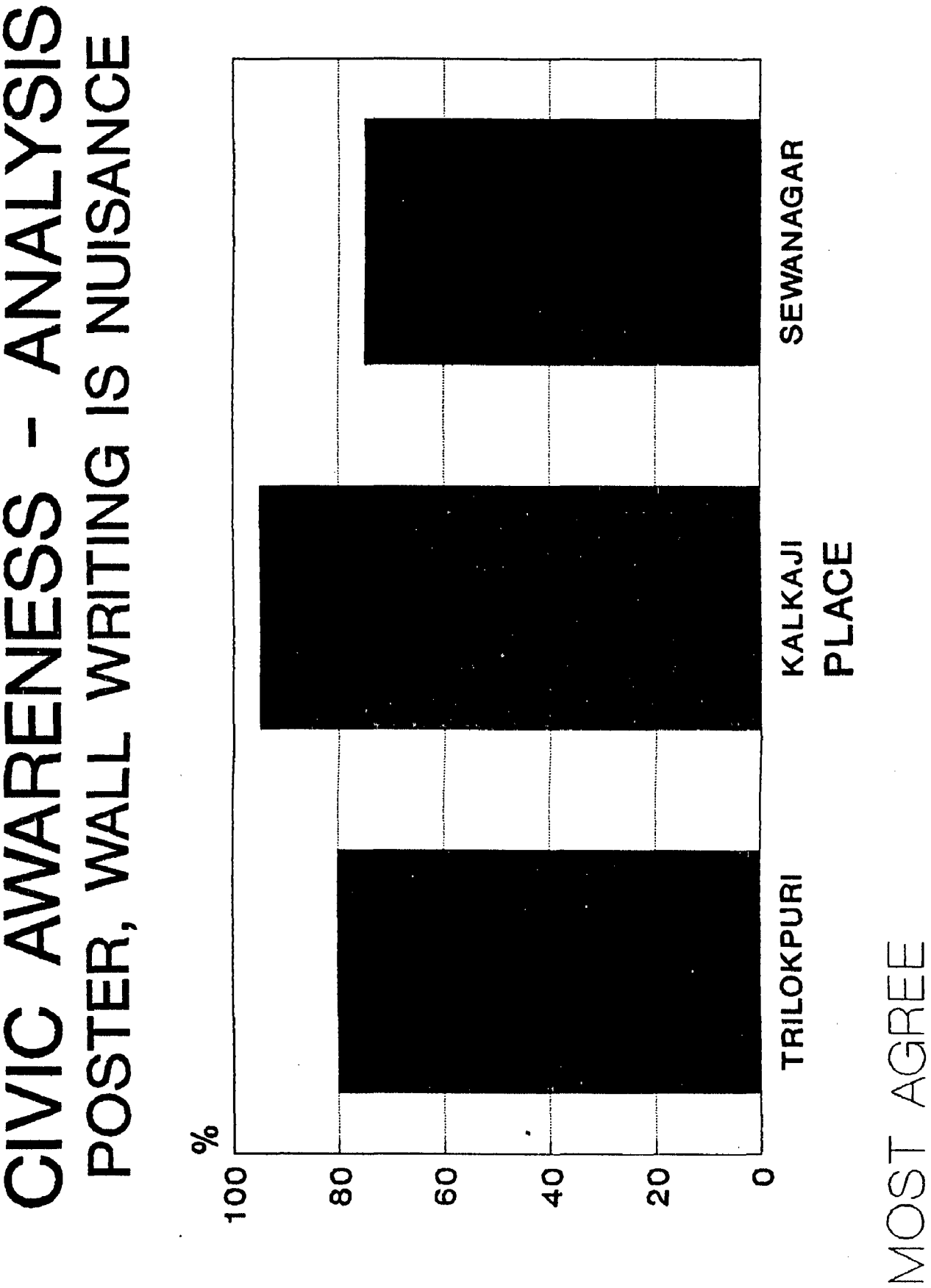
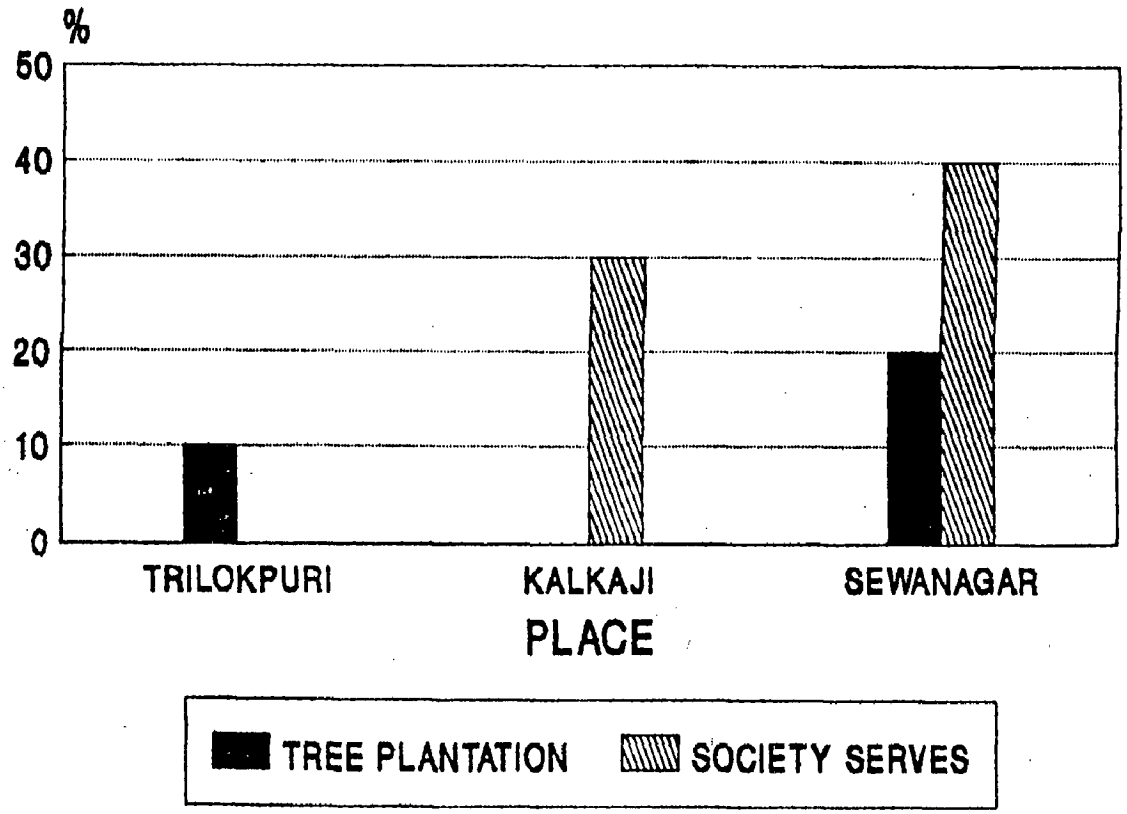


FIGURE NO : 5.53

PUBLIC PARTICIPATION

TREE PLANTATION AND SOCIETY SERVES ITS PURPOSE



SOURCE : FIELD SURVEY

FIGURE 5.54

PUBLIC PARTICIPATION
TREE PLANTATION - ANALYSIS

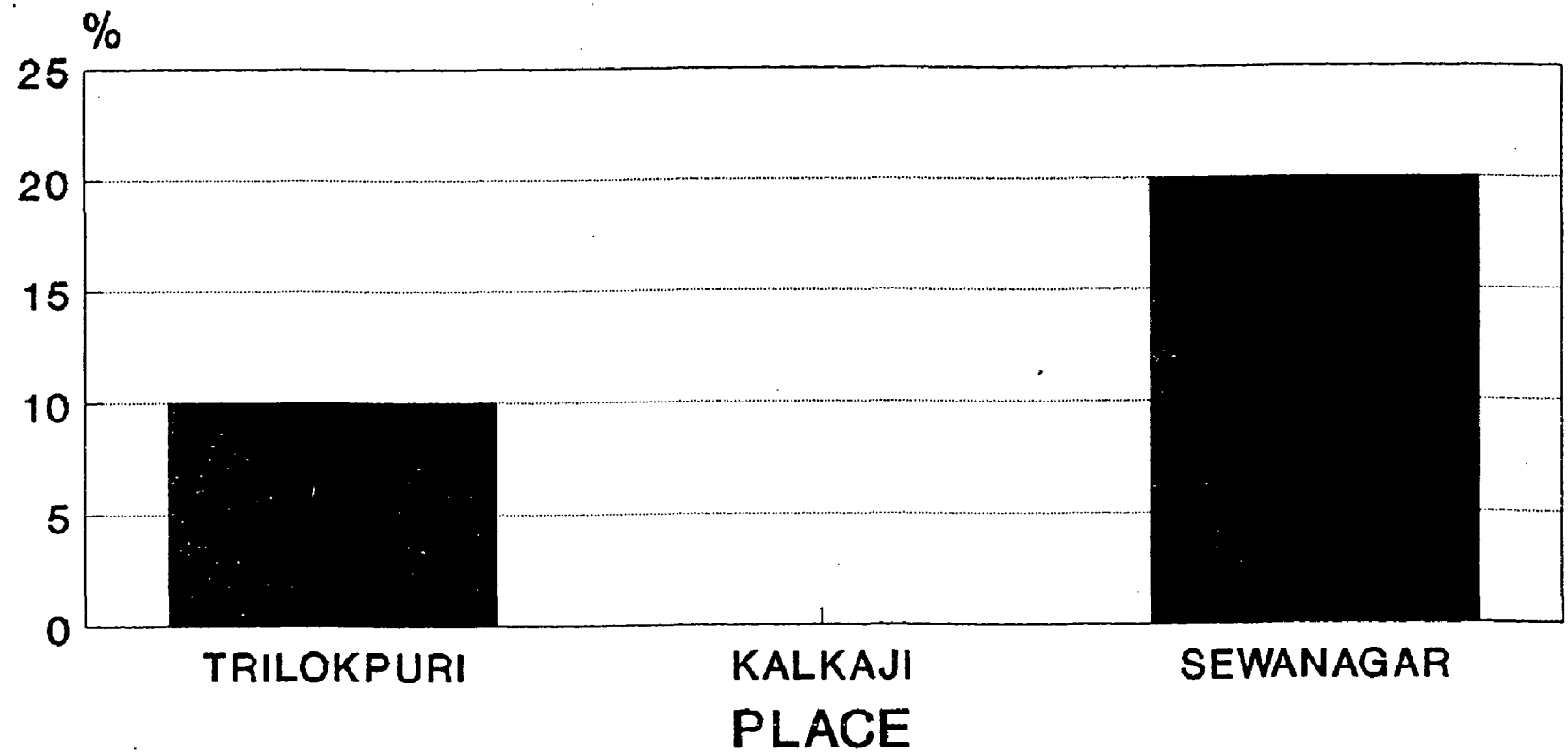


FIGURE NO : 5.55

EFFORTS & ENTERPRISE HAVE FAILED DUE TO VANDALISM. INDICATES NEED FOR CONSENSUS & INCREASED AWARENESS FOR SUCCESS

PUBLIC PARTICIPATION
SOCIETY SERVES ITS PURPOSE
AN ANALYSIS

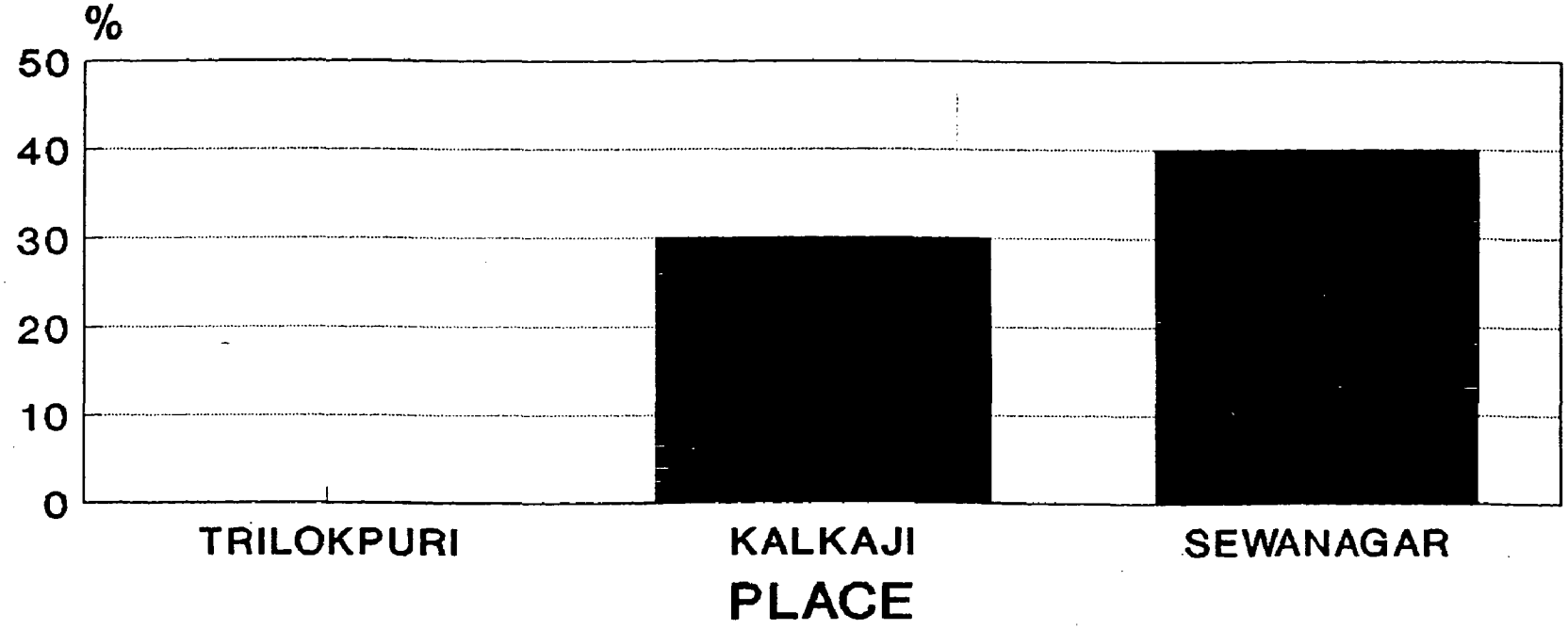


FIGURE NO : 5.56

INDICATES NEED FOR CONSENSUS & PROPER STRUCTURING OF SUCH INSTITUTIONS FOR PROPER FUNCTIONING.

CHAPTER 6

EMERGING ISSUE IN POST OCCUPANCY MAINTENANCE MANAGEMENT OF LOW INCOME HOUSING AREAS.

. The proper functioning of the facilities & utilities, (Within the scope of this study) are broadly dependent on the following aspects.

(a) Planning

Physical planning of the provision of facilities & utilities

(b) Administration and Policies

Organisational set up of Urban Management. The various approaches adopted by the Administration; policies and priorities of the administration.

(c) Task performance by Agencies

Despite ideal provision and complementary policies & priorities, the actual success of the operations are greatly dependent on the performance levels & attitudes of the Agencies responsible for provision and upkeep of various utilities and facilities.

(d) Residents Inputs

There are two ends in any delivery system - "Provider end", and "Consumer end". In the case of Maintenance Management of residential areas, the Provider end under the present system, comprises of various public bodies - and at the Consumer end, are the residents.

2. Much is dependent on the consumer - whose level of awareness, attitude & approach to Maintenance Management can have a significant bearing on the standards of maintenance management in any residential area.

3. With this understanding in mind, most of the issues (except those that are general) emerging from the study, have been classified under

(a) Planning Issues,

(b) Administration and Policy Issues,

(c) Task Performance by Agency Issues, and

(d) Residents Inputs Issues.

6.0 ISSUES

6.1 GENERAL

1. Inadequate utilisation of existing facilities.

2. Improper distribution of staff without due consideration to specific needs of the area, affecting standard of maintenance.

3. Poor public accountability of public utilities.

4. Politicisation in service provision and locational biases with respect to budgetary allocations for maintenance management, has impeded maintenance management of low income areas.

5. Poor citizen - administration relationships.

6. Imprest funds available to the field staff are not in keeping with the emergent needs of such funds in prompt & efficient discharge of their duties in maintenance management.

7. Poor inter and intra departmental coordination, delaying problem - rectification process.

8. Poor power sharing among personnel in various levels of the agencies impeding prompt decision making.

9. Administration's obsession with capital works leaves little resources, for maintenance management of existing housing areas.

10. Expenditure and budgetary provision for maintenance management by the Municipal Corporation of Delhi, showing a negative trend.

11. Unchecked squatter problem, affecting efficiency of maintenance management.

12. Potential for improvement, reflected through residents perception of maintenance management as joint responsibility.

6.2 WATER SUPPLY

6.2.1 PLANNING ISSUES

1. Water supply layout not compatible for equitable pressure maintenance throughout the distribution network.

2. Lack of overhead or underground storage facility.

3. Lack of effective and alternate sources of supply, leading to insanitary conditions and hindering contingency planning.

4. Lack of separate supply systems for domestic and industrial/ horticultural purpose, resulting in a substantial quantum of filtered water being unnecessarily consumed in non priority uses.

6.2.2 ADMINISTRATION AND POLICY ISSUES.

1. Existing norms of water supply are unrealistic and this results in inequitable distribution.

2. Water supply not metered in most cases, leading to wastage through consumption in non priority uses.

3. Pricing policy & revenue generation, bearing little relationship with costs of production and distribution of water.

6.2.3 TASK PERFORMANCE BY AGENCIES, ISSUES

1. Lack of record on population served and quantum supplied.

2. Lack of data on :

   (a) Type of consumers;

   (b) Income status;

   (c) Requirement of water;

   (d) Price and demand elasticities;

   (e) Type and extent of leviable tariff, (which is necessary to recoup the cost of production and distribution of water).

3. Substantial losses of water in distribution indicating :

   (a) Unpreparedness on the part of the municipal bodies to prevent or even minimise wastage.

   (b) Inadequate technical capacities and equipment to detect leakage.

   (c) Lack of maintenance of distribution network.

4. Inappropriate and irregular water supply timings.

5. Irregular and / or errant billing.

6. Poor complaint redressal.

7. Delays in problem rectifications

6.2.4 RESIDENTS INPUTS

1. Substantial losses of water at consumer end

2. Installation and use of boosters, by upper floor residents in multistoreyed tenements affecting equity of supply.

3. Irregular payment of bills affecting revenue generation.

4. Poor awareness regarding quality of water supply.

6.3 ELECTRIC SUPPLY

6.3.1 PLANNING ISSUES

1. Provision of bare transmission lines, making them susceptible to illegal tapping.

2. Failure of pole mounted substation to take adequate stress, resulting in voltage fluctuations and frequent breakdowns in supply.

3. Absence of long term planning, leading to the supply and distribution lines of low income housing developments being heavily stressed upon (with economic, transformations and consolidation) causing voltage fluctuations and frequent supply breakdowns.

6.3.2 ADMINISTRATION AND POLICY ISSUES

1. Lack of progressive taxation system and ceiling on use of electricity, resulting in supply failure.

2. Procedural bottlenecks in complaint redressal system causing delays in problem rectification.

6.3.3 TASK PERFORMANCE BY AGENCIES, ISSUES

1. Lack of inspection and exercise of control leading to excessive illegal tapping of electricity.

2. Poor commitment to duty and indifferent attitude of staff and corruption ills the agency.

3. Errant and / or irregular billing adding unnecessary burden on residents, resulting in default and poor revenue collection.

6.3.4 RESIDENTS INPUTS, ISSUES

1. Illegal taping by certain section of residents causing line failure and poor revenue generation.

2. Excessive consumption in luxurious and non priority uses, affecting equity in distribution.

3. Irregularity and delays in payment of bills.

4. Residents apply for small loads, to avoid heavy security deposits, but later consume more power, adding stress on the system.

6.4 GARBAGE DISPOSAL

6.4.1 PLANNING ISSUES

1. Lack of compulsory indication of location, type and capacity of garbage collection, arrangement in layout plans.

2. Spatial distribution of collection bins, not compatible with the distribution of population and their requirement.

3. Improper location of garbage collectors, resulting in disposal of garbage at unintended spots.

4. Improper and inefficient design of garbage collection.

5. Waste bins attract stray animals and garbage pickers who constitute a source of nuisance for the neighborhood.

6. Adequacy of capacity of waste collection arrangement.

6.4.2 ADMINISTRATION & POLICY ISSUES

1. Deployment of staff, independent of

   (a) Refuse generated

   (b) Types of roads to be cleared

   (c) Specific density of population, resulting in varying workloads and consequent poor performance of staff.

6.4.3 TASK PERFORMANCE BY AGENCIES, ISSUES

1. Irregular and untimely garbage collection.

2. Inadequate working fleet, frequency and number of breakdowns is very high (fleet in poor working condition).

3. Poor condition of waste bins.

4. Lack of proper records on amount of waste generated / collected.

5. Improper and haphazard collection of waste, leading to insanitary conditions.

6. Low utilisation rate of existing facilities.

7. Lack of commitment among staff.

8. Poor augmentation of services and facilities.

6.4.4 RESIDENTS INPUTS, ISSUES

1. Regular disposal of waste, by residents

2. High dependence on private arrangement for waste collection and disposal.

3. Disposal of garbage at unintended spots, making cleaning difficult and resulting in insanitary conditions.

4. Strong resistance by residents to location of waste bins in the vicinity of their houses.

5. Resident (squatters and informal establishments) blocking access to garbage dumps, making cleaning difficult.

6.5 SEWERAGE AND DRAINAGE

6.5.1 PLANNING ISSUES

1. Improper location and spatial distribution of community toilets, causing inconvenience in access, and inducing people to defecate in unintended spots.

2. Water borne sewage disposal system - having high dependence of water supply.

3. Lack of proper sewage disposal system.

4. Lack of water supply and lighting provision in community toilets causing people to defecate in unintended spots.

5. Uncovered drains, prone to unintended uses, causing insanitary conditions.

6. Inadequate capacity of drains, causing overflowing of drains.

7. Insufficient set back of plinth from drains causing nuisance.

8. Insufficient level of plinths, causing water overflowing from drains to enter the houses.

6.5.2 ADMINISTRATION & POLICY ISSUES

1. Privatisation of maintenance management of community toilets through Sulabh International has met with limited success.

2. Multiplicity of departments involved in maintenance management of various types of drains creating confusion and delaying problem rectification.

3. Improper staffing policy affecting efficiency of task performance.

6.5.3 TASK PERFORMANCE BY AGENCIES, ISSUES

1. Irregular maintenance of community toilets, sewerlines, drains etc. resulting in frequent chokages and the failures.

2. Delays in problem rectification causing indefinite closure of community toilets.

3. Lack of regular inspection by agency's field staff.

4. Frequent pilferage and damage of cast iron manhole covers.

5. Intermediary body of CPWD making maintenance management more efficient.

6. Absence of annual budgeting for maintenance management at housing area level.

7. Lack of commitment among staff.

6.5.4 RESIDENTS INPUTS, ISSUES

1. Residents indulging in defecation at unintended places.

2. Lack of participation in upkeep of community toilets.

3. High tolerance level and low awareness of residents, deter them from lodging complaints.

4. Encroachments, blocking access to drains, hindering maintenance.

5. Unintended use of drains.

6. Indulgence in willful damage and pilferage of I.C. covers etc.

7. Participation of ground floor residents in cleaning portions of drains in house front.

6.6 ROADS AND STREET LIGHTING

6.6.1 PLANNING ISSUES

1. Improper road surface and gradients, susceptible to waterlogging

2. Road layout, inviting unnecessary through traffic and resultant misuse.

6.6.2 ADMINISTRATION AND POLICY ISSUES

1. Process of road excavation and restoration, delayed by procedural bottlenecks and weaknesses.

2. Maintenance management of street lighting is not considered as part of maintenance management of roads.

6.6.3 TASK PERFORMANCE BY AGENCIES, ISSUES

1. Absence of control of encroachments, resulting in hindrances in maintenance of roads.

2. Poor maintenance of street lighting.

3. Use of poor quality of materials in road construction and / of maintenance; making the surfaces more susceptible to wear and tear.

6.7.3 TASK PERFORMANCE BY AGENCIES, ISSUES

1. Poor maintenance management of open spaces.

2. Lack of commitment among staff.

6.7.4 RESIDENTS INPUTS, ISSUES

1. Poor participation of residents in maintenance management of open spaces.

2. Impressive standards of open spaces, under maintenance management of residents.

3. Residents keep animals, which often stray into and abuse open spaces.

4. Indulgence of children in vandalism and willful damage of furniture and landscape in formal open spaces.

CHAPTER 7

ANALYSING THE PRIVATISATION SCENARIO

7.1 EXAMINING THE POSSIBILITY OF PRIVATISATION

1. The efficiency of maintenance management of Housing Areas largely depends on, ` who does ', and, ` for whom '. In the context of this study maintenance management needs to be carried out for housing areas, containing as its residents, who have

(a) restricted and low income and have therefore

(i) less affordability to pay for services rendered,

(ii) poor civic awareness,

(iii) greater degree of tolerance,,

(iv) poor perception of quality of service,

(v) little incentive to follow the rules laid down by society, for the protection of others' property.

2. Therefore, to successfully address the needs of such people, prescription of options, with respect to who should do it, need to be carried out, after a detailed analysis of costs and benefits. Though, provision and maintenance management of services and utilities is a social commitment of the government in our kind of a political set up, much of the problems occur because there is

(a) very poor public accountability of public utilities &

(b) the government machinery is on most occasions, grossly, inefficient.

3. Privatisation of services could then be a possible option to improve the quality of post occupancy maintenance management of low income housing areas. To study, what privatisation would entail, in our context, a planning balance sheets is worked out showing resultant costs and benefits of privatisation.

7.2 PRIVATISATION IMPACT ANALYSIS

1. Having studied this, we can now study who are possibly the 'private' who can successfully take up maintenance management of various services and utilities, as not all maintenance management of services and utilities - can be privatised.

2. The three types of private parties that are possible are :

(a) Institutions having a profit orientation.

(b) Institutions having a social orientation.

(c) The people themselves.

These three could come through :

(i) Contracting services to firms,

(ii) Residents association, respectively

3. To understand the reliability of each, with respect to the various services, a privatisation impact analysis is done.

PLANNING BALANCE SHEET

COST - BENEFIT ANALYSIS OF PRIVATISATION PROPOSAL

GROUP'S AFFECTED	OBJECTIVES OF EACH GROUP	IMPACT OF PRIVATISATION PROPOSALS	
		COSTS	BENEFITS
Target groups (Potential customers)	# Quality service satisfactory needs # Reliable & Sensible Service. # Convenient Payment- System # Minimum cost to consumers.	# Low income group do not get advantage of subsidies hence affected. # Negligible chance for default.	# Service, more satisfying individual needs. # Greater reliability of service/Better MAINTENANCE MANAGEMENT # Cost reduction at city level
Tax payers in general	# Minimum Taxes # Receive quality services at minimum cost.		# Reduced need for taxation. # Services are cost effective.
Municipal Employees Made redundant by proposal.	# Maintain employment, salary and other benefits at present or higher level. # Promotion prospects # Service job with minimum account ability	# Reduced employment benefits # Higher Level of efficiency required. # Reduced work force.	
Senior Public Service Managers.	# Employment Security # Power (Executive) # Promotion and employment benefits.	# Reduced management responsibility. # Less power	# Reduced overload
Councillors	# Stay in power # Gain personal advantage # Provide service to electorate.		# Increase popularity with votes. # Gain of support from private sector firms who receive contracts.
Private firms who gain contracts.	# Maximum profits # Maximum growth rate.		# Increase profit. # Gain new business opportunity to make profit.

4. The parameters considered are the consumer objectives of :

(a) Cost effectiveness objectives;

(b) Quality of service.

(c) Reliability of Services.

(d) Ease of Payment; and,

(e) Equity of charging system and subsidies.

7.3 LOW INCOME HOUSING AREA WORKING OUT A MAINTENANCE MANAGEMENT MODEL

(Refer Figure 7.1)

1. The first category consists of those cases, where the private sector organisation, undertakes the task just as a commercial project.

2. The second category comprises of those cases, where co-operative societies or employees association or non-profit N.G.O.'s do undertake the task of providing and managing the services and facilities.

3. The third party category includes those cases, where there is direct participation of the private individuals and groups of users and beneficiaries in the task.

4. For the first category to be efficiently operative, the task as a business project should fulfill the following conditions.

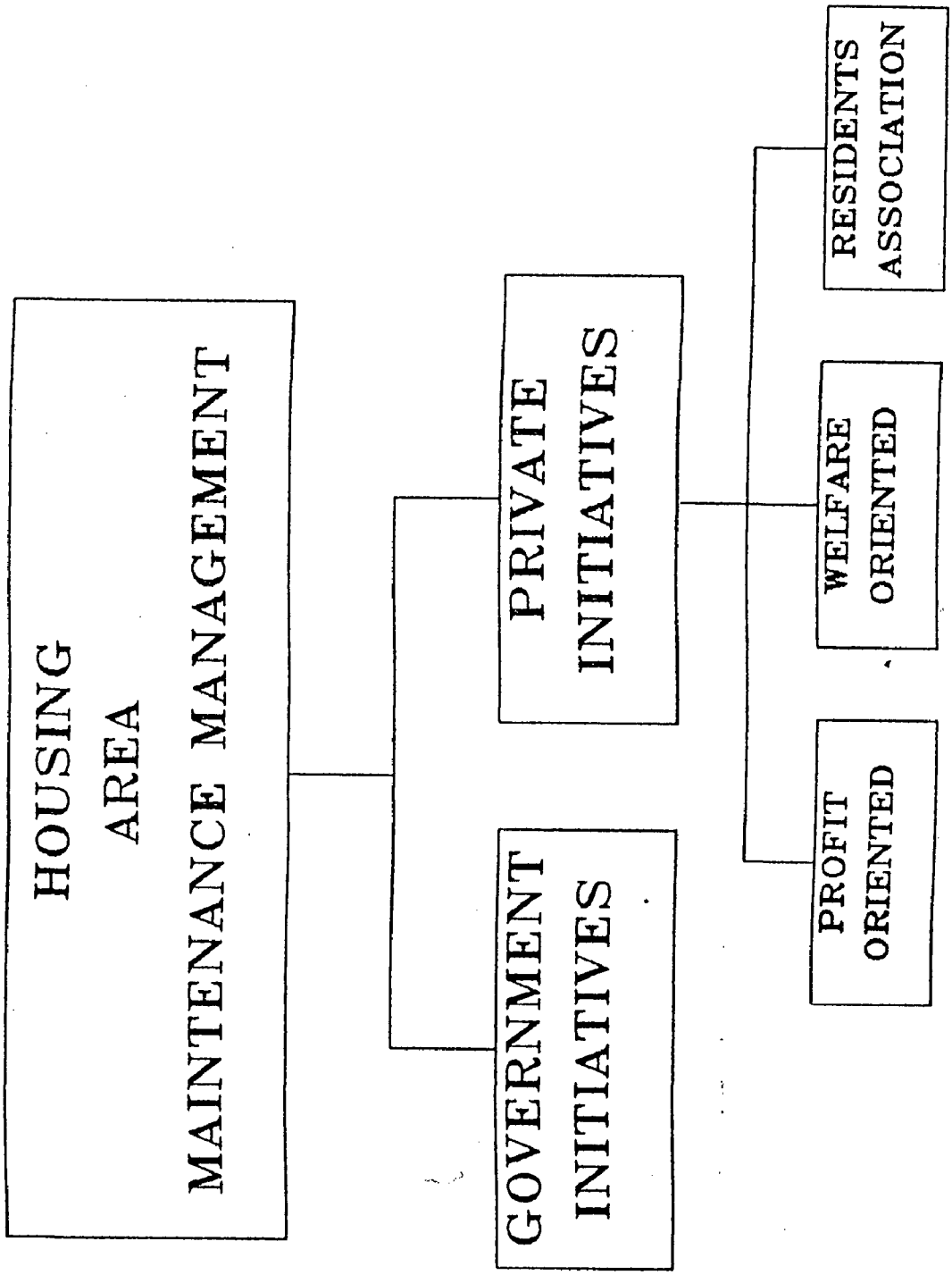
(a) The service delivered should be such that it can be measured / quantified and can be charged on the basis of quantity consumed.

(b) The user/consumer group can be easily identified and revenue can be collected in a more or less straight forward manner.

(c) The system can be installed and operated as a self sustaining and independent entity by the concerned private agencies, and

(d) the facility permits, absolute cost recovery. In this case, there is however a fair possibility, that, in absence of appropriate control and continuing monitoring by public agencies, there is every chance of the profit making motivation, prevailing and the interest of the user/consumer would suffer. Here the public sector should act as the policy maker, controller and monitor and not as service provider.

MAINTENANCE MANAGEMENT



CHAPTER 8

GUIDELINES FOR IMPROVEMENT OF POST OCCUPANCY MAINTENANCE MANAGEMENT

8.1 GUIDELINES

1. Guidelines for improvement of post occupancy maintenance management of low income housing areas are suggested through:

(a) Changes in Physical Planning and

(b) Changes in Maintenance Management Structure.

8.2 WATER SUPPLY

8.2.1 PLANNING GUIDELINES

1. High-rise flatted development should not be advocated (at most the existing practice of providing G + 3 should be allowed).

2. The supply of water and power should be delinked. Pumping stations should be provided with dedicated feeder lines to continue pumping by switching to another phase if the supply on the first phase gets disrupted. If the second phase also goes off, the pumping station should have generators. These generators should have running capacity ranging between 3 to 4 hours.

3. Solar powered community water pumps should be provided.

4. Overhead or underground storage system should be compulsorily attached to all housing areas development. The location of the facility should be indicated in the layout plan.

5. The data base on quantum of water available and the sources thereof should be created urgently.

6. Smaller distribution grids to be worked out, with a number of small storage and distribution pockets serving a smaller area, than a big storage and distribution point serving a bigger area.

7. Water should be fed directly to an overhead storage tank and then distributed to the residents. Over head storage tanks should be properly chlorinated and residents be made aware that chlorination is not harmful through mass media propaganda.

8. Only an optimum number of public standposts should be provided, with hygenic considerations and their location indicated in the layout plan. All public standposts should be fitted with FORDILLA * valves to prevent wastage of water from these points.

9. The complaint office should be located within the convenient and accessible reach of the residents, preferably near the planned shopping area.

8.2.2 MANAGEMENT GUIDELINES

1. Water problem is an international problem. Like all scarce resources, water management implies conservation and optimal use.

2. Use of water should be economised not only in irrigation but also in industrial as well as domestic sectors.

3. A change in management system from public to private should be tried to improve efficiency & service accountability, as such endeavors elsewhere have shown encouraging results.

4. The data should be collected on :-

   (a) types of consumers

   (b) income status

   (c) requirements of water

   (d) price and demand elasticities and

   (e) type and extent of leviable tariff in order to recoup the cost of production and distribution of water.

5. To improve revenues, taxes should be levied on facilities like additional taps, overhead boosters pumps, whose presence leads to greater non priority uses and affects equity in distribution.

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* FORDILLA VALVES INTRODUCED BY ROBERT.T.FORD, WORK ONLY ON THE APPLICATION OF PRESSURE, (LIKE ONES USED IN TRAINS).

6. Every liter of water (regardless of the purpose for which it is used) should be metered. Water should be priced realistically according to its quality and the use to which it is subjected. Water should be recycled as a matter of course. Incentives should operate for economical use & disincentives should be imposed for wastage.

7. Water supply norms should be suitably amended to effect a more practical and equitable distribution.

8. Mass media propaganda (on a war footing basis) should be undertaken so as to ensure that the residents get wholesome water only.

9. Residents should be made aware that the water they are consuming from private sources is not clean through the public awareness campaign.

10. Chlorine tablets or bleaching powder should be distributed amongst residents. Residents be made aware that these are not harmful through mass media propaganda.

11. Strict monitoring of quality should be undertaken, with samples inspected not only at source, but also at various consumer pockets.

12. Administration needs to adopt improved water management techniques to boost productivity and avoid any wastage of this renewable resource.

13. Water shortage is a universal phenomenon & the quantity of water can not be increased. However, certain available alternatives should be explored. These alternatives are a mix of set-house-in-order and begin-search-for-gold-at-home. The recommendations are as follows :

(a) The monsoon discharge should be harvested in the Yamuna River and rain water should be harvested in the city and its surrounding areas.

(b) Afforestation should be carried out in the catchment areas.

(c) Eco-parks should be created for the treatment of sewage as back up for the sewage treatment plants. Output of these parks should be diverted for agricultural use.

(d) Landfill sites should not be located in the vicinity of fresh ground water bacquifiers. They may however be located in areas where the ground water is saline.

(e) There should be regulation of ground water extraction by a legislation. Registration of all tubewells should be made compulsory.

(f) The scope and powers of different agencies concerned with Delhi water supply remains vague and undefined. These should be rationalised and if necessary, a unified agency may be constituted.

(g) Distribution losses in the water system are about 30 %. These should be checked immediately.

(h) Recycling of waste water by large commercial establishments should be made mandatory.

(i) There should be a public awareness campaign to educate people and legislators and other opinion makers on matters concerning water use.

8.3 ELECTRIC SUPPLY

8.3.1 PLANNING GUIDELINES

1. Electric transmission lines should be through insulated conduits to prevent illegal tapping.

2. Pole mounted substations should be replaced by larger transformers

3. Solar power should be provided to low income housing areas (35 WP (Peak Watt) domestic roof-top packs to power 2 points, a 9W compact fluorescent lamp and a plug point for a transistor or a television).

OR

4. Solar lanterns per house should be provided for a group of houses.

8.3.2 MANAGEMENT GUIDELINES

1. A change in Management from Public to Private should be tried to improve efficiency - as such endeavors elsewhere have shown encouraging results.

2. Licensing of electric connections should be introduced and renewal and inspection effected periodically. A differential pricing system should be worked out to complement it.

3. Irregularity in billing should be checked in order to improve the efficiency of the revenue collection system. Consumer should be provided with cards, enumerating their meter - reading at least twice a month.

4. DESU should be decentralised into smaller manageable units for better efficiency. The organisation should be restructured in order to bring in efficiency, sense of responsibility and improvement in consumer service.

5. Electric Supply should be rationalised based on realistic cost of inputs and power metering.

6. A spatial strategy should be worked out to reduce consumption levels.

7. In view of the endemic power shortage in Delhi, following measures are recommended :

(a) Shop timings should be rescheduled (0900 hrs to 1900 hrs instead of 0930 hrs to 1930 hrs).

(b) Use of decorative lights and display of neon signs should be either banned or heavily taxed to reduce consumption of power.

(c) Streetlights should be switched on at 1930 hrs and switched off at 0600 hrs.

(d) Power Supply to industries should be restricted for certain hours (0600 hrs to 0900 hrs in morning and 1800 hrs to 2100 hrs in the evening).

(e) Pilferage proof electronic meters should be provided for heavy industries so as to avoid large scale power thefts.

(f) Offenders should be penalized.

(g) Incentives (in form of reduction of tariff should be given to industrial units running at night).

(h) Consumer should be appealed to conserve energy.

(i) All domestic consumers, hotels & other establishments using geysers should be urged to use it after 2300hrs & before 0600hrs.

(j) Consumers should be requested to use boosters at night for supplying water.

(k) Consumers should be urged to minimise use of airconditioners during peak hours ie 1830 hrs to 2230 hrs.

8.4 GARBAGE DISPOSAL AND COLLECTION CONSERVANCY AND SANITATION

8.4.1 PLANNING GUIDELINES

1. Location of garbage collectors, indicating type and capacity should be shown the layout, compulsorily.

2. Location of garbage collectors should be offset from the road (to prevent the road from coming under the nuisance zone) and attached to some functional public utilities like field offices, electric substation etc. to increase accountability of maintenance.

3. Smaller garbage collectors should be spatially distributed, attached to each block or cluster, to ease disposal.

4. Incidental spaces in planned development should be minimised, to prevent misuse.

5. Community toilets should not be advocated. However incase of provision, they should be complimented with adequate water supply and lighting facility. (Solar lanterns should be provided .)

6. A set of toilets - one for male use and one for female use should be made available to - households and put under their charge of maintenance management.

7. An optimum number of community toilets, to be maintained and managed by private, welfare oriented agencies should be planned for to meet casual and additional requirements in order to prevent defecation in unintended spots by non-residents and non-formal residents.

8. Efforts should be made, so as to replace the existing water borne sewage system by innovative and non conventional system.

9. All storm water drains should be of concrete pipes of varying dias - as they are cheaper and less prone to environmental hazards - complemented by manhole with prefab covers at regular intervals.

OR

10. All drains should be covered by prefab units to facilitate cleaning and maintenance operations through easy removal.

11. Capacity of drains should be worked out keeping in mind, extreme level of use.

12. The plinths of all residential units should be compulsorily above the probable level of overflow of drains.

8.4.2 MANAGEMENT GUIDELINES

1. House to house collection of garbage should be formalised and residents should be charged for the service. For this purpose, the service could be contracted out.

2. The staffing pattern should be suitably revised to suit local requirement, rather than in the broad city pattern and they should be externally contracted, put within a normative framework of charges, to ensure efficiency of task performance.

3. Community-level waste management programme with innovative technological input should be implemented. These will help in reducing the work load of civic bodies.

4. Garbage Management scheme should be indigenous, resident friendly, scientific, eco friendly & decentralised.

5. People should be made more responsible towards disposal of garbage.

6. Bio-degradable garbage should be composted & recyclable materials can be sold. The money earned can be distributed as pay to employed rag-pickers and sweepers.

7. Community participation, active involvement of resident associations and day to day monitoring by nodal residents should be an integral factor for success of garbage management schemes.

8. M.C.D. is thinking about privatising garbage management, it still has a mechanised and decentralised approach, without any adaptation to local needs and without community participation. M.C.D. instead of asking outsiders to come and manage garbage of residential areas, should simply allocate money from its present budget to residents association. Delhi, will in no time, not only become cleaner but also would have resident who would be more responsible and involved in their immediate environment.

9. Waste to energy conversion technologies such as palletisation, bio-methanisation and sanitary land filling should be adopted

10. Vermiculture should be adopted.

11. People should be educated towards recycling of waste.

12. Heavy fines should be imposed for throwing garbage in open.

13. The locational bias should have the following consideration :

(a) Type of development.

(b) Population and density.

(c) Refuse generated; and,

(d) Types of roads to be cleared.

14. Cleaning of drains, should go hand in hand with garbage collection / garbage collection and road cleaning should follow cleaning of drains to remove sullage prompt.

15. Cleaning of roads should promptly follow garbage removal, to clear spillage.

16. Private contractors should be employed to support and augment the existing removal fleet.

17. Any attempt to block access to garbage dumps / drains should be promptly resisted.

18. Collection of garbage should be supervised to ensure :-

(a) Collection is daily and efficiently phased; and,

(b) to ensure that waste does not remain uncollected.

19. Regular updating of data should be undertaken to plan for augmentation of services.

8.5 ROAD & STREETLIGHT MAINTENANCE

8.5.1 PHYSICAL PLANNING GUIDELINES

1. The layout of colonies should be planned to minimise through use roads and have roads for specific use of only those who reside along them (clusters).

2. Roads should be planned to efficiently accommodate all present and future requirement of services and so as to minimise disruption of the road surface for maintenance and repairs of service lines.

3. Suitable introduction of street furniture and landscape element should be made to prevent squatting and encroachment and these should serve to make way for future widening schemes.

4. Decentalised lighting system such as PV (Photo Voltaic) Panels should be provided for the streetlighting in view of the poor maintenance of existing infrastructure. This will ensure some minimal amount of streetlighting.

8.5.2 MANAGEMENT GUIDELINES

1. The maintenance management of street lighting should be considered as part of road maintenance management.

2. Post excavation road restoration should be taken up on urgent basis.

8.6 FORMAL OPEN SPACES MAINTENANCE

8.6.1 PLANNING GUIDELINES

1. Parks and tot lots should be provided only to the bare minimum in low income settlements. They should however be substituted by suitable cluster courts, community spaces and larger playgrounds, to meet with the recreational and space requirements. They may be suitably subdivided and rearranged for conversion, with the changing needs of the residents in future.

2. The community spaces should not be a repetition of its adjacent neighbor, but should seek some degree of individuality.

3. Location of parks etc. should be within the neighborhood, well defined by use of suitable separators, and looked upon by residences on all sides, so as to restrict their uses to those intended only.

4. Bigger open spaces should be attached to other social infrastructure, like schools, community halls etc. to create accountability for maintenance.

5. The provision of these spaces should be complete with associated furniture and landscape so as to restrict residents from designating their own uses for them.

8.6.2 MANAGEMENT GUIDELINES

1. Maintenance management of formal open spaces should be privatised and preferably should be under the maintenance management of residents welfare association.

8.7 GENERAL GUIDELINES

8.7.1 GUIDELINES IN PHYSICAL PLANNING

1. Cluster concept of Housing should be patronised and advocated in low income housing developments.

2. The size of the dwelling clusters must be kept within an identifiable scale, related to height and numbers of dwellings and not to any preconceived density ratios.

3. Development of residential areas should commensurate with feasibility of maintenance management. This should be prescribed in the master plan and strictly adhered to.

8.1.2 GENERAL GUIDELINES IN MANAGEMENT

1. Possession of Residential complexes should not be given till the time all the sustainable developmental works are complete and the agency ultimately responsible for maintenance management of service and facilities has taken over charge.

2. A Revolving Fund should be started by the D.D.A. for payment of compensation to the municipal authority, in event of lapses, even before the compensation claims are thoroughly inspected and justified.

3. An intermediate body for coordinating and monitoring of works of various agencies should be introduced. This could be the residents associations, having a pre defined structure, formed through the services of social welfare officers and N.G.O's and they should be made responsible for upkeep of the housing areas.

4. There should be action to bring a change in the orientation of municipal agencies towards maintenance of existing facilities and infrastructure, from the present obsession with capital works.

5. There should be action to generate information, general technical and financial to locate areas of inefficiencies.

6. A powerful **Management Information System** should be introduced.

7. There should be action to modify the structure to create smaller local bodies within itself, but independent of each other. The supreme body should act only as coordinator and resource allocator.

8. A powerful **Resident Information System** oriented to raise the level of awareness of low income residents and to communicate (through medias like television) information, should be introduced.

9. Residents should be made to pay for all services they consume, so as to develop accountability of public utilities and facilities.

QUESTIONNAIRE

(INFORMATION COLLECTED THROUGH THIS QUESTIONNAIRE IS CONFIDENTIAL AND WILL BE USED EXCLUSIVELY FOR ACADEMIC / STUDY PURPOSES)

PART I

FACTUAL INFORMATION ABOUT HOUSING AREA

1. NAME OF AREA _____

2. DISTANCE FROM CITY CENTRE / LOCATION _____

3. UNDER WHAT AUTHORITY _____

4. NUMBER OF RESIDENCES _____

5. TYPE OF RESIDENCE _____
(Single/Row/Independent/Apartment)

6. ROAD NETWORK

   (a) WIDTH _____

   (b) APPROACH ROADS _____

7. SEWER DISPOSAL _____

8. STORM WATER DISPOSAL _____

9. OTHER FACILITIES

   (a) OPEN AREAS / PARKS / PLAYGROUNDS _____

   (b) RECREATIONAL FACILITIES _____

   (c) SHOPPING _____

   (d) TRANSPORT _____

10. MAINTENANCE OFFICE STAFFING PATTERN _____

11. MAINTENANCE AREA FACILITIES _____

12. COMMUNITY SPACES / ACTIVITIES _____
(Who is Looking After)

13. MODE OF PROCUREMENT OF HOUSE _____
(Outright Sale / Rental)

PART II

USER SATISFACTION

WATER SUPPLY

1.	Is Water Supply readily available ?	Yes / No
2.	Is Water Supply Adequate ?	Yes / No
3.	Is the Quality of Water Good ?	Yes / No
4.	Is the Pressure of Water Supply Good ?	Yes / No
5.	Are Water Supply Timings Regular ?	Yes / No
6.	Is Proper Collection & Storage Facility Available ?	Yes / No
7.	Are Water Supply Connections Metered ?	Yes / No
8.	Do you Depend on Public Stand Posts / Tubewells etc. ?	Yes / No
9.	Are there Breakdowns in Water Supply ?	Yes / No
10.	Do you Complain at Agency Office ?	Yes / No
11.	Are Water Supply Complaints Timely Redressed ?	Yes / No
12.	Is Water Supply Billing Regular ?	Yes / No
13.	Do you Keep a Track of Newspaper Announcements ?	Yes / No
14.	Is Television an Effective Media ?	Yes / No

ELECTRIC SUPPLY

1.	Do you own a Legal Connection ?	Yes / No
2.	Is the Supply free of Voltage Fluctuations ?	Yes / No
3.	Do you Approach DESU Officials in case of Breakdowns ?	Yes / No
4.	Are the Electric Supply Complaints Timely Redressed ?	Yes / No
5.	Is Meter Reading regularly done ?	Yes / No
6.	Is Electric Supply Billing Regular ?	Yes / No

GARBAGE DISPOSAL & COLLECTION

1. Is there Unauthorised Garbage Dumping ? Yes / No
2. Do People Dump at Unintended Spots ? Yes / No
3. Are Garbage Bins Sufficient ? Yes / No
4. Is Dumping regularly Done ? Yes / No
5. Is Collection Of Garbage Frequent Yes / No

SEWERAGE & DRAINAGE

1. Do You Use MCD Community Toilets ? Yes / No
2. Do People Defecate at Unintended Spots ? Yes / No
3. Do you take Private Initiative in Cleaning Toilets ? Yes / No
4. Do you take Private Initiative in Cleaning Drains ? Yes / No
5. Are Drains Being Used Properly ? Yes / No
6. Are Drains Clogged during Monsoons ? Yes / No
7. Are Drains regularly maintained ? Yes / No

ROADS, STREET LIGHTING ETC.

1. Are Roads Water Logged During Monsoons ? Yes / No
2. Is There Excessive Encroachment on Roads ? Yes / No
3. Are There Delays in Post Excavation Road Repairs ? Yes / No
4. Are Roads Regularly Repaired ? Yes / No
5. Is there Lack of Maintenance of Street Lighting ? Yes / No

FORMAL OPEN SPACES

1.	Are Parks Being Used Properly ?	Yes / No
2.	Are Playgrounds Being Used Properly ?	Yes / No

CIVIC AWARENESS,

PUBLIC PARTICIPATION,

COMMUNITY ACTION

1.	Do You Participate in Tree Plantation ?	Yes / No
2.	Does Society Serves its Purpose ?	Yes / No
3.	Do Councillors Aid in Civic Maintenance ?	Yes / No
4.	Is M.M. a Joint Responsibility ?	Yes / No
5.	Is Encroachment by Informal Sector a Nuisance ?	Yes / No
6.	Is Poster Sticking & Wall Writing a Nuisance ?	Yes / No

PART III

OWN OBSERVATIONS

MAINTENANCE

1. WATER SUPPLY

2. ELECTRIC SUPPLY

3. GARBAGE DISPOSAL AND COLLECTION

4. SEWERAGE & DRAINAGE

5. ROADS, STREET LIGHTING ETC.

6. FORMAL OPEN SPACES

7. CIVIC AWARENESS, PUBLIC PARTICIPATION, COMMUNITY ACTION

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An Advertisement in The Hindustan Times, New Delhi, 11 Dec, 1995

13. MCD WILL GO GLOBAL TO CLEAN DELHI

Article in The Times of India, New Delhi, 22 Nov, 1995

14. MCD TO INTRODUCE POLYTHENE BAGS FOR GARBAGE DISPOSAL

Article in The Hindustan Times, New Delhi, 10 Nov, 1995

15. SORT YOUR GARBAGE - IN RED AND BLACK

M.C.D. WILL ATTEMPT ENVIRONMENT FRIENDLY SCHEME FROM JAN 1, 1996.

LIST OF AREAS IN 11 COLONIES TO BE PART OF PILOT PROJECT.

Article in The Times of India, New Delhi, 29 Dec, 1995

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