

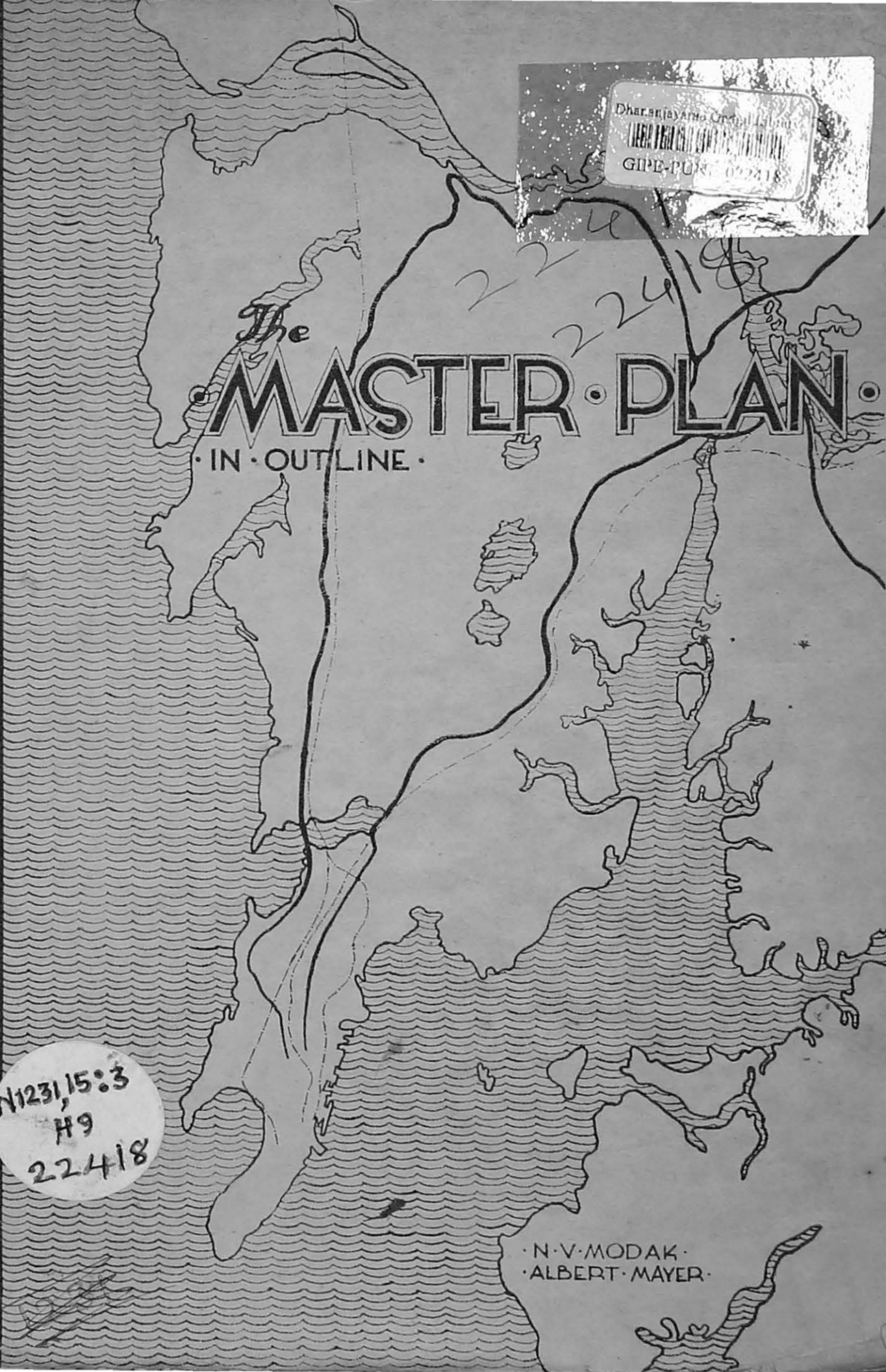
Outline of the
Master plan of
Greater Bombay : report

by N. V. Modak
& Albert Mayer.

with First progress report.

CHEATER · DAVDAI

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**- AN OUTLINE OF THE MASTER PLAN
FOR
GREATER BOMBAY.**

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FOREWORD.

The authors have pleasure in submitting the Report on the Outline of the Master Plan for Greater Bombay. It is not suggested that the proposals made therein are the last word in Town Planning, but it can definitely be stated that they are logical and practical proposals based on the information collected by the nucleus staff made available to them for the purpose. As is well known, the last word in Town Planning will never be written.

The Report presents a clear and true picture of the City and its Suburbs, without any attempt to overemphasize its good features or pass over its shortcomings. It attempts in the first instance to analyse the defects and their causes and then proceeds to make concrete suggestions to overcome them. It looks ahead into the future and by an analysis of growth, trends and influences, visualises probable changes and suggests measures to ensure that these changes will be effected with minimum dislocation to the City.

The actions suggested include proposals to relieve traffic congestion, insanitary housing conditions and cramped industrial development in the City. The solutions to our physical problems are, as far as possible, adapted to existing conditions, to avoid economic waste. At the same time short term solutions are meticulously avoided as ultimately they lead to more intricate problems in years to come. The correction of past mistakes is very difficult—in some cases almost impossible—and an earnest attempt is made to avoid the repetition of such mistakes.

Bombay City and the Suburbs have some basic advantages, such as a favourable geographical position, an excellent harbour, good rail and air communications, a reasonably good road system, a flourishing textile industry, etc. On the other hand, Bombay and its Region suffer from certain topographical shortcomings—relatively small percentage of useable land because of the mountainous and swampy areas in large proportion to the whole regional area—a rather elongated shape that hampers good planning, a very high residential density and absence of zoning. Bold planning is indicated to overcome these disadvantages. The Master Plan presented herein takes into account all these disadvantages and in the light of the anticipated development, suggests a feasible solution.

The Report makes various recommendations of which some are very urgent and require to be undertaken for execution at the earliest opportunity, to afford relief from conditions hampering business and industry.

Among the foremost of these may be mentioned the improvement to the main approaches to the City, the proposals to relieve the serious overcrowding of population, the decentralisation of industry, etc. Such improvements when carried out will be of inestimable benefit to the City, especially if executed without delay.

Land being the basic commodity in which a town planner deals, the Report attaches much importance as to how it should be used in the interest of the whole community. This only means that legislation controlling land use is urgently needed—in fact, it cannot come a day too soon.

The purpose of the Report is to draw a correct picture of the City and the region and suggest remedies for its defects and also to plan for the development of new communities (neighbourhoods) in the region with the attendant services and facilities, so as to enable everyone concerned, irrespective of his state in life, to enjoy a full measure of civic life. It is presumed that the co-operation not only of the Municipalities and the Government, but also of the citizens at large would be forthcoming without which this Plan cannot be realised. If the citizens take up the opportunity that is offered in this Master Plan and tackle the problems with broadness of vision and boldness of execution, then only we will have done our duty to the community, children and grandchildren.

N. V. M.
A. M.

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REPORT ON THE OUTLINES OF A MASTER PLAN FOR GREATER BOMBAY AND SATELLITE TOWNS

INTRODUCTION.

1. This is a joint Report by Mr. N. V. Modak, Special Engineer and by Mr. Albert Mayer, Town Planning Consultant, and on Roads and Traffic by Mr. W. J. Cox, Traffic and Road Consultant as well, except where otherwise noted.

(a) Technical questions of water-supply and of sewerage and sewage disposal are not covered in this Report, as the Consultant has accepted Mr. Modak's assurance that schemes to be undertaken will amply cover the requirements.

(b) This presentation of the outlines of a Master Plan for Greater Bombay consists of two parts :

(1) The Report proper, and

(2) Maps as indicated below :

(i) Drawing No. G.B.1/11-11-1947 showing allocation of functional areas, roads, airfields etc.

(ii) Drawing No. G.B.2/11-11-1947 showing certain satellite and outlying towns.

(iii) Drawing No. G.B.3/11-11-1947 of the Bombay Island showing the proposed stages of development.

(iv) Drawing No. G.B.4/11-11-1947 showing the proposed grade separated express highway intersection ; and

(v) Drawing No. G.B.5/11-11-1947 showing the proposed cross-section of Sion Road, indicating relocation of tram tracks and introduction of service lanes on an existing road.

(c) The Report is composed of XIII Sections as detailed below. The first two Sections are summaries and they are followed by short Sections III to XIII, discussing further the items included in the first two sections.

SECTION I.—The General Picture.

Do. II.—Targets for population, Industry, Docks, Business, Open spaces etc.

Do. III.—Areas and populations allotted—Greater Bombay and beyond.

Do. IV.—Four proposed typical localities or Districts in Bombay Island.

Do. V.—Progress stages or periods in development of the Plan.

Do. VI.—Housing.

Do. VII.—Traffic and Transportation : Road system, Parking, Underground tubes, Railways, Aerodromes.

Do. VIII.—Business and Shopping, Markets.

Do. IX.—Parks and Playgrounds.

Do. X.—Required Legislation.

Do. XI.—Surveys and Staff required.

Do. XII.—Public Relations.

Do. XIII.—Costs and availability of Materials and Equipment.

2. The aim of this Report is to present the salient factors in the Plan and its execution in as stripped-down and compact a form as possible so that it will be read and absorbed, criticised and supported by many of Bombay's citizens. A great deal of the general background and purposes of planning as well as of factual material about Bombay is omitted, because these are well known and amply covered by the three Preliminary Reports issued in 1945 and 1946 on the Greater Bombay Scheme, on 'Town Planning,' 'Housing' and 'Communications'. It is urged that these reports be re-read in this connection.

SECTION I

THE GENERAL PICTURE

3. The purpose of this Plan and Report is—(1) to carry one step further the sound general attack made in the preliminary reports of the three panels, with such changes as have been found desirable in accordance with modern experience, or as close study of terrain, trends and actual conditions have indicated ; (2) to show as clearly and concretely as possible in a brief but intensive study what the actual areas and lines of development should be ; (3) to furnish as it were the envelopes within which development of various types should take place ; (4) to state in some detail the reasons for the particular decisions reached and (5) to state for the guidance of the planning staff how to fill in the envelopes, *i.e.*, how to design articulated localities and neighbourhoods within them.

(a) The next step, if this Plan is adopted, is for a much strengthened staff to study more exactly the locations and boundaries of the envelopes so that action may be taken as to controlling land use in accord with the adjusted pattern and to start filling in the envelopes, selecting them in order of priority so that actual building may take place in the areas where there is urgent pressure for development, without delay, but in accordance with detailed zoning requirements.

PLAN AND ACTION

4. The Plan here presented covers the proposed development of Bombay City, Greater Bombay and Satellite Towns beyond.

(a) Bombay is desperately overcrowded, the overcrowding appears to be constantly worsening, and Bombay is daily expanding in a way to add to the confusion of its suburbs. Unless a plan such as this is adopted and speedily implemented by legislation and by actual action and development, Bombay will grow just as an industrial enterprise used to grow, adding a building here and a shed there and a godown somewhere else—the result—inefficient and obsolete development competitively at a handicap with modern well-planned industries. It is not altogether too late, though almost too late and in some respects actually too late, to create or recreate a great City, and a City that will be able to meet any competition.

(b) But bold and prompt action is required. This cannot wait. Numerous instances can be cited where adequate planning and execution are now impossible except at enormous expense and dislocation of people, where even a few years ago it would have been simple and inexpensive. There are other instances also where local development schemes, each conceived individually, are now in the way of good economical planning. What waste ! What inconvenience ! These are past instances, but new instances occur daily. Units of industry are now placing themselves in the suburbs and housing follows, with already visible disorganisation and confusion. Closer to home, we see that the originally promising Mahim Woods area is now so peppered with industrial factories, bungalows and institutions, that a really first class development is indeed difficult. And even now, new housing projects are definitely proposed and some actually proceeding, which will certainly interfere with proper development. We are at present confronted with the problem of accommodating the refugees and its solution demands quick action. If we lose this urgent opportunity for planning and proper development, it will be a tragedy.

(c) Bombay, of all Indian cities should be in the forefront. Its history is studded with large-scale endeavour and accomplishments. Its original creation out of a series of hills surrounded by water, its excellently conceived port development, its two-level planning with roads boldly carried over its railways at a time when cities of the world generally were still

satisfied with level crossings to their present regret, its large-scale developments such as the Ballard Estate, Marine Drive and Back Bay area—all these go to form a tradition that Bombay can and must carry forward.

WHAT IS WRONG AND WHAT TO DO

5. But Bombay has definitely got behind hand of late years. Its inhuman overcrowding and its slums are a menace to health, morals and working efficiency. In its lack of parks and playgrounds there is probably no sizeable city in the world to compare to it. And cynically enough, a disproportionately large amount of the tiny green area is devoted not to public parks and playgrounds but to Race Course, Golf Links, Private Clubs, used either infrequently or by relatively few people or both and mostly by people with cars who could most easily drive out for these amenities as they do in most other cities.

(a) Bombay's road and traffic system, while in many localities satisfactory, particularly at the north end of the Island, is in certain central areas already inadequate, will become increasingly inadequate, as soon as the backlog of present orders for new cars is filled, and will simply break down when use of cars becomes more common in the next few years as it certainly will. Lack of parking area is already acute.

(b) What we must and can do is to remedy these conditions, prevent their now-threatened repetition in the suburban areas, work out an orderly time-table of development to foresee, anticipate and meet imminent and future requirements ; not lag behind them. Legislatively, we must on the negative side prevent disorderly interim development ; on the positive, create the necessary powers to carry out the proper development whether by Government, Municipality or private interests.

(c) To accomplish these things we must attract the passionate interest of the public, its representatives and representative groups. We must invite their comments and criticisms. We must take them creatively into account. We must deserve and gain their support. We must seek or encourage the creation of citizen groups genuinely interested in civic progress which in western countries have done so much to promote the cause of creative planning. This last is not a detail or side-issue or a part-time job or an occasional lecture, but a full scale enterprise which has been found indispensable wherever good planning has been transformed into good development. Planning often dies by inertia. More often, because planning that is effective in an overall sense is bound to inconvenience or annoy some people ; these few raise strong opposition which is often successful if the far greater numbers benefited are not alert. The world is full of unused plans.

WHAT THIS PLAN CONSISTS OF

6. This is not a final detailed blue-print. It is a carefully conceived general plan based on proper inter-relationship and anticipated growth of areas of living, industry, business, shopping, recreation, education and also on road, rail and airport systems to connect them most conveniently and safely. What the Report and its maps and charts do is to merely furnish an envelope. By far the biggest job is to fill this in, properly and imaginatively. This has still to be done and it is a very big job. Exact locations of roads, exact limits of areas, exact location of greenbelts, design of neighbourhoods and towns, will depend on information as to terrain, drainage characteristics, soil character and fertility, social and industrial information.

(a) It may be pointed out that the Plan is flexible and provides a certain amount of elbow room. On the Greater Bombay Map, for example several areas shown now as ' parks ' are

provided to leave room for requirements not now anticipated with certainty but which may arise. A specific example thereof is the area south of Santacruz Aerodrome, where the two railways are considering a cross-over for goods whose exact location is being studied. It is also a strategically located area and the best user thereof is not yet clear. It should not therefore be earmarked for any specific purpose for the time being. There are other low-lying areas which could be filled and used for such purpose as additional small airfields. But we do not recommend that they should be built upon for accommodation of substantially large population or industry, as this would result in dislocating the proper relationship of the various elements of the plan, including railway and road facilities. Bombay Island does not possess this flexibility. We must fight for every inch and create elbow room as we go along.

(b) One of the most important elements of the plan is the placing of functions in such physical relation to each other as to minimize the friction of space. We first minimize the need for travel and transport back and forth—for the sake of convenience and economy—and then we provide adequate transport and traffic arteries to handle what remains. The former we propose to accomplish by creating living units of residence, shopping, recreation, education—individual organic cells located as closely as possible to work areas, reasonably complete in themselves and surrounded by green belts for recreation, for agriculture and to prevent higgledly-piggledly growth. People living in such communities go back and forth into the City only occasionally, because they find work, shopping, recreation, schools etc., near at hand.

(c) We can plan such communities fairly readily in the Suburban areas. It is also necessary to create such communities in the City proper, but the conditions for doing so are not as favourable as those in the suburban areas. For example, such communities in the City cannot be provided with big green belts. Examples of what we propose to do in the City is shown on the Map of the Island of Bombay (Drawing No. G.B. 3, 11-11-1947).

(d) We provide adequate transport and traffic facilities by carrying our main roads *around* and not through these districts and by separating pedestrian and slow moving traffic from automobile traffic. Thus we achieve greater speed and greater safety. Even now, with the relatively small number of cars on the streets, police statistics show that we in Bombay kill one person per 100 automobiles. The rate in U.S.A. is one person per 1,000 automobiles, where miles driven per car are also much higher. Possibly, the most pressing and the most immediate problem is that of pedestrians and proposals in regard thereto are made in Section VII. They aim at not only keeping pedestrians out of the way of high speed automobiles, but they also aim at keeping the automobiles in heavily congested areas, off the lanes that seem to belong to pedestrians.

(e) This is the basis of traffic-insulated sub-areas and precincts where through roads must not pierce. This delimitation of localities also furnishes the basis over a period of years for placing of schools, recreation areas etc. The creation of such localities is important for another reason. A city plan is not only a large area intelligently sub-divided, it is the summation of organic and vital neighbourhoods and localities.

(f) As there has not been enough time and data at our disposal to assure that the boundaries of such precincts as laid out, are absolutely correct they will have therefore to be studied, verified and adjusted by the planning staff to be created hereafter, who will also follow the same principles and discover and demarcate other precincts.

(g) Finally, we are aware that even after further study, such communities, especially those in the built up city will not be as good as they should be, because this is not possible in a built

up city. Description and explanation of these localities and basis of demarcation are given in Section VI. Simultaneous planning and replanning of roads and localities is imperative. Inspection of Bombay reveals instances where localities planned without relation to through roads (some localities developed not very long ago) now interfere with the best road layout. There are cases as well, where road locations interfere with the best locality layout.

(h) Successful prosecution and development of a plan consists of two elements :

(1) The immediate, *ad hoc* or opportunistic element. It consists of seizing every small opportunity for local improvement and the Consultant wishes to compliment Mr. Modak on alertly finding and capturing many of these *e.g.*, creating and equipping local parks and playgrounds on any piece of land available or that can be made available. This is relatively cheap, affords tangible relief, is the best possible means of having the individual citizen grasp what planning means to him and to his children and demonstrates that the planners mean business. Bombay has such potential areas now undeveloped and running wild. We strongly urge that they be taken in hand and developed at once. Another example of an immediate possibility from a different field—the traffic jam at Carnac Bunder goods yard which frequently spills over into Frere Road and interferes with its effectiveness as a traffic artery through which the blood of traffic can flow without clotting up. There is a relatively simple and cheap remedy for this.

(i) These modest daily instalments of planning are sometimes neglected in favour of the big conceptions, but they are equally necessary.

(2) The realisation of the great Plan itself. It must be tied down to a reasonably definite time-table of development to co-ordinate various related aspects in time with each other so that at no point are its elements, thrown out of balance physically and functionally. We have therefore worked out as part of this Report actual proposed or illustrative development charts in the first three periods or priorities, without having specified the exact length of each. The time required for the completion of each will depend on availability of materials, and finance. It need hardly be added that the development in each stage will be overwhelmingly affected by the degree of interest and insistence of the citizens. We recommend that luxury construction should be prohibited until materials become more readily available.

(i) The three charts are intended to give a general indication as regards, (a) the interrelation in time of the various aims of the plan ; (b) to give the overall plan as specific and feasible and challenging a character as possible by breaking it down into definite chunks ; and (c) to give some idea of the magnitude of the cost involved. The actual future planning staff will need to refine or even more seriously adjust these charts—for example the proportionate numbers of houses as among Bombay Island, Suburbs and Towns beyond, the rate of industrial relocations etc. While only the roughest degree of approximation can be claimed for these charts of the first three periods, it would be completely unrealistic to attempt anything so definite as even this, beyond that point.

(j) The following point is of the highest importance and should be triply underscored. *Regardless of the rate, availability of materials and finance, Bombay must take measures to assure that it will not in the future be hampered by unavailability of required land nor by developments on it that make its acquisition too costly.* This means that this present, merely indicative plan

should be developed with all possible speed so that specific zoning and land use maps may be evolved and enforced and necessary land may be acquired. For this, far more adequate staff is desperately needed. The cheapest and indeed the only possible insurance is to develop reasonably detailed plans as soon as possible, even for projects that are not at all immediate, so that land can be notified or at least zoned against improper development, or other legal methods adopted, to assure no interference later.

(k) We are also showing by way of maps, the different stages of development in the City proper. These maps are subject, of course, to variation and adjustment. We have, for example, shown certain areas for housing in the first stage which from our present knowledge seem most readily available. But with the world-wide trend and the actual present Indian trend to industrial decentralization, we might find other areas than we expect. Likewise, a central area is indicated by the Consultant for a good-sized park, which we expect should be available towards the end of the second period. This is the general area for such a park, but it might well turn out, after closer study and inventoring, that some shift in boundaries may work out better.

WHAT THIS PLAN IS NOT

7. We have worked out on this conception of Greater Bombay and its development, firmly believing in the urgent necessity thereof, its overall economy, its validity and creative value. But we would emphasize again and again that it is only a preliminary guide. Most of the work remains to be done. If this presentation acts as a stimulus to action and is understood to lay down the principles of action and its outlines, then the job done is well worthwhile. But if Bombay's officials and its citizens should feel comfortably complacent about it, get the idea that the plan is all finished, then they would be under a terrible misapprehension and the work done would accomplish more harm than good. We believe this is a good beginning and a good first chapter, but the rest remains to be written.

FIRST THINGS FIRST

8. Undoubtedly the most urgent need is for housing which must be on vacant or predominantly
Housing. vacant land for the first periods.

(a) Housing should have the topmost priority for several reasons, the paramount one being "health and morals". Even back in 1941, *almost a lakh of people* were incredibly living 10 to 19 people in a small room; in 1947 with about double the population and no new building, one shudders to think of what conditions are. Even with the four lakhs of people whose bed is the footpath, such figures must be nearly doubled. These fellow citizens of ours **MUST** be accommodated at rentals they can afford to pay.

(b) We must also acquire elbow room to work in. You cannot displace a single person
Elbow Room for better roads, parks, schools, parking etc., until you create new
and living quarters, so that you will not dishouse people, for a miserable and
Dehousing squalid one is still better than none at all.

(c) And finally, the whole texture of our plan, the quality of living and contentment of
Neighbourhoods people in it, depend on creating integrated neighbourhoods. Sporadic
 building such as is now taking place, as for example the new
 construction being carried out in the Bhuleshwar area which should have been kept open,
 is an example of what not to do. We must arm ourselves with adequate powers to prevent
 such repetition in the future.

CONTROL OF LAND USE

9. We will never catch up with ourselves, our plans will never have meaning, and the money and effort spent on planning will be wasted unless we immediately establish and exercise legal powers to control the use of land and its density of development. Bombay and Greater Bombay cannot permit the individual builder to do as he pleases, for, his knowledge of the City's requirements is inadequate and his personal pecuniary interest or what he considers to be his interest is too often at variance with the interest of the efficiency and liveability of the City and the region.

COMBINATION OF INDIAN KNOWLEDGE AND FOREIGN EXPERIENCE

10. The plan as offered is the result of close interchange of opinion and observation between the Special Engineer and his staff and the Consultant, and it is believed that this fusion has resulted in a sound realistic plan which takes account of India's and Bombay's conditions and resources, and which has the benefit of the last 30 years of mistakes and successes in European and American planning.

(a) One of the big questions is, whether Bombay's citizens will be able to leap over these 30 years, save the time and waste, the trial and error which America and other countries have gone through or whether every country must make its mistakes and learn from them.

(b) In this connection we have adopted the following method: We have recommended the incorporation of single instances of the most modern solutions, and to do the bulk of the work in the way in which it is done at present. The experience of the citizens themselves with these contrasting methods should determine whether they should be later on incorporated in general. An additional advantage of this method is that expense at any one time is minimised.

(c) However, we must make it possible to introduce such modern solutions generally later on, without, in the meantime allowing extraneous development which would make these solutions, in future too costly, particularly because of needed land being built upon. For example, in the plan, there are express highways planned for Greater Bombay. On the basis of American and European experience, we are certain that such highways will require grade separation of the express highways from cross-roads and that only very limited access should be provided. Instead of providing overbridges at every cross-road, we recommended two only, at this time one at Andheri in the Suburbs, which is in a particularly difficult condition; and another in Bombay where the new subarterial road comes from Trombay and crosses over the Port Trust Railway and the Jackeria Bunder Road continuation. The users of the roads can then see how much advantage there is. They will then make up their minds as to the future and we are confident they will demand more of such sub-grade separations.

(d) Similarly, we recommend limited access to a stretch of one of the new roads within Bombay itself. This will naturally be compared with other stretches where each cross-road or even each house connects up with the highway.

(e) In any case, it is *absolutely vital* that such connections be *designed now*, and land acquisition made in adequate amount *now* while it is undeveloped and fairly cheap, so that if this modern type of intersection is required in later years, it will not be impossibly costly to adopt it.

(f) These are only a few of dozens of illustrations that could be cited, not only in connection with roads but in all fields of City development, where costly experience in America and in England has clearly demonstrated two things: First, that land must be controlled or acquired far in advance of need, to avoid much costlier acquisition later on, much unnecessary dislocation

and hence antagonism. Second, that through lack of knowledge we have often done the very same job twice, that the first solution had to be replaced a very few years later, for a more adequate solution

CARRYING THE PLAN FURTHER

11. As noted above, this is a general articulated plan. It is based on the large accumulated knowledge and experience of Mr. McDak and his small staff, the Town planning consultant Mr. Mayer and his traffic associate Mr. Cox. In its preparation, use has also been made of the information supplied by various bodies and individuals, intimately connected with the region. The generous co-operation of all those consulted is gratefully acknowledged*.

(a) To make the plan more precise and detailed will require—

(1) Ampler and more accurate topographic, civic, economic, real property and traffic surveys. There must be initial surveys which will have to be kept up-to-date periodically, plotted up and interpreted. Certain suggestions regarding agricultural surveys are made in paragraph entitled 'Agriculture' in Section II. An absolute **MUST** is an aerial contoured survey and mosaic of the region, which should be undertaken as quickly as possible. Such a survey is indispensable in any case, particularly in our case, as we lack up-to-date maps showing construction in the Greater Bombay Region in the past few years. Besides, this survey will serve as an interim until a topographic survey is made.

(2) Adequate staff : In this connection please *vide* Section XI by Mr. Albert Mayer and Mr. W. J. Cox which gives the qualifications, specialisations etc., of the staff and its number which is considered to be the minimum by them.

(b) Next steps in the development of the plan should go forward without delay, for the outlines are clear and there is plenty to do. But it will not be possible to get very far in a completely satisfactory or realistic way without action on the above two recommendations. It must be borne in mind that even if both are authorised at once, **IT WILL TAKE MONTHS TO ASSEMBLE THE PERSONNEL AND CARRY OUT THE SURVEYS.**

CARRYING THE PLAN OUT: PLANNING AND DEVELOPMENT BOARD OR COMMISSION

12. A far flung plan for a great City requires far more than technical skill and resourcefulness. It requires a strong, alert Board or Commission from various functional, geographical, political elements in the City, to give it the weight and prestige indispensable if the plan is to be realised. This should be compact and as small as possible commensurate with adequate coverage. The time to create this and appoint members is **NOW.**

* General Manager, B.E.S. & T. Committee; Representative of the Institution of Engineers; Executive Engineer, Central P.W.D. Superintending Engineer, Northern Circle; Executive Engineer, Presidency P.W.D. Bombay; Deputy Chief Engineer, Bombay Port Trust; Chief Engineer; B.B. & C.I. Railway; Engineer-in-charge, Colonies, G.I.P. Railway; Representative of the Indian Institute of Architects; Deputy Consulting Surveyor to the Government of Bombay; President, District Local Board, Andheri; Director of Parks and Gardens, Bombay Presidency; Superintending Engineer, Bombay Aviation Circle; Collector of Bombay; Housing Commissioner; President, Indian Merchants' Chamber; President, Bombay Chamber of Commerce; Secretary Indian Roads and Transport Development Association; Commissioner of Labour, Bombay; Milk Commissioner; Director of Industries, Government of Bombay; Collector of Thana; General Manager, G.I.P. Railway; General Manager, B.B. & C.I. Railway; Principal, University School of Economics and Sociology; Director, Tata Institute of Social Sciences; Director of Labour Welfare, Government of Bombay, etc.

(a) Among other things, this group must consider the financial implications of projects, and devise means of meeting the financial requirements. It should also consider, so planning its construction that the bulk of all but urgent work may be executed during times of depression and unemployment, both so as to provide work at such times and to get more for its money. This means employment of enough staff so that detailed plans are ready, for ample experience shows that general plans take too long to whip into shape when really needed. It also means setting up a capital budget system over a period of say, five years so that incidence of work and availability of funds may be co-related. But this principle will of course not be used as a justification for inaction.

EMOTIONAL AND AESTHETIC APPEAL

13. Hitherto, the discussion has concerned itself with physical and functional considerations in the widest sense, including social and economic factors. But of equal importance in another realm is the expression of these in architectural form and organisation which make direct and lasting impression on the people who see, live, work in them. Design will not only fulfil functions, but should speak eloquently to all, whether they well understand the functions or not. People want to live in a great City, a City of dignity, grace and inspiration; not only an efficient City.

(a) In endeavouring to reach such creative design the Architects and Planners have two splendid natural fundamentals at hand, the Sea and the Hills. While some hills must furnish the stone to fill and to build, Bombay and particularly Bombay Island should be vigilant to keep her remaining hills, for use of the public as recreation and as vantage points for inspiring views of the City and the sea. Beaches and well-designed recreation areas on the Sea and not merely odd left-over patches—these constitute another element to be skilfully used. The Mahim Woods area offers another natural opportunity, somewhat spoiled now, of retaining and recreating its wooded character; its treelined Cadell Road is one of the most delightful places in Bombay.

(b) Elements like landscaping, tree-planting, designing and setting up sturdy recreation equipment, can at low cost do much to make living pleasanter and more inspiring. They have not heretofore been adequately utilized in Bombay's Chawl developments, roads, or even open spaces. In every type of development proposed in this plan, trees and generally well considered landscaping should be an integral part.

(c) The new shopping centres and housing developments give the Architects an opportunity for really functional design. In the new road systems the landscape Architects and the Engineers are challenged. Some of the handsomest structures created in America in the last generation are the fly-over bridges and the famous Clover Leaves, which act as grade separators between roads. It is not a question of architectural embellishment or of extra expense, but of the beauty of carefully studied functional form and arrangement.

(d) The situation is replete with challenge and with opportunity. Bombay is fortunate indeed in its natural setting, but it cannot be said that either in individual buildings, groups of buildings, in public squares or in any aspect of civic art, Bombay has improved its opportunities. The new planning should generate new inspiration.

SECTION II

TARGETS FOR POPULATION, INDUSTRY, PORTS AND DOCKS, HOUSING, PARKS AND PLAYGROUNDS, TRAFFIC AND TRANSPORTATION.

POPULATION

14. The population of 35 to 37 lakhs to be ultimately distributed as follows :

Approximately 13 lakhs on Bombay Island, 18 lakhs in Suburban area up to Bassein Creek, including Thana, 5 to 6 lakhs in other (new) satellite towns beyond Greater Bombay*.

(a) While Greater Bombay might readily grow beyond 35 to 37 lakhs of population, its peculiar terrain consisting mostly of hills and of low-lying land, makes it difficult to find enough land without excessive amounts and costs of cutting or filling. As it is, on the available land, these total figures represent densities somewhat beyond those considered desirable, and beyond those recommended in the Preliminary Reports of the Town Planning and Housing Panels. The densities proposed are :

- (1) Approximately 50 per acres in residential area of Greater Bombay including local shopping centres, schools, local parks and playgrounds and local roads.
- (2) Approximately 175 per acre in residential areas in Bombay Island in the first few projects, then going down to about 140. This density does not include park areas which are created as each project is built.

(b) This simply means that Bombay must begin to consider the question soon of limiting its ultimate population. Effective methods of achieving this must be conceived and adopted especially in view of the present influx of refugees. It should also be noted that as industry and labour efficiency increase and modern plant and machinery become available, there will be a good deal less reason for indefinite growth than hitherto, and that in such conditions excess population may in fact be a source of trouble.

(c) As regards redistribution of population, the " Illustrative Programme " (First three stages), indicates that by the end of the third stage Bombay Island should have lost 3,90,000, to the Suburban and new town areas.

INDUSTRY

15. The weight of opinion seems to be that in view of Government's decentralization policy tendency towards provincial self-sufficiency and modern industry's own trend to decentralization not more than a 50 per cent increase in requirements of industry need be anticipated. Satellite or outlying towns should take this increase. While the amount and rate of decentralization of existing industry from Bombay City outwards, cannot be forecast, and while those industrialists consulted seemed to think it would be very slow indeed, it is already taking place to some extent and an allowance for it must be made in Greater Bombay area and other associated towns. Greater Bombay should take care of those light industries as requiring close-in locations ; towns beyond, for heavy industries (particularly Ambernath-Kalyan), and other light industries.

* As against the major expansion in a northerly direction, or as a supplement to it, we considered the question of a major expansion of the City to the mainland on the east, i.e., to Uran. This would have the advantage of bringing in people and traffic near the southern end of the Island. However, this idea was not adopted as it would have involved a long expensive tunnel. The terrain on the Uran side is a combination of hills and of low-lying land with very little normal high land so that the development would be difficult and expensive. We consider the contemplated railway and bridge from Trombay to Panvel to be a much better project and this will be the site of some satellite towns if the bridge project goes through.

(a) In view of the difficulty of finding enough land in Greater Bombay, there should undoubtedly be some limitation on new industry, but an absolute prohibition is another matter. Certain industries such as printing and consumers' industries are most advantageously located fairly close in. For planning purposes some increase must be allowed for. An area of some 3,200 acres in the suburban area has been definitely allotted (which at a rough figure of 50 employees per acre represents half of the present employment total of Bombay). To provide for decentralization from Bombay, and for a minor amount of new industry that may be found desirable, the following policy is recommended. No new industry should be allowed on Bombay Island. Expansions of present plants on Bombay Island should be permitted only in very exceptional and urgent circumstances. In Greater Bombay only such new light industry as is clearly situated more advantageously near to the City because of proximity of consumer market should be permitted. Industry decentralizing from Bombay Island, should in general go into the towns beyond, unless the same reason exists or unless dislocation of labour market or difficulty in supplying housing or other facilities, is excessive. For rate of decentralization from Bombay Island, and procedure to expedite this, see last two paragraphs of this section.

(b) The method of stage or period of development that is proposed in rather compact areas, should make it possible to utilize land now marked for industry, for other uses later, if industry proves not to require so much land. In any planning of this magnitude and spread in time, there has got to be a degree of flexibility. But those in charge of execution of the plan must not lose sight of its purposes, or flexibility will result in some confusion.

(c) The tanning industry will definitely have to leave Bombay Island in the first phase leaving Dharavi area for development. It will be moved to a relatively insulated location on the north side of Trombay, adjacent to the *kutchrapatty*. In connection with other decentralization from the Island proper, nothing beyond shifting of the tanneries is contemplated in the first stage. In the second stage, it is assumed that 100 acres of industrial land will be released on the Island; and in the third stage another 400 acres.

(d) These figures may seem to be too low but we are not recommending any drastic pressure for decentralization of industry from Bombay Island (except tanneries or other noxious industries and certain scattered or fringe industries) for the following reasons;

- (1) Most industry is rather compactly located and does not seriously interfere with either amenities of living or economical functioning.
- (2) In view of the scarcity of materials for all purposes, which will probably last for a long period, it is not felt that industrial decentralization should be given so high a priority as other needs of the City, province or nation. While we want more land for housing and open areas, the rate of provision called for in our first three progress stages will probably tax the materials and budgetary resources available in any case.
- (3) We should concentrate on moving out certain isolated industries interfering with needed developments (e.g., in the Mahim Woods area) especially when they are old and fairly obsolete, as soon as possible. The same applies to industries located on the fringes of the industrial area, e.g., in the Parel Tank locality.

PORTS AND DOCKS

16. The present plans by the Bombay Port Trust contemplate an increased capacity of about 40 per cent. which seems a fair consensus of what increase may be expected. However, to avoid the possibility of difficulty later, in the face of possible unexpected increase in volume of Port traffic,

water-front area in Trombay is being held for possible future use for docks and appurtenant traffic, rail facilities and godowns.

BUSINESS AREAS

17. The City is short of business areas. They need to be considerably increased. This can be done in two ways—(1) by increasing the facilities in regard thereto in the Fort area itself and (2) by creating additional shopping and business centres in other parts of the City and suburban areas, suitably situated.

(a) As regards (1) some extension as shown by patches around Churchgate extension and at the north end of Colaba Road can be carried out. Similarly, some additional area can be provided by reorganising the entire area between Hornby Road and Mint Road. In this reorganisation, better traffic conditions to relieve Hornby Road and Sir Pherozshah Mehta Road should be aimed at in addition to parking facilities. This area must be planned for re-development as a whole but its development will have to wait until the second period because it will depend upon the housing available for accommodating those who would be displaced therefrom.

(b) As regards (2) *viz.*, creation of secondary shopping and business centres, two major proposals are contemplated on the Island itself, the present Bombay Central area and the Dadar area. The Bombay Central area business and shopping district proposal ties in with our underground tube proposal. In the Greater Bombay Region, we recommend that two shopping centres should be created, in the first stage one at Andheri and the other at Trombay. Creation of such sub-centres is in accord with the universal modern trend of taking the pressure off the main inner City centres and lightening the traffic load into them. Such new centres will be more modern in design, in respect of ample and convenient parking facilities and in respect of keeping cars out of the shopping area itself, permitting safe and leisurely shopping and making it possible to take the children along.

(c) With the establishment of such advantageously located new shopping centres in the Island itself and the various new centres in the Greater Bombay Region, there will be a substantial increase in business and shopping areas which we consider to be justified in view of prospective increase in *per capita* income over the years.

HOUSING

18. No one can possibly question the fact that Housing is Bombay's most crying need, (the need of a decent system of parks and playgrounds is second).

(a) It is particularly difficult to set up realistic housing targets because of the all-important question of availability of materials. In Bombay there are other uncertainties and difficulties, particularly the lack of adequate information on yearly family income, for, this directly affects rent-paying ability and the question of the magnitude of the yearly deficit below economic rental that must be met.

(b) However, these are problems of later detail, in a sense, because our best efforts in every respect, intensely carried on for years, will meet only a fraction of the problem.

(c) The most pressing part of the problem is the relief to low and medium income workers from frightfully overcrowded, ill-lighted and insanitary homes. We must concentrate here and prohibit, for a certain period, construction of luxury homes and all other construction not urgently needed in order to permit maximum volume of low-rent housing.

(d) We must build as much subsidised housing as we can find deficit money for, as even that is woefully inadequate for the needs of the lowest income groups. For the next income group, lowest interest rates and sinking fund may do the job for a portion of this group. In the U.S.A. in recent years, insurance companies have been authorised to construct homes for the upper income portion of this group and have done so in large quantities.

(e) Illustrating these points, our first period's figures are about 17,000 low-income homes, about 15,000 for those of medium income and 2,400 for high income (these latter to be built towards the end of the period). The first period calls for more homes on Bombay Island than elsewhere because it will take time to supply roads and utilities outside and because of possible insufficient industrial employment there. In the second stage there is a reversal in these proportions.

(f) Standards of housing should meet those recommended by the Bhore Committee.

(g) For years to come, all housing must be on vacant land and not on lands occupied at present by slum buildings, for, even a leaky thatched roof is better than none. Towards the end of the first period we may have accumulated enough new housing to be able to start some slum clearance.

(h) We should not construct these houses in small isolated developments but they should be in the form of neighbourhoods with schools, parks and other needed amenities. (Sections V and VI give details of the sites considered suitable for this purpose*).

(i) Housing is the dynamics of planning—the core of planning. England and America have for years constructed housing without the larger planning, and are now beginning to see what a waste of opportunity this has been. Let India, let Bombay now on the threshold, not make the same mistake. The Government are about to embark on a programme of housing 7,000 low-rental units in three years. This quantity represents five good sized neighbourhood units or two good-sized localities. It will be a tragedy if there is not the fullest sympathy and co-operation between the builders and the planners, and correspondingly a splendid step forward if this substantial nucleus becomes the means for helping the actual creation of the first step in the plan.

PARKS AND PLAYGROUNDS

19. (a) At 4 acres per 1,000 people, and an ultimate thinning of population to 13 lakhs, the area required would be 5,200 acres—and as Bombay now has over twice that population, it ought to have a great deal more. The fact is that it has the shamefully negligible amount of 550 acres, much of it badly situated with respect to accessibility to those who need it most. Nor, with respect to the prior claim of housing on vacant sites, can we use for this purpose even all of the meagre lands now vacant.

(1) By reference to "Illustrative Programme" Charts, it will be seen that by the end of the first period, extent of these public areas should reach 850 acres, by the end of second period about 1,500 acres; by the end of the third period about 2,300 acres. These are recognised to be inadequate, but it is all that can be realistically planned. In the second period, we begin to clear central slums and replace them with parks. All new housing, except that to be built under schemes where land is already disposed of and out of control of the new plan,

* The neighbourhood principle has proved its value in countries of the West. In India, where so much of the City population is of recent village origin, it is, if anything, more important. However, due to this very factor and others, the details of neighbourhood development here, may need to differ in important respects and will need to be restudied and adapted to Indian conditions. For further discussion see Section IV.

is indicated to have a proportion of park for general use (beyond its own recreation areas), though in the early stages, the amount is somewhat below what is desirable in order to let housing catch up. (See first three periods of Charts " Illustrative Programme " for locations and sizes of public open spaces : also Section IX on Parks and Playgrounds).

(b) Greater Bombay area will be extremely well off in respect of open spaces for inspiration, relaxation and play because it shall be served with large open areas consisting of the hills from the north to the south end of Salsette, (which are not suitable for building purposes) hill in the centre of Trombay, green belts proposed around new communities, (which will offer certain playing fields) green strips to be provided flanking the new express highways and the available beaches which possess the further advantage of ready accessibility. For these reasons, it is considered that in Greater Bombay region, an allowance for open spaces at the rate of 4 acres per 1,000 persons in the areas actually to be built upon will be quite ample.

LOCALITIES OR DISTRICTS OF NEIGHBOURHOODS ON BOMBAY ISLAND AND IN GREATER BOMBAY

20. The districts composed of neighbourhood units suggested for creation in the City proper are fully discussed in Section VI. This section deals with the new settlements to be created in Greater Bombay. For reasons of topography—Salsette being split in the middle by a ridge of hills into two long rectangular areas, and also because these rectangles are again split by the two railroads and due to the fact that the amount of buildable land available is not adequate, we cannot create in Greater Bombay, a series of separated satellite towns each with their own industry. Rather it has proved more desirable to concentrate industry into two areas, one more or less square, east of the B.B. & C.I. Railway, and the other in the form of a long strip to the west of the G.I.P. Railway, as shown on the Greater Bombay map, and to place living areas separate from, but around and adjacent to them.

(a) As far as pleasant and convenient living is concerned, the effect is the same in either case because the individual living areas will be of adequate size and will be isolated from the other areas either by natural topographical boundaries or by through roads or railways with green belts. But as far as local administration is concerned, the situation will need to be carefully studied for a solution.

TRAFFIC AND TRANSPORTATION

21. Road system, parking, railways, need not be discussed in this section as they are adequately covered in Section VII. Progress targets as related to the main items of development of Housing and Industry are noted under " Other Principal Works " on " Illustrative Programme Charts " for the first three periods.

(a) Two items are presented at this point that are taken out of their natural context under Section VII for greater emphasis; one is the proposed meter-gauge suburban tube railway loop from Bombay Central through the Fort area and return. This item in various forms has been discussed for many years. This is too costly and complicated an item for categorical recommendation, but its construction will serve so many purposes of paramount importance, that we strongly urge the Corporation to request Government to appoint at once an Engineering Firm of the highest competence to make a complete report on alternative routes, first costs, operating revenue etc., and that it act promptly on their recommendations. At best, this tunnel will be urgently needed long before it is available. This is also a particularly good instance of the principles recommended ; to make plans ready so as to take advantage of the lowest price market.

(b) The specific form of this project considered most useful from the knowledge now at our disposal is as follows :

All B.B. & C.I. Railway main line trains to run into Victoria Terminus; make Bombay Central the main Suburban Terminus of B.B. & C.I. and starting from there at lower level run meter gauge loop into the Fort area and back along another route as shown in dotted blue line on the Map of Bombay Island. The railway yard will be at grade in present Bombay Central.

(c) The advantages of the proposal are as follows :

- (1) It will enable B.B. & C.I. Railway to carry the doubled suburban load which the Greater Bombay development requires. (In Greater Bombay as large a proportion of the new inhabitants as possible will be engaged in work there, but we have estimated that the displacement of some 14 or 15 lakhs of population from Bombay, into the Suburbs will nearly double the traffic load. While G.I.P. can handle this, B.B. & C.I.'s Churchgate Terminus cannot handle an increase of over 20 per cent. according to the General Manager of that railway.
- (2) The most serious single traffic problem in relation to accidents and to vehicular movement in Bombay's Central business area, is the horde of pedestrians. The proposed tunnel will minimise this in two ways :
 - (i) As the proposed route of the tunnel is much closer to the locations where the incoming people work, the length of walk will be much diminished, which is another way of saying that the number of pedestrians on the street at any one time will be less ;
 - (ii) As the tube will have stops under the busiest intersections such as Dhobitalao and Victoria Terminus, it can have exits and entrances at places on the various sides of the intersection which will place passengers exactly where they want to be, keeping them off the road-ways at these intersections, (This is similar to Piccadilly Circus underground distributor or Times Square in New York.)
- (3) It will further improve traffic conditions* by—
 - (i) Enabling certain central area tram routes to be eliminated. Trams, especially at intersections, are a very difficult and dangerous problem as they must operate on fairly direct lines, cutting through roundabouts.
 - (ii) By use of the to-be-abandoned right-of-way of B.B. & C.I. from Bombay Central to Churchgate, it will become possible, when the necessity arises, to run an express highway from the north end of the Island (so called Tulsi Pipe Line Road) with limited access, connecting up with Marine Drive, straight down to Churchgate. This will in the future, when automobile traffic increases, be of cardinal importance and probably indispensable to Bombay's traffic system.
- (4) The present right-of-way of B.B. & C.I. between Queens Road and Marine Drive can be used for parking. In the approximate 1.6 square miles thus made available, there would be parking space under future buildings for some 1,500 cars.

* Traffic conditions are inconvenient now and it must be visualised that Bombay will have something like a 40 per cent. increase in motor traffic before the tunnel is in operation.

(5) The capital cost of the tube will be counterbalanced in some measure as follows :

(i) Buildings can be erected, or building plots sold, along the present B.B. & C.I. right of way between Marine Drive and Queens Road.

(ii) The intersection at the Opera House on Sandhurst Road offers a most difficult problem. A proper solution under present conditions will involve a very high cost. With the proposed express highway from Marine Drive along present depressed B.B. & C.I. right-of-way, the severity of the problem will be lessened and the cost will be only a fraction of what it would be under present conditions.

(d) In our opinion Bombay must face up to this whole problem NOW. The situation will be very acute long before the job can be completed. The engineers employed to make a detailed study may recommend a solution different in detail, but some such solution is urgent and imperative.

AERODROMES;

22. (a) At least one additional field must be provided. Cargo deliveries by plane are already appreciable, and with the strain on railway's rolling stock, the long distances of India and the unsatisfactory road system, this second air-field may be required in the not too distant future. It has to be located on the west shore of Salsette where substantial fill is required, that being the only location where adequate length runways can be created, and clear glide angles found, clearing the hills. The site was approved at a meeting with the members of Central Aviation Division. It is believed that filling operations should get under way well before the end of the first period. An aerodrome on fill takes time to build. American and British experience has shown a totally unanticipated increase in scheduled and cargo flying.

(b) It is suggested that a third site for a large Aerodrome should be explored by the planning staff on the Ambernath-Poona side, as it is felt that before the end of the second stage, indicated in the " Illustrative Programme " Charts is reached, one additional major Aerodrome will be badly required near the area for heavy Industries.

(c) These air-fields are required for individually owned planes, planes used by business concerns and flying schools. A suitable location is on the salt pan area in Trombay which is adequately distant from both the main aerodromes, This has the additional advantage of being located within a reasonable distance of the City proper. One such air-field will not be sufficient and it is therefore recommended that at least one more site be found out and earmarked somewhere in the vicinity of Thana.

(d) The sea-plane base was originally intended to be located south of Santa Cruz aerodrome. It was agreed at the meeting with the members of the Central Aviation Division that this was not the best location and we were informed that the site need no longer be held for this purpose. The representative of the Central Aviation Division indicated that they would probably pick a site at Panvel Creek.

(e) All the air-fields referred to above will be adequately served by a suitable road system for fast traffic, except the seaplane base which must connect to Bombay by launch unless the Trombay-Panvel bridge is built.

PROGRESS STAGES OR PERIODS IN DEVELOPMENT OF THE PLAN

23. The three periods covered in the Charts entitled " Illustrative Programme and Schedule of Progress " do not carry to a point where the present plan is complete (we say *present* plan,

because a plan is always developing and being adjusted to meet new needs). To have done so would have been quite unrealistic. In fact, we may be accused of being brash in carrying our predictions that far.

(a) But it was important to do so, so that reconnaissance, surveys and actual plans could be scheduled back to be ready in ample time. Development can neither be done overnight nor planned overnight. Also and possibly more important, by looking ahead and planning elements in relation to each other, we ought to be able to avoid repetition of the painful experiences we have had in Bombay, of finding the right solution to our problem blocked by a previously completed development of a different kind, planned oblivious of other requirements. Finally, by looking and designing well ahead, land can be acquired at the proper time as regards cost and in the most advantageous amount. We must avoid unpleasant surprises such as we have repeatedly encountered in making the present indicative plan.

(b) In any case, the requirements for the first period are already in focus, and the later periods reasonably so—these latter can be adjusted and changed with closer study of potentials and trends. The first period is likely to be the most difficult, but it is hoped that the periods will be no longer than between 3 and 5 years and that the second and third may approach a smaller figure.

(c) Such a tentative pre-formulation is also required if the policy of a capital budget is adopted. A very approximate tie-up between stage progress as noted in the charts and anticipated costs, is given in Section XIII. While a summary of it might be useful at this point, we feel that this important matter deserves inspection of the costs section itself, which at this stage is of necessity quite brief and very approximate. The Maps of Bombay Island and of Greater Bombay should be consulted in connection with these charts. The Greater Bombay Map does not show stages because the situation is sufficiently simple so that, the tables are clear without such details on the Map. In the case of Bombay Island, the more complicated situation requires a more detailed map.

AGRICULTURE AND DISPLACEMENT OF CULTIVATORS : LOCATION OF DAIRY FARM COLONY.

24. Large agricultural areas are left untouched, but no definite land in the large areas to be developed remains available for agriculture other than in the greenbelts and certain "park" areas (e.g., surrounding the tanneries). The whole question of displacement of cultivators even though it takes place gradually, of soil survey for adjusting location of greenbelts, the question of market gardening, etc., should be the subject of an early study by qualified personnel so as to evolve a plan which may minimize hardship on the cultivating population and result in maximum food-producing benefit to the City.

(a) The Milk Commissioner's Dairy Farm colony: This area was planned and acquired independently by the Milk Commissioner before our work was started. Obviously, it is not consonant with our plans and development. However, the Milk Commissioner has stated that it must be roughly in this location to permit milk and dairy products to reach the City unspoiled, as there are no refrigerated cars available. Consistent with this basic premise which we have perforce accepted, the Milk Commissioner has been most co-operative in adjusting his boundaries and requirements.

(b) In all likelihood, this location will have become an anachronism in ten or fifteen years. The adjacent areas should be so planned as to readily include this area for normal suburban purposes when it is eventually abandoned for dairy purposes.

SECTION III

AREAS AND POPULATIONS ALLOTTED
(GREATER BOMBAY AND BEYOND)

GREATER BOMBAY

25. The figures on allotments of areas appear in Table No. 1 entitled " Allocation of areas for various purposes in the Greater Bombay Area ".

26. Industrial in Greater Bombay should contain only " light industry ". Heavy industry is visualized as going to Ambernath-Kalyan and satellite towns. The basis for quantitative allocation has been explained under " Targets " in Section II. Both industrial areas shown in Greater Bombay are on adequately high land, one on G.I.P. where active development is already under way by industry ; the second is provided east of the B.B. & C.I. Railway between Kandivli and Borivli. The latter has been questioned by several people consulted. The reasons for selection of the two areas and their shape are as follows :

(a) The shape and topography of Greater Bombay, its division by the central ridge of hills and the character of already built-up area west of the B.B. & C.I. make it impossible to work out the classic arrangement of a number of centres of industry in well separated satellite towns. The situation on the G.I.P. side is similar resulting in this case in an elongated industrial strip along the railway. However, we can achieve the same close adjacency between location of industrial employment and working population, as well as most of the other advantages by establishing two large centres of industry, each surrounded by living areas, as shown on the Greater Bombay Map.

(b) The long relatively narrow strip of land along the G.I.P. is necessitated by the same consideration.

(c) In both cases, industry is mostly confined to one side of the railroad. In the case of the G.I.P. area, all housing is located on the other side.

27. The park area is unusually large. Most of it is hilly land unsuitable for building, and ideal for giving the people of Bombay a close contact with nature and natural recreation.

(a) A sizeable area of park is shown to be created surrounding and insulating the tannery and slaughter house area, so located that the prevailing winds will carry sewage odours out over the creek.

(b) Greenbelts and greenstrips are provided between built-up concentrations, and along main roads. These greenbelts should as far as possible be so located and their depths so adjusted that good agricultural land is left undisturbed as far as possible ; in other cases cultivable land may be exchanged so that a maximum number of those displaced may obtain similar land. While greenbelts are in general shown as of more or less uniform depth, this is purely diagrammatic, in default of any adequate information.

(c) A large park and recreational area is shown on the beach west of Andheri and along Malad Creek. The latter requires filling and might be developed in part from time to time as a large regional recreational area, as contrasted with the hilly parks.

(d) The functional and arboricultural basis for handling the Parks, as well as the type of development in each for maximum use and minimum capital and maintenance cost, needs careful and capable handling.

28. Rough calculations of areas and population for the development of "Housing" are shown in Table No. 1. "Housing" does not merely mean constructing a building on a vacant piece of land. It connotes something further. It stands for complete unit development with all the facilities such as local parks, recreational grounds, schools for primary and secondary education, shopping centres, meeting halls etc., which are essential for good living and for fostering spirit and activity.

(a) The table shows the location, area and rough population of the various residential areas, by key numbers which correspond to the area-identification numbers on the Greater Bombay Plan.

- (1) Under *location*, each area is given some identifying name. All the units except R/6 and R/12 are large enough to be separate civic entities with certain local functions, and they are divided from their neighbours by a greenbelt in order that they create and retain a sense of identity and of personal participation which is apt to be lost in the usual amorphous composition of a large City with its endless stretch of built-up area.
- (2) The populations of these units generally range from 35,000 to 85,000 which are a desirable size. One area will have 1,50,000 but it should be part of Thane, which will become a sizeable City in itself and should begin planning its internal and expanded layout, in view of the probably large increase in population.
- (3) Populations suggested for accommodation within various areas are very rough. They have been based on an average of 32,000 persons per square mile. In some localities this average may be slightly higher while in others slightly less, depending upon their proximity to the City proper and to large open areas, their incomes, roughness of topography and other considerations affecting their utility and economical development.

- (4) The average of 32,000 is arrived at as follows :

Several layouts were prepared on the assumption that they would be occupied by the medium income group families in two storey units. It was found that with adequate open spaces—22 families could be well accommodated per acre (inclusive of local roads) or about 1,000 persons per 10 net acres. To this must be added the following :

Local recreation;	... 4 acres per 1,000.
Shopping centres;	... 1.75 Do.
Educational and public buildings	... 2.75 Do.
Waste	... 1.5 Do.

- (5) This gives a net land allowance of 20 acres per 1,000 persons or 32,000 persons per square mile or about 12-14 families per gross acre of residential area.
- (6) Based on this density, the overall population of "Greater Bombay" estimated at 18 lakhs in Section II—"Targets" is arrived at as follows :

(i) On 38.75 square miles of new residential area	... 11,50,000
Present population of Greater Bombay	... 5,50,000
Population that can be housed in various interstitial areas in existing unfilled developments—say.	1,00,000
Total	... <u>18,00,000</u>

- (ii) It should be understood that the densities indicated in the table are not based on anything like thorough study, but are mainly illustrative, to show the kind of variation that is probably desirable. For example, in parts of the somewhat rough terrain north of the Andheri-Marol Road, the average allowance for waste area of about 7 per cent may be too low. For that area a lower than average density has been indicated. But here again, competent planning and architectural engineering staff will have to study each situation carefully.
- (iii) Compact areas will be taken up for development in preference to smaller divided units (*vide* "Illustrative Programme"). This aspect of housing has been further described in Section VI of the Report.
- (iv) The compact areas to be developed in stages are—
- (1).. Pawai, for industrial workers, assuming that industry is there to require it, which appears very likely—
 - (2) Trombay for middle and higher income groups who do not need to be so close to places of work—
 - (3) Deonar for 1,000 low rental dwellings to serve the tanneries and slaughter-house—
 - (4) In the areas north of Santa-Cruz aerodrome just north of Andheri-Marol Road to provide housing for medium income group families.
- (v) In the second period, we continue building in the same areas, adding medium income housing to that for low income groups. In case the industrial area to the west of B.B. & C.I. Railway is developed, one additional housing centre can be started there in this period. In other words, the objective is to build up completely, not to, scatter wastefully. To avoid spotty development of other areas by private enterprise before the authorities are ready to notify or acquire areas, is a legal problem, but in any case studies should be made and plans prepared for all areas so that a net of realistic zoning can be spread over all areas as soon as legal basis has been set up.

29. Areas for higher education are predicated on the basis that there is no room in Bombay Island for the large institutions to be required by the research and higher educational programme of the new India and that several concentrated large areas for the location of related institutions are preferable to numerous scattered locations. While some preliminary contact has been had with those in the fields of education, health and hospitals, it will be necessary to confer much more closely with those authorities before the allotted areas can be said to be anything beyond preliminary indications. Particular attention should be given to the question of medical centres, as hospitals and medical schools and colleges are so closely connected in modern medical educational theory.

30. Great care will have to be taken to select suitable points for sewage outfalls so as to keep the beautiful sea-front on the west free from nuisance. The sewage outfall of the City proper is to be located at Dharavi, where sewage to the extent of about 40 to 44 million gallons per day will be discharged into the Mahim Creek after subjecting it to primary treatment in preliminary settling tanks and secondary treatment in bio-filters. The sewage from the areas covered by the Bandra and Juhu Municipalities will have to be discharged after adequate treatment, into the Mahim Creek as it would be unwise to allow it to be discharged even with treatment, in the sea round about Juhu. Areas to the North of Jogeshwari on either side of the B.B. & C.I. Railway will have to be provided with sewage outfalls discharging either in Malad or Manori Creeks. Similarly areas lying on either side of the G.I.P. Railway North of Ghatkopar will have the sewage outfalls discharging in Thana Creek.

This only gives a general indication as to how the sewage from the areas beyond the City limits should be disposed of. A complete Scheme of Sewage for Greater Bombay will have to be drawn up and this can be done only after the skeleton Master Plan is accepted. Sites for installing sewage purification works must, however, be earmarked from now. The area lying between the park to the south of Santa Cruz Aerodrome and the Mahim Creek, as indicated on the plan has temporarily been earmarked for this purpose.

WATER SUPPLY FOR GREATER BOMBAY REGION

(Contributed by Mr. N. V. Modak.)

31. To fix the requisite supply of water at adequate pressure to the various areas included in the Greater Bombay region, the whole area is proposed to be divided into 5 zones. The following statement shows the five zones together with the approximate requirements of each, based upon the prospective population and the nature of the industries likely to be established therein :—

(a) (1) Thana, Mulund and Bhandup (including light and heavy industries therein) ...	4 m.g.p.d.
(2) Ghatkopar, Vikroli, Chembur development area, Mahul etc. ...	7 m.g.p.d.
(3) Kurla and part of Chembur and Trombay ...	2 m.g.p.d.
(4) Goregaon, Malad, etc. ...	3 m.g.p.d.
(5) Marol, Andheri, Vile-Parle, Khar, Santacruz and Bandra ...	4 m.g.p.d.
Total ...	20 m.g.p.d.

(b) The total requirements of the Greater Bombay Region during the next ten years are expected to be about 20 million gallons per day. It should be possible to give this supply without any interruption to the supply given to the City proper when the Vaitarna-cum-Tansa Scheme is completed. If more water is required for the industries, as they develop it can be made available, as, by then the Corporation would have to develop a second source of supply, either the Kalu-Shai or Bhivpuri.

(c) Re : (1) The existing two as well as the proposed 72" trunk mains run in close proximity of this area. The major portion of the supply to the extent of about 3 million gallons per day can be made available from the new main by tapping it at convenient points. The hydraulic gradients of the new main (72" dia.) in this portion will vary between 310 and 320 T.H.D. The 72" West main can be tapped to give about 1 million gallons per day with its hydraulic gradient of about 310 T.H.D. Suitable feeder mains will be laid from the point of tapping to convey water to the various parts of the area.

(d) Re : (2) It is expected that out of the estimated total requirements of 7 million gallons per day, 2 million gallons per day would suffice to meet the requirements of Ghatkopar and Vikroli. The remaining 5 million gallons per day will meet the requirements of the immediate developments likely to take place in Trombay. The total supply of 7 million gallons per day can conveniently be drawn from the proposed balancing reservoir at Ghatkopar with its F.S.L. at about 270 T.H.D. An 18" main from the proposed balancing reservoir will be adequate to serve the areas of Ghatkopar and Vikroli and a 30" > 24" main may have to be laid from the proposed reservoir to Chembur and Mahul.

(e) Re : (3) The 48" > 32" Vehar main with its hydraulic gradient of about 230 T.H.D. runs by the vicinity of Kurla and part of Chembur. It can on its way be tapped to give a supply of 2 million gallons per day.

(f) *Re*: (4) No mains run through this area. The estimated requirements of Goregaon Malad etc., are about 3 million gallons per day. Though these requirements are comparatively small this will have to be met from Tulsi Lake—which is at a higher altitude—to minimise the losses due to friction which would otherwise be considerable if long feeder mains are laid from the pipe lines conveying water either from Tansa or Vehar. The F.S.L. of the Tulsi Lake is 426 T.H.D. There is at present 24" pipe line running from Tulsi but it will have to be enlarged to 30" for a length of about 2 miles upto its junction with the proposed Goregaon Are Road and therefrom it can be reduced to 24" and utilised for serving this area.

(g) *Re*: (5) This area is at present supplied with water from the 24" Tulsi main. The portion of this main from the lake upto its junction with the proposed Goregaon Are road after being enlarged to 30" will give Tulsi supply to the zone in (4) above, but the further portion of the main towards the South can be utilised to take 4 million gallons per day of Tansa supply by means of a 24" cross connection with the 72" new main with its hydraulic gradient of about 305 T.H.D.

32. The size of feeder mains will depend upon the altitude of the storage reservoir to which the supply will be taken in the first instance before distribution, in each case. The topography of the area through which the feeder mains will pass will also affect their sizes. Both these factors will have to be studied into detail to arrive at the correct sizes. The sizes mentioned above are, therefore, only approximate. In most of the cases, storage reservoirs will be insisted upon, as any supply drawn directly from the trunk mains will adversely affect the pressures in the main causing great inconvenience to the regulation of the distribution of the water supply to other zones and the City.

PRESENT BUILT UP AREAS.

33. Little is said in this report or shown on maps and charts as to presently built-up or partially built-up areas, as it requires very detailed study which we were unable to give it. Unless the planning staff is increased to larger numbers than appears likely due to dearth of suitable personnel and due to cost considerations, some priorities of planning are necessary.

(a) To re-plan and re-zone built-up areas, takes far more time per unit of area than in new areas, and the product accommodates much fewer people. As a choice must be made, it is recommended that the new areas be dealt with first, except for the re-planning required by the new roads and other developments incident to the Greater Bombay plan as a whole, and except for preserving or enhancing areas that are still relatively open and can be saved from the prevailing confusion or are otherwise especially important, e.g., Juhu Beach area, the Beach park at Khar, Old Juhu airfield, etc.

(b) In the meantime, until comprehensive planning is possible, schemes submitted by private developers should be carefully scrutinized and zoned.

(c) This decision as to order of priorities in planning is a difficult one, but seems the only realistic one to make.

NEW TOWNS AND SATELLITES

34. It has been noted under targets, that to accommodate between five and six lakhs of an ultimate population of 35 to 36 lakhs, and to take care of heavy industry as well as of light industry that does not need to be within Greater Bombay, towns beyond the Greater Bombay would need to be developed. Within the time at our disposal it was not possible to recommend sites for new towns to accommodate all of this 5 to 6 lakhs of people and accompanying industry. The planning staff will need to make further studies to locate the residue (some 3 lakhs) not covered by these recommendations.

35. The Ambernath-Kalyan area is particularly favourable being on high dry land, with good railway and road facilities, where water-supply can readily be made available. **Ambernath-Kalyan.** Several industries are already located there. It is felt that as this area is sufficiently favourably located and there is enough land, and there is a dearth of such favourable land in the environs of Bombay, this should be developed well beyond what is considered the normal size of a satellite, to accommodate something of the order of 2 lakhs of people and a large amount of industry. Development is indicated to start in the first period. It will need to be available as soon as possible for new industry. Hence a plan should be drawn, land users determined, zoning ordinances drawn up, necessary land notified—in fact all the applicable steps taken at an early date that are indicated in this report, for Greater Bombay. This is urgent from two view points—in providing adequately for new industry seeking to enter the Bombay area, and to prevent unplanned industry and housing from entering this favourable area without control, to its confusion and ultimate deriment.

36. Only two are noted—Virar which is suitable for 50,000 to 60,000 people and is well located on the B.B. & C.I. Railway. The other location across Thana Creek at **Satellites.** Turambhe, Nerul Shiraone, etc., is a good land and would be splendidly located if the new highway railway cut off bridge to Ulva and Panvel is built. But if this is not developed, the site would not conveniently accommodate a population of 50,000 to 60,000 people.

(a) Neither site need be developed in the first two stages. Virar should be planned soon so that this good site may not be spoiled by casual developments.

SECTION IV.

TYPICAL LOCALITIES TO BE DEVELOPED ON BOMBAY ISLAND

37. Locality and neighbourhood planning of new units of the City outside of Bombay Island, will be readily possible, except in such built-up areas as Ghatkopar and Kurla which confusedly run into each other. Such situations require careful study at the earliest moment by a competent planning staff, to prevent further deterioration and to guide imminent developments there.

Neighbourhood and locality planning.

(a) The most difficult place to establish any such system satisfactorily is always in the central built-up City, *i.e.*, Bombay Island. The whole of the Island cannot in the foreseeable future be handled that way, even aside of the central business and governmental areas which do not fit into any such categories. Beyond that, much of the recent residential construction in which must be included large areas of land belonging to the *ex-Improvement Trust* already disposed of by lease though not yet built upon. It appears to be too late to alter their layouts and other areas must therefore be found which can be developed as neighbourhood units.

(b) Due to overall soundness of Bombay's road system (and despite its defects, noted in Section on Roads), consisting of main arteries and through roads, with rather narrow and sometimes winding local roads or short straight road, offsets at intersections, the Island lends itself reasonably well to creation of such localities surrounded by through roads. These areas can be developed over a period, as good examples of City development.

(c) Even brief preliminary study has indicated that certain localities are highly suitable for such development. They are indicated on the Map of Bombay Island inside blue boundary lines. Further study will indicate additional ones. Some will almost immediately emerge and can be planned in terms of localities and neighbourhoods—*e.g.*, the Mahim Woods area*. The planning staff should also at an early date tentatively and mainly for its own guidance, layout the boundaries of other likely localities and watch for trends to see whether they confirm expectations or warrant changes. This applies particularly to two general types of areas: The industrial areas, and what might be called the central business-residential areas such as Bhuleswar and Kalbadevi. Any new, privately proposed development in these areas must be weighed in the light of such tentative plans and certainly no new development which adds to congestion should be tolerated (such as are unfortunately proceeding in Bhuleswar now).

(d) The extension of the locality or neighbourhood principle over as much of Bombay Island as possible, is an early priority assignment for the planning staff. In the short period at our disposal and with the tiny staff available, it would have been too unrealistic to go any further ourselves than the four sites selected. The staff should also start, in the districts noted in the first and second stage Charts, to select additional slum areas for being laid out into suitable neighbourhood units.

(e) It is suggested that this be approached in two practically independent ways :

- (1) More or less independently of what is there now except for what may be considered permanent factors such as railways, and based on what would be most desirable ;
- (2) Taking account of what is there now—*e.g.*, in the Parel Tank area there are at this time some mills which will remain for a certain period at least.

* As this is a favourably located area only sparsely developed and hence wide open to sporadic development, it is recommended that this planing be undertaken as one of the earliest assignments.

(3) By a carefully adjusted combination of the two methods and by drawing up for each district or locality a set of time or stage development plans, it should be possible to fix a feasible and reasonably satisfactory pattern at any stage which would best meet the demands of the future City. It is believed that even in the most complexly occupied areas, the work can be completed in not more than three stages. It should be possible to create a stage-by-stage programme of a complete district in terms of minimum units or steps of a complete neighbourhood at a time to accommodate about 1,000 families in each unit centered around a school. Such a neighbourhood unit would be surrounded by local connecting roads, which should be reasonably free from traffic dangers, as these would be local and not through roads, but which would not normally need to be crossed because local, educational, and shopping facilities would be found within the neighbourhood. Typically, the area of such a unit, with our standard of densities and local open areas, would be of the order of 30 to 40 acres. This means that the school would not be more than a quarter of a mile distant from anywhere in the neighbourhood, *i.e.*, within a child's walking capacity. Until such a minimum of area or most of it has accumulated, it may be desirable to leave occupiers in place after acquisition. What we must avoid is patchwork—building small areas which cannot be integrated, or which will take years to integrate.

(f) This principle of the neighbourhood has been accepted and seems from experience in western countries to offer not only the best and functional solution but also the best social and spiritual solution to City living. Socially, it offers a cohesive organism which effectively breaks down the large amorphous City of the 19th century and of the present into constituent elements of a size where the individual is not lost, where somewhat the same social stimuli and controls prevail as prevailed in the smaller towns and villages from which the people originally came and in the case of Bombay came, to a large extent, only fairly recently.

(g) However, fruitful as the concept undoubtedly is, it must be carefully formulated and studied in terms of Indian requirements and conditions, not merely copied. For example, some other central nucleus than the school may be more important as the unifying or basic factor. Selection of inhabitants for newly formed neighbourhoods who have some common factors in their background or at least are not too disparate, or alternatively careful preparation and the devoted activity of suitable social workers if backgrounds are very disparate, these are some of the problems to be explored. This is further noted in the section of surveys required (*vide* Section XI).

(h) The determination of districts or localities of neighbourhoods is more exclusively a physical, topographic, traffic and functional matter. While it should not be smaller than to contain one high school, it may well be larger, depending on location of surrounding through streets, railways or other natural barriers. It will contain a more varied and important shopping centre than the individual neighbourhoods. The size and boundaries should also be such, where possible, as to contain some concentration of park areas beyond that of purely open and recreational spaces. The locality or district should be insulated by a green strip from the surrounding through roads, as noted on Bombay Island map.

(i) The following four areas in the City are considered to be typically suited for being developed into modern districts of neighbourhoods.

I—PAREL TANK AREA

33. This district is bounded roughly by Kalachowki Road on the south, Government Gate Road on the west, King Edward Road on the north and Sewri New Road on the east. A large development comprising several neighbourhood units is possible in the first stage. These should probably

be among the very first housing projects undertaken, as land and utilities are available with comparatively little preliminary work and as there are relatively few existing buildings. It is possible not only to add park area within the development, but there is the opportunity of devoting the fine Golanji Hills as a park for this area as a whole and for the district to the north, provided they are rescued before too long from quarrying operations. A density of 50 families (net residential) per acre, higher than the overall objective is recommended, because we wish to get a good housing start on the little vacant land now available in the City.

(a) The whole district may not be completed until the third stage or beyond. In the early stages, industrial employment is available immediately adjacent. Even after this adjacent industry may have moved away, the district is still well located with respect to general industrial employment. There is also miscellaneous employment such as at hospitals and laboratories in the vicinity. In the final stage of development, assuming all industry has moved out of this area and if by then the total industrial employment on Bombay Island is markedly lower as we believe it will be, a large percentage of medium rental housing will be built, for office workers, service employees, transport and electric workers etc., who will always find employment in Bombay.

(b) Thus, it would appear possible, to make such an area as this suitable for good living at every stage of development. Such stage development requires patience, persistence and foresight, but this seems to be the only way to combine realistic attack with great ultimate objectives of achievement in an existing crowded and confused City.

II—DHARAVI AREA

39. This is visualised as a second stage development, and the sea-wall park on Mahim Creek when carried out in the third stage will supplement open space facilities for this area.

(a) Only a small portion of the area can be developed in the beginning as most of it requires 5' to 6' of fill and the tanneries would have to be shifted before much of the area is developed.

(b) There is little to be said about this area, which seems a natural district, surrounded on three sides by railroad and on the north by a road and park. Two points are, however, worth noting :

(1) Total population in Dharavi proper will be about 7,600 families, about half to be low-income families and about half of higher income. This land is reasonably well located for accessibility to industry but not ideally. It is better located for those of somewhat higher income. The proportion of low-income families is pushed up somewhat beyond what might otherwise be the case, because so little vacant land is available and so much housing for this group is needed. However, if other more suitable areas become available sooner than anticipated, the percentage of low-income workers to be located in this district might well be diminished.

(2) In the third period, railway workshops, just south of Dharavi are to be replaced by housing. This area is shown as connected with the Dharavi district, as this seems to give a rather pleasant continuity of park, right out to Mahim Creek sea-wall park even though it requires a pedestrian over-bridge across the Railway or the Lady Hardinge Road.

III—RACE COURSE AREA (In Second Stage) :

40. In size, area, location, freedom from any interior obstacles and correspondingly freedom to plan interior circulation, this is one of the best sites for our purpose in Bombay, which is a **MUST** for housing and park purposes. We can, by this time in the second stage, afford to create park area at a greater ratio than the four acre per thousand standard and in view of the central and strategic location of this area we create it at a substantially greater ratio (130 acres instead of 90 acres), thus establishing a park and playfield area of more than local usefulness. This area will in future be connected by the proposed foot overbridges to the large adjacent mill area. Besides, it is conveniently located in relation to all sorts of employment, industrial and otherwise, and to all the central City facilities. It is on this account that this area is recommended for a large amount of medium-rental housing.

IV—B.B. & C.I. AND G.I.P. WORKSHOP AREA SOUTH OF ELPHINSTONE ROAD (In Third Stage)

41. The suitability of these areas for housing is open to question, as they are divided in two by railways. However, as the Railways are electrified, this area seems little different from one surrounded by trams buses, motor-cars, etc. The location is central and ample local park area can be made available. The smaller area—the B.B. & C.I. portion—is connected by a foot overbridge to the large 40 acre future park available in the G.I.P. area. It seems sensible to link this smaller area to the more varied facilities of the larger area, especially as its other sides are through streets and as park and other facilities are not otherwise available near at hand.

SECTION V**PROGRESS STAGES OR PERIODS IN DEVELOPMENT OF THE PLAN.**

42. There has been so much reference to these Charts throughout this report that little will be said here. It was with a good deal of hesitancy that we decided to draw these up, for we were well aware of the vulnerability of any such attempt, and our own view of them is indicated in the title " Illustrative Programme and Schedule of Progress ".

(a) But the conclusive argument in their favour is that they change the nature of the plan and of civic discussion and consideration of the Plan, from something merely proposed that might vaguely be done at any time, into a specific crystallized programme. This along with the section on costs, which is also of the roughest approximate character, offers a definite proposal and steps for the accomplishment of the plan.

(b) The Charts indicate what inter-related steps must be taken, by going a considerable distance into the future, and including all aspects of work. They also permit all agencies involved to schedule their plans accordingly or to suggest adjustments or changes based on their own requirements and potentialities or special knowledge. They enable all citizens to know what to expect and more or less when to expect it. By stating the underlying assumptions and suggesting a rough order of timing, they give to everyone the opportunity of agreeing or disagreeing, with the hoped for result that what then emerges as the result of such comments, may be completely realistic and feasible. While we have already consulted many people and received useful comments and criticisms, many of which have been incorporated, this definite formulation gives further opportunity for serious study and comment.

(c) On the other hand, it must be recorded that these Charts are as realistic as we could make them at this time and in the light of existing information and trends. They should certainly form the basis of discussion and action. Apart from or in addition to comments and help from other sources, it is paramount and essential to have more and more trained staff which will itself discover appropriate changes. The work has been done with a very inadequate staff which enthusiastically helped to the limit of its capacity.

(d) One set of items in these Charts requires special note. There are a number of housing schemes listed whose densities are excessive, and whose park areas are either inadequate or altogether lacking. This is because these are schemes already laid out and whose land has been already leased, so that even though they are not yet developed, they are beyond our control or influence. However, we urge study of these areas with a view to selecting and demarcating desirable size and location of local parks and attempting to reacquire them. In view of the cost of building and the difficulty of obtaining materials for a considerable time to come, such reacquisition may be easily feasible in some cases. The schemes in question can be identified by the fact that they are numbered in the " Illustrative Programme charts".

SECTION VI

HOUSING

43. General principles such as the neighbourhood and its location, housing standards, etc. Principles. are not discussed here as they are covered in Section IV.

(a) In the planning of developments, houses must not have their entrances on main or arterial roads as this is a menace to safety, causes traffic delays and interferes with the traffic flow. There must be a service street with limited access to the main highway. The lack of these service streets will be a serious detriment to the future, both of the homes involved and the safety of their children, and to the efficiency and safety of Bombay's traffic. Every effort should be made to remedy this condition, where it is not physically too late (*i.e.*, where building has not yet begun) in existing schemes. It will improve the plots themselves and their values and can generally be done merely by re-arrangement, without loss of area.

(b) On the Bombay Island Map, every proposed housing project has set aside within it an area of park at least equal to the four acres per thousand standard. This is one of the imperative measures if Bombay is to achieve anything adequate to catch up with its appalling lack of parks and playgrounds. It is noted that in past schemes this has not been the case.

44. While the facts on which this programme is based are sketchy and any such attempt at prognostication extremely hazardous, certain guiding principles may be noted ; as, if they are valid, they furnish the basis for drawing up a more realistic programme, and the method of readjusting it from time to time as the situation develops.

Notes on Housing in the three period charts of the "Illustrative Programme."

(a) In the first period, most of the housing is projected for Bombay Island (almost 60 per cent.). In the second and third periods, the ratio goes down to about 40 per cent. and under 35 per cent. respectively. The reason is that it will take time to acquire, survey and prepare land and utilities in the outer areas, while these are pretty well available in Bombay. This will not increase congestion in Bombay as the houses are on vacant land and park areas are reserved so that there is actually a slight percentage increase in the park area.

(b) In the three periods, low-income housing out of Bombay Island is of the order of only 30 per cent. of the total. As labour cannot afford the fares in and out of Bombay, the amount of workmen's housing must not run ahead of local industrial employment, and must be carefully adjusted to it. Those of middle income are in a more flexible position, so that the bulk of decentralization at these stages involves this group (about two-third of all the housing off Bombay Island in the first three stages).

(c) By the time the fourth stage is reached, it is believed that industrial decentralization should be well under way, and if a Chart had been made for that stage, a much higher percentage of workers' housing would probably be in order.

(d) The Planning Commission to be created will want to keep in very close touch with industry, for one of the most difficult problems in successful planning and development is to avoid creating new industrial areas without housing, and housing without industry.

(e) The rate of decentralization of housing and population out of Bombay Island according to the tables, is as follows :—

At the end of first period	approximately	...	15,000 family units.
At the end of second period	„	...	35,000 family units.
At the end of third period	„	...	45,000 family units.
Total	„	...	95,000 family units.

(f) The rate of production of new housing steps up with each period. Probably as productive capacity goes up, a still steeper increase will be possible.

(g) In the first period there is no slum clearance on account of shortage of housing. In the second period some slum clearance is contemplated as possible, and more in the third period. All this slum land is contemplated as being used for parks, as this is high priority, and as the amount of housing contemplated is in any case probably the maximum that can be produced. In a fourth period, it would probably be desirable to use some for parks and some for housing.

(h) Surveys should be originated as early as possible to get the facts on age and condition of buildings with a view to legally declaring certain areas as slums. Also, family incomes and sizes must be surveyed, and rechecked from time to time so that before very large amounts of housing are created, the market may be defined and the building programme adjusted to it. Survey should also be conducted to determine the facts as to relative desirability of minimum apartments for single families *versus* larger apartments for joint families. It may parenthetically be noted here that the larger unit is cheaper to build per room than the smaller unit, because of relatively less plumbing.

(i) In the Greater Bombay area, development should be in compact units so as to avoid uneconomic situations which occur when houses are freely built anywhere, for all civic services are excessively expensive in such a case. In fact, a number of the proposed residential areas in Greater Bombay are not even included in the first three stages.

(j) Notes on certain housing sites in Bombay :—

(1) Completion of sea-wall and fill of the uncompleted blocks of Colaba is strongly recommended for the following reasons :

- (i) It will add much needed acreage to the scarce supply of land.
- (ii) Figures indicate a profit on disposal of plots which may help to defray a part of the cost of subsidies for workmen's housing and costs of development of the Greater Bombay and Regional Plan.
- (iii) The method of fill, by dredging, should not interfere with or reduce any other building activity.
- (iv) The thousands of families to be housed thereon would add no corresponding burden of traffic into the island, as the area is situated within a short distance of the centre and the traffic there from south to north and will thus not add to the predominant streams of traffic coming from north to south.

(2) For similar reasons, it is suggested that the large vacant acreage of the military on Colaba might be gained for housing development. It is recommended that negotiations in this behalf be initiated.

(3) The use of Railway Workshops' land for housing in the third stage is based on discussion with the Railways' General Managers who indicated that it was desirable to move these workshops out of the Bombay area altogether, and felt that it would in all likelihood be feasible to do so by then.

SECTION VII

TRANSPORTATION AND TRAFFIC

ROAD SYSTEM AND PARKING :

45. This section unless otherwise noted, is concerned with major through roads*, arterial and sub-arterial, not with local circulation roads. The local roads are equally important to safety and convenience, and particular care must be exercised as to how they are permitted to join main roads. The modern tendency elsewhere is to emphasize width of main roads, generally leaving local roads fairly narrow so as to discourage through traffic on them. No other comment is offered on purely local roads, nor on secondary roads on Bombay Island which, though not purely local, partake more of that character than the sub-arterial. This distinction is not merely one of words, but is very important as it affects thinking and practice. The natural tendency is to widen almost every road, but very often this does fully as much harm as good.

(a) Both in Greater Bombay and Bombay Island entirely new roads have been recommended (e.g., the two north and south expressways, a large portion of the Andheri-Marol Road in Greater Bombay and the road paralleling Kalachowki Road on Bombay Island), because it is generally cheaper to lay-out and construct an entirely new road than to widen an existing road and also because it gives greater freedom to plan and to limit ribbon-development and frequency of access ; and results in providing one fast traffic and one local traffic road.

(b) Similarly it is suggested that the existing road from Ghodbunder to Juhu which is already overcrowded should not be widened but should be left for those who want to move in a leisurely fashion. A new through road with green borders should instead be run through the vacant land to the north. This will result in fewer accidents, less irritation to pedestrians, motorists and to people who live along the old road.

(c) All through roads and where possible the sub-arterial roads, should be provided with a green strip on either side.

46. The proposed road system shown on the Map of Greater Bombay, consists of two express highways running north and south, one on each side, a series of East and West **Greater Bombay (salsette)** connections between them and sometimes extending to the shore, beginning at Trombay, then one at Santa Cruz, one at Andheri, one at Goregaon, one at Borivli. The two expressways are more or less parallel to Ghodbunder Road and Bombay-Agra Road respectively, leaving the latter two, to serve local slow-moving traffic. There is also a north-south road running down the centre of Salsette, originating west of Lake Vihar, going down through Kurla and finally joining the southern-most Subarterial road after crossing the eastern expressway.

(a) While all these roads will be constructed 22' wide to begin with, with 8' berms on either side, they are designed for ultimate construction as follows :—

- (1) *Expressways*.—For automobiles only. Four lanes with dividing strip. Limited access from certain cross-roads only, usually several miles apart.
Grade separation from cross-roads.

* The local roads are not properly part of the Master Plan and should be worked out in connection with localities. However, the local roads of one locality do have a relationship to those of adjacent localities. This does not mean that they should always be continuous from one locality to another, but it does mean that the roads of one locality must be considered not only by themselves but as part of a general web of local roads.

No access to pedestrians, cycles or animal drawn vehicles, (These will pass over or under at intervals of about half mile. This assures the all important continuity of flow. Cycle traffic at a distance from the expressway rather than adjacent, but generally within the green strip).

Turn-outs on the road, for bus stops.

Large parking spaces at each railway station where vehicles can be left by people taking the train to Bombay, thus tending to prevent too much pressure on Bombay's streets. Minimum right-of-way to be purchased to be 300' widening from time to time to add to the green strip, for recreation purposes.

- (2) *Other roads constituting the remainder of major road system.*—It should be noted that the present roads are bye-passed where they pass through busy areas such as bazars, e.g., Andheri to Marol, at Ghatkopar etc. Where, as in the present case the new road runs parallel and close to the old, the practise of limited access can and should be observed and the width of the new roads should not be less than 250'.

47. The map speaks pretty well for itself and no detailed description of the road system is considered necessary.

GENERAL DISCUSSION

48. The Island has three advantages in its road and traffic system :

(a) It has a reasonably well defined major road system that does not suffer from the usual situation of too many roads of almost equal width and importance so that there is too much choice and not enough specialization. While it needs a few more inter-connections, great care must be taken not to break up areas too glibly, which are now not pierced by wide roads. Each of these localities or districts must be carefully studied before trying to relieve their internal over-congestion, which will in most cases best be cured by moving population and by other methods rather than by widening roads.

(b) Its railroads are with very few exceptions crossed by road overbridges of adequate width.

(c) Some of its roads are wide enough (e.g., Sion, Kingsway, Vincent Road) so that they can be redesigned with high-speed centre lanes and side service lanes. (See sketch "proposed cross-section of Sion Road").

49. Disadvantages and remedies :

(a) Due to the narrow long shape of the island, with main business centre near the south end, the traffic has to traverse the length of the Island before reaching the business centre where it concentrates excessively. The very decentralizing nature of the Greater Bombay plan, the creation of large suburban shopping centres, and of large parking spaces at Suburban Railway Stations, should operate to keep considerable traffic out of Bombay altogether. For further decentralization of the present business centre, it is necessary to create additional business and shopping centres on the Island north of Fort Section and to reorganise the main centre (See Section VIII). Filling in and building on land in Colaba south of the Fort Centre, capable of providing for some 13,000 families will also help to keep away some traffic from main arterial roads as the residents of this area will normally come up to the centre and not run further north to mix with the incoming main traffic.

(b) The present road network does not offer natural continuous flow. It is full of offset intersections which are dangerous, slow down traffic and cause confusion at inter-sections. This must be avoided in future and whenever opportunity offers, present situations must be cured. A major corollary to this is the absence of a continuous north and south expressway. This is proposed to be provided in the third stage by completing the Tulsi Pipe Line Road having a 150' right-of-way for most of its length and carry it down to and around the present race course (which is proposed to be removed outside the City limits and its site made available for housing and park purposes) and continuing it further right down to Churchgate by using the present B.B. & C.I. right-of-way from Bombay Central, if that is abandoned in favour of the tunnel scheme which we have recommended. (This proposed expressway is shown on map of Bombay Island, by double line). Careful reconraissance of this proposed road to ascertain just what land is needed, should be made promptly and the land-required earmarked for this purpose. At the third stage or possibly in the second stage, a new causeway should probably be built across Mahim River, which will connect up the north-south expressway running parallel to the B.B. & C.I. Railway up to Borivli and the proposed express highway, thus providing in the City an express highway from Borivli to Churchgate.

(c) On the east side of the Island, Reay Road and Jackeria Bunder Road will be continued upto Sion Road. This continuation will join the north-south express highway running through Trombay and skirting the east side of Salsette upto Thana. It will be connected to the express highway at sion. It may be that in the future, expansion of traffic may require a north-south expressway on the East side of Bombay Island. The only possibility would seem to be an overhead road over Reay and Frere Roads. This is in the distant future but justifies making a layout and survey to establish the possibilities.

(d) Bombay Island is lacking in good continuous east-west roads. This will be remedied at five points :

- (1) At extreme north end, by widening road north of Dharavi with overbridge over B.B. & C.I. Railway.
- (2) At Elphinstone Road by widening the Tripartite Road.
- (3) At Connaught Road by a new overbridge over the railroads to connect upto Jacob Circle.
- (4) Connecting Bellasis Road with Nesbit Road by widening a short stretch of Shepard Road between and as soon as possible thereafter acquiring corner property eliminating offset.
- (5) A new cross street between Carnac Road and Churchgate Street: exact location to be determined after close study.

(e) There is at present no continuous cross street between Carnac Road and Churchgate Street. This causes excessive detouring and piling up of traffic at various intersections. A new continuous street will have to be run through from Queens Road (and later) Marine Drive to the Fort and Ballard Estate areas even though it must cut through the maidan.* This street should not have shops abutting it and on it, parking should not be allowed, so that there will be a minimum of delays to traffic. This new street will also relieve Pheroza Mehta Road which now carries an excessive burden of local and through traffic. The time available to us did not permit us to recommend exact location for this new street, which will need to be carefully studied. It is not shown on the Bombay Island Map, because of its undetermined location.

* There is no reason why a central maidan of this character need be of great uninterrupted area. It differs in this respect from a park in a residential areas, as in the business areas it is mainly for its visual value and for the occasional recreation that it affords the worker, that it is valued. There is no question here of safety, or children playing, or of sylvan atmosphere.

(f) By widening Waudby Road and using the circuit Waudby Road Fort Street, Mint Road, Churchgate Street and by installation and use of traffic lights so as to favour this route as against Hornby Road, fast moving traffic should to a substantial extent be deviated from Hornby Road, to the benefit of shopping and business values on that road.

(g) It is not advisable to widen any road. Mere widening as pointed out before does not help to relieve congestion. For this very reason we do not recommend widening of Cadell Road. Lady Jamshedji Road running parallel to and located at a short distance thereof is capable to carry the high traffic, with the construction of the Tulsi Pipe Line express highway. On the positive side, Cadell Road is now a delightful local road, lined with trees, running through Mahim Woods. The whole leisurely pleasant character of this section of town should be retained.

(h) Excessive pedestrian traffic both in crossing roads and along footpaths of most streets is further accentuated and complicated by the shallow shops in most sections, which have no space inside for customers. Remedies for these conditions are suggested in Section II—Traffic and Transportation, paragraph 21, (c) (2), (i) and (ii) Section VIII, paragraph 57 (a), (b) and Section X, paragraph 76 (f) under Zoning. This state of affairs is not only restricted to the City proper but it is almost equally severe in most built-up areas in Greater Bombay. Apart from inconvenience to pedestrians, the spill-over of pedestrians from narrow footpaths into the vehicular areas is dangerous, and in effect narrows the moving lines and slows up traffic. While part of this is due to carelessness and ancient habit, most of it is due to inadequate width and obsolete shopping conditions.

(i) In most western countries this problem is almost negligible as compared with the vehicular traffic. In India it must be recognised as of equal or almost equal importance. Solutions are suggested in sections on zoning, shopping, surveys; the problem should be carefully studied and attacked comprehensively and quantitatively by vigorous methods similar to vehicular traffic studies and solutions.

(j) There is a great dearth of adequate off-street parking spaces particularly in central areas. This question is discussed and remedies are suggested in Section VIII—"Shopping and Business; Markets". It is, however, felt that proposed reorganisation of the area east of Hornby Road should help particularly in modernizing an obsolescent situation.

(1) The present provision for parking in the centre of roundabouts is an ingenuous one and probably unavoidable due to lack of other spaces. But it delays traffic and offers some danger.

(k) The existing road system does not provide for adequate segregation of traffic. Under the schemes now proposed, slow-moving traffic will be kept off express-ways and service roads will be created on certain other arteries. As far as the congested areas of the City are concerned, it is desirable to carry out the experiment of keeping cars off some of the narrow interior roads with their masses of pedestrians, where the Victoria is a far more suitable vehicle.

(l) Some of the roads accommodate tramways which are a handicap especially at intersections. If the tunnel scheme is adopted, it should be possible to minimize or eliminate them from the busiest central intersections.

(1) It is possible to realign the tram tracks on certain roads, for instance the Vincent Road—and Sion Road, with a view to avoid such dangerous intersection as shown on Drawing No. G.B.5/11-11-1947.

(m) In the report of preliminary Panel on town planning, a new sea drive is suggested going up to the north of Island. It cannot be given a high priority and the work on the same may be taken in hand in the fourth or fifth stage of development. Its construction should be at such a level that it would not interfere with the proposed sea-front parks at Mahim Woods etc., and it should connect up at convenient point with the sea-front drive in Greater Bombay,

Sea Drive.

GRADE SEPARATION

50. The second of the two specimen grade separations between roads (the first is at Andheri) will be at the intersection of the prolongation of Sion Road and the East Suburban expressway from Trombay. (Drawing No. G.B.4/11-11-1947 shows a typical grade separation layout).

51. *General design notes.*—The following considerations should be borne in mind while designing new roads :

(a) Wherever a road runs parallel to a railroad and is fairly close to it, it should be kept as close as possible to the Railway, allowing for adequate green strip, because the narrow area between the two that would otherwise be left, is undesirable for any development.

(b) When a new road crosses a railway by an overbridge, this should be at a distance from the Railway station to avoid aggravation of congestion.

STAGES

52. The various appropriate stages for the execution of the programme coming under the category of new roads etc., are shown on the Map of Bombay, where numbers indicate priority. (For both Bombay and Greater Bombay, the three Charts of "Illustration Programme and Schedule of Progress" should be referred to).

RAILWAYS

53. The B.B. & C.I. Railway can furnish the sidings required for industry in Greater Bombay because they will all be taken off on the East side where no cross-over is necessary. As far as passenger traffic is concerned, a maximum increase of 20 per cent. in Suburban traffic can only be handled due to the bottleneck at Churchgate Station. The ability of the B.B. & C.I. Railway to handle 100 per cent. increase in passenger traffic is contingent on the tube scheme being carried out.

(a) The G.I.P. Railway can handle both (passengers and goods traffic) provided they proceed with the rearrangement of their quadruple track system by installing overhead cross-overs, or by adopting any other suitable device or devices.

(b) Both the railways are planning for goods crossover between the two lines, south of Santa Cruz. With the growth of industry on both sides of Salsette, it will need to be prosecuted, so as to avoid the necessity of coming into Dadar on Bombay Island. It is recommended that the scheme be completely designed so that planning of the area of Greater Bombay will not interfere with its installation as and when found necessary.

(c) *Tube loop.*—This has already been dealt with under Section II.

The proposed G.I.P. cut-off across Trombay and rail-road bridge to Panvel to shorten the distance between Bombay and Poona would give great incentive to the development of the Greater Bombay area on regional basis as its construction will enable several needed satellite towns being

located along this rail and roadway. In case it is found that the execution of the rail-road bridge scheme cannot be undertaken for want of finance, it is suggested that the road section of the bridge might charge a toll—a method in wide use in the U.S.A. to pay for express roads, tunnels and bridges that could not otherwise be built.

(d) The G.I.P. and B.B. & C.I. Railways adequately serve the eastern and western sides of the region of Greater Bombay. However, as they radiate from Dadar in the City proper and increase the distance between them as they move northwards, a stage is reached when they no longer serve the area lying between them. This is particularly true for the area proposed to be developed for residential and educational purposes on either side of the Andheri-Marol-Kurla Road, which when developed will contain a population of about 2 lakhs. Most of this population will be middle class and heads of families will be visiting the City every day for their work at the offices. It can be seen that bus service alone will not be in a position to cope with this traffic and that a rail link between Ghatkopar and Andheri will be badly needed. This link will also serve the Industrial area on the G.I.P. side for transport of goods to the B.B. & C.I. Railway, without going southwards to the City for the purpose.

This proposal has been checked for its physical feasibility and has been found to be quite possible. For accelerating the development of the area mentioned earlier, this rail link is absolutely essential.

AERODROMES

54. For discussion of aerodromes see Section II 'targets'.

SECTION VIII

SHOPPING & BUSINESS (Markets) :

- General.** 55. The considerations entering into the selection of sites for, and the design of modern shopping centres are well known, and where put into practice have worked well. Every shopping centre should meet at least three criteria : easy and safe to reach, ample space for parking of vehicles and cycles and safe convenient opportunity for shoppers to circulate among the shops without disturbance by vehicular traffic.
- New shopping centres in suburban areas.** 56. These principles are easy to apply to new areas, and will be applied to the suburban regional shopping centres, one east of Andheri and one in Trombay, as well as similar future centres and to local shopping centres.
- Existing shopping conditions in built up areas in central and shopping areas. Specific new shopping areas.** 57. The difficulties mount when we attempt to apply these principles to existing shopping areas, and worst of all in a central shopping and business area such as Bombay's, where the difficulties of access and parking are accentuated by the fact that it is so near the south end of the island that traffic must come full way down to reach it. We will here briefly discuss policy and action with respect to business and shopping in built up areas generally and in greater detail, the central concentration in Bombay Island and specific proposals in connection with them.
- (a) In general, business and shops in built-up areas consist of solid linear developments along streets, with frequently the entire frontage given over to shops. Besides the central shopping areas, the shops are so small and shallow that the already narrow footpath is used by customers, for whom interior shopping area should be provided. This arrangement combines the maximum of discomfort, fatigue and danger. Modern shopping areas are concentrated, instead of indefinitely stretching out; they are relatively self contained with good interior pedestrian circulation from one shop to another.
- (b) Such new principles can be applied only gradually and partially in built-up areas, mainly by legislation (except as definite redevelopment or improvement schemes can be undertaken, supplying positive solutions), by zoning, which carefully establishes extent and location of areas and frontages where shopping is to be permitted ; prescribing interior floor spaces for customers, or alternatively, setbacks to accommodate them outside ; prescribing off-street parking areas, etc. Also by eliminating non-conforming uses of certain lapses of time as indicated in Section X.
- Central shopping area (Fort area).** (c) Our Master Plan will relieve the congestion and difficulties to, from and in the Fort area in a substantial degree, by the following measures :—
- (1) In order to lighten the load of traffic into Hornby Road and the Fort area, two other shopping and business centres should be established on Bombay Island—one in the neighbourhood of Bombay Central and one at Dadar. The existence of more than one major shopping and business area in a City, and regional ones outside, is common in many cities.
 - (2) Expansion of Fort area into Churchgate and the larger, more important and more functional expansion and reorganization of the area between Hornby Road and Mint Road have already been noted under "Targets" in Section II.
 - (3) Reorganization and redevelopment of area between Hornby Road and Mint Road should have the provision of ample parking for the whole area as one of its main features. While much more study
- Parking areas**

will need to be given to this problem, as per recommendations for traffic surveys in Section XI, two additional areas likely for parking are shown on the Map of Bombay Island and are put down for accomplishment in the second stage. They cover the present slum land north of First Marine Street and the area bounded on East and West by Queens Road and Marine Drive,—the ground floor area under future buildings to be constructed on the area presently occupied by the B.B. & C.I. Railway tracks between Churchgate and Thakurdwar being used for this purpose (tracks are recommended for removal if the tube scheme is adopted). Their development will provide accommodation for some 3,000 cars in about five to ten years, depending upon the progress made on the scheme of slum clearance and the construction of the tube railway. If necessary, a shuttle bus service can also be provided to take people from these parking areas closer to their offices. These areas are within less than half a mile, to a maximum of less than a mile from the central areas.

- (4) Future business buildings in the Fort area (and certain office areas also) should be made to supply off-street parking.

58. (a) Bombay Central.—If and when as per the tube scheme described in Section II, Bombay Central becomes the main Suburban Terminus where passengers change for underground trains, the Bellasis Road area will become an important shopping and business centre and if taken in hand as an improvement scheme, can well be carried out along the lines of modern practice, beginning at the end of the first period, as noted on sheet I of "Illustrative Programme" Charts. It may be pointed out that the presently empty area facing the west end of Bellasis Road (formerly occupied by Petit Mills), furnishes a very conveniently located parking area of ample size which is one of the main ingredients of a good shopping centre. This area should be acquired by the Municipality immediately. Similarly the part of the area formerly occupied by the Byculla Club should also be acquired by the Municipality for being developed into a good shopping centre with adequate parking facilities, also slum land west of Bombay Central and east of Tardeo Road between Bellasis Road & Willingdon Sports Club. A recreation ground for the residents of the locality can also be provided in this area. No time should therefore be lost in acquiring this land even at a speculative price because in the end it would pay and be very useful in providing the much needed amenities to the inhabitants of the adjacent localities.*

(b) Dadar.—This is a natural point for shopping (with much less of office space than Bombay Central area) as passengers interchange here between railways. There is already a substantial shopping centre there, but it is now cut into pieces by roads. It will need to be redesigned with ample parking area, and without interference with pedestrian shoppers by vehicular roads. The area bounded by Ranade Road, Lady Jamshedji Road, Tulsi Pipe Line Road and Dadar Road should be acquired and developed into a modern shopping centre. This will serve the requirements of Greater Bombay to a considerable extent. The cost of acquisition may be considered to be high but the advantage of having such a large shopping centre designed on modern principles would be a boon not only to the residents of Dadar but to a large number of inhabitants staying in Greater Bombay. A major portion of the expenditure to be incurred may be recouped from the rents to be charged to the shop-keepers.

- 59.** No detailed study has been given to the location of markets, nor an analysis made of the advantageousness or otherwise of their present locations and their effect on traffic. This remains to be done.

* Recommendations that acquisitions be made at relatively high prices for us is mainly an indication of the degree of urgency we see in the situation and of our rough opinion that it would be financially advantageous. It need hardly be added, however, that this does not preclude the necessity of detailed design and financial studies to assure the soundness of the project.

SECTION IX

PARKS AND PLAYGROUNDS

TYPES OF PARKS AND PLAYGROUNDS REQUIRED

60. The importance of these has already been stated under "General Picture" in Section I. The importance and urgency should be underlined, especially on **Local immediate, Ad Hoc.** Bombay Island, of the present desperate scarcity of developed open spaces and of the difficulty of obtaining new ones on any adequate scale, for a long time. In New York City, under similar but much less drastic circumstances, hundreds of such areas were used, in some cases even on a temporary basis, while land was vacant and until required for building. Till such time, they served their purpose to provide recreation until permanent programme had begun to catch up with the need.

(a) This opportunistic, type should include sections of beach immediately available even if small, for example, at Worli and South Mahim Woods area, fairly accessible to a large section of working class population. In the latter case at least, such immediate developments can become part of a large development, later.

61. These must be provided at convenient sites as a part of every neighbourhood in a **Local Play-grounds and small parks.** development plan. They should likewise be provided in existing built up areas where possible, in accordance with a plan for future development, without necessarily waiting for the whole development to proceed in all its aspects.

(a) It will be noted by reference to the "Illustrative Programme" Charts and to the Bombay Island Map, that all new housing projects are shown as having parks within their areas. The Schemes listed without parks are those previously designed and with all plots now disposed of. As previously recommended, determined effort should be made to regain appropriate areas for park development, where study indicates the need, before they are built upon.

62. Where feasible, each locality or district may have a somewhat larger concentration of **Larger Local Parks.** park area either in addition to local neighbourhood parks (which in such a case would be somewhat smaller than usual, and the large park be made possible by accumulation), or where the neighbourhood parks together form such a larger park. An example of both the former and the latter is the B. B. & C. I. and G. I. P. Workshop areas respectively, south of Elphinstone Road as shown on Bombay Island Map. Another example of the latter is the long continuous park furnishing also a safe, almost uninterrupted means of walking to local shopping areas, sea-wall park etc., in Dharavi and an area immediately to the south (marked 1st and 3rd period on the map).

(a) On Bombay Island, it is particularly recommended that certain of the hills be retained and developed as parks and that they be not levelled off and devoted to other purposes nor that they be built on even if not levelled off. In this category are the Golanji and Rowli hills. Rowli Hill will be used for locating balancing reservoir in connection with the City's water supply and it would be provided with garden on its top in the same manner as Sir Pherozeshah Mehta Gardens at Malabar Hill. The quarrying operation at present undertaken at Golanji Hill should be restricted as far as possible and in the development plan of the area lying to the east of the Harbour Branch Line the Rowli Hill should be made a prominent feature.

63. The provision of playing-fields in the City, especially in the vicinity of permanent school buildings should be undertaken as a high priority for existing and new Schools. Others should be located in large parks on Bombay Island (paragraph 64 below), or in similar parks or in greenbelts in Greater Bombay.

64. Parks are generally conceived as connected with places of living, where indeed they are more essential than anywhere else. But parks in business and industrial areas are important as well, for they are usually an inspiration and give opportunities for brief relaxation from the grind of work. Bombay Island has a fine example of this in the Maidan. Other small areas are noted in "Illustrative Programme" Charts. There is no reason why these parks need be of great uninterrupted size—which is why we are willing to let the central Maidan be pierced by a new desperately needed East-West traffic artery. They should be more liberally provided for, on the cheap land available in the new Greater Bombay industrial areas.

Continuous parks or greenways.

(a) The long continuous rather narrow park proposed for Dharavi furnishes one example of this. Parel Tank area and the Willingdon Sports Club and Race Course area extending through to Fergusson Road and Globe Mill passage furnish two other examples of this type handled in a somewhat different way (park concentrations connected by rather narrow strips with foot overbridges as required). In one case, there is about one-and-half miles of continuous greenway, in the other over two miles.

(b) These greenways should become one of the pleasantest and most healthful features of Bombay life, and if completely developed, will make for greater pedestrian safety and amelioration of traffic problems.

65. There is a great necessity of providing a system of large parks in the City proper not only for those using them frequently for recreation, but as meeting places for large gatherings, concerts, as also for a setting to the placing of worthy monuments, and as an attraction for the City as a whole. The largest park in the City is the Shivaji Park in the north having a total area of 24 acres. But it does not compare favourably with Parks in other cities. Every large City in the World has at least one large park and usually more. Calcutta with its great Maidan and Dakuria Lakes, London with Hyde Park, Regent's Park Kensington Garden and others; New York with Central Park, Inwood Park, Prospect Park, etc., etc., THIS IS A CIVIC NECESSITY.

(a) In Bombay's congested condition, no such area can be made available until the second and third periods. It is expected that when we can replace obsolete slums such as those shown as future park north and south of Bellasis Road (which by then should be obtainable at reasonable land value only). Even these areas together come to only a little over 200 acres, which is small for the purpose. Enlargement of this area, creation of other areas at least equal to it, or both, is a civic necessity. But in view of the scarcity of land, the cruel need for housing, and the uncertainty as to whether and when industry will move away, we cannot yet realistically show the required additional area on the Bombay Island Map. As mills start to move away, vacated areas should be held as nuclei for other large parks. In our "Illustrative Programme" we make rough allowances of possible acreages. As the area north and south of Bellasis Road is turned into a park, Ripon Road and Duncan Road should be no longer used as through roads, but for circulation of traffic in park only. The intervening Bellasis and Grant Roads should be spanned by a series of overbridges to give access to visitors from one part of the park to the other.

66. The wooded hills of Salsette area will be the backbone of the park system outside of the Island. Much of this area should be kept fairly virgin, with little development except for access roads, pedestrian paths, picnic grounds, impounding of lakes for swimming and even fishing, if possible. Some of these areas should be developed for golf courses, as the land is of negligible cost and unuseable for housing or industry except at excessive cost. The National Park is a notable beginning. Other areas are shown on the Greater Bombay Map. A great level regional *recreational area* is shown for possible fill and development, on the west shore by the side of the Malad Creek.

67. Bombay's good fortune in having potentially fine beaches should be utilised to the full, both on the Island itself and in Greater Bombay. The habit of giving over these best sections to private use should not be carried further. More Chowpattis should be developed in Bombay; more Juhu Beaches in Greater Bombay. We have not shown the full ultimate possibilities on our plans for the first three stages because it was not evident how much we could realistically count on attaining. Certainly, the whole Mahim Woods length should be developed for the public. Dharavi water-front on Mahim Creek is shown to be developed in the third period. Careful technical study is required to relate the safe use of these recreational areas and pedestrian approaches to them and to projected shore drives, as has been done for example along Hudson River in New York City.

68. On Bombay Island these must be relatively shallow, of the order of 100' or 150' deep, being buffers and safety barriers for use mainly as inactive relaxation areas.

(a) In the Greater Bombay area, these green strips can be of this normal depth but should occasionally be widened at attractive and topographically suitable points, which could sometimes contain golf courses and playing fields with parking areas, as in the American park-way practice. Deeper greenbelts where they occur could be agricultural to a large extent. Their exact location can in many cases be adjusted to leave agricultural areas intact.

69. Listed in the "Illustrative Programme," totals are summarised for the first three stages, in Section II—"Targets". THIS IS BY NO MEANS THE ULTIMATE TOTAL BUT IS CARRIED ONLY AS FAR AS WE CAN NOW SEE OUR WAY AHEAD.

BALANCED PARK AND RECREATIONAL PROGRAMME, DESIGN EQUIPMENT AND OPERATION

70. The previous part of this section offers a programme of functional land allocation and location which it is believed constitutes a balanced conception both for all kinds of recreation and relaxation, and for the spiritual and inspirational needs of a great City.

(a) The details of the park layout should be carefully designed to make them serve the intended multiplicity of functions. The designs should aim at securing adequate landscaping for beauty, economy, durability and easy maintenance and should also provide for varied and durable equipment. It must be remembered that parks and playgrounds require as much care and thought in their design as a building.

(b) One of the notable defects in even the terribly inadequate park areas in the present Bombay, is the failure to develop even these areas properly. The small City parks in general are not properly equipped for play and planted for shade. A number of such areas examined,

seem somewhat derelict and not used to any great extent, certainly not to the maximum. Shivaji Park may be mentioned as a moderate example of this type. On the other hand, those that are so equipped—even simply—seem very popular. Even the tiny green area in Elphinstone Circle is used avidly by children and people of all ages.

71. Good constant physical upkeep must be provided otherwise parks quickly deteriorate. In order to build up the social value potentially inherent in the park system, special effort must be made, particularly, in the first few years to render service to the public by people specially trained in initiating recreational work. Just as merely a lot of physical housing, however well-planned, does not constitute a fruitful social unit without trained, imaginative and devoted management, so the open space facilities require a similar infusion of trained effort.

SECTION X

REQUIRED LEGISLATION;

72. No single element is more indispensable for the successful implementation of a plan than prompt and thorough-going legislation, establishing a powerful planning body, defining its power and method of enforcement, covering control of land use and density (zoning) and prevention of ribbon development, the basis for arriving at land and property values for property acquired, interim powers and control to cover the period until final legislation can be hammered out and in some cases until sufficiently precise plans can be prepared on which to base final zoning and land use control. Land speculation and uncontrolled building during this interim period may seriously hamper the plan.

(a) No attempt will here be made to cover this field either broadly or thoroughly, as it is beyond the technical competence of the writers of this report, and as it is well covered in the Town Planning Panel's Preliminary Report. This section confines itself to listing certain items which our exploration of the problems from the technical point of view has indicated to be necessary for inclusion. It may, however, be noted that in general, British legislation on this subject is the most advanced, comprehensive and practical.

73. Power of quick condemnation to prevent any element of the plan being hampered by a recalcitrant owner, compensation being determined later, if necessary. Prompt action and development should not be slowed down by cumbersome legal procedure and appeals.

(a) Basis for determining price of property, including the provision that slum property or property that has outlived its sinking fund, may be taken for the price of land only.

74. We have noted hitherto in Section II under Industry and in Section III under Housing, that we want to develop Greater Bombay by compact areas, as scattered development results either in excess costs of roads, water-supply and distribution, sewage disposal etc., to serve relatively few houses; or they are not installed adequately, with resulting inconvenience and possible danger to health. Appropriate legislation should require (and enforce the requirement) that permits be mandatory for any building to be erected, and should limit the authority of either local authorities, or a Greater Bombay Government to issue such permits in unbuilt areas, without approval of the planning commission or some central authority.

75. There can be little doubt as to the desirability and feasibility of this policy. The only possible exception would seem to be local service industries such as bakeries, repair shops etc., and in certain cases where hardship can be proved, the minor expansion of existing industries. Legislation should be passed prohibiting new industries or expansion of any kind with power to the planning commission or to some high calibre Board of Appeals to grant exceptions in certain defined and very restricted categories.

76. Zoning Powers :

(a) These should include restrictions on maximum height and density and establish user restrictions in all areas. There should also be a law to assure the inviolability of unbuilt upon green-belts, and the green-strips bordering new roads, as in the future, pressure may be brought to build on them.

(b) In the case of Bombay Island with its desparate lack of land, it is recommended also that *minimum* limitations of developments be enacted. In the face of the scarcity of land, it should not be allowable for example, to build a bungalow on half acre or an acre. The maximum amount of land that may be allowed per dwelling unit, should be restricted.

(c) In certain areas of Bombay, e.g., the Fort area, some vertical expansion of the business zone beyond that contemplated by horizontal expansion should be permitted, than is the case. In doing so the permitted increase in density or volume of building should not be increased in full proportion to the vertical expansion.

(d) The Corporation has already sanctioned the amendments to Section 349-A, B, C of the Municipal Act to permit tall buildings in the City to a maximum height of 102', having adequate and appropriate setbacks. These amendments are being forwarded to Government for sanction.

(e) Legislation should include restriction of the space occupied by arcade columns on footpaths or preferably this should be prohibited entirely. The same effect of protection from sun and rain can be obtained by a continuous marquee or cover supported from above or cantilevered out. If footpaths are to be reduced in useable width and area by such encroachments, the pedestrians and traffic problem will never be solved.

(f) A Similar or more severe interference with effective use of footpath by pedestrians to whom it belongs, is the ubiquitous small shop with no room for customers inside it. The customers clutter up the footpath; the pedestrians walk in the roadway. Either the shops should be compelled to provide ample floor space for customers or should be required to setback an adequate distance from the footpath line.

77. One of the reasons why zoning is not more effective in western countries is that an existing non-conforming building may not be interfered with. Provision should be made in the law that after a non-conforming building has reached an age where its useful life as determined by reasonable sinking fund provision, has been reached, legal recourse may be successfully introduced to make it conform.

Non-conforming
user.

PARKING AND UNLOADING

78. All new buildings in built-up areas should be required to supply parking facilities based on the amount of cars to be expected. This includes :

Cinemas, Factories, Mills, Office buildings, Multi-family houses, Hotels and Markets.

(a) In addition, buildings expected to be so used as to have substantial deliveries of materials (e.g., markets, large shops, warehouses etc.), should be required to have off-street loading facilities to prevent cluttering of the road by lorries or cars.

LIMITED ACCESS HIGHWAYS

79. In America it has been found necessary and it may be so in Bombay, to make legal provision or the acquisition of any normal rights of access, the abutting property owners may have, including the power of condemnation for the acquisition of such rights to prevent possible "hold-ups".

DEFINITION OF GREATER BOMBAY JURISDICTION.

80. It will be necessary to include all of the area south of Bassein Creek in order to accommodate the number of people, and the amount of industry and other activity contemplated in this plan.

(a) It is believed that Thana should be included also, as Greater Bombay's development will go up that far, and it will be desirable to control its sanitation and in particular its malaria problem.

(b) The question of whether the planners of Greater Bombay will design or otherwise have any control in Ambernath-Kalyan, Virar and other satellite towns to be proposed and what kind of legislation this requires, should be considered. These will probably depend on Bombay for their water supply and efficient disposal of domestic sewage and trade effluents. These are vital matters affecting the health of Bombay.

TEMPORARY LEGISLATION PROHIBITING LUXURY CONSTRUCTION

81. It is recommended that such construction as that of Cinemas, Shops, homes costing more than a certain amount or having more than certain maximum area per family, be prohibited until the materials shortage has eased, so as to permit essential constructions to make some progress, at costs that are not prohibitive.

SECTION XI STAFF & SURVEYS

(Contributed by Mr. Albert Mayer and Mr. W. J. Cox)

STAFF FOR PLANNING AND HOUSING.

82. (This is a minimum, taking account of financial stringency, and substantially less than would be the case in a Western City of similar size and complexity). No time should be lost in assembling such a staff:—

TECHNICAL STAFF

(1) Principal Planner.

Master Plan Division—

- 1 Senior Planner.
- 3 Assistant Planners.
- 1 Senior Draftsman.
- 2 Architectural Draftsmen.
- 2 Engineering Draftsmen.
- 3 Tracers.
- 1 Model Maker and delineator* (also for Public Relations).

Work.

Master Plan of—
Land use and zoning studies.
Roads.
Public Building and City Centre.
Schools.
Central Shopping and business.
Markets.
Industry.
Determination and demarcation of localities and precincts.

Engineering Division†

- 1 Engineer. Liaison with Engineers, rough estimates and reconnaissances.
- 1 Road planning Engineer (Qualification, Special training in modern design and practise).
- 2 Combination designer—draftsmen;
draftsmen also nucleus for expansion for field reconnaissance, traffic surveys.

Rough estimates; Co-ordination with engineers.
Street and intersection design.
Determination of land-taking requirements for same.
Traffic surveys.
Liaison with police on traffic.

Planning and Design for Localities and Neighbourhoods*

(Local roads, Housing, Parks and Playgrounds etc.)

- 1 Chief Architect—Planner.
- 1 Site-planner and Landscape Architect.
- 3 Senior Designer Draftsmen.
- 10 Draftsmen (depending on rate of progress of work)‡
- 6 Tracers.

Detailed locality layouts.
Detailed precinct layouts.
Detailed housing projects.
Detailed shopping and business centres.
Landscaping.
Park and Playground area and equipment design.

Economic and Social Research and Division of Civic Surveys: §

- 1 Economist and Survey Director.
 - 1 Statistician and cost analyst. Capital Budget.
 - 1 Assistant investigator and Research worker.
 - 2 Assistant investigators for one year only (initial surveys).
 - Outside supervisors, Field enumerators. §
- } For 6-9 months initial surveys.

Civic Surveys and tabulation Charts.
Capital Budget and Time-table.
Industrial, business and Marketing advice and trends
Liaison with Bombay Government Department of Industries, Labour etc.

Administration and Public Relations:

- 1 Executive Director.
- 1 Office Manager.
- 1 Librarian and Liaison Man (or woman secretary).
- 1 Public Relations Director.
- 1 Photographer and Field Information Man (Assistant to Public Relations Director).

Public Relations.
Public generally: Business, Citizen, labour and neighbourhood groups.
Newspaper releases, pamphlets (vernacular and English)
Films. Exhibitions of maps and models.

* Staff for Master Plan Division, and that for Localities and Neighbourhoods, is somewhat interchangeable, depending on whether one or the other department is most busy at any particular time.

† It is assumed that all engineering surveys in the field, and all sewer and water design, as well as details of road design and construction, are carried out by the City Engineer. No staff is here included for these purposes.

‡ This staff will be inadequate if a number of these are being prosecuted at once. It is assumed that in that case, some of this design work may be let to private architectural firms, rather than try to assemble too large a permanent staff here.

§ Number depends on calibre of enumerators and supervisors employed, number of volunteers available etc.

SURVEYS

83. Facts and trends as to civic, social, economic conditions, wages, overcrowding, health, real property and ages of buildings, as shown by surveys made and periodically renewed, are necessary to proper development of a plan suited to the realities. Surveys to determine these should be initiated promptly. But there should be no delay in taking further steps towards the definition and completion of the plan, because the broad facts and desiderata on which the plan should be based are well known and the initial amounts of development work that we can possibly do in the short time before survey results are available, are so much less than what requires to be done, that we can feel quite safe that the adjustments we may be required to make, will still be found out in plenty of time.

(a) There have been more urgent items to accomplish on this visit than to devise survey forms. However, as the Consultant formulated survey forms for Cawnpore, which, with a few exceptions are applicable to Bombay and are reproduced as Appendix A forms A-A3. They will naturally be revised by the economist-director of survey to meet local needs more precisely. Note that Cawnpore forms as revised there, do not have any reference to age and condition of industrial and business buildings. This should be added.

(b) The information already available from other agencies should of course be checked first by consultation with Labour Commissioner, Chief Inspector of Factories, Tata Institute of Social Sciences, University School of Economics etc., so as to avoid duplication.

(c) One item on which good information is badly needed is that of earnings per *family* as well as per worker, for, without this, it will not be possible to define the housing problem closely to determine the total families whose housing requires subsidy, the number which requires only low interest rates etc.

(d) Another specific and immediately vital point—chawls and other housing for low income families have generally consisted of minimum size and number of *rooms* based on family income, ignoring the institution of the joint family. A survey by qualified workers is very much in order, to observe the effects of this forced social change. Are the results satisfactory, or is there serious evidence of social disintegration due to this factor? While we should in general not be bound too much by tradition, this vital matter should be thoroughly explored before a housing programme goes too far.

(e) A third example : Social analysis and field survey to determine proper form, area and central school (or other nucleus) for neighbourhood layout to suit Indian conditions. Educational authorities should be consulted also.

(f) These points should be borne in mind in connection with surveys :

- (1) Aside of the information they yield, they are definitely instruments of public relations, good or bad. If widely publicised beforehand in the regular newspapers and in the vernacular, if public meetings are held explaining them—particularly to local groups—and if the field enumerators are well chosen, people become interested and even eager to participate. On the other hand, lacking these elements, people are unprepared, sometimes hostile.
- (2) In an other important sense, such surveys are vital as public relations and as source of public knowledge. Manufacturers, merchants, Chambers of Commerce find these surveys invaluable to them in their operations and planning.
- (3) In order to minimize cost and from their point of view to help them gain experience, students should be enlisted to help conduct the survey, *e.g.*, from the University School of Economics, Tata Institute of Social Sciences etc.

- (4) The first survey is most urgent, and is the most difficult and costly. But it should be renewed at intervals of several years, so that changes and trends can be traced and identified. The renewals are of course cheaper than the original survey.

84. It is not possible to list all traffic surveys that may be required ; time and money may be wasted by excessive numbers of surveys. As Bombay's traffic problems are in general not yet too acute and as the expected increase of cars will very materially change the facts, any general survey can well wait for some time. This is particularly true as our work has pretty clearly revealed the broad outlines of a traffic and road plan for Bombay, without general surveys. The following surveys are, however, recommended :

(a) Before *detailed* planning of any part of the system goes forward, local surveys should be made at a number of points to assist in making estimates and determining relative importance of various directions of flow.

(b) Where any changes in roads or road widths or intersections are made; survey should be made before and after, in the affected area, to measure resulting changes in traffic volume or traffic speed or delay, for future guidance in similar cases.

(c) To measure the worsening or bettering of traffic conditions, either as the result of changes or with the passage of time, periodic speed and delay surveys may be made at peak traffic hours. The same can be done with bus and tram traffic.

(d) For troublesome intersections (e.g., Dhobitalao, Bhatia Baug etc.), origin and destination surveys should be made to define the problems more closely. A simplified version of this is to check licence numbers of cars entering at one point and leaving at another.

(e) A survey of parking, including duration of parking times on important streets, and a survey of the number of parking spaces available (a) at curbs, (b) in carparks, (c) at taxi-stands, (d) in off street areas, in the busy sections of the City should be made to give initial insight into the scope of the problem. A survey also of *potential* off-street parking areas should be made within a radius of one mile of busy centres. For one such off-street area, see section on shopping centres and business.

(f) A number of traffic accident surveys and cause-analysis is much needed.

(g) In order to trace trends and changes in the kinds of traffic (car, lorry, victoria, bullock-cart etc.), a few traffic volume counts should be made each year at points on typical roads of different character and functions, e.g., Hughes Road, Frere Road, Hornby Road.

(h) Combined with design progress, engineering surveys of topography, property conditions etc., should be undertaken to assume that at as early a date as possible, accurate data is available to determine exactly what is required for adequate roads and adequate intersections, to forestall excessive prices and difficulties later, when the work must actually proceed. **WE MUST ANTICIPATE REQUIREMENTS.**

(i) *Survey of footpaths and pedestrian requirements.* In Sections I, VII and VIII, this problem is adequately discussed. Field surveys are imperative to fill the gap in actual facts.

85. The problem of the best use of land, of cultivators to be displaced over the years by the Greater Bombay Plan, of the proper placement and utilization of Greenbelts to alleviate this problem—all these have been mentioned in this report. But the formulators of this report are not agriculturists. To achieve the best overall plan as far as agriculture is concerned a survey must be made by competent technicians to organize the best solution. This is a high priority job.

SECTION XII.

PUBLIC RELATIONS QUESTIONS : CITIZEN OR
NON-OFFICIAL GROUPS :**Public relations directly fostered by planning
(and by the Commission where formed).**

86. Particular emphasis is placed on this, because it is so often considered of little or no importance, as it is not part of the technical work itself and as it is generally felt that whatever needs to be done in this way can be done by an occasional lecture or talk by a staff member or Director or as a very part-time job by the public relations officer of a City.

(a) This accounts for the apathy in regard to planning so frequently encountered and very often responsible for the failure of a plan to get support, hence its ultimate failure altogether.

(b) What is needed is an alert and energetic full-time man, who by attending departmental planning conferences and by study, acquires some acquaintance with the subject. His main job is to interpret the planners' work to the citizen, and to introduce the citizen and his views to the planners. A few casual meetings are not enough. There must be continual contact between the planners and the public, face-to-face, frequently, or by newspaper releases, photographs, exhibits, pamphlets, films, by encouraging people to visit the planning office and use its library, by lectures to students and by their voluntary participation in surveys, by informing the public or the neighbourhood when a survey is to be made, by explaining its purposes, and finally getting co-operation instead of indifference or hostility.

(c) These are but a few examples of what an alert public relations officer can devise and accomplish.

87. Nor is this a one-way operation. The planning itself is much helped by the comments of people who know their own neighbourhood intimately, by people who have given much thought to these problems but who might in the ordinary course not volunteer any views. The plan itself is usually much improved by such contacts.

• 88. Finally, as development of the plan proceeds, as certain elements are completed, there is the great opportunity to make the public or its groups—its Chambers of Commerce, its Labour Unions, its Rotary Club—in short, its various organs of public opinion—aware of what has been done, to have them inspect and form opinions as to the value of what has been created. Only thus, can we make the most creative use of developments.

(a) For example, if one of our projects has been a modern neighbourhood shopping centre which concentrates around a central green in place of the usual myriad tiny shops diffused almost 100 per cent. along almost every street in some neighbourhoods, causing trouble for traffic and for themselves, such a modern centre is probably all but unknown to most citizens of Bombay. Yet, if we want to get such an idea to spread to be acceptable to, or even desired by most people, we have got to get lots of them to know about it, to visit it and see what it is like, to tell their friends about it—in short, to get this into the public consciousness. Failing this, we continue to run into the same old habitual objections to such changes.

(b) Although this forms a small part of the expense for planning no other element is more important.

89. We have just discussed the importance of fostering public relations. However, of possibly **Independent Citizens' Committee.** even more importance, according to European and American experience, are the spontaneous citizens' Committees which themselves create and foster the demand for planning and interest in it. In fact, it is true to say that much or most of the official planning in those countries has resulted from the inspiration, initiative, activity and even research on the part of such groups. The Town and Country Planning Association in England, the Regional Plan Association of New York, the National Planning Association in the U.S.A. are a few examples of such groups. By their disinterested, voluntary and devoted efforts they created the demand for planning, conducted high calibre and fruitful research and they continue to function after the official work is under way.

(a) From western experience it can be said with confidence that no paid planning body or officials could possibly command the amount of time and energy of such members—men and women of high level ability and prominence that these citizens' groups command and develop.

(b) We urge the Citizens of Bombay to form such permanent groups of which the three panels which developed the preliminary reports furnish a fine example on a temporary basis (though this is somewhat different from the western examples in having been officially appointed).

SECTION XIII

COSTS AND AVAILABILITY OF MATERIALS AND EQUIPMENT

COSTS.:

90. The attached costs are a very rough indication of what the magnitude of capital cost of the developments indicated, may turn out to be. There has been no time to come to any reasonably close estimates, which would in any case be impossible now, until topographic surveys, quantities of cut and fill etc., were available. As another example, land costs used, are more or less intelligent guesses, as there hasn't been any detailed canvas. However, they are good enough to permit those who are concerned with financial aspects, to determine how best to proceed.

91. The cost of developing the Master Plan in one stage or at one stretch would be about Rs.115 crores at the present market rates, as per Statement 'A'. The realisation to be obtained therefrom by the sale of developed lands for residential and industrial purposes may be taken at about Rs. 53 crores resulting in a deficit of Rs.62crores (*vide* the Statement 'A'). This deficit cannot be said to be net loss as there will be assets in hand in the shape of lands acquired for public purposes, e.g., roads, parks, hospitals, greenbelts, sewage purification works, educational centres etc., and hilly lands of Trombay, the stone and spoils from which can be utilised.

(a) It is not however possible, that all the works proposed in the Master Plan could be carried out simultaneously and it is necessary to divide the scheme into suitable stages. Accordingly a four stage programme has been prepared as outlined below :

STAGE No. I

92. In the first stage it is proposed to go a little bit beyond the limit of the existing Police Jurisdiction. The two express highways shown on the Master Plan, and estimated at Rs. 3 crores (*vide* Statement 'B') must be constructed at Government cost as they have already sanctioned funds for the construction of a relief road on the East of the B.B. &C.I. Railway parallel to existing Ghodbunder Road, to relieve congestion of traffic thereat and to serve the new aerodrome at Santa Cruz. The express highway on the east of the G.I.P. Railway should also be constructed by Government at their cost, as the present Bombay-Agra Road is found inadequate to meet the requirements of traffic and with industries growing on that side, this road would be so congested that the traffic would be held up for a considerable time resulting in an indirect loss and inconvenience to the public. It is recommended that instead of widening the existing Bombay-Agra Road at a very heavy cost, which proposal is already receiving the attention of Government, it would be more economical and advantageous to have an independent express highway from Sion to Thana.

(a) The other works proposed to be carried out in this stage in regard to the acquisition of lands, construction of roads including water-supply, drainage etc., and development of land for residences are shown in the accompanying Statement 'B'.

(b) The cost of works in Stage No. I excluding the cost of two express highways is estimated at Rs. 30 crores with a realisation of about Rs. 11 crores. There will be some assets left, such as filled in land, hilly land, sites acquired for public purposes etc. The total value thereof may be taken at Rs. 9 crores. This will mean that there will be a deficit of Rs. 10 crores.

STAGE No. II

93. The works proposed to be carried out in this stage in regard to the acquisition of land for residential and industrial purposes, construction of roads, including water-supply, drainage, lighting etc., and development of lands for residences and industries are shown in the accompanying Statement 'C'. The cost of executing these works is estimated at Rs. 20 crores with a realisation of about Rs. 15 crores. This means that there will be a deficit of Rs. 5 crores. These estimates are however, based on the existing prices and by the time the second stage programme is taken in hand for execution, the prices of materials may have been considerably reduced. Consequently, the cost to be incurred may be much less. On the other hand the figures of realisation having been based on the lower side it is likely that the realisation and capital outlay may balance without substantial deficit.

STAGE No. III

94. The works included in this stage, the cost thereof and the realisation are given in the accompanying Statement 'D'.

(a) The total cost will amount to Rs. 10.25 crores giving a realisation of Rs. 5.50 crores with a deficit of Rs. 4.75 crores. Here again, it may be possible as stated in Stage No. II above to reduce the cost of the works and keep down the deficit.

STAGE No. IV

95. The works remaining to be executed after the completion of the first three stages will be carried out in the fourth stage. The figures of cost have not been worked out as it is expected that by the time this stage is reached, the prices of materials and wages of labour may have been considerably stabilised. Consequently the cost to be incurred on the works included in this stage will be considerably less than if worked on the basis of the present market rates. Moreover, their execution will depend upon the response to the scheme, received from the public and the results achieved in the improvement of the living conditions of the Greater Bombay Region. The implementation of the first three stages of the Master Plan would provide comfort and happiness to more than 10 lakhs of people including the existing residents.

REDEVELOPMENT OF BOMBAY ISLAND.

96. The different works to be carried out for the redevelopment of Bombay Island, proper, are shown in the three charts of the 'Illustrative Programme and Schedule of Progress.'

The land that will be made available for 'parks and playgrounds' in the three stages is tabulated below:—

	Area acres.	Cost. Rs.
First Stage approximately ...	300	2.4 crores.
Second Stage " 	600	4.2 crores.
Third Stage " 	680	Cost not worked out on account of uncertainty of rates when this stage is reached.

For other items of works included in these tables, e.g. new arterial east-west roads, shopping and business centres, underground tube railway, it is not possible to work out the cost even approximately without undertaking detailed survey and planning in respect of these works.

Housing : (Bombay, Greater Bombay and Region Beyond) :—

Proposals for housing the low-income families in different stages as shown in the " Illustrative Programme " charts are as under :—

First Stage.—17,850 tenements of which some 5,000 will be built by Bombay Government., leaving about 13,000 to be subsidised at Rs. 200 per tenement per annum or Rs. 26 lakhs per annum.

Second Stage.—19,600 units at annual subsidy of Rs. 100 per tenement per annum, say Rs. 20 lakhs per annum.

Third Stage.—23,700 units. These will not be subsidised as prices are expected to be stabilised when this stage is reached.

MATERIALS.

97. It is obvious that the cost and scarcity of materials are the greatest hazard to the development of the plan. There is a great deal of talk all over, about new cost reducing methods. It is suggested that these be immediately and seriously explored with a view to either adopting them, if rigorous investigation proves them satisfactory or concluding definitely that they are not.

Several such methods are worthy of mention here. In the case of bricks, their manufacture by machinery should be investigated as well as possible substitution for clay-bricks, sand—lime bricks, stone-concrete blocks or cinder concrete blocks—which latter have been used elsewhere successfully as substitutes.

Sand in large amounts may well be most readily and cheaply obtainable by erecting a suitable plant to dredge it from the sea e.g. at Mumbra or Dharamtar.

It should be clearly understood that we are not recommending any methods for adoption. What we are recommending is serious investigation of such methods by those, qualified to do so.

EQUIPMENT.

98. Large operations of quarrying and of filling are involved in our proposals. The present manual operations take long and are unnecessarily expensive. Pneumatic drills, compressors, bulldozers and other earth-moving machinery should be procured for this task.

TIME.

99. By prompt preparation of detailed plans so as to be immediately available when needed, and by timing the execution of all but urgent enterprise with proper regard for cost level cycles, not only will costs be minimised, but these operations can operate as a balance wheel in the economy of the Region, thus multiplying the utility of the plan.

STATEMENT 'A'

Cost of works included in the Master Plan and
Realisation from sale of lands.*A.—Construction of roads including drains, sewers,
water-supply, lighting etc.*

	Lakhs. Rs.
Total mileage—122.	
Acquisition—full width (150' or 250')	... 234.60
Filling in where necessary (22' wide plus 8' berm on either side)	... 59.98
Cement concreting 22' width	... 98.89
Surface drainage (side drains)	... 120.00
Sewerage	... 212.26
Water-supply	... 122.00
Lighting	... 32.20
Bridges	... 250.00
Cutting and levelling	... 60.00
Total	... <u>1,189.93</u>

Say Rs. 12 Crores.

*B.—Acquisition of land for public purposes and filling in where
necessary and urgently required.*

		Lakhs. Rs.
Greenbelts and parks	... 11.62 square miles	... 1,021.80
Hospitals	... 0.48 do.	... 37.00
Educational centres	... 1.74 do.	... 235.20
Race Course, Stadium etc.	... 3.80 do.	... 77.00
Sewage Purification Works	... 0.75 do.	... 131.25
Holiday Resort	... 0.90 do.	... 36.00
Sanatorium	... 0.40 do.	... 16.00
Total		... <u>1,554.25</u>

Say Rs. 15.5 Crores.

*C.—Acquisition of land for residential purposes, filling in
or levelling and cutting and internal development.*

		Lakhs. Rs.
Residential lands	... 38.75 square miles	... 8,009.10

Say Rs. 80 Crores.

*D.—Acquisition of land for industrial purposes, filling in,
levelling etc., and internal development.*

Industrial lands	... 4.42 square miles	... Lakhs. Rs. 750.50
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Say Rs. 7.5 Crores.

Total of A, B, C and D = $12 + 15.5 + 80 + 7.5 = 115$ Crores.

Rs. 115 Crores.

Realisation.

Residential lands	...	Lakhs. Rs. 4,806.90
Industrial lands	...	518.90
	Total	... <u>5,325.80</u>

Say Rs. 53 Crores.

Total expenditure ... Rs. 115 Crores.

Total realisation ... Rs. 53 Crores.

Loss ... Rs. 62 Crores.

STATEMENT 'B'
FIRST STAGE:

Construction of two express highways on the East and West.
(Construction cost to be borne by Government)
Eastern Express highway from Sion to Thana—12.5 Miles.

		Lakhs. Rs.
Acquisition : Width 250'	Length ... 12.5 miles.	17.70
Filling in for 5' depth and 50' width	do ... 12.5 miles.	19.80
Construction of 22' concrete carriageway with 8' kutcha berm on either side	do ... 12.5 miles.	14.38
Lighting	do ... 12.5 miles.	3.30
Sewers	do ... 12.5 miles.	26.37
Water-supply	do ... 12.5 miles.	12.50
Bridges	do ... 3 Nos.	90.00
Total ...		184.05

Western Express highway from Santacruz to Borivli—10.5 Miles.

		Lakhs. Rs.
Acquisition : Width 250'	Length ... 10.5 miles.	51.00
Construction of 22' concrete carriageway with 8' kutcha berm on either side	do ... 10.5 miles.	12.08
Lighting	do ... 10.5 miles.	2.82
Water-supply	do ... 10.5 miles.	10.50
Sewers	do ... 10.5 miles.	22.18
Canalising	... Lump.	9.00
Total ...		107.58

Cost of both the Express Highways Rs. 184.05 lakhs+Rs. 107.58 lakhs=Rs. 291.63 lakhs
Say Rs. 3 Crores.

Other Roads

		Lakhs. Rs.
(1) Acquisition :		
Sub-arterial road from Wadala to Kurla-Mankhurd Railway 4.5 miles × 150'	...	9.75
Pawai Road between Vihar Lake Road and Bombay-Agra Road 2.5 miles × 150'	...	4.26
(2) Filling in for 6' depth 50' width	... 1.75 miles.	3.32
(3) Construction of 22' carriageway with 8' kutcha berms	... 7.00 miles.	8.05
(4) Lighting	... 7.00 miles.	1.85
(5) Water-supply	... 7.00 miles.	7.00
(6) Sewers	... 7.00 miles.	14.77
(7) Canalising	... Lump.	2.50
(8) Cutting and dressing	... Lump.	1.00
Total ...		52.50

Total cost for roads Rs. 52.50 Lakhs
Say Rs. 53 Lakhs,

Lands*(a) Residential area*

(1) Acquisition :	Lakhs. Rs.
Trombay : Low-lying= $1.17+0.90+0.19=2.26$ square miles	... 67.80
Trombay : Hilly and level land= $3.57+1.42+1.24+1.40$ $+0.25=7.88$ square miles	... 945.60
East of Pawai and Vehar Lakes= 1.55 square miles	... 93.00
Majas Area north of Andheri-Marol Road= 2.62 square miles	... 235.80
Chakala area south of Andheri-Marol Road= 0.25 square miles	... 30.00
Total	... <u>1,372.20</u>
(2) Filling in low-lying land 2.26 square miles for 6' depth	... 453.63
(3) Internal development= $2.62+1.42+1.40+1.24+1.55=8.23$ square miles	... 740.70
(4) Dressing, cutting and levelling= $2.62+1.55=4.17$ square miles	... 41.70
Total	... <u>1,236.03</u>

(b) Areas earmarked for public purposes.

Acquisition :	Square miles.	Lakhs. Rs.
Educational centre north of Kurla	... 1.07	96.30
Educational centre near Versova	... 0.67	20.10
Race Course, Stadium and low-lying land near Ghatkoper	... 3.80	114.00
Hospital in Trombay	... 0.23	27.60
Sewage Purification works	... 0.75	16.88
Total	... <u>74.52</u>	<u>274.88</u>

(c) Industrial Area.

Acquisition :	Square miles	Lakhs. Rs.
Land on the east of G. I. P. Railway between Ghatkoper and Mulund	... 2.72	<u>81.60</u>

Total expenditure for Lands= $1,372.20+1,236.03+274.88+81.60=$
Rs. 2,964.71 Lakhs.

Total expenditure for roads and Lands in 1st stage= $Rs. .53+Rs. 29,64.=$
Rs. 30.17 Crores.

Say Rs. 30 Crores.

Realisation

<i>Realisation from sale of Lands.</i>		Lakhs. Rs.
Trombay=1.42+1.40+1.24=4.06 square miles, 50 per cent available for sale= 2.03 square miles	...	730.80
Pawai=50 per cent of 1.55 square miles=0.78 square miles	...	117.00
Majas=40 per cent of 2.62 square miles=1.05 square miles	...	252.00
	Total ...	<u>1,099.80</u>

Say Rs. 11 Crores.

Total expenditure = Rs. 30 Crores.

Total realisation = Rs. 11 Crores.

Loss = Rs. 19 Crores.

Against the loss of Rs. 19 Crores there will be assets in hand worth about Rs. 9 crores in the form of land ready for development, spoil for filling in, stone for building work and road metal and lands acquired for public purposes.

HOUSING**Low Income Group.**

		Area available in square miles.
Trombay	...	1.24
Pawai	...	1.55
<i>Upper and Lower-middle class Groups.</i>		
Trombay	...	2.82
Majas	...	2.62

STATEMENT 'C'**SECOND STAGE.****Roads.**

(1) Acquisition :	Miles	Width.
Mahul to Marol	... 5.00	× 150'
Ghatkopar to Saki	... 1.75	× 150'
Bye-pass to Andheri-Marol Road	... 2.50	× 150'
Bye-pass at Vesava	... 0.50	× 150'
East-West Road at Kandivli	... 2.00	× 150'
Pawai Road between Express Highway at Vikhroli-Bhandup and Bombay-Agra Road	... 1.00	× 150'
Pawai Road between Vehar Road and Western Express Highway at Jageshwari	... 2.50	× 150'
East-West Road at Borivli	... 1.12	× 150'
Koli-Kalyan to Kurla	... 1.50	× 150'

17.87 × 150'

= 0.51 sq. miles

Rs. 30.60 Lakhs.

		Rs. Lakhs:
	C. F.	30.60
(2) Filling in 5.5 miles for 6' depth	...	10.45
^f Filling in 1.5 miles for 3' depth	...	1.43
(3) Construction—22' concrete carriageway with 8' kutcha berms	... 17.87 miles.	20.55
(4) Lighting	... 17.87 miles.	4.72
(5) Water-supply	... 17.87 miles.	17.87
(6) Sewers	... 17.87 miles.	37.71
(7) Canalising	... Lump	3.40
(8) Bridges	... 3 Nos.	90.00
(9) Fly-over	... 1 No.	10.00
(10) Cutting and levelling	... Lump	2.50
	Total ...	<u>229.23</u>

Total expenditure for roads=Rs. 229.23 lakhs.

Lands.

Residential.

	Sq. miles.	Rs. Lakhs.
(1) Acquisition :		
Area east of B. B. & C. I. Railway near Malad	... 3.35	301.50
Area near Borivli north of Industrial Zone	... 0.50	30.00
Area north of Andheri-Marol Road and east of Majas	... 2.80	252.00
(2) Dressing for uneven and hilly land $2.80+3.35=$	... 6.15	30.80
(3) Internal development :		
Trombay area acquired and filled in first stage $1.17+.90$ $+0.25+0.19=$	... 2.51	225.90
Area north of Andheri-Marol Road and east of Majas	... 2.80	252.00
Area east of B. B. & C. I. Railway near Malad and area near Borivli north of Industrial Zone= $3.35+0.50=$	... 3.85	346.50
	Total ...	<u>1,438.70</u>

Industrial Area.

(1) Filling in part of the area acquired in the first stage near Vikhroli	... 0.90	180.00
(2) Acquisition of area on the west near Borivli	... 1.70	102.00
(3) Cutting, dressing and levelling for this area	... 1.70	17.00
	Total ...	<u>299.00</u>

Hospital near Pawai.

	Sq. miles.	Lakhs. Rs.
Acquisition of land	...	0.25
		<u>10.00</u>
	Total for lands ...	<u>1,747.70</u>

Total expenditure for roads and lands in 2nd stage=Rs. 229.23+1,747.70 lakhs.=Rs. 1976.93 lakhs.

Say Rs. 20 Crores.

Realisation.*Realisation from sale of lands.*

	Sq. miles.	Lakhs. Rs.
Trombay—2.07 square miles 50 percent. available for sale	1.04	436.80
Trombay—0.44 square miles 50 percent. available for sale	0.22	66.00
Area east of Majas 2.80 square miles. 50 percent available for sale	= 1.40	294.00
Area east of B. B. & C. I. Railway, near Malad—3.35 square miles. 50 percent available for sale	= 1.68	302.40
Area near Borivli north of Industrial zone—0.50 square miles. 50 per cent available for sale	= 0.25	37.50
Industrial area near Vikhroli 0.90 square miles—Whole area	...	0.90
Industrial area near Kandivli 1.70 square miles—Whole area	...	1.70
	Total ...	<u>1,529.70</u>

Say Rs. 15.25 Crores.

Total expenditure	Rs. 20.00 Crores.
Total realisation	... <u>Rs. 15.25 Crores.</u>
Loss	... <u>Rs. 4.75 Crores.</u>

Housing.*Low Income Group.*

	Area available in square miles.
Trombay	... .44
North of Andheri-Marol Road and east of Majas	... 2.80
East of B. B. & C. I. Railway Malad and Borivli	... 3.85

		Rs. Lakhs:
	C. F.	30.60
(2) Filling in 5.5 miles for 6' depth	...	10.45
^F Filling in 1.5 miles for 3' depth	...	1.43
(3) Construction—22' concrete carriageway with 8' kutcha berms	... 17.87 miles.	20.55
(4) Lighting	... 17.87 miles.	4.72
(5) Water-supply	... 17.87 miles.	17.87
(6) Sewers	... 17.87 miles.	37.71
(7) Canalising	... Lump	3.40
(8) Bridges	... 3 Nos.	90.00
(9) Fly-over	... 1 No.	10.00
(10) Cutting and levelling	... Lump	2.50
	Total ...	<u>229.23</u>

Total expenditure for roads=Rs. 229.23 lakhs.

Lands.

Residential.

	Sq. miles.	Rs. Lakhs.
(1) Acquisition :		
Area east of B. B. & C. I. Railway near Malad	... 3.35	301.50
Area near Borivli north of Industrial Zone	... 0.50	30.00
Area north of Andheri-Marol Road and east of Majas	... 2.80	252.00
(2) Dressing for uneven and hilly land 2.80+3.35=	... 6.15	30.80
(3) Internal development :		
Trombay area acquired and filled in first stage 1.17+.90 +0.25+0.19=	... 2.51	225.90
Area north of Andheri-Marol Road and east of Majas	... 2.80	252.00
Area east of B. B. & C. I. Railway near Malad and area near Borivli north of Industrial Zone=3.35+0.50=	... 3.85	346.50
	Total ...	<u>1,438.70</u>

Industrial Area.

(1) Filling in part of the area acquired in the first stage near Vikhroli	... 0.90	180.00
(2) Acquisition of area on the west near Borivli	... 1.70	102.00
(3) Cutting, dressing and levelling for this area	... 1.70	17.00
	Total ...	<u>299.00</u>

Hospital near Pawai.

	Sq. miles.	Lakhs. Rs.
Acquisition of land	...	0.25
		<u>10.00</u>
Total for lands	...	<u>1,747.70</u>

Total expenditure for roads and lands in 2nd stage=Rs. 229.23+1,747.70 lakhs.=Rs. 1976.93 lakhs.

Say Rs. 20 Crores.

Realisation.*Realisation from sale of lands.*

	Sq. miles.	Lakhs. Rs.
Trombay—2.07 square miles 50 percent. available for sale	1.04	436.80
Trombay—0.44 square miles 50 percent. available for sale	0.22	66.00
Area east of Majas 2.80 square miles. 50 percent available for sale	= 1.40	294.00
Area east of B. B. & C. I. Railway, near Malad—3.35 square miles. 50 percent available for sale	= 1.68	302.40
Area near Borivli north of Industrial zone—0.50 square miles. 50 per cent available for sale	= 0.25	37.50
Industrial area near Vikhroli 0.90 square miles—Whole area	...	0.90
Industrial area near Kandivli 1.70 square miles—Whole area	...	1.70
		<u>204.00</u>
Total	...	<u>1,529.70</u>

Say Rs. 15.25 Crores.

Total expenditure	Rs. 20.00 Crores.
Total realisation	... <u>Rs. 15.25 Crores.</u>
Loss	... <u>Rs. 4.75 Crores.</u>

Housing.*Low Income Group.*

	Area available in square miles.
Trombay	... .44
North of Andheri-Marol Road and east of Majas	... 2.80
East of B. B. & C. I. Railway Malad and Borivli	... 3.85

Upper and Lower Middle Class Group

		Area available in sq. miles.
Trombay	...	2.07
<i>Industries.</i>		
East, between Ghatkopar and Mulund	...	0.90
West—between Malad and Borivli	...	1.70

STATEMENT 'D'

THIRD STAGE

Roads.

(1) Acquisition :	Miles.	Lakhs. Rs.
Part of Borivli-Bhandup Road	...	1.80
Juhu-Parle Road	...	0.50
Juhu-Andheri Road	...	1.25
Extension of Marol-Maroshi Road northwards to meet Borivli-Bhandup Road	...	4.50
Road at Borivli joining Borivli-Bhandup Road	...	0.50
Sub-arterial road from Govandi to Ghatkopar	...	1.25
Saki-Ghatkopar extension	...	0.90
Bye-pass to Chembur-Ghatkopar Road	...	1.12
	11.82	
	Say 12 miles. × 150' width = 0.34 sq. miles. 10.20	
(2) Filling in—5' depth and 50' wide	...	5.5 miles. 8.70
(3) Construction—22' concrete carriageway with 8' kutcha berms	...	12 miles. 13.80
(4) Lighting	...	12 miles. 3.17
(5) Sewers	...	12 miles. 25.32
(6) Water-supply	...	12 miles. 12.00
(7) Bridges	...	3 Nos. 90.00
(8) Canalising	...	Lump. 3.00
	Total ...	166.19

Lands.*Residential.*

Acquisition :	Sq. miles.	Lakhs. Rs.
Area west of Bhandup ...	1.72	154.80
Kopri south of Thana ...	1.13	135.60
Internal development for above areas 1.72+1.13=2.85 square miles ...	2.85	256.50
Industrial area east of G. I. P. Railway, acquired in first stage—		
Filling in for remaining area 5' depth ...	1.82	304.43
Total ...		<u>851.33</u>

Total expenditure for roads and lands : =Rs. 166 lakhs+Rs. 851 lakhs=Rs. 1,017 lakhs.
Say Rs. 10.25 Crores.

Realisation.*Realisation from sale of land.*

	Sq. miles.	Lakhs. Rs.
Area west of Bhandup 1.72 square miles. 50 percent available for sale =	0.86	129.00
Kopri south of Thana 1.13 square miles 50 percent available for sale =	0.56	100.80
Industrial area east of G. I. P. Railway, whole area =	1.82	327.60
Total ...		<u>557.40</u>

Say Rs. 5.5 Crores.

Total expenditure	Rs. 10.25 Crores.
Total realisation ...	Rs. 5.50 Crores.
Loss ...	<u>Rs. 4.75 Crores.</u>

Housing.*Low Income Group.*

	Area available in square miles.
Area west of Bhandup ...	1.72

Upper and Lower Middle Class Groups.

Kopri—South of Thana ...	1.13
--------------------------	------

Industrial.

Area east of G. I. P. Railway ...	1.82
-----------------------------------	------

KANPUR DEVELOPMENT BOARD.

Building Survey.

Office No. _____

INDIVIDUAL DWELLING UNIT.

Investigator's No. _____

Investigator _____ Group _____ Date _____

<p>I.—Building No. _____</p> <p>II.—D. U. No. (Ration) _____</p> <p>III.—Number of Rooms _____</p> <p>IV.—No. of persons occupying _____</p> <p>V.—No. of families Joint/Single _____</p> <p>VI.—Rental paid for D. U. _____</p>	<p>DISTANCE TO:—</p> <p>VII.—School _____</p> <p>Nearest park or play-ground _____</p> <p>Market _____</p> <p>Place of employment _____ Transport used _____</p> <p>VIII.—Do you want to move to another house _____</p> <p>Area preferred _____</p> <p>At what rent _____</p> <p>IX.—Any other remarks by occupant _____</p>
--	---

X.—Income of families occupying D. U.	Total Monthly. Yearly.	No. of worker per family	XI.—Employment Information.					Location.
			Regular or not.	At Home.		Other.		
				No.	Type Work.	No.	Type Work.	
Family 1						
Family 2						
Family 3						

XII.—Family Composition.	Total No.	Husband	Wife or Widow.	CHILDREN.						Other dependents or relations.	REMARKS.
				Male.			Female.				
				0-5	5-12	Over.	0-5	5-12	Over.		
Family 1								
Family 2								
Family 3								

XIII.—Accommodation.	LATRINES: Private/Common.							WATER SUPPLY: Private/Common.					
	Rooms.							Verandah.		Court Yard		Kitchen	Bath.
	1	2	3	4	5	6	7	1	2	1	2		
*Use	...	...	...	...	...	...	...
Length	...	...	...	...	...	...	...
Width	...	...	...	...	...	...	...
Height	...	...	...	...	...	...	...
No. and Size of doors	...	...	...	...	...	...	...
No. and Size of windows	...	...	...	...	...	...	...
No. Ventilators	...	...	...	...	...	...	...
Material of	Floor	...	...	...	...	...	...
	Roof	...	...	...	...	...	...
	Walls	...	...	...	...	...	...

XIV.—Animals—Kind.	Number.	Where kept.		XV Milk Supply.		REMARKS.
		In Room, Courtyard Shed or	Distance from house.	Source.	Quantity.	

*STATE for each room whether bed-room (B.R.), Store (S), Dining (D), Study (St.), or Sitting Room (S.R.).

APPENDIX A.
KANPUR DEVELOPMENT BOARD.

FORM A-3.

Buildings Survey.

Office No. _____

Investigator's No. _____

OPEN AREAS.

Investigator _____ Group No. _____ Date _____

(1) NAME OR IDENTIFICATION : _____ No. if any _____ Locality _____

(2) *USE : _____ Ownership Public Occupancy Owner _____

Private. Tenant Nil.

<p>(3) SIZE OF PLOT.</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; border-top: 1px solid black;">Front ft.</td> <td style="text-align: center; border-top: 1px solid black;">Deep ft.</td> </tr> </table>	Front ft.	Deep ft.	<p>(4) WHETHER ENCLOSED.</p> <p>Temp. (Describe) _____</p> <p>Permanent (Describe) _____</p>	<p>(5) PAVED per cent.</p> <p>Material _____</p> <p>(6) PAINTED— (Describe) _____</p>	<p>(7) DRAINAGE.</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; border-top: 1px solid black;">Open</td> <td style="text-align: center; border-top: 1px solid black;">Covered.</td> <td style="text-align: center; border-top: 1px solid black;">Nil.</td> </tr> </table> <p>Run into _____</p> <p>Sewer Sreet Pit.</p>	Open	Covered.	Nil.
Front ft.	Deep ft.							
Open	Covered.	Nil.						

(8) BUILDING EQUIPMENT. (10) TYPE. (11) DIMENSIONS. (12) MATERIAL. (13) WATER SUPPLY

<p>Permanent or Temporary structures.</p>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">No.</td> <td style="text-align: center;">No.</td> <td style="text-align: center;">Long ft.</td> <td style="text-align: center;">Broad ft.</td> </tr> </table>	No.	No.	Long ft.	Broad ft.	<p>Sheds _____</p> <p>Roof _____</p>	<p>Stalls _____</p> <p>Walls _____</p> <p>Stores _____</p> <p>Floor _____</p>
No.	No.	Long ft.	Broad ft.				

(15) † Remarks _____

* STATE Whether: Playground, Park, Cemetery, Graveyard, Bus station, tonga-Ekka Stand, Agriculture and/or Dairying, Market or Mandi, etc. (Wholesale/Retail Also Type: Grain, Timber, Vegetable, hides, Gur, etc., also state whether weekly daily etc.)

† If a Mandi or Market, give a general description, number of stalls, Rent paid and resulting congestion on adjoining streets.

TABLE No I
**ALLOCATION OF AREAS FOR VARIOUS PURPOSES IN THE
 GREATER BOMBAY AREA (VERY APPROXIMATE).**
 References are to Map entitled 'Rough Land Allocations and Road System'
 No. GB1, dated 11-11-1947.
 RESIDENTIAL* (NEW).

Index No.	Location.				Area in sq. miles.	Density Thousands per sq. mile.	Total Population (Approximate).	
R1a	North of Utan	..	..	..	2.25	26,000	60,000
R1b	South of Utan	..	..	..	3.00	28,000	85,000
R2a	Dahisar	..	..	..	2.35	28,000	65,000
R2b	North East of Borivli	..	..	..	2.00	27,500	55,000
R3	West of Kandivlee	..	..	..	2.07	30,000	60,000
R4	East of Malad	..	..	..	3.35	30,000	1,00,000
R5	North West of Thana (join with Thana)	..	..	..	4.70	32,000	1,50,000
R6	Oshivre and Goregaon (West of B. B. & C. I. Railway)	..	..	..	0.80	25,000	20,000
R7	Mulund	..	..	..	1.72	29,000	50,000
R8	Locality of Thana	..	..	..	1.13	36,000	40,000
R9	Juhu (Airfield etc.)	..	..	..	1.85	26,000	50,000
R10	North of Andheri-Marol Road (East of B. B. & C. I. Rly)..	..	..	..	2.85	28,000	80,000
R10a	Area east of R10	..	..	..	2.80	28,000	80,000
R11	Pawai	..	..	..	1.55	30,000	45,000
R12	Bandra-Khar (part of town planing Scheme)	..	..	..	0.32	25,000	8,000
R13	West Trombay	..	..	..	1.17	33,000	40,000
R13a	South of Chembur	..	..	..	2.32	32,000	75,000
R13b	Anik-Mahul	..	..	..	1.40	35,000	50,000
R13c	South of Sion Trombay Road	..	..	..	1.12	36,000	40,000
Approximate Totals					..	38.75	30,000	11,50,000
						(average)		
†R13d	Small area East of Chembur	0.44	sq. miles.,					
†R2c	Area near Borivli	0.50	sq. miles.					
					INDUSTRIAL.			
	..	..	..	..	1.70		
	..	..	..	..	2.72		
	..	..	..	..	0.65		
				
Total					..	5.07	sq. miles.	

* Including local streets, local parks and playgrounds, schools, shopping.
 † Areas subsequently added.

TABLE No. 1—*Contd.*
Tanneries and Slaughter Houses.

Index No.	Area in sq. miles.	Index No.	Area in sq. miles.
T	0.80		
	Parks.		Hospitals.
	(Smaller greenbelt acreages not included)	H1	0.25
P1	8.78	H2	0.23
P1a	4.82		Total <u>0.48</u>
P2	3.62		Sanatorium.
P3	1.50	S	0.40
P4	2.30		Possible Dock Area.
	<u>Total sq. miles. 21.02</u>	D	2.50
	Aerodromes.		Open Area for Race Course, Stadium.
A1	2.72	O	3.80
A2	3.00		Holiday Resort.
	<u>Total sq. miles. 5.72</u>	h	0.90
	Centres of High Education.		Leper Home.
†E1	0.67	L.	1.08
E2	1.07		Sewage Purification Works.
	<u>Total sq. miles. 1.74</u>	S.P.	0.75

† Area subsequently modified to 1.52 sq. miles.

**ALLOCATION OF AREAS FOR VARIOUS PURPOSES IN THE
GREATER BOMBAY AREA (VERY APPROXIMATE).**

Abstract of Table No. 1.

Purpose.	Area in sq. miles.
Residential	38.75
Industrial	5.07
Tanneries and Slaughter Houses	0.80
Parks and possible recreation grounds.. .. .	21.02
Aerodromes	5.72
Educational Centres	1.74
Hospitals	0.48
Sanatorium	0.40
Possible Dock Area	2.50
Open area for Race Course, Stadium	3.80
Holiday Resort	0.90
Leper Home	1.08
Sewage Purification Works	0.75

BOMBAY REGIONAL PLAN: ILLUSTRATIVE PROGRAMME AND SCHEDULE OF PROGRESS—THREE PERIODS.
FIRST PERIOD.

Location.	BOMBAY ISLAND.												GREATER BOMBAY AND BEYOND.						Remarks.	Other principal works in First Period. (On Bombay Island and Beyond).	
	HOUSING (INCLUDES LOCAL SHOPPING CENTRES, SCHOOLS, PARKS AND PLAYGROUNDS).												HOUSING (PARKS AND PLAYGROUNDS, ETC., NOT SPECIFICALLY NOTED AS AVAILABLE AREAS ARE AMPLE.)								
	Low-income housing.					Middle and Upper Income Housing.							Location.		Family density per acre including Parks, Playgrounds, shopping, etc.	Total Families.					
	Size (Acres).			Family density per acre.	Total families.	Size (Acres).			Total Families.		Parks and Playgrounds (average).	REMARKS.	Suburban.	Towns Beyond.		Low Income.	Medium.	High.			
Total.	Deduct local parks and play-grounds.	Net.	Total.			Deduct local parks and play-grounds.	Net.	Family density per acre.	Medium.	High.											
Worli ...	24	...	24	42	1,000	24	...	24	42	1,000	Existing Scheme.	Pawai	...	12	3,000	Depending on requirements of industries, 300	...	Current influx of industry along G. I. P. makes this urgent.	<p><i>General.</i>—Augment staff—enact legislation—Appoint Planning Board or Commission—Draft details of zoning regulations—Commence agricultural and soil survey to evolve policy for minimum displacement of cultivators and arrange removal to new land of those who must go.</p> <p><i>Bombay City.</i>—Activate existing derelict parks and play-grounds and acquire new areas as indicated</p> <p>For large scale industries as they are planned and are ready to go forward.</p> <p>For tanneries ...</p> <p>Initiate study of underground suburban loop and start construction.</p> <p>Design and start central-traffic diversion around Hornby Road back to Mint Road, including parking and reconstruction.</p> <p>Construct new North-South artery continuing Reay Road and Jackeria Bunder Road and B. P. T. Road.</p> <p>Connect Nesbit and Bellasis Roads by widening road between. Complete E.W. Tripartite Road.</p> <p>Move out tanneries from Dharavi. Move out stables and establish local parks and playgrounds in those vacated areas</p> <p>Design and start construction of modern shopping and business areas at Dadar Bellasis Road and Bombay Central. Begin Scheme for business centre at Bombay Central. Use former Petit Mill site for parking.</p> <p><i>Suburban.</i>—Start acquisition of land required for public purposes and for housing the low-income and middle class families at Trombay, Pawai and Majes. Also acquire land for industrial purposes on the East of the G. I. P. Railway.</p> <p>Begin construction of express highway on east and west sides of Salsette (initially two lanes). Begin construction of certain cross (East and West) arteries also. Design Andheri shopping area and Trombay shopping area.</p> <p><i>Railways.</i>—Construct cross-over between B.B. & C. I. and G. I. P. Rlys. at southern end of Salsette.</p> <p>G. I. P. Rlys. to construct any necessary cross-overs to permit ample goods sidings from Kurla to Thana; also to increase suburban passenger service. Start fill for second aerodrome.</p> <p><i>Satellite Towns.</i>—Design layout for new town at Ambarnath and Kalyan.</p>
Parel Tank Area ...	125	35	90	50	4,500	...	...	...	...	...	35	Includes Lovji Castle and Petit Orphanage. One Hill is Municipal land and one is quarry. Existing Scheme.	...	...	12	...	...	...	...
Golanji Hills	40	
Sion-Matunga ...	10	...	10	103	1,000	...	...	...	...	...	...	Existing Scheme.	...	...	15	2,000	Do.	...	...
Rowli ...	30	...	30	56	1,700	...	...	...	...	...	...	Existing Scheme.	...	...	12	...	300	...	...
Rowli—Addition to South ...	20	...	20	45	900	...	...	...	...	...	...	...	...	...	15	1,000	...	...	...
Rowli Hill ...	...	...	...	...	...	...	...	...	...	...	13±	...	...	...	12	...	5,000	1,000	...
Antop Hill ...	...	...	...	...	600	...	...	...	...	...	...	B. P. T. Project.	...	...	...	...	...	...	...
Bhavani Shankar Road area (Near Dadar)	27	6	21	44	900 (net)	...	...	...	...	...	6	Mostly vacant. About 100 existing huts.	...	...	...	...	...	...	...
Dharavi First Part ...	80	30	50	40	1,250 (net)	...	...	...	...	...	30	After tanneries are moved 30 acres high land; 50 acres fill. Total tenements; 2,000 Less 750 existing=1,250 (Net).	Area above Andheri-Marol Road (Majes) Mulgaon etc.	...	...	3,000	...	...	...
Gas Works Area. (Intersection Arthur and Suparibaug Roads.)	...	...	...	...	...	...	...	...	...	...	8±	...	...	...	...	...	...	...	...
Area behind Chawls between Fergusson Road and Globe Mills Passage.	...	...	...	...	...	...	...	...	...	...	25±	Area over covered drain.	...	...	...	...	...	...	...
Area Off Haines Road between Phoenix Sassoon and Raghuvanshi Mills.	...	...	...	...	...	...	...	...	...	...	10±	Near Jewish and R.C. Cemeteries.	...	...	...	...	...	...	...
Mahim Woods Beach ...	...	...	...	...	...	...	...	...	...	...	10±	Start expansion of beach recreation area. Existing Scheme.	...	...	...	...	...	...	...
Churchgate Reclamation ...	...	...	...	...	...	36 (1/3 out of 2,400)	...	...	67	...	800	...	...	...	...	...	...	...	...
Scheme 52 Worli*	...	...	...	...	...	42 (1/3 out of 1,200)	...	...	29	800	400	...	Do.	...	...	...	...	...	...
Scheme 58 Worli*	...	...	...	...	...	26 (1/4 out of 800)	...	...	31	600	200	...	Do.	...	...	...	...	...	...
Scheme 57 Sewri-Wadala*	...	...	...	...	...	90 (1/3 out of 6,000)	...	...	67	2,000	...	...	Do.	...	...	...	...	...	...
Scheme 6, Sion-Matunga*	...	...	...	...	...	70 (1/3 out of 4,260)	...	...	61	1,400	...	...	Do.	...	...	...	...	...	...
Stables ...	...	...	...	...	...	...	...	...	...	...	40±	Various Locations.	...	...	...	...	...	...	...
Worli Village ...	...	...	...	...	...	...	...	...	...	...	10±	South side of ridge, former military installation. No interference with villagers	...	...	...	...	...	...	...
Mahim Woods ...	...	...	...	...	...	...	...	...	...	1,000	...	...	...	...	...	...	...	...	...
Mahim Woods ...	...	...	...	...	...	...	...	...	...	...	70±	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	11,850	...	...	...	...	6,800	1,400	297+550	existing = 847 acres.	...	...	6,000	8,600	1,000	...

*Existing schemes, plots already disposed of or layouts approved, before the present planning study was started.

(Total of 34,000—36,000 family dwelling units built on vacant land to house approximately 150,000 people. By the end of first period we can therefore start clearing slums).

Approximately 850 acres in parks and playgrounds on Bombay Island at the end of first period.

Approximately 15,000 family units built out of Bombay Island drawing off about 60,000 people.

(Recapitulation of Housing totals in First Period).

	Low Income.	Medium Income.	High Income.	Total.
Bombay Island ...	11,850	6,800	1,400	20,050
Greater Bombay ...	4,000	8,300	1,000	13,300
Ambarnath-Kalyan ...	2,000	300	...	2,300
Totals ...	17,850	15,400	2,400	35,650

Total 35,650 families.

BOMBAY REGIONAL PLAN: ILLUSTRATIVE PROGRAMME AND SCHEDULE OF PROGRESS— THREE PERIODS.

SECOND PERIOD.

Location.	BOMBAY ISLAND.											GREATER BOMBAY AND BEYOND.						Remarks.	Other Principal works in Second Period. (On Bombay Island and Beyond).			
	HOUSING (INCLUDES LOCAL SHOPPING CENTRE, SCHOOLS, PARKS AND PLAYGROUNDS).											HOUSING (PARKS AND PLAYGROUNDS, AND LOCAL SHOPPING CENTRES NOT SPECIFICALLY NOTED AS AMPLE AREAS ARE AVAILABLE.)										
	Low-income housing.					Middle and Upper Income Housing.						Parks and Playgrounds. (acreage).	REMARKS.	Location.		Family density per acre including Parks, Playgrounds, shopping, etc.	Total Families.			Remarks.		
	Size (Acres).			Family density per acre.	Total families.	SIZES (Acres).			Family density.	Total Families.				Suburban.	Town Beyond.		Low Income.				Medium.	High.
Total.	Deduct local parks and playgrounds.	Net.	Total.			Deduct local parks and playgrounds.	Net.	Medium.		High.												
Race Course and Stables ...	260	130	100	45	4,500	30	40	1,200	...	130	Pawai	13	4,000	This seems nearest to first concentration of large suburban industry.	Bombay City.—Complete underground loop and associated pedestrian underpassow. Remove tram cars in this area.		
Willingdon Club ...	80	30	40	45	1,800	10	40	400	...	30	Borivli	10-12	...	2,000	...	Requires Fill.	Establish parking area on ground floor of buildings over former B. B. & C.I. route between Marine Drive and Queens Road. Demolish slum north of Marine Lines between Queens Road and Girgaum Road. Establish parking on ground floor behind shops of new buildings to be erected there-at total of approx. 3,000 cars in both areas. Complete Hornby Road, Mint Road reconstruction.		
Dharavi 2nd Part ...	70	25	45	40	1,800	...	...	...	...	...	...	25	...	...	13	1,000	1,000	...	
Dharavi 2nd Part	150±	40±	110	35	3,850	...	40	13	1,500	1,500	...	Do.	This depends on starting industry out along B. B. & C. I. Rly.		
Churchgate Reclamation ...	...	...	...	...	...	2nd Instalment.	...	...	...	1,000	...	...	...	...	13	3,000	...	...		
Colaba Blocks 3, 4, 5, 6—1st Instalment.	...	...	...	...	...	550±	100	450±	30	...	2,500 (out of 13,500)	100	...	Ambernath-Kalyan ...	...	13	...	...	...
Scheme 52—Worli*	...	...	...	...	...	2nd Instalment.	...	...	...	400	...	...	...	...	10-12	...	1,000	...	...	
Scheme 58—Worli*	...	...	...	...	...	Completion.	...	...	...	600	...	...	...	...	12	...	...	300	...
Scheme 57—Sewri-Wadala*	...	...	...	...	...	2nd Instalment.	...	...	...	2,500	...	...	...	...	15	1,000	...	...	...
Scheme 6—Sion-Matunga*...	...	...	...	...	...	2nd Instalment.	...	...	...	1,500	...	...	Trombay ...	...	12	...	9,000	...	...	
Kamathipura area as marked on Bombay Island Map.	120	...	...	...	...	...	...	...	...	...	...	120±	...	...	10	...	...	1,000	...
Start clearing area for Park North of Bellasis Road, East of Moreland Road. Area abandoned by industry	110	...	...	...	...	...	...	...	...	...	...	20±	Slums can be cleared and park created towards end of period due to large amounts of new construction completed in first 2 periods. Out of total of 110 acres.	Area North of Andheri-Marol Road and East of Ghodbunder Road.	15	1,000	...	...	...
Mahim Woods ...	...	2nd Instalment—Exact	location	not known.	75	...	75	34	2,500	...	...	100±	Exact locations not known	...	12	...	7,000	500	...
Mahim Woods—North of Lady Hardinge Road.	...	...	...	...	...	...	...	...	...	...	...	4±	...	...	10	...	...	...	...
Mahim Woods Beach ...	...	...	...	...	...	...	...	...	...	...	...	15±	2nd expansion of beach for public recreation.	...	...	...	...	...	...
Totals ...	...	...	...	...	8,100	...	...	...	...	11,950	4,500	584± 847 1,431	acres previously Say 1,500 acres to date.	...	...	11,500	21,500	1,800	...

* Existing Schemes—Plots already disposed of or layouts approved before the present planning study was started. (Total of 55,000 family dwellings built on vacant land to house approximately 2,26,000 people).

Approximately 1,500 acres in Parks and Playgrounds on Bombay Island. To end of second period, total new houses for 95,000 families or 4,00,000 people. In the second period, approximately 35,000 family units built out of Bombay Island, drawing off approximately 1,15,000 people in addition to 60,000 people drawn off in the first period.

	Low Income.	Medium Income.	High Income.	Total Approx Income.
Bombay Island ...	8,100	11,950	4,500	24,550
Greater Bombay ...	8,500	20,500	1,500	30,500
Ambernath-Kalyan ...	8,000	1,000	360	4,300
Total 2nd Period....	19,600	33,450	6,300	59,350
Total 1st Period....	17,850	15,400	2,400	35,650
Total 1st and 2nd Periods....	37,450	48,850	8,700	95,000

BOMBAY REGIONAL PLAN : ILLUSTRATIVE PROGRAMME AND SCHEDULE OF PROGRESS—THREE PERIODS.
THIRD PERIOD.

Location.	BOMBAY ISLAND.												GREATER BOMBAY AND BEYOND.						Other Principal works in Third Period (On Bombay Island and Beyond).
	HOUSING (INCLUDES LOCAL SHOPPING CENTRES, SCHOOLS, PARKS AND PLAYGROUNDS).												HOUSING (PARKS AND PLAYGROUNDS, LOCAL SHOPPING CENTRES ETC., NOT SPECIFICALLY NOTED AS AMPLE AREAS ARE AVAILABLE).						
	Low-income housing.					Middle and Upper Income Housing.							Location.		Total Families.			Remarks.	
	Size (Acres).			Family density per acre.	Total families.	Size (Acres).			Family density	Total Families.		Parks and Play-grounds. (acreage).	REMARKS.	Suburban.	Town Beyond.	Family density including Parks, Playgrounds, shopping, centres etc.	Low Income.			Medium.	High.
Total.	Deduct local parks and play-grounds.	Net	Total.			Deduct local parks and play-grounds.	Net.	Medium.		High.									
Railway workshops south of Dharavi ...	120	45	75 (50 acres for low-income)	40	2,000	25	35	900	...	45	Pawai	2,500	1,500	...	<i>Bombay Island—</i> Complete removal of workshops out of Bombay. Completion of Tulse Pipe Line Expressway Central park area north and south of Bellasis Road about 225 acres complete. In the 4th period start erecting new housing on slum cleared lands. Remove tramways from all central Bombay areas. <i>Greater Bombay and Beyond—</i> Complete Railway cut-off, Bombay-Poons Line. Complete portions of Malad Creek recreation area. Construct the following roads:— (1) Part of Borivli-Bhandup Road. (2) Juhu-Parle Road. (3) Juhu-Andheri Road. (4) Extension of Marol-Maroshi Road North of Marol. (5) Road at Borivli joining Borivli-Bhandup Road (Part). (6) Sub-arterial Road from Govandi to Ghatkoper. (7) Saki-Ghatkopar Road extension. (8) By-pass-to Chembur-Ghatkopar Road
G. I. P. Workshops south of Elphinstone Road.	95	40	55	40	2,200	...	...	...	...	...	...	40	Mulund ...	...	12	3,500	4,000	...
B. B. & C. I. Workshops south of Elphinstone Road.	25	8	17	40	680	...	...	...	...	...	...	8	East of Kandivli ...	...	...	4,000	2,000	...
Mill Area—Expected decentralisation ... Exact locations not now known.	400	160	240 (Develop 120 acres in this period). (80 acres for low income).	35	2,800	...	...	40	35	1,400	...	160	...	Ambenath-Kalyan	...	4,000	1,000	500
Dharavi-Mahim sea-wall Park	100	...	...	...	...	...	...	...	...	...	...	100	Trombay ...	...	...	1,000	9,000	1,000
Park north of Kamathipura north of Bellasis Road on Cleared slum land ... (complete).	110	...	...	...	...	...	...	...	...	...	...	100	Area north of Andheri-Marol Road East of Ghod-bunder Road.	...	...	1,000	9,000	1,500
Lepor Asylum ...	200	...	...	...	...	...	...	...	...	...	...	200	...	...	...	...	...	...
Zaoba's Wadi Slum Clearance	15	...	...	...	...	...	...	...	...	...	...	15	...	...	...	...	...	...
Churchgate Reclamation ...	...	...	...	...	...	...	...	...	...	...	...	600	...	...	...	...	...	...
Colaba Blocks, 3, 4, 5 and 6	...	...	...	...	...	...	...	...	...	...	...	4,000	...	...	...	...	...	...
Scheme 52—Worli*	...	...	...	...	...	...	...	...	...	...	...	400	...	...	...	...	...	...
Scheme 57—Sewri-Wadala*	...	...	...	...	...	...	...	...	...	...	...	1,500	...	...	...	...	...	...
Scheme 6—Sion-Matunga*	...	...	...	...	...	...	...	...	...	...	...	1,360	...	...	...	...	...	...
Mahim Woods	...	...	...	...	...	...	...	...	...	...	...	3,000	...	...	...	...	...	...
Mahim Woods Beach	15	15	...	...	...	...	...	...	...	...	...	15	...	...	...	...	...	...
Totals	Approx.	7,700	Approx.	8,200	5,000	680 1,500 2,180	16,000	26,500	3,000	...

* Existing schemes now completed.

Total of approximately 66,000 family dwelling units on vacant land to house approximately 2,50,000 people.

To end of third period.—Approximately 2,200 acres in parks and playgrounds, in Bombay Island.

To end of third period.—Total new houses for 1,60,000 families or approximately 6,50,000 people.

In the third period.—Approximately 45,500 family units built out of Bombay Island drawing off 1,80,000 people in addition to 2,10,000 drawn off in the two earlier periods

Recapitulation of Housing Totals in Third Period.

	Low Income.	Medium Income.	High Income.	Total (Approx.)
Bombay Island ...	7,700	8,200	5,000	20,900
Greater Bombay ...	12,000	25,500	2,500	40,000
Ambenath-Kalyan ...	4,000	1,000	500	5,500
Total 3rd Period ...	23,700	34,700	8,000	66,400
Total 1st and 2nd Periods.	37,450	48,850	8,700	95,000
Combined totals for first three periods	61,150	83,550	16,700	1,61,400

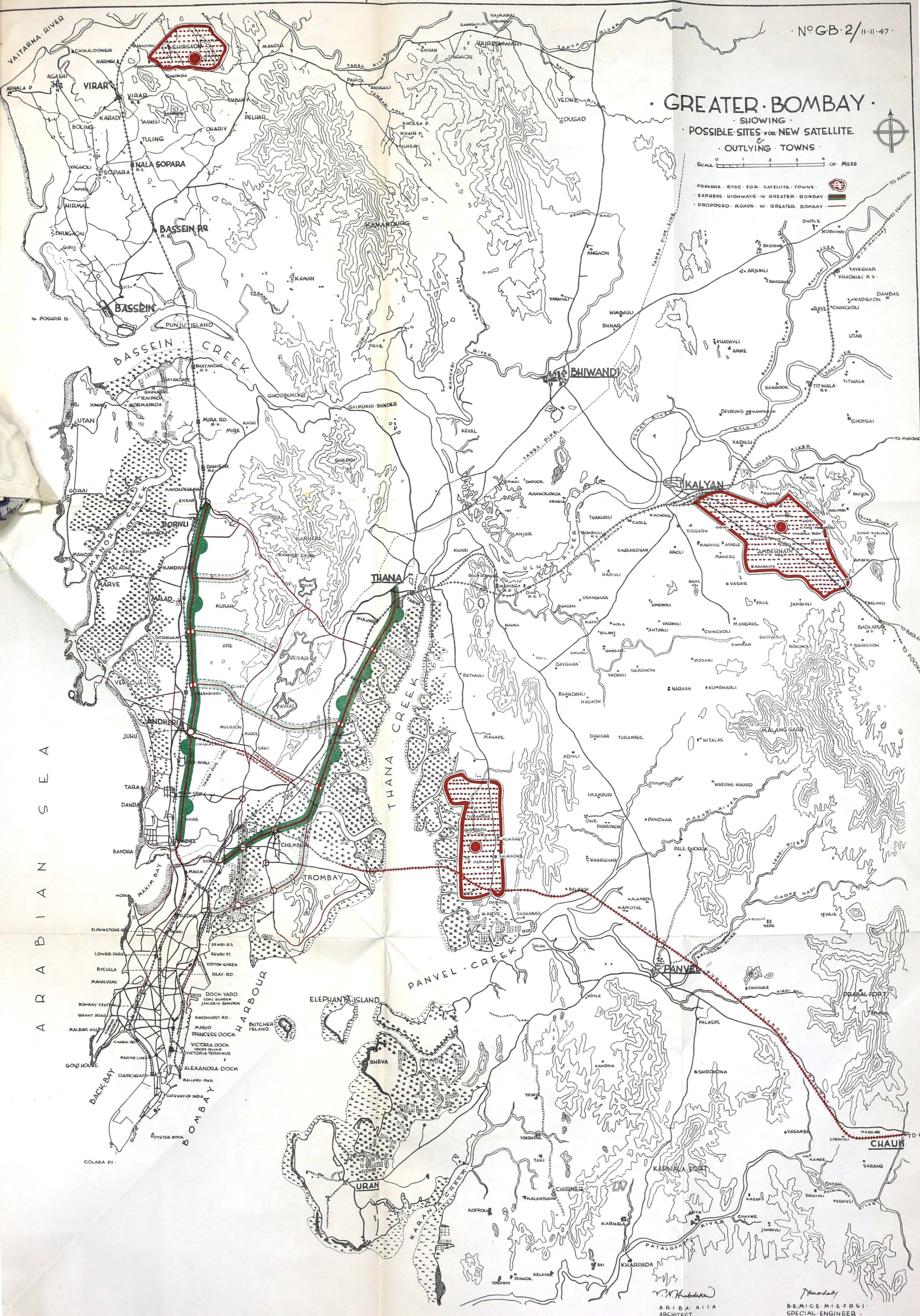
GREATER BOMBAY

SHOWING
POSSIBLE SITES FOR NEW SATELLITE
&
OUTLYING TOWNS



SCALE 0 1 2 3 4 OF MILES

- POSSIBLE SITES FOR SATELLITE TOWNS
- EXPRESS HIGHWAYS IN GREATER BOMBAY
- PROPOSED ROADS IN GREATER BOMBAY



ARABIAN SEA

V. N. H. ...
 ARCHITECT
 GREATER BOMBAY

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 SPECIAL ENGINEER
 BOMBAY MUNICIPALITY

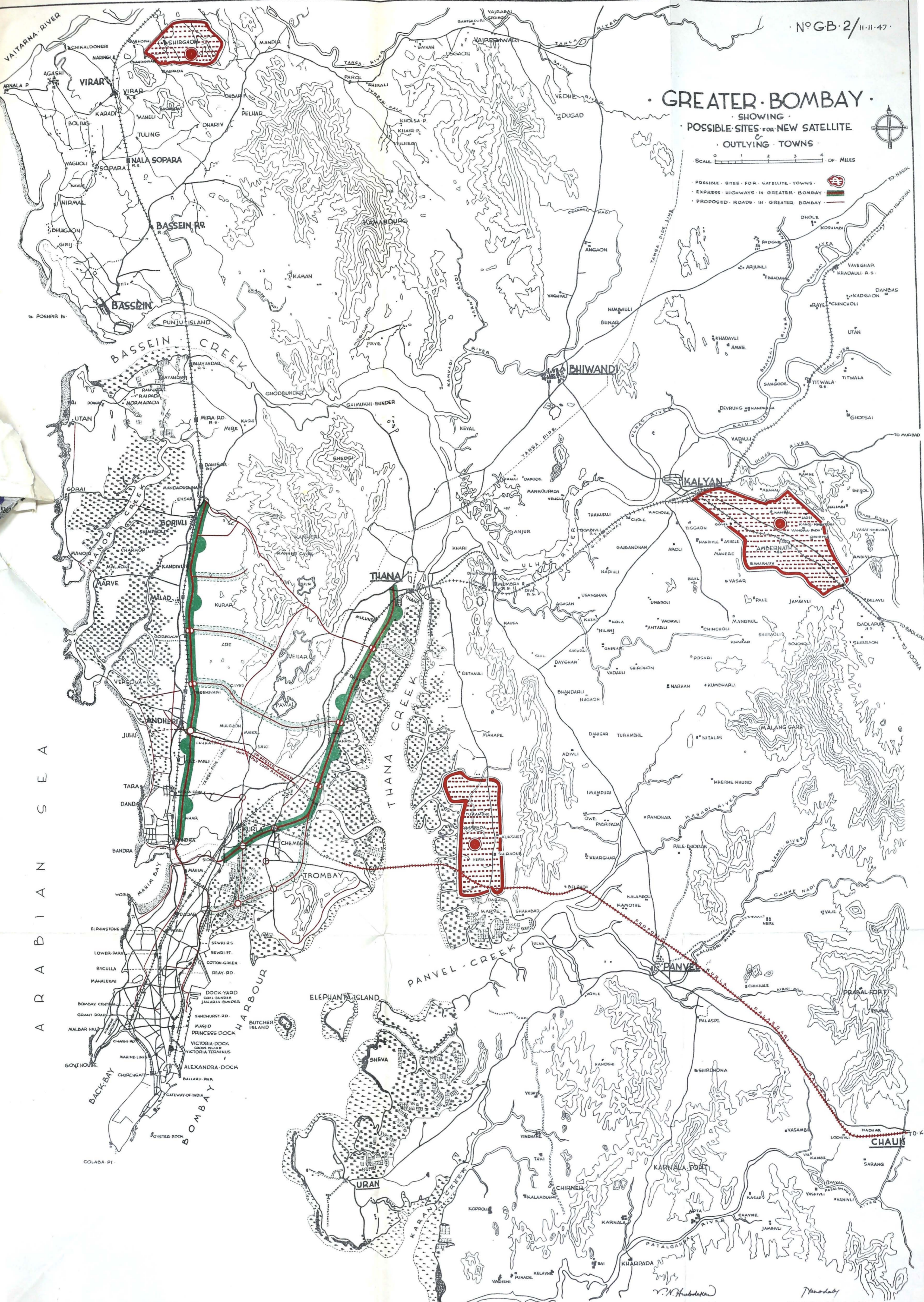
GREATER BOMBAY

SHOWING
POSSIBLE SITES FOR NEW SATELLITE
&
OUTLYING TOWNS



SCALE 0 1 2 3 4 OF MILES

- POSSIBLE SITES FOR SATELLITE TOWNS
- EXPRESS HIGHWAYS IN GREATER BOMBAY
- PROPOSED ROADS IN GREATER BOMBAY



ARABIAN SEA

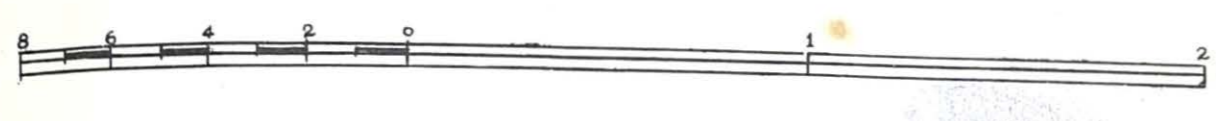
V.N. Hubdekar
 A.R.I.B.A. A.I.A.
 ARCHITECT
 GREATER BOMBAY

M. Madhavi
 B.E. M.I.C.E. M.I.E.F.R.S.I.
 SPECIAL ENGINEER
 BOMBAY MUNICIPALITY

ISLAND OF BOMBAY

PROPOSED STAGES OF DEVELOPMENT

AS PART OF THE GREATER BOMBAY SCHEME



SCALE OF MILES

REFERENCES:

- PRESENT PUBLIC PARKS & RECREATION GROUNDS.
- PROPOSED PUBLIC PARKS & RECREATION GROUNDS.
- HIGH INCOME RESIDENTIAL AREAS APPROVED AND LEASED OUT BEFORE 1947.
- MEDIUM INCOME RESIDENTIAL AREAS APPROVED AND LEASED OUT BEFORE 1947.
- PROPOSED HIGH INCOME RESIDENTIAL AREAS.
- PROPOSED LOW & MEDIUM INCOME RESIDENTIAL AREAS.
- NEW MAJOR BUSINESS AND SHOPPING CENTRES.
- PROPOSED EXPANSION OF EXISTING BUSINESS AND SHOPPING; PARKING ON GROUND FLOOR.
- CLEARANCE & REBUILDING TO EXPAND MAIN BUSINESS AREA & TO SUPPLY PARKING & TRAFFIC RELIEF.
- HOUSING SCHEMES CARRIED OUT OR SANCTIONED BEFORE 1947.
- PRESENT MAIN ROAD CIRCULATION.
- PROPOSED ADDITIONAL ROADS OR CHANGES.
- PROPOSED MAJOR ROAD WIDENINGS.
- EXPRESSWAY SYMBOL & EXISTING RIGHT OF WAY.
- EXPRESSWAY SYMBOL, RIGHT OF WAY TO BE ACQUIRED FROM THE B. B. & C. I. RAILWAY.
- SANDHURST ROAD AT OPERA HOUSE JUNCTION, FOR FURTHER STUDY.
- PROPOSED TUBE RAILWAY SYSTEM.
- BORDERS OF PROPOSED LOCALITIES OR DISTRICTS.
- PROPOSED FOOT OVER BRIDGES.
- STAGE IN WHICH THE ITEM NOTED IS SCHEDULED FOR EXECUTION.

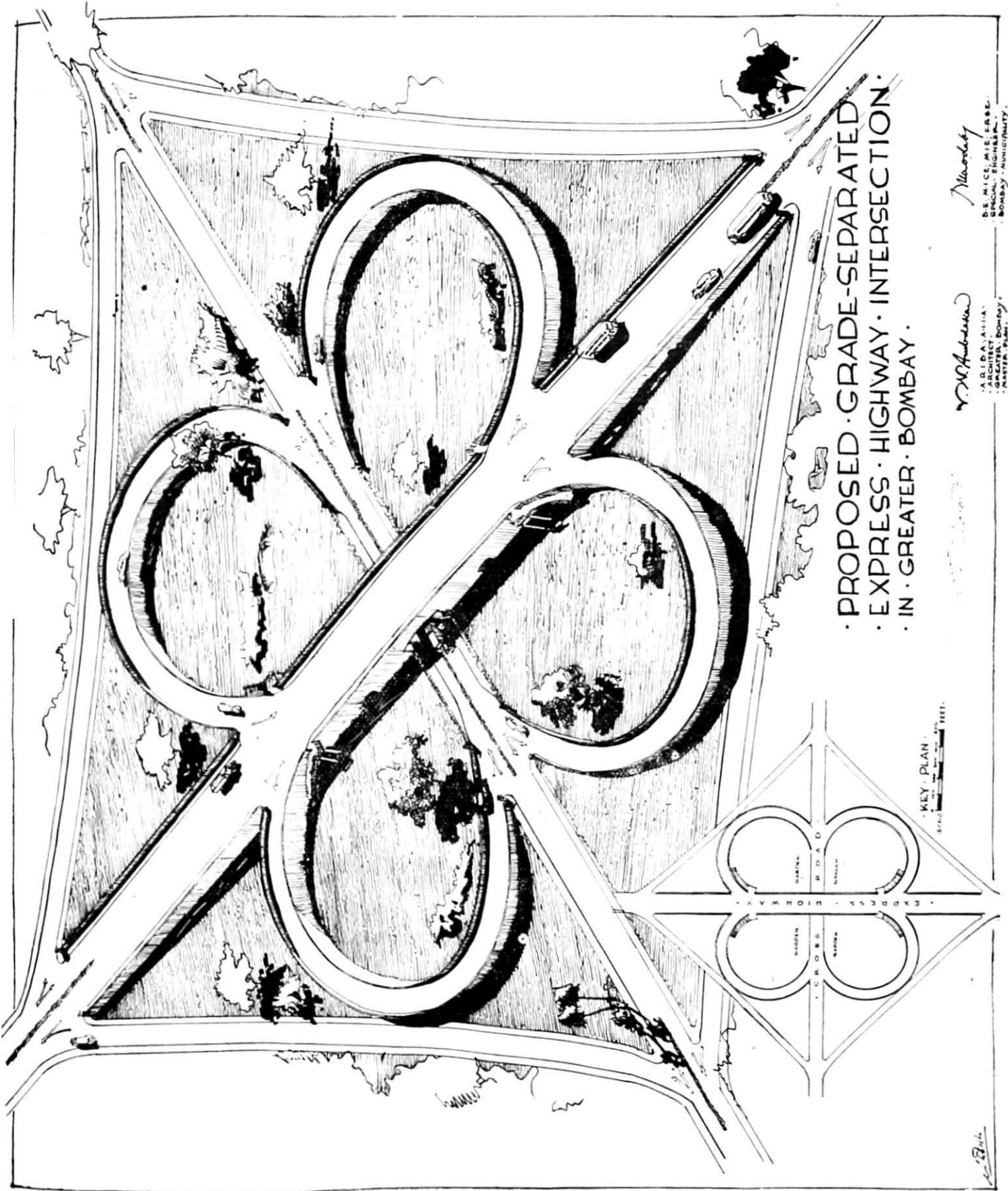
ARABIAN SEA



PROPOSED ROAD FROM QUEEN'S ROAD AND LATER FROM MARINE DRIVE TO MINT ROAD, EXACT LOCATION NOT YET DETERMINED BUT WILL BE SOMEWHERE WITHIN THIS RANGE

R.N. Subdhan
A.R.I.B.A., A.I.A.
ARCHITECT
GREATER BOMBAY

Munshi
S.E., M.I.C.E., M.I.E., F.R.S.I.
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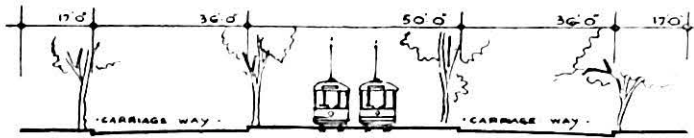


· PROPOSED · GRADE-SEPARATED ·
 · EXPRESS · HIGHWAY · INTERSECTION ·
 · IN · GREATER · BOMBAY ·

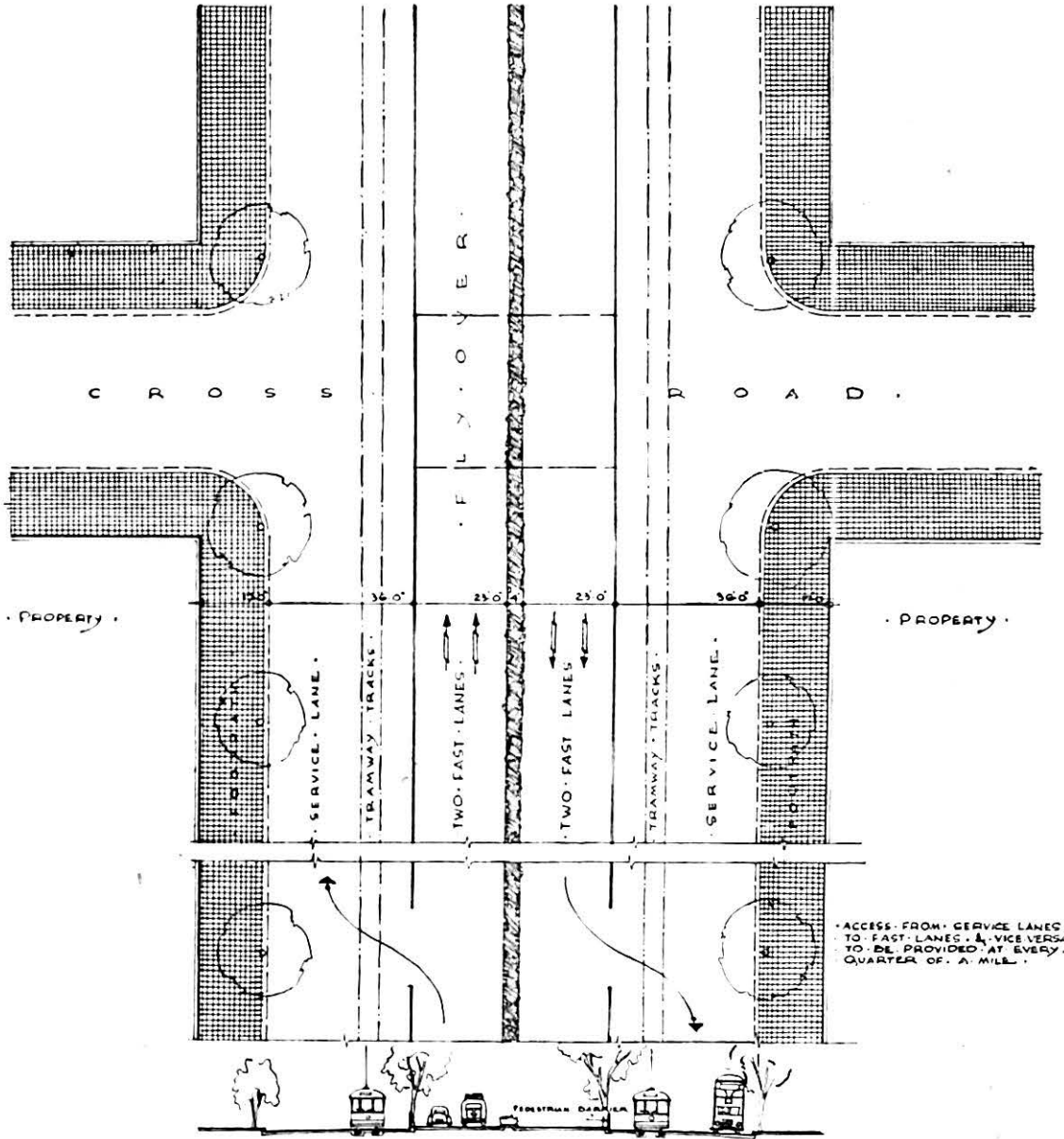
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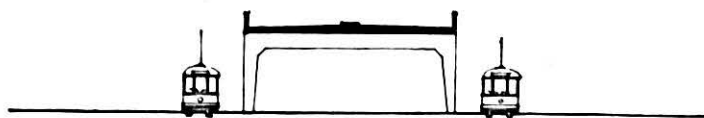
M. M. A. S. A. S.



SECTION OF VINCENT ROAD AS AT PRESENT



SECTION SHOWING USE OF SERVICE LANES & RELOCATION OF TRAMWAY TRACKS



SECTION SHOWING FLY OVER

SCALE: 1" = 10' OF FEET

PROPOSED CROSS SECTIONS OF SION ROAD FROM KING'S CIRCLE TO SION CIRCLE

V.N. Ambekar

ARIDA, AIAA
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GREATER BOMBAY
MASTER PLAN

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CHESAPEAKE BAY

MASTER PLAN...FIRST PROGRESS REPORT • 1949



MASTER PLAN
FOR
GREATER BOMBAY

First progress report

by

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MASTER PLAN FOR GREATER BOMBAY.

FIRST PROGRESS REPORT.

1. This consists of—

Preliminary Note.

Glancing back at the Plan ; and forward.

General Picture.

Comments on the Master Plan, section by section, indicating development since the original Report, clarifications, amplifications, revisions, etc.

Maps revised to date.

Typographical errors in original Outline Master Plan.

PRELIMINARY NOTE :

2. It was the original intention to issue each year a statement such as this, for the Master Plan is a living, growing organism which is constantly developing, which depends for its life and vitality on the close awareness of the citizens it seeks to serve. Only by publishing this kind of report can the citizens be kept abreast of the progress of their city's reformation.

(a) As, much of significance has happened since the original publication, and as the Special Engineer and his staff, and the Consultant have just completed a thorough review of the Plan and have been able to amplify it and make it more precise in certain respects, this First Progress Report is now issued.

GLANCING BACK AT THE PLAN ; AND FORWARD :

3. One great advantage of periodic reports such as this, is that the original creators can look back at the original work with some degree of perspective and detachment, re-examine and re-appraise their own work somewhat as critics, free from the initial original passion of creation. In our case we have gone further. The comments of careful Indian observers have been obtained, and the Plan has been shown to other planners in America for comment.

(a) It is good to be able to say that no essential changes appear to be indicated, either from our own self-examination, or as a result of comments from others. What has chiefly emerged is the desirability of pointing up or high-lighting certain factors and implications of the Plan, of re-arranging the time order of certain work, and of making a more explicit and stirring statement of the spirit of the Plan, a synthesis of the spiritual effects which are sought to be achieved by the physical plan.

(b) We find that such statements do appear in various places in the Report. What is lacking is, what may be called a general underlying credo, which has actuated the physical proposals and which gives them their united significance.

In the General Picture of our Plan, a section was devoted to "Emotional and Aesthetic Appeal", a call to planners, architects, all of us, to create a future man-made Bombay which will be much more worthy of our natural inheritance of sea and hills, than has been done in the past. It is quite possible to live in crowded Bombay without more than very occasionally being aware of these beauties, these inspirations. The Plan calls both for creating more of these sea areas devoted to the ordinary public, making them easy of access to people living anywhere in the City, and for opening the heart of the town to the sea. That is why, for example, the proposal for greenways is so important. They serve too, as do the Parks, to bring nature and its healing re-creative power into the daily ken of the people. Hence too the proposal for a large central park. Hence too the preservation of Bombay's remaining hills, such as Golanji and Worli which provide the inspiring panorama of a great city and the embracing sea. Let all people, so far as it is still possible, share the thrill that the lucky few now experience who live on Cumballa Hill and Malabar Hill.

(c) Perhaps this phase may be best summed up and dramatized by the comment of a friend who says:—

(d) "Although it is eighteen years since I have seen Bombay, I remember our first impression indelibly. We entered the harbour at dawn. We were overwhelmed by the beauty of its surroundings in the early sunlight. Later, within the city, we felt let down—walled in—cut off from the superb natural setting. We did have an exceptional view of the harbour from the home of an Indian artist we had met on the boat. Superb it was indeed. But on the whole, our recollections of Bombay are distasteful. Reading your Plan I recognize the intention to create a city worthy of its environment, and I think your measures should accomplish it, but please emphasize it, as eloquently as you can, again and again."

(e) Another point for general emphasis which, again, crops up at numerous places in the body of the Report: Bombay is a great cosmopolitan city, but the planning solutions it adopts, must be closely part of the new India. Principles proved out in the west, yes. Benefits of western experience, technical and otherwise, yes. We have in our Report called for a fusion of Indian knowledge and feeling, with western experience. Of course we do not mean any archaeologically motivated revivalist Indian architecture. But we do mean for example that in creating modern, convenient, safe and pleasant shopping and commercial business centres on Bombay Island and in the Region, we should develop and not discard or lose, original essence of the bazaar with its lively atmosphere, its semi-social character, its atmosphere of having plenty of time to talk and argue. We must vastly improve and modernize, not de-Indianize. Similarly with our neighbourhoods, and our housing. All this is implicit, and stated in our original Plan, but it bears re-stating and re-emphasis. Lucky it is that in most cases, the principles painfully discovered in the west, apply even more suitably in India, with the necessary adaptations.

(f) Specific points for re-emphasis, modification and addition:—

(1) Satellite Towns and the Atomic Bomb. Since the original Plan was conceived and published, the question of defence

against air attack and specifically the atomic bomb, has rapidly crystallized. Tentatively, it has been concluded that a practical means of defence consists in eliminating the concentrated targets offered by large continuous cities so far as possible, for it appears that separated industrial cities with a population of the order of 50,000, do not offer practical targets—the cost and effort of attacking these separately, are not justified by results.

- (2) We have provided for satellite towns, and later in the Progress Report it will be seen that we have added more satellites (both because in the original Report we had not had time to actually locate enough suitable sites that were required ; and because with the definitely agreed and permanent addition of refugee population to Bombay more satellite sites had to be found). However, the requirements of defence add a more urgent note to the concept of the usefulness and pleasantness of satellite towns and the desirability of limiting the size of the very large city.
- (3) We urge therefore, that emphasis should begin to shift in our stage development programme, from the heavy initial emphasis on Greater Bombay in relocation of population and of industry, towards earlier development of satellite towns. Hence in the first stage, where Ambernath, Kalyan is the only outside town specifically noted for development, we feel that at least three of these new towns should be got under way, with, if necessary, a corresponding diminution of development in Greater Bombay ; and increasingly so in the later stages. If in the meantime a rational peaceful assurance is given the world against mad destruction, our over-all pattern and land allocation remains as proposed. If not, later progress reports will indicate a further increase of satellite towns, and less population and industry in Greater Bombay.
- (4) Parking provision has been made in the Plan in two ways. We have called for large parking facilities at all the railway stations in Greater Bombay, to keep automobile traffic out of Bombay Island as far as possible ; also in large quantity for the central districts in the area to be redeveloped East of Hornby Road, and on the present right of way of the B.B. & C.I. Rly., if the loop or tunnel project is adopted. We have also called for provision of parking facilities for individual buildings as they are constructed, such as shops, cinemas, office buildings, etc.
- (5) It should be emphasized that the larger parking or district areas referred to, are instances only, and that it will be necessary to place such facilities at various points on the Island, and to re-emphasize that all new shopping centres, local or regional, and including those at Dadar and at Bellasis Road, must have ample parking areas included in their design and development.

CIVIC CENTRE :

4. The original Report did not go into the matter of Civic Centre, which is indispensable, both from the functional point of view—for a degree of concentration of civic functions is desirable and from the spiritual point of view, it is important to have a focus of civic life and aspiration. Every district headquarters town has this, yet our largest cities lack it. Such a centre should be planned by the best architectural talent, and should progressively include such buildings as Town Hall and Corporation Offices, departmental offices, possibly the courts, a civic auditorium, an art museum, and if possible, a great library.

(a) It should be located centrally. We have not yet been able to locate an adequate site. It may be related to the proposed central park so as to give it a fit setting. Certainly the present scattering of miscellaneous buildings does not give the inspiration and feeling of civic pride that a great city is entitled to.

GENERAL PICTURE :

5. On the favourable side, these factors may be noted :—

(a) The Plan has been adopted by the Corporation.

(b) It has aroused a great deal of interest among Bombay's citizens, and in India at large (the latter as indicated by the demand for the published Report). It has been considered at length by the Press and favourably commented on.

(c) Though it has as yet no legal force, agencies of Government, industry and private citizens have in general been planning their developments in accord with its provisions, have consulted the Special Engineer for advice and interpretation. In a number of cases they have changed previous plans to conform to it. This voluntary co-operation and recognition of the validity of the Plan, is the most satisfactory and significant single development.

(d) Considerable progress has been made in field surveys ; in establishing precise locations of major roads, boundaries of various allocated areas ; in locating additional tracts of land in Greater Bombay, high enough to be suitable for development with some fill, in addition to those originally indicated, thus adding some 4.5 square miles to the original area ; in detailed layout of three districts of neighbourhoods : Dharavi area and Parel Tank area on Bombay Island and the Waduali area in Trombay near Chembur. Certain work has been actually sanctioned by the Public Works Department, Government of Bombay, viz., the western express highway in its first stage from Bandra to Santacruz Aerodrome. A scheme for the widening of Carnegy Road and extending it to meet Waudby Road, to serve as a new cross-artery, has been approved by the Corporation and Government have been approached to release the strips of land from the two maidans, free of cost, to the Municipality for the construction of the road. The Railways have prepared a scheme including plans and sections, for cross-over from Santa Cruz to Kurla-Kirol as noted in para. 53(b) of the Report.

of Bombay's people if this year twenty-five such playgrounds and locality gathering places were set up, at a yearly cost well under one lakh—that is for two-tenth of 1 per cent. of Bombay's budget.

(f) It is desperately urgent that Bombay meet this challenge, for the site of cattle stables on the island will be abandoned and become available. They offer a splendid opportunity for providing parks, playgrounds, etc., which must be grasped. After that, new neighbourhood developments will be coming into being. Bombay owes this trivial expenditure to the well-being of its working population.

7. Certain new factors have crystallized and are now provided for:—

(a) It is definite that 3 lakhs of refugees will remain in Bombay. This changes our population target from a total of about 37 lakhs to 40 lakhs. Of these, we can manage one-and-half lakhs in the Salsette Suburban area, as field surveys have located some 4.5 square miles or a little more of good land which had not been noted in our original plan. The other one-and-half lakhs of additional population may be located in Satellite towns which would bring the population to be placed there to 7 lakhs. (See Table No. I.)

(b) The refugees have brought with them the question of furnishing somewhat more land for industry. This should be land that is immediately available. Something like 1.86 square miles has been added in three areas. Locations are noted in Section II—Industry.

(c) Master Plan of Greater Bombay—Table No. I (Allocations of areas for various purposes) has been changed to take these changes into account.

COMMENTS ON THE MASTER PLAN IN OUTLINE (DEVELOPMENTS SINCE THE ORIGINAL REPORT).*

SECTION II—TARGETS FOR POPULATION.

Add at the end of paragraph 14 this statement—

8. Since the original outline Master Plan was made, it has been determined that 3 lakhs of refugee population will permanently settle in Bombay, making an overall population target of the order of 40 lakhs, instead of the original figures. Of this increase it is intended to find room for additional 1,50,000 in Greater Bombay Suburbs (Salsette) and the other 1,50,000 in additional satellite towns. The additional number can be accommodated in the suburbs as the field survey has located additional appropriate lands at levels high enough to build on, which we had hitherto excluded on preliminary inspection.

* These are listed section by section, and this Progress Report has been printed on one side only so that those who wish to, can cut up this Report and paste each into its appropriate place in the original plan. It is recommended that each interested person acquire a second copy also, which can be kept intact. A short section has now been added (i) on schools and other educational institutions and (ii) on civic centre.

INDUSTRY :**In paragraph 15 to Sub-paragraph (c) add—**

9. As the Civil Aviation authorities have since found that the Slaughter House must be about 10 miles from the airport to avoid vultures getting in the way of planes, the site has now been tentatively moved to a location east of Thana Creek, along the Thana-Belapur Road, as shown on the revised Greater Bombay Map. The use of the area originally marked 'Tanneries and slaughter house' which will take years to make suitable for any other purpose because of its adjacency to the kutchrapatty, is left indeterminate until decision is made as to the Trombay-Panvel Railway cut-off. The area to the south, formerly marked green, as an insulating area from the tanneries becomes residential.

To paragraph 15, add new sub-paragraph (e)—

(e) To the three areas in Salsette presently allotted to industry—two on the G.I.P. side from north of Ghatkopar to Mulund and one on the B.B. & C.I. Railway side from Kandivli to Borivli, we recommend making two additions. The reasons are that the 3 lakhs of refugees require an addition to the industrial area of Greater Bombay. The two areas are : the triangle south of railroad from Kurla to Chembur, abutting the present industry and served by the G.I.P. and a strip some 1,500 feet wide between the westerly North-South express highway and the B.B. & C.I. between Jogeshwari and Goregaon, west of the Dairy Farm Colony. The former selection necessitates moving the proposed stadium to a new nearby location. The originally proposed industrial areas near Bhandup and Vikhroli have been extended to provide for more industries. The additional industrial area thus added is 1.86 square miles.

Add to Sub-paragraph 17(b)—

- (1) Further study has indicated the desirability of two additional regional shopping areas in Salsette at a later date in addition to the two already located at Andheri and at Trombay.
- (2) One will be wanted at Borivli near the end of the express highway to take care of the large future population in this northern tier. This is a strategic location, for one is also near the junction of the east-west highway from Mulund and the junction of the road from the future second airport.
- (3) Another will be required at the north end of the east express highway, south of Thana, well situated in the green area marked on the Greater Bombay Map.
- (4) These regional shopping centres in order to justify themselves economically, and to justify a large diversity of shopping, entertainment and recreational facilities (as distinguished from both neighbourhood and district shopping centres) are located conveniently to express highway connections, to other roads, and

to the railway station in each case. These are the 'Fort areas' of the region. The total of four is ample. There must not be too many, for each one must contain a very wide range of facilities both in type and price range, to offer substantially more than can be found in local shopping centres—or people will prefer to share their patronage between their local centre and Bombay Island Centres.

- (5) The original location of the centre at Andheri has been shown as shifted on the map as the originally selected land has since become unavailable. It is required by the Civil Aviation Department for their scheme of extension of Santacruz Aerodrome.

Add new Sub-paragraph (d)—

(d) For discussion and plans concerning the in-city composite commercial shopping—living areas such as Bhuleswar and Kaibadevi, see Addendum sub-paragraph 57(d) of this Progress Report.

SECTION III—AREAS AND POPULATION ALLOTTED (GREATER BOMBAY AND BEYOND).

To paragraph 26—Industrial—add a new paragraph at the end—

(d) In Section II (Targets, etc.) para. 15 of this Progress Report, it has been indicated that two industrial areas have now been added, near Kurla—Chembur and east of B.B. & C.I. between Jogeshwari and Goregaon. Total industrial area in Bombay Suburban is now 6.93 square miles. See Table I revised, and see revised Greater Bombay Map for exact locations.

To paragraph 28—Housing—add to Sub-paragraph (a) (6) (i)—

On approximately 4.5 square miles of land to be added for development (marked yellow on the map of Greater Bombay), there will be added an amount of housing necessitated by allotted settlement of refugees, of an approximate total of 1,50,000 bringing the total in Suburban Greater Bombay to 19,50,000.

To paragraph 34—New Towns and Satellites—add a paragraph—

(a) Once again it should be noted that due to the decision with respect to refugees, a total of 3 lakhs is added to the total population just noted. Of this increase about 1,50,000 will be in Greater Bombay's Suburbs and about the same number in satellite towns.

To paragraph 35—Ambarnath Kalyan—add this paragraph—

(a) On re-examination of this area, its natural advantages, its visible growth and suitability for heavy industry, we have allotted it an ultimate population of something over 3 lakhs.

To paragraph 36—Satellites—Add new paragraph—

(b) Additional sites for satellite towns have now been located at Badlapur and at Karjat on the G.I.P. Railway to Poona, on either side of the Bombay Agra Road South of Bhiwandi and to the North of Panvel. This leaves several sites to be located. Particularly in case the railway cut-off to Panvel does not materialise, Panvel and Kukshet-Turambhe will not be suitable. For summary of satellite towns and populations, See Table No. II.

SECTION IV.—TYPICAL LOCALITIES TO BE DEVELOPED IN BOMBAY.

To Paragraph 37, add another paragraph under sub-para. (3) (f).—

(f) (1) Generally, no neighbourhood, and certainly no district should be planned for one income-group only. Aside of the question of stratification, there is the functional necessity of including those who perform service and trading functions in the area, so that they will not be too far from their places of work.

SECTION VI—HOUSING.

To Paragraph 43, add new sub-paragraph (c) :—

(c) The principle of including housing areas for lower income workers in all sizeable developments, particularly those engaged in supplying services to the area (e.g. domestic servants, shop assistants, malis, taxidriviers, etc.) has already been noted in Section IV. The proportion may be guessed at as 10 to 15 per cent., depending to some extent on the incomes of the main portion of inhabitants. The situation should be checked to arrive at a figure in each case, which is better than a guess:

SECTION VII—TRAFFIC AND TRANSPORTATION.

At the end of paragraph 46—(Greater Bombay) add sub-para. (a) (3) —

Certain omissions are now corrected on the map :—

(a) (3) Road from Santacruz to present Bombay-Agra Road is now shown continued to Chembur where it joins the East express highway, and is continued parallel to the railway, to the east end of Trombay. This provides needed additional through road from east to west.

(4) The Borivli-Gorai Road shown ending at Ghodbunder Road, is now carried across to meet the express highway. This will not be required until the second aerodrome is developed. Similarly, the two new East West roads on the North and South of the Dairy Farm Colony are also carried across the Railway to meet the Western Express highway.

At the end of sub-para 49(d) add :—

On further study, it has been considered that additional east-west cross-overs are required. Two more have been provided for (making seven additional major ones instead of 5).

(6) Between the cross-over at the north end at Dharavi, and at the Elphinstone Road further south, Tilak Road extension at its easterly end to its junction with the extension of Jackeria Bunder Road, is to be widened.

(7) Thakurdwar Road which is halfway between Sandhurst Road and Carnac Road and Masjid Bunder Road will be joined by widening the easterly continuation of Thakurdwar Road (Panjarapole Street) to Kika Street, which will be widened to join the already wide Mumbadevi road to its junction with Masjid Bunder Road. This route is not as direct as the other cross-routes, but has been offset to avoid crossing the very busy Bhuleshwar business area, which should be enormously helped and made more efficient by keeping automobile traffic out of it.

At the end of sub-paragraph 49 (e) add paragraph :—

This cross street indicated as required between Carnac Road and Churchgate has now been located and authorised. It will utilise a widened Carnegie Road from Queens Road, will cross the Maidan to the junction of Waudby Road and Ravelin Street. The whole of Waudby Road will be widened. This will relieve traffic conditions in these three ways :—

- (1) Ease considerably the pressure on Dhobitalao, take some of the traffic off Cruickshank Road and Churchgate Street and of Queens Road.
- (2) A second step (to be taken as part of the study and re-development of the area east of Hornby Road to Mint Road) will be to continue Ravelin Street east across Hornby Road to Mint Road and Nicol Road. This will take some of the traffic load off Phirozeshah Mehta Road, off Bhatia Baug intersection, off Hornby Road, and give direct access to the Ballard Estate.
- (3) These additions are now shown on the revised Bombay Island Map, No. GB 23A dated. 18-11-1948.

At the end of sub-paragraph 49(k) add :—

It is believed that in general, traffic regulation of this character can accomplish a great deal to improve conditions, now, and to accentuate the benefits of new road developments when they are carried out later.

49(n) The listing from sub-paras 49 (a) to 49(m) makes a series which together will achieve substantial improvement in Bombay Island's road and traffic system, most of which could be accomplished in a reasonably short time. Both, the East West and North South systems require further improvement and integration, with developments that look further into the future. The system is being further studied and analyzed, and a road report will shortly be issued dealing with these questions. The important point to be noted here is that the listing in the original report, and the additions noted above in Section VII of this report, are by no means complete, though they are the main part of the complete plan.

SECTION VII—TRANSPORTATION AND TRAFFIC.

To paragraph 53 add :—

A footnote applying to the last sentence reading 'The ability of the B.B. & C.I. Railway to handle 100 per cent. traffic increase in passenger traffic is contingent on the tube Scheme being carried out.'*

RAILWAYS :

At the end of paragraph 53(d) add :—

(d) (1) Further consideration has been given to this second railway link shown between B.B. & C.I. at Andheri and G.I.P. at Ghatkopar one of whose main purposes was to provide cheap transportation to the new residential areas north of Andheri-Marol Road. On closer study, it appears to involve a number of traffic difficulties with crossings of the new road system in already dense areas. Further, it will probably take some five years to come into operation, by which time it is expected that the cost of bus transportation will have become competitive and connecting routes established.

(e) A scheme for the proposed connection between Kurla-Kirol and Santacruz has already been worked out by the railway authorities and necessary plans and sections have been prepared. This proposed link has now been shown on the revised plan.

SECTION VIII—SHOPPING AND BUSINESS.

To paragraph 56 add :—

(a) As noted in Section II para. 17(b) and the addendum thereto, two more regional centres have been added, one at Borivli and one between Mulund and Thana, for reasons discussed there. All four locations are shown on the revised map of Greater Bombay.

To paragraph 57 add a new sub-paragraph (d) :—

(d) Special discussion and treatment are in order for the old self-contained commercial—shopping—living areas, such as the Bhuleshwar and Kalbadevi areas. Such areas which are important and enduring elements in every Indian City have quite a different character and in some ways a more complex character, than what might be called the more "westernized" shopping and business areas such as the Fort, the Ballard Estate, etc. A great deal of study of their functions and inter-relations will have to be done before we can properly improve them in terms of their own special requirements. One thing is definitely clear, however, and of this we take account in the road system of the Master Plan—automobile traffic must be routed around these

* The anticipated possible 100 per cent. increase in passenger traffic to the suburbs is not a permanent increase, but will nevertheless obtain for some years due to the fact that much industry will remain on Bombay Island for a number of years, while living will be decentralizing to the suburbs. However, the plan for Greater Bombay contemplates ultimately a decentralization of this industry (which is the general world wide economic tendency in any case). At that time, this railway passenger load should not be in excess of the present volume. However, in this considerable interim period, such an increase must be provided for.

areas by providing wider easier roads. One such is the Thakurdwar—Masjid Bunder connection described in this Progress Report under Section VII—Others will need to be studied and adopted. Serious consideration should be given to prohibition of motor traffic in these areas except for deliveries at certain specified hours of the day when their own characteristic teeming pedestrian and victoria traffic is not so heavy.

SECTION IX—PARKS AND PLAYGROUNDS.

In paragraph 60, add new sub-paragraph (b):—

(b) There are numerous small vacant areas now available. Instead of being an asset to the spiritual and physical needs of the people, they are neglected, derelict, dirty. One example is the long strip of land east of the Worli Development Chawls (this case has already been referred to under General Picture). No possible investment can yield so much, for so little expenditure.

In paragraph 61, add sub-paragraph (b):—

(b) The cattle stables gradually being abandoned as their activities are moved out into the new Government Centre at 'Are', offer the opportunity for inaugurating a number of desperately needed breathing, recreation, and local social relaxation areas for existing population. They should all be used for this purpose as soon as they become available. Most of them are wanted as neighbourhood centres but some are concentrated in areas where they can become the nuclei of bigger parks.

In paragraph 65, add sub-paragraph (b):—

(b) Luckily some of the cattle stables about to be abandoned, about this area (proposed central park area) to the north and to the south-west or actually fall within it. Thus they offer a double advantage ; increased size of the proposed Central Park, and an immediate beginning or nucleus for this park, most of which will have to wait until later.

In paragraph 71, continue with a new paragraph :—

(a) Bombay will need to make a basic decision with respect to its policy on parks and playgrounds. It must consider these as a basic necessity and provide funds accordingly. The total ultimate expenditure required is small, but it must be vastly increased over the present almost invisible amount. The abandoned cattle stable areas, the playgrounds and parks called for in our new neighbourhood developments, the greenbelts—these will all be of much less cost than they could and should be. Nothing fancy is contemplated. The expenditure involved is a minimum but it must be faced upto. These are basic ingredients of city life and well-being, like housing, sewage system, schools, etc.

SECTION XI—STAFF AND SURVEYS :

In paragraph 82 add sub-paragraph (a) :—

(a) In para 82 of original Report listing minimum recommended staff and their duties, one important division of the work was inadvertently omitted. The indicated technical sections were—Master Plan Division and Division for Planning and Design for Localities and Neighbourhoods. A third division in charge of Zoning formulation, interpretation and enforcement should have been included. This is a major job, and requires at least one high level architect or engineer, and two well-trained technical assistants *plus* subsidiary staff.

SECTION XIV—SCHOOLS AND OTHER EDUCATIONAL BUILDINGS

(New : not included in Original "Outline Master Plan").

SCHOOLS :

10. As indicated in our discussion of Neighbourhoods and Districts in Sections IV and VI, one of the basis for minimum size of neighbourhood, is for it to have such a population that it can justify at least one primary school without children having to walk too far or cross heavily travelled roads on the way. And likewise a District or locality of neighbourhoods should have at least one secondary school within it (or one for each sex if it is not co-educational). Primary schools are to be co-educational, as per Corporation's decision.

(a) Facts and standards as to the optimum number of pupils or range of numbers for each type of school and as to the area that should be allowed for each type of school and its playground, are not yet authoritatively available here. However, some assumptions must be made which should be considerably on the high side as compared with present schools, most of which have little or no play area. Experience in the U.S.A. and U.K. where they originally allowed for no playground, and then playgrounds that were too small, is that ample area and elbow room must be allowed to avoid the necessity of buying costly or built-up land later. This subject must be studied and developed in co-operation with educators, bearing in mind that the playground of the primary school, and the football field of the secondary school will help to serve the neighbourhood's and district's needs for these same facilities. In many cases too, it will be advantageous to use the large hall in the school, its library and some of its other facilities, for adult, social and community purposes as well.

(b) For purposes of arriving at the number of pupils for each school level, we have, on the basis of 1941 census, assumed that 10 per cent., of the population of any area would be in primary school (6 to 10) and about 8 per cent., in secondary school (age 11 to 16).

OTHER EDUCATIONAL BUILDINGS :

11. There is nothing to be added here to the discussion in paragraph 29 of Section III of the Original Report.

SECTION XV—CIVIC CENTRE.

12. The importance of a Civic Centre for Bombay has been discussed in this report under the section entitled 'Glancing Back at the Plan ; AND FORWARD. Due to the difficulty of finding a suitable and worthy site which can be realistically considered to be available or potentially, we are not yet in a position to go into further details on this.

TABLE No. I.

Allocation of Areas for various purposes in the Greater Bombay Area (very approximate).
References are to Map entitled 'Rough Land Allocation and Road System' No. G.B. 23, dated 18-11-48.

Index No.	Location.	Area in sq. miles.	Density Thousands per sq. mile.	Total Population (Approximate).
<i>Residential* (New).</i>				
R1a	North of Utan	2.25	27,000	61,000
R1b†	South of Utan	4.23	31,000	1,31,000
R1c**	Near Raipada south of Bhayandar-Utan Road	0.75	31,000	23,000
R1d**	South of Bhayandar to the west of B. B. & C. I. Railway	1.95	31,000	60,000
R2a‡	East of B. B. & C. I. Railway between Dahisar and Mira Road	1.80	29,000	52,000
R2b†	North east of Borivli	1.75	29,000	51,000
R2c	Near Borivli	0.50	29,000	15,000
R2d**	West of B. B. & C. I. Railway and north of Borivli-Gorai Road	1.54	29,000	45,000
R3†	West of Kandivli and north of Malad-Marve Road	2.22	31,000	69,000
R4‡	East of Malad and east of western expressway	3.05	31,000	95,000
R4a**	South of Malad between the B. B. & C. I. Railway and the western expressway	0.50	27,000	14,000
R5‡	North west of Thana	3.28	32,000	1,05,000
R6	West of B. B. & C. I. Railway between Oshivre and Goregaon	0.80	26,000	21,000
R7‡	Mulund	1.07	31,000	33,000
R8	Near Kopri Colony	1.13	32,000	36,000
R9‡	Juhu	1.65	27,000	45,000
R10‡	Majas, Mogra, etc., to north of Andheri-Marol Road	2.44	27,000	66,000
R10a‡	South of Powai Road	1.92	29,000	57,000
R10b	Near Mogra west of western expressway	0.36	27,000	10,000
R10c**	Between Ghatkopar and Vikhroli west of Bombay-Agra Road	0.36	27,000	10,000
R11†	North of Powai Road and east of Powai Lake	1.93	31,000	60,000
R12	Bandra-Khar, Part of Town Planning Schemes	0.32	26,000	8,000
R13‡	West Trombay Salt Pan area	0.78	32,000	25,000
R13a	West of Mahul-Ghatkopar Road	2.32	32,000	75,000
R13b	Anik Mahul	1.40	32,000	45,000
R13c†	North and south of Sion Trombay Road between Borla and Trombay.	2.04	32,000	65,000
R13d†	East of eastern expressway between Ghatkopar and Borla	1.13	27,000	31,000
Approximate Total ...		43.75	29,000 (Average).	13,08,000
<i>Industrial.</i>				
I ₁	On the east of B. B. & C. I. Railway between Kandivli and Borivli	1.70		
I ₂ †	On the east of Bombay-Agra Road between Ghatkopar and Mulund	3.31		
I ₃	On the west of C. I. P. between Kurla and Ghatkopar	0.65		
I ₄ **	On the south of Kurla-Mankhurd Railway	0.22		
I ₅ **	Near Saki Naka and on the north of Andheri-Marol Road	0.50		
I ₆ **	Area between Jogeshwari and Goregaon and to the east of B. B. & C. I. Railway.	0.55		
Total ...		6.93	sq. miles.	

* Including local streets, local parks and playgrounds, schools, shopping.

** Denotes area newly added. † Denotes diminished area. ‡ Denotes augmented area.

TABLE No. I—(Contd.)

Index No.	Location.	Area in sq. miles.
<i>Parks.</i>		
P1	Kanheri National Park	8.78
P1 α	Kanheri National Park (suggested addition to above)	4.82
P2	Near Malad Creek	3.52
P3 \ddagger	Near Mulund	0.94
P4 \ddagger	On the west of Bombay-Agra Road between Ghatkopar and Vikhroli	1.29
P5**	North of Chembur	0.60
Total square miles ...		20.05
<i>Aerodromes.</i>		
A1	Near Manori	2.72
A2 \ddagger	Santacruz	3.26
Total square miles ...		5.98
<i>Educational Centres.</i>		
E1	West of Ghodbunder Road and north of Vesava Road	1.52
E2 \ddagger	Near Kurla	1.25
E3**	Near Pawai Lake, north of Marol	0.39
Total square miles ...		3.16
<i>Hospitals.</i>		
H1	Near Vikhroli	0.25
H2	Near Anik	0.23
Total square miles ...		0.48
<i>Sanatorium.</i>		
S	At Vesava	0.40
<i>Possible Dock Area.</i>		
D	Wadala to Mahul	2.50
<i>Open Area for Race Course and Stadium.</i>		
O \ddagger	On either side of the Mahul Ghatkopar Road	1.49
<i>Holiday Resort.</i>		
h	Near Marve	9.90
<i>Leper Home.</i>		
L	On Panju Island in Bassein Creek	1.08
<i>Sewage Purification Works.</i>		
S.P.	Bewteen Bandra and Kurla	0.75
<i>Government Dairy Farm Colony.</i>		
F	'Are' near Goregaon	4.20
<i>Tanneries and Slaughter House.</i>		
T	On Thana Belapur Road near Itawa Village	0.80

** Denotes area newly added. † Denotes diminished area. ‡ Denotes augmented area.

TABLE No. II.

Summary of Satellite Towns and Populations.

	Population.
1. Near Virar at Shirgaon	... 60,000
2. Ambernath	... 3,00,000
3. Near Nerul to the East of Thana Creek	... 60,000
4. South of Bhiwandi	... 75,000
5. Near Badlapur	... 75,000
6. Near Karjat	... 75,000
7. North of Panvel	... 55,000
Total	... <u>7,00,000</u>

**TYPOGRAPHICAL ERRORS AND MINOR CORRECTIONS IN THE TEXT
OF THE ORIGINAL MASTER PLAN IN OUTLINE.**

Page 6 para 6(i) first line, delete the word "in" before the word 'favour.'

Footnote on page 16 ; the fourth word now reading "motel" and the eighth word now reading "tunno" should read 'motor' and "tunnel" respectively.

Section II :—

Paragraph 21(c)(4) ; Delete the words 'In the approximate 1.6 square miles' and substitute the word "area."

Paragraph 22(c) ; Delete all but the first sentence and substitute "location of these fields is being determined in consultation with the Aviation authorities."

Section VIII :—

Paragraph 57(a), 2nd and 3rd lines ; Delete the word "besides", and substitute "except for."

Paragraph 57(b), next to last line, reads now ; "Also by eliminating non-conforming uses of certain lapses_____ " change the word 'of' to read "after."

Paragraph 58(b), next to last line reads "A major portion_____ —". substitute "a major portion or all_____."

Section IX :—

Paragraph 65(a)—2nd line reads "It is expected that when_____ " change "when" to read "then."

Section XIII :—

Paragraph 95 ; Omit the first sentence.

Page 70, third item, delete the letter 's' in houses.