
BANDRA KURLA COMPLEX

PLANNING PROPOSALS

BOMBAY METROPOLITAN REGION DEVELOPMENT AUTHORITY



BANDRA KURLA COMPLEX

PLANNING PROPOSALS

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**BOMBAY METROPOLITAN REGION
DEVELOPMENT AUTHORITY**
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BANDRA (EAST),
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RUPEES TWENTY FIVE

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I. History

Decadal growth of population in the island of Bombay, beginning with the first year of the century, indicates the pace of activities in the island. In the same intervals, the growth of population in the suburbs is also a matter of relevant interest.

YEAR	POPULATION			
	ISLAND		SUBURBS	
	Lakhs	% increase	Lakhs	% increase
1901	7.8	—	1.5	—
1911	9.8	26	1.7	12
1921	11.8	20	2.1	21
1931	11.6	-1	2.4	15
1941	14.9	28	3.1	32
1951	23.3	56	6.7	113
1961	27.7	19	13.8	108
1971	30.7	11	29.0	110

2. The fast growth rate since 1941 shows the impact of post-war industrialisation and influx of refugees consequent to the partition of the country besides other activities, the growth of which had been attracted in Bombay.

3.1 Realising the high rate of growth in the uni-nucleated island, various study groups and committees had suggested several measures in dealing with the situation. The Modak-Meyer Report (1948) had first hinted at a suggestion to stop further activities in the island and open up areas immediately to the north of the island, where the limits of Bombay Municipal Corporation then ended. This report had specifically made a reference to the lands in Bandra-Kurla Complex.

3.2 The Barve Study Group, appointed by the State Government, had also made suggestions for putting the lands in Bandra-Kurla Complex to uses which would help proper development of Bombay. The Study Group had observed : "One of the important measures which would help in decongesting the island of Bombay and relieve, to some extent, the flow of traffic towards the south would be to establish another new centre of activity in the central part of Greater Bombay, say in the Bandra-Kurla area, where some of the important Government offices, banks, commercial and industrial houses, possibly also new educational institutions, insurance offices and market places should be located in order that, at any rate, those people who may

find employment in this centre or may have business calls to make there, may not have to travel long distances from north to south, as at present, in the mornings and in the reverse direction in the evenings. Development of such an alternative centre, somewhat on the lines of what Connaught Circus and its environs are in New Delhi, as an addition to the original commercial and business centre in old Delhi, is a clear necessity for the future planning of Greater Bombay. The Bandra-Kurla region, bounded on the west by the Western Railway line, on the north by the Santa Cruz Air Port, on the east by the Bombay-Agra road and on the south by the Mahim creek together with some of the open areas immediately south of Dharavi would probably furnish the best location for such an alternative centre of business. This commercial and business centre would be conveniently located for the traffic coming from the North, South and the East. This would also ease the pressure on the lines of communications which are, presently, subjected to great stress and strain."

(Extract from the Report of the Study Group on Greater Bombay — pages 38-39).

3.3 The Bombay Development Plan, 1964, also suggested the development of the area in Bandra-Kurla for a commercial complex.

3.4 The Bombay Metropolitan Region Plan — 1970-1991, accepted by the State Government in 1973, also made specific suggestions for the development of this area, as given below :

"A certain amount of internal restructuring within the Greater Bombay area itself will also be necessary to bring about a re-distribution of population as between the city and the suburbs. The development of alternative commercial complex in the Bandra-Kurla area of the suburbs is very important in this respect".

(Para-23 Page xxviii of the Regional Plan for Bombay Metropolitan Region 1970-91)

"Internal restructuring within the metropolis and decentralisation of new activities to suburban area, on neighbourhood principles, can avoid commutation. The most essential ingredients for such internal restructuring would be the immediate creation of an alternative commercial centre in the Bandra-Kurla area. This could succeed in arresting further growth of tertiary sector employment in the south of Bombay for some years to come and may delay expenditure for the underground railway for some years if the present level of congestion can be tolerated.

Internal restructuring, without any efforts for decentralisation and dispersal away from Salsette would, however, end up in a closed situation after some more years and would not be a lasting solution. The area potential of the Bandra-Kurla area as a alternative centre is after all limited. Besides, this would continue to concentrate all activities in the strategically vulnerable island of Salsette. Dispersal of work centres within the limits of Bombay alone would not therefore be of much help in arresting the growing congestion in Bombay". (Para 5.2.17 of the Regional Plan for Bombay Metropolitan Region 1970-91)

"Certain major policy decisions at Government level regarding future development in Bombay particularly in the offices sector are also immediately necessary. These would be as follows :

(1)

(2) To give a priority to the Bandra-Kurla reclamation and to establish an alternative commercial complex in this area to give immediate relief. To locate or relocate such offices which must essentially exist in Bombay, either in this alternative centre or in the area to the north of Belasis Road."

(Para. 5.2.41 of the Regional Plan for Bombay Metropolitan Region 1970-91).

4. The Bombay Metropolitan Regional Plan was approved by the State Government under notification U.D. & P.H.D. No. RPB-1173-RPC, dated the 2nd June, 1973, and was sanctioned to come into with effect from the 16th August, 1973. On the heels of the first notification, the State Government identified nearly 210 hectares of land in the Complex, in the village of Kolekalyan, and appointed City and Industrial Development Corporation as a special Planning Authority under Section 40 of Maharashtra Regional & Town Planning Act, 1966. Development of other growth centres, such as in New Bombay, was also initiated.

5.1 In the 1940s, when there was not much demand on lands in this area, nearly 800 hectares of open land was available. In the subsequent period, the activities of Maharashtra Housing Board, University Campus and the Government colony (at Bandra) took place. Along the Bombay-Agra Road also some sporadic development took place. Bulk of the land belonged to the State Government and the Maharashtra Housing

Board. The Municipal Slaughter House near the Bandra Railway Station was shifted to Deonar recently. The Bombay Municipal Corporation land vacated by this shift also came up for development. The Maharashtra Housing Board land, by the side of this ex-slaughter house land, was vacated by the slums. This reclaimed Maharashtra Housing Board land at Mahim (west) was progressively developed. City and Industrial Development Corporation also undertook the development of nearly 20 hectares of land out of its notified area (near Kurla) by reclamation.

5.2 On the south, the largest slum at Dharavi went on worsening. This contained a large number of tanneries and leather industrial units, which discharged tannery waste into the creek. The State Government has already allotted an area of 35 Hectares for the proposed Bird Sanctuary, immediately to the east of the Western Railway tracks.

5.3 In the area, organisations such as Maharashtra Housing Board, Bombay Municipal Corporation, Bombay University and City and Industrial Development Corporation, besides the State Government, have been operating. City and Industrial Development Corporation has already reclaimed nearly 20 hectares of land near Kurla, which is being developed by provision of infrastructural services. These organisations have been working in fragments of lands belonging to them and their activities of development were undertaken without considering the overall effect on the environment in and around the area of the complex. Large portions of Government lands were left out of purview and allotments of small parts of these lands were being made without taking into account any overall view of such development.

6. Thus with the many agencies operating, this area has been in a neglected condition and was being developed in a uncontrolled or haphazard manner and a need was felt to plan and develop it in a proper and orderly manner. Accordingly the State Government under its notification No. BKR-1177/262-UD-5 dated 7.3.77 appointed the Bombay Metropolitan Region Development Authority as a Special Planning Authority for an area of approximately 1262 hectares in the Bandra-Kurla Complex as defined by the schedule attached thereto. The notified area includes large open lands available for development as well as some of the surrounding areas which are partially or fully developed.

II. Hydraulic & Pollution Problems of Mahim Creek

Mithi River, the lower reach of which is known as Mahim Creek, flows from some points in the upper catchment of Vihar and Powai lakes. The last 6 kms. of its length passes through Bandra-Kurla Complex, which the Bombay Metropolitan Region Development Authority is to develop. The creek discharges finally into the open sea, immediately down-stream of Mahim Causeway.

2. The catchment area of this creek, near the bridge on the Bandra-Dharavi Link Road, is 20,800 acres i.e., 36.5 square miles. Maximum discharge from this catchment would give a maximum run off of nearly 40000 cusecs, at the bridge on Bandra-Dharavi link road.

3.1 In the 1930s, the area of marshy land in the complex, measured upto the Mahim Causeway, worked out at 710 hectares. The area of a part of the marshy land out of above, which then drained to the bridge on Bandra-Dharavi link road, was approximately 586 hectares. During the last 2 to 3 decades, considerable reclamation of this land has taken place, mainly in the land on both sides of the Western Express Highway and around the Maharashtra Housing Board colony. Recently, City and Industrial Development Corporation has reclaimed, by conventional methods nearly 20 hectares of land near the Kurla Bus Depot, while some reclamation near the Maharashtra Housing Board office has taken place for the 'Drive-in-Theatre'. Some area is filled up with refuse near Dharavi on the South bank of the creek by the Bombay Municipal Corporation. Against 710 hectares of marshy land, which drained to Mahim Causeway in 1930s, marshy land which drains to Mahim causeway today is around 475 hectares. Marshy land draining at the bridge on Bandra-Dharavi link road is around 410 hectares.

3.2 Curtailment of the area of the basin on account of the reclamations of land

undertaken in the past by the various organisations has resulted in a substantial reduction of the basin capacity. The exact extent of the existing holding capacity is not known as the detailed surveys for the area are yet to be carried out. However, taking into consideration the requirements to safe guard the surrounding areas from flooding, a holding capacity of nearly 6 M. cu.m. is proposed to be provided in the basin based on the Model Experiment conducted by the Central Water and Power Research Station.

4.1 It has been observed that nearly 255 MLD of sewage flows into Mahim creek, both partially treated from the nearby sewage treatment plants which have limited capacities as well as raw sewage which cannot be tackled in the treatment plants and is thrown out into the Mahim creek directly. In addition tannery waste is also thrown into the Mahim Creek by the tanneries of Dharavi area.

4.2 The total problem of Waste Water Collection, Treatment and Disposal of Greater Bombay area was given by Bombay Municipal Corporation to their Consultants, M/s. Metcaff and Eddy. Their report has been received by the Municipal Corporation of Greater Bombay and the final proposal, it is learnt, is under approval. This proposal provides collection of waste water from Saki Naka and Kurla by pumping and from the areas of Khar, Kherwadi, Dharavi and Bandra by Gravity, through a system of Gravity sewers and tunnels. The combined waste water collection would be pumped to partial waste water treatment plant at Bandra which is on the western side of the reclaimed area in 'A' Block. The treatment plant will be on an area of 12 Hectares. The partially treated sewage is then pumped and disposed off into deep sea off the west coast, at Bandra, by a submarine outfall sewer. The Pumping Stations at Khar, Kherwadi and Dharavi (Sion) are proposed to be deleted and a gravity sewer tunnel is introduced, for which alignment and depth would have to be closely co-ordinated. The pollution of waste water discharged into Mahim Creek as described in para 4.1 above would disappear only on completion of all these works and the expected time of completion would be by 1983-84 or beyond.

5. The State Government has decided to shift the existing units engaged in tanning and curing operations in and around Dharavi and further no new leather goods manufacturing units are to be allowed in Dharavi. The details of alternative sites are being separately worked out by the Industries Department. The Leather Industries

Development Corporation of Maharashtra is also considering the project to rehabilitate the present leather goods manufacturing units of Dharavi at an alternative site, in an organised manner. For the purpose of the Bandra-Kurla Complex, it is assumed that in another 3 to 5 years time there would be no discharge of pollutant from the tanneries into the Mahim creek. As regards the pollution due to effluents of some of the industries surrounding the channel, effective control will have to be exercised by Bombay Municipal Corporation and Maharashtra Prevention of Water Pollution Board for pre-treating such effluents before discharging in the river.

6. Before the Bombay Metropolitan Region Development Authority came into the picture, the Bombay Municipal Corporation and City and Industrial Development Corporation had posed the hydraulic problem to the Central Water and Power Research Station at Khadakwasla. Due to high level of pollution and sensitive location of the area, which is subjected to the effects of tidal as well as rain storm waters and which is surrounded by important transportation arteries, namely the Western Express Highway and Western Railway tracks to the west and old Bombay-Agra Road and the Central Railway tracks to the east, it was considered desirable to get the hydraulic model studies of the basin conducted by the Central Water and Power Research Station to ascertain the effects of massive reclamation on the surroundings and to evolve measures to control the flooding and improve the environments.

7. The Central Water and Power Research Station have conducted the hydraulic model studies of the basin in two stages, (a) effects of reclamation in the area earlier notified to be developed by City and Industrial Development Corporation and (b) effects of reclamation in the Direct Action Area, incorporating the City and Industrial Development Corporation's area, for which the Bombay Metropolitan Region Development Authority has been appointed as the Special Planning Authority. The draft final report prepared by the Central Water and Power Research Station related with the reclamation in the direct action area, which incorporates the earlier notified area of City and Industrial Development Corporation also, has been received. The main points, which emerge as a result of these studies, are enumerated below :—

- (i) The studies carried out clearly indicate that channelisation of the creek is

essential before going in for any further reclamation. Even without any further reclamation, the provision of channelisation is necessary to avoid flooding of Bombay-Agra Road for the case of a rainfall of intensity of 60 mm/hr (for 4 hrs.) coinciding with the high tide level and that too with the provision of gates at Mahim Causeway.

- (ii) The extent of reclamation possible is a function of the channelisation and flood absorption capacity of the basin.
- (iii) Due to the indiscriminate reclamations in the basin of the creek which had been continuing over the last several years and the consequent silting of the basin, and the presence of the rocky bar near the Mahim Causeway, the flow of the creek has progressively become sluggish as well as tidal influx has decreased. With the uncontrolled discharge of various pollutants in the creek and the reduction in the tidal influx, the salinity level in the basin has decreased considerably which has created acute problem of mosquito nuisance in the area. With the proposed channelisation of the creek, as recommended by the Central Water and Power Research Station, including the lowering of the sill levels of the existing hydraulic structures and the removal of the rocky bar, it is expected that the tidal ingress will improve very considerably and the salinity of the basin will increase, leading to the abatement of the prevailing mosquito nuisance in the area. It may be mentioned that with the proposed channelisation measures, the tidal influx will increase by about 96% compared to the existing conditions.
- (iv) The recommended channelisation measures consist of widening the Mahim river to 175 M at the bed (200 M at top) from C.S.T. road bridge to Dharavi Road Bridge and 60 M width between Dharavi Bridge and Mahim Causeway and further into Mahim Bay, with suitable smooth transitions in between (total length about 6 Km). The Vakola Nalla needs to be widened to 40 M at bed (60 M at top). The deepening of Mahim river would be from - 0.5 M (GTS) at CST road bridge to - 1.9 M (GTS) at Causeway (uniform bed slope of 1 in 4285) and further into Mahim Bay to meet the - 1.9 M (GTS) contour. The deepening of the Vakola Nalla would be for a length of 3 kms with a

uniform bed slope of 1 in 1250.

- (v) The side slopes of the channel would have to be suitably protected from the high velocity flows that occur in the monsoon periods.
- (vi) The channelisation proposal involve exposures of foundations of some of the piers of the bridges and altering their hydraulic characteristic. They need to be appropriately protected.
- (vii) Several alternatives for different conditions and criteria were tried on the model. Finally, with criterion of flood level not to exceed RL 2.50 M (GTS) (which would keep Agra Road free from submergence) for a rainfall cycle of 40 mm per hour for 4 hours, three alternatives for reclamation were found possible. Having regard to the different locations of various pockets of lands, the need to minimise the area of excavation of the already filled up land and to obtain larger compact blocks, the final alternative has been selected. This alternative also enables the maximum total area of reclamation possible among the three alternatives. According to this optimum solution, the reclamation possible in various blocks is as indicated in Chapter IV. It involves cutting of about 34 hectares of Block 'H' to RL-1.50 M (GTS) and provision of gates at Mahim Causeway to control the inflow of tide whenever the conditions warrant.
- (viii) In case it is not possible to close the gate at Mahim Causeway during the flood tide, the maximum level reached at Kurla Court would be + 2.90 M (GTS) i.e. about 0.6 M of submergence and the period of submergence would be about $3\frac{1}{4}$ hrs. (This corresponds to a rainfall having a frequency of occurrence of once in 2 years). For the rainfall having a frequency of once in 10 years (60 mm/hr for 4 hrs.), the submergence of Bombay Agra Road would be about 0.9 M and the period of submergence would be $4\frac{1}{2}$ hrs. (The provision of a gate at Mahim Causeway reduces the submergence to 0.7 M and the period of submergence would be about 4 hrs.) The submergence due to the once in 10 years frequency and rarer rainfalls can be minimised by provision of a bund along the Agra Road and Vakola Nalla (MHB Housing Colony) and carrying out some modifications to the connecting C. D. Works etc.
- (ix) Since even with the full channelisation and no further reclamation, the flood level would be R.L. 2.55 M (GTS) at

Agra Road for 60 mm per hour rainfall of 4 hours duration, it would not be possible to carry out any further reclamation without the corresponding progress on the channelisation. The channelisation is **sine-quo-non** before any reclamation is actually implemented. A careful phasing out of the reclamation as well as channelisation measures is therefore to be carried out while executing the project, under the advise of the Central Water and Power Research Station, to ensure that at no stage the flood level gets adversely affected. The general principles of phasing would be to start the work of lowering of sills of the bridges and to provide gates at Mahim Causeway. The channelisation should proceed upstream and reclamation should proceed from the high ground level towards downstream. The Block 'G' over which the levels vary would be divided into various zones for reclamation purposes.

- (x) Drainage problems of localised areas are to be tackled separately.
- (xi) For the proposed new bridges, the openings have to be adequate so as not to adversely affect the proposed measures.
- (xii) As a second phase study, the diffusion processes between the salt and fresh waters as well as the dispersion of the pollutants in the hydraulic system, is to be studied at Central Water and Power Research Station.

8. Consequent to the receipt of final recommendations from CWPRS, Khadakwala, a Co-ordination Committee, comprising of senior representatives from the various concerned organisations (Western Railway, Central Railway, Bombay Housing & Area Development Board, Bombay Municipal Corporation, Public Works Department, Bombay Metropolitan Region Development Authority, Central Water and Power Research Station) has been constituted to take further steps regarding the engineering feasibility and preparing the designs of the concerned works based on the recommendations of the Central Water and Power Research Station. Separately, the Phase II studies on a salinity hydraulic model have also been entrusted to Central Water and Power Research Station. The exact phasing of the project will be decided in consultation with Central Water and Power Research Station after carrying out detailed engineering surveys and preparing designs and by carrying out model experiments, if necessary.

III. Basic Planning Strategy

The basic planning strategy for the development of the Bandra-Kurla complex hinges on five major issues :

- (i) Exploit the opportunity of restructuring the city's pattern of development by attracting as large a number of jobs from South Bombay as possible. This would mean making available space for offices — both public sector and private sector — and for other commercial uses like wholesale trade and godowning which have a necessary nexus with Bombay, giving priority to such activities which can be shifted from South Bombay, to help decongestion. This would result in decongesting South Bombay and also relieving to an extent the pressure on the transportation systems which are overloaded at present.
- (ii) Make up the deficiencies in terms of social cultural and also shopping facilities in the suburbs by providing space for these.

- (iii) Improving the environmental conditions of the area by channelising the creeks and providing sufficient wooded areas for parks and gardens, besides ensuring orderly development in the commercial and residential areas in the complex itself.
- (iv) In order to facilitate redevelopment of the slums in Dharavi area on the southern side, provide for a parcel of residential land for serving as transit camp area, to be finally used for residential purposes. Any success in this itself is bound to improve the environment to a very large extent.
- (v) Develop the area on the basis of a self-generating scheme in phases that would reduce financial burden on the Authority and also ensure that some results towards the objectives of the project are achieved in each phase of development.

2. This strategy would primarily mean the evolution of a well conceived land use and transportation plan for the notified area, linking both the north-south corridors by a network of activities and transport. The Western most part along the creek would be ideal for residential use, whereas the areas in between and near the mass transport focal points in the railway stations, viz., Bandra, Kurla and Sion, being well served by transportation, would be ideal for commercial exploitation, i.e., offices, wholesale traders and some godowning. It would also mean the provision of a continuously linked series of shopping, recreational and such other activities, as also the pedestrian and vehicular movements between various points in the notified area. A suitable transportation centre catering to the bus system (and in future the 7th corridor MRT stations) would be the essential ingredients of the plan.

3. The sub-division into various sub-zones, plots and building sites would have to be such that the entire development would be a "Harmonious whole", giving a new image to Bombay and exploiting the full aesthetic, architectural and environmental merits of the situation. Segregation of vehicular and pedestrian traffic, would be attempted by a proper grouping and arrangement of the buildings and activities in the development areas.

4. Channelisation of the creek, shifting of tanneries, ensuring a proper flow in the channels and reducing the mosquito nuisance

and flooding problem, development of open spaces, complexes of buildings grouped on some concepts satisfying the functional needs, redevelopment of Dharavi slum and some control over buildings in largely developed portions within the notified area as also a suitable transportation system would all contribute to the improvement of the environmental conditions, and would indicate the determination of the city for moving towards a better future. This planning strategy is, therefore, contemplated to be translated into a suitable transportation and land use plan, which is explained in the next part. The strategy also indicates the improvements in the city's development pattern and hints at initiating the process of restructuring the same. Suitable policies would have to be pursued to control further influx of offices and other jobs in South Bombay. This is a matter which would have to be pursued not by Bombay Metropolitan Region Development Authority alone, but also by other concerned agencies, particularly the Government and the Bombay Municipal Corporation.

5. The Bombay Metropolitan Regional plan has suggested a number of areas, such as Kalyan Complex and New Bombay, in the region for phased development. The development of Bandra-Kurla Complex which is aimed at internal restructuring of Greater Bombay, is one of the important recommendations of the Regional Plan. However, it has to be recognised that the development of Bandra-Kurla Complex is not to be undertaken in isolation. Simultaneous action on development of New Bombay and Kalyan Complex are initiated separately. The Regional Plan had recommended to give a priority to the Bandra-Kurla reclamation to establish an alternative commercial complex in this area to give immediate relief for locating or relocating such offices and activities which must essentially exist in Bombay. The planning strategy, therefore, has to take this into account.

6. Since the development of the complex has to be reviewed, planned and implemented by a single authority, which is charged with the task of overall development of the Metropolitan Region, Bombay Metropolitan Region Development Authority's role is most crucial. It is only Bombay Metropolitan Region Development Authority which can not only keep the planning strategies constantly in view, but could also ensure that the coordinated development of the Region takes place without creating conflicts between the interests of the over-developed island and other urban centres.

IV. The Landuse and Transportation Plan

Land Identification

The total land covered by the notification is around 1262 hectares. This broadly constitutes Direct Action Areas, which are largely open and developable, and others, where sizeable development has taken place already. The latter portions have been included in the notified area, so that the coordinated and integrated development could be achieved in these areas with proper control, if possible.

1. **Direct Action Area** : This admeasures only 370 hectares out of the total of 1262 hectares and comprises the following :—

Block		Gross	Net reclaimable
A	— Mahim Reclamation of MHB	36 Ha.	36 Ha.
B & C	— Belonging to BMC & MHB together	9 Ha.	9 Ha.
D	— Plot G9 of MHB	10 Ha.	10 Ha.
D-1	— Railway land near plot G9	16 Ha.	16 Ha.
E	— Near Drive-in-Theatre (excluding DIT's land)	25 Ha.	16 Ha.
F	— S. No. 341 by Vakola Nalla	(*24 + 3 Ha.)	12 Ha.
G	— CIDCO's notified area	115 Ha.]	130 Ha.
G-1	— CIDCO's notified area	20 Ha.]	
H	— BMC and Govt. land near Dharavi.	(*10 + 78 Ha.)	54 Ha.
I	— Reserved for Bird Sanctuary.	*24 Ha.	—
		say . . . 370 Ha	283 Ha (Approx. (* unreclaimed areas))

Thus, the total land that has been taken for direct action of development is nearly 370 Ha. This does not include nearly 100 Ha. under proposed Mahim Creek channel and 15 Ha. under proposed Vakola Nalla. Small portions of some of these lands have already been developed and committed. This fact has been taken into account while planning for the area.

2. **Influence area** : This admeasures 777 Ha. and comprises the following :

- The University;
- Government colony;
- Maharashtra Housing Board colony;
- Proposed railway car shed area;
- Existing industrial estate along CST road;
- Partly developed area to the east of Western Railway near Khar;
- Belt to the north of CST road and
- Others.

Certain measures to control development in these areas are required to be taken so as to achieve an integrated final development.

3. For integrated development of the area, the following points have to be taken into account :

- Existing high rise building development along the western part of Hill Road has propelled a very large vehicular traffic. The existing portion of Hill Road upto its junction with S. V. Road is too narrow to carry the increased traffic and this has created bottlenecks. The traffic could be easily diverted along the road in Block 'A' and by widening one of the short link roads near Ann's Church.
- The Northern road shown in the old Maharashtra Housing Board's layout for A-Block is too narrow with a land

- width of 60 ft. In view of 3(i) above and considering the development activities in Block 'A' itself, the land width proposed for widening is 90 feet.
- (iii) There is an existing market in Bandra bazaar at the northern periphery of land in Block 'A'. The plot containing the market could be, with advantage, extended, to serve a very large area in Bandra-West, through the open space upto the layout road and the provision is made in the layout of 'A' Block for expansion of market facilities in the adjoining area.
 - (iv) For a good entry into the market from the north, one of the existing roads from the Hill Road side would have to be taken up for widening, as and when possible.
 - (v) The junction of the 90 ft. road (from Block 'A') with S. V. Road (at the start of the Western Express Highway) needs to be remodelled suitably, taking into account the volumes of interchanging traffic.
 - (vi) Provision of social amenities should come up simultaneously with the development and disposal of lands.
 - (vii) No vehicular access should be provided from S. V. Road to any developments in the land in Blocks 'B' & 'C'. Simultaneously with the development of the area, part of Tulsi Pipe Road Extension should be constructed to provide better access to the area.
 - (viii) The existing road over-bridge at Sion station is too narrow. It needs to be widened suitably in time to synchronize with the development of the complex.
 - (ix) The narrow strip of Govt. land along Old Agra Road between Sion and Kurla should be reserved for uses such as bus lay-byes, wide walkways, parking places, Gardens, public utilities etc.
 - (x) In order to have a good and effective link between the Eastern Express Highway and the area under development, the construction of an over-bridge and the link road near Kurla should be expedited alongwith the approaches on both sides.
 - (xi) Large land to the north of the proposed 7th corridor is earmarked for a car shed. Until this materialises, the area should be reclaimed with an understanding with the railway (MTP) and used for temporary purposes such as circus, open storage place, transit camps, etc. It is a valuable land to be used integrated with adjoining area, in case proposal of carshed does not materialise ultimately.

- (xii) The berms-dykes of the proposed channel should be covered by trees and greenery to serve as wooded areas.
- (xiii) The existing sewer outlets should be immediately tackled by Bombay Municipal Corporation so that the nuisance of the untreated sewage flowing into the creek and emitting Hydrogen Sulphide would be stopped at once. In fact the Bombay Municipal Corporation already has proposed taking this sewage to the new treatment plant to be set up in Bandra (west) area.

4. The flow Streams : The Mahim Creek Channel and Vakola Nalla flow through the area. The hydraulic problem of determining the alignment and the section that should be adopted for both the streams had been referred to the Central Water & Power Research Station at Khadakvasla, both by the City & Industrial Development Corporation and the Bombay Municipal Corporation. While the model studies were being carried out at Khadakvasla, in order to prevent irregular activities on several of the lands in the area in the intervening period an approximate alignment and width for both the channels had been assumed to a safe dimension, after discussion at Khadakvasla, for the purpose of draft planning proposals. The Central Water & Power Research Station have since given their final recommendations on channelisation and the areas under the schemes would be as under (as measured on the plan) :

Mahim Creek	—	100 Ha.
Vakola Nalla	—	15 Ha.

Total : 115 Ha.

It has to be noted that 200 meter width of Mahim Creek Channel will have 15 meter wide land strips on either side of the channel in addition to accommodate dykes. In actual practice, these two strips of 15 meters width are to be developed as wooded areas and added to the useable open space.

5 Social Amenities : A study of the existing social facilities such as schools, markets, post offices, fire brigade stations, etc. in the existing areas, surrounding the area under planning has been made. In the proposed development of the area, provision for the social amenities is to be made to remove the deficiency of these services in the surrounding areas also.

V. Transport Implications

The impact of development of Bandra-Kurla Complex has been considered in the context of the mass transportation needs in the Bandra-Kurla area and the requirement of the road net-work in the area. For assessing the mass transportation needs, the trip generation and trip attraction have been worked out based on the land use envisaged for the Bandra-Kurla area and using the latest regression equations developed by the Traffic Cell of the Town Planning Department while carrying out the mass transportation study for Bombay.

2. About 1.27 lacs jobs and 1.00 lac population planned for Bandra-Kurla area have been assumed in the calculations. The total transport requirements will be met by (a)

(A) mass transportation modes—suburban trains and buses

(B) private cars and taxis for passenger transport and

(C) railway goods facilities and trucks for goods transport

A. Mass Transportation Modes :

3. It is worked out, through quick studies, that about 1.10 lacs mass transportation trips

will be generated in the Bandra-Kurla complex on account of residential component of the Complex and 2.40 lacs mass transportation trips will be attracted to the Bandra-Kurla Complex on account of its commercial component. Out of 1.10 lacs mass transportation trips generated in the Bandra-Kurla Complex little less than 50% trips will be the internal trips performed by the residents of the area having their work-places and other attraction ends within the Complex itself. Rest of the generated trips, which are estimated to be 0.58 lacs, will be having the attraction ends outside the Bandra-Kurla Complex, i.e. to the suburban areas of Greater Bombay, the island of Bombay and the other towns in the Region. Similarly excluding the trips attracted to the Bandra-Kurla Complex made by the residents of the Complex, the rest of the attraction trips i.e. 1.89 lacs, will come from the Bombay island, suburbs and other towns in the Region. Thus total external mass transportation trips, so far as Bandra-Kurla Complex is concerned, would be about 2.47 lacs. These trips will have to be carried by suburban trains and buses. The modal split between the suburban trains and the buses is assumed to be 50 : 50 which is based on the previous traffic and transportation studies carried out for Bombay Metropolitan Area. Thus the mass transportation trips that are estimated to be carried by suburban trains would be about 1.23 lacs per day. Actually if the capacity on the suburban rail increases the modal split could be more in favour of the suburban trains.

(a) Suburban Trains :—

4. The allocation of rail trips (1.23 lacs) between the Western Railway and the Central Railway is assumed to be in the ratio of 60 : 40. On this basis the total daily additional rail trips to be handled by Bandra railway station (without considering any new rail link between Bandra and Kurla) will be 0.74 lacs, and these at Kurla railway station will be 0.49 lacs. The distribution of these trips and their direction would vary depending upon the extent of the number of jobs that are shifted from south Bombay for relocation in Bandra-Kurla Complex. Actually the question of shifting of wholesale cloth market from south Bombay to Bandra-Kurla Complex is under active consideration with the co-operation of the wholesale cloth market dealers. In case all the jobs in Bandra-Kurla Complex happen to constitute the shifted jobs from south Bombay, no additional train capacity in the peak direction i.e. north-south direction will be required in the morning and the south-north direction in the evening since

the commuters are already travelling in these directions to reach their present jobs which are located at present in the south Bombay.

As regards the capacity in the south-north direction in the morning and north-south direction in the evening it may be stated that 24 trains on the Western Railway and 25 trains on the Central Railway and 24 trains on the Western Railway and 28 trains on the Central Railway are respectively available both during morning and evening peak hour. The present load on these trains is of about 24000 passengers per hour only (2% of the total two-way traffic as per the Report of Railways on Optimisation of Suburban Services). Thus no additional rail capacity in south-north direction in the morning and the north-south direction in the evening will also be required. An exercise has also been worked out to assess the effect in case none of the jobs from south Bombay are shifted. In such a case distribution of the trips would be as shown in the following table :

Sr. No.	Description	Total daily addl. trips.	Peak hour additional trips in one direction (10% of total two-way trips).
1	Trips from Kurla to north	9,336	934
2	Trips from Kurla to south	2,310	231
3	Trips from north to Kurla	25,971	2,597
4	Trips from south to Kurla	11,832	1,183
5	Trips from Bandra to north	14,004	1,400
6	Trips from Bandra to south	3,464	346
7	Trips from north to Bandra	38,957	3,896
8	Trips from south to Bandra	17,748	1,775

It would be seen from this table that in case no jobs from south Bombay are shifted to Bandra-Kurla Complex additional capacity of $1\frac{1}{2}$ trains load in north-south direction upto Bandra during morning peak and in south-north direction from Bandra in the evening peak will be required to meet the travel demand of about 4,000 passenger trips upto and/from Bandra during peak hour. Similarly additional capacity of one train during morning and evening peak hour will be required upto and/from Kurla in north-south and south-north directions respectively to meet the peak hour demand of about 2,600 passenger trips. As regards the provision of capacity in the south-north direction in the morning and north-south direction in the evening the same is not needed as the existing available capacity is adequate to take care of the additional trips.

5. As already stated the actual requirement

of augmenting the suburban train capacity at Bandra and Kurla would depend upon the total number of jobs to be shifted from south Bombay to Bandra-Kurla Complex. However, bearing in mind that even in the eventuality of none of the jobs being shifted from south Bombay, the additional capacity required to be created is not significant as would be seen from para 4, it is, considered that handling of suburban traffic for Bandra-Kurla Complex from capacity point of view would not present a big problem for the Railways to cope with. The Railways will, however, have to provide station facilities for handling additional traffic at Bandra, Kurla and Sion railway stations. It will also be necessary to provide adequate dispersal facilities immediately outside the railway stations to cope up with the requirement of the additional traffic. This will have to be done by the Bombay Municipal Corporation by preparing Station Area Improvement Schemes, etc.

(b) Buses :

6. The bus transport will have to cater to 1.23 lacs external passenger trips. About 190 single decker bus trips will be required to carry these trips in addition to bus trips that would be required for carrying the rail commuters from Bandra and Kurla railway stations to the work-places in Bandra-Kurla area and from Bandra-Kurla residential area to Bandra and Kurla railway stations. For carrying the latter trips estimated number of single decker buses needed will be 17. In working out this figure it is assumed that 50% of rail commuters would walk to their destinations.

B. Private cars and taxis :

7. For projecting vehicular trips of cars and taxis no models have been developed recently. However on the basis of previous transportation studies it is estimated that the total person trips (generation and attraction) by cars and taxis would be about 0.9 lacs per day. Taking the average occupancy of cars and taxis at 2, the total number of cars and taxi trips would be 0.45 lacs per day. Road net-work has to be designed taking into consideration the above traffic as well as the projected general traffic of the surrounding areas which would have to use the net-work of roads.

C. Railway Goods Facilities and Trucks :

8. Goods traffic demand of Bandra-Kurla Complex would be met by the Railways and trucks. The Railways have goods yards at the nearest stations of Bandra and Sion. These existing railway goods yards can handle the railway part of the goods traffic of Bandra-Kurla Complex. If it is found that the goods demand to be handled by Railways is more than what could be handled at Bandra and Sion a provision for Railway booking facilities could be made within the Bandra-Kurla Complex itself from where the goods can be lifted by Railways to their nearest convenient goods yard. This aspect will, however, be considered in the detailed layout. As regards the goods traffic by trucks it is estimated that 0.05 lac truck trips can cater to the goods demand by road. This truck traffic has to be taken into consideration while designing the road net-work.

9. Considering the road traffic under para 7 and 8 above and also the projected

requirements of the general traffic of the area, assignments to the important existing and proposed roads have been done by judgement. Following lane capacities have been adopted :—

- | | |
|--|-----------------|
| 1. Expressway | 1000 PCUs/hour. |
| 2. Other important divided carriage ways | 800 PCUs/hour. |
| 3. Other roads undivided | 500 PCUs/hour. |

Major road net-work implications for the projected traffic be as follows :—

- a) Existing Bombay-Agra Road needs widening to 6 lanes (Road to be divided).
 - b) CST and Santacruz-Chembur road i.e. proposed Santacruz-Chembur link road will have to be constructed to be of 4 lanes from Western Express Highway upto Bombay-Agra road and 6 lanes from Bombay-Agra road upto Eastern Express highway. (Public Works Department has already proposed a 6-lane Road Over Bridge over Central Railway lines near Kurla on this link road.)
 - c) Sion-Dharavi road along with the road over bridge on Central Railway will have to be widened to 6 lanes.
 - d) Mahim Causeway will need widening to 8 lanes.
 - e) Existing S. V. Road to the north of Mahim Causeway, at least upto Bandra station road, will be required to be widened to 8 lanes.
10. It is felt that a separate Bandra-Kurla rail link can provide good facility for passengers commuting the Bandra-Kurla Complex in as much as the commuters can be discharged near the places of their work without there being necessity for change over to Bus at existing stations of Bandra and Kurla. Also this new link would reduce the passenger pressure on railway stations and bus facilities at Bandra & Kurla railway stations. It may, however, be necessary particularly at Bandra railway station to provide new platform and other allied facilities in connection with the Bandra-Kurla new rail link. The Bandra-Kurla rail link after construction will take up some of the passenger load which till then will be handled by buses as mentioned in paragraph 6 above.

The Metropolitan Transport Project (Railways) is already investigating the feasibility of Bandra-Kurla rail link to cater to the needs of passenger transport of Bandra-Kurla Complex.

11. The Bombay Municipal Corporation proposes to extend Senapati Bapat Marg to the north across Mahim Creek and the Western Express Highway. This road will have to be suitably aligned near Bandra railway station to afford reasonable space for circulation of railway bound traffic. A good inter face facility for the commuters' trans-shipment from bus to railway and from railway to bus will need to be provided at Bandra and Kurla stations. Bombay Electrical Supply and Transport is already developing bus station and depot under Bombay Urban Transport Project near Bandra Station on western side. Two bus stations, each of about 10,000 sq. m. will be located, one on the eastern side of Bandra station in 'D' Block and the other on the eastern side of Western Express Highway. Location of the latter site will be tied up with the station on new Bandra-Kurla rail link while drawing up the layout. Another bus station of smaller size, say 5000 sq. m. will be located in the 'A' block of Bandra-Kurla Complex. Location of the bus station on the eastern side of Bandra station has to be as far as possible near the eastern outlet of the foot-bridge catering to the commuters on the eastern side. After the proposed railway expansion, this bus station will have to be shifted and will be located in block 'D'.

12. The Western Railway will have to provide for their expansion of suburban passenger facilities. With the expected saturation of inter-city passenger facilities at Bombay Central auxiliary terminal for inter-city passenger trains could be developed at Bandra and the necessary land for this purpose is available with railways in 'D1' Block. The Western Railway will need a suitable approach about 27M wide from the Western Express Highway for its expansion programmes. This approach from the W.E. Highway will have to be at the approved access point on the Highway. Provision for reservation of land required for VIIth corridor and the car-shed is indicated in the layout of Bandra-Kurla Complex.

13. With the development of Bandra-Kurla Complex the traffic pattern of Western Express Highway is expected to undergo some changes. The junction design at Kalanagar therefore will have to be suitably modified. Similarly the junction of S. V. Road and Western Express Highway will need

redesigning to facilitate proper connection to Block 'A'.

14. Adequate parking facilities will be provided in residential and commercial zones. Some area will have to be set apart from truck parking especially in zones planned for commercial use.

15. Provision of adequate pedestrian facility in the form of sub-ways and/or foot-bridges will be considered while planning the details.

16. To avoid through traffic, internal roads in commercial and residential zones will be provided in the form of cul-de-sacs wherever possible while preparing detailed layout. No road will be of width less than 22 ft. At Kalanagar a small east-west connecting road leading to Drive-In-Theatre, appears necessary and will have to be provided.

17. There is a proposal to construct a road-over-bridge on Santacruz-Chembur link road across Central Railway lines to the north of Kurla railway station. This road-over-bridge will have to be given priority as external traffic to Pune and Agra arising out of the Bandra-Kurla Complex development will use this bridge.

18. A major east-west arterial road 45 m. wide has been planned to connect Western Express Highway and Bombay-Agra road, the alignment passing through Maharashtra Housing Board's transit camp. The alignment of the road will be alongside and parallel to the proposed VIIth Corridor of Railways in 'G' Block.

19. If 1.27 lac jobs are shifted from Bombay island to Bandra-Kurla Complex, the total daily attraction of trips by mass transportation modes in the island is expected to be reduced by 1.70 lacs. If all the above jobs are shifted from the south Bombay, the resultant reduction in the traffic would be approximately in proportion of the above jobs to the total jobs in south Bombay. According to 1971 Census figures, the total jobs in south Bombay were about 6.28 lacs. Thus the reduction in traffic due to shifting of 1.27 lacs jobs would work out to between 16 and 20%. This impact would, more or less, proportionately change according to the actual number of jobs that would be relocated from south Bombay.

20. The above is a broad estimate of the transport implication of the development of Bandra-Kurla Complex. When detailed layouts will be taken up, further refinements as found necessary will be effected.

VI. Detailed Proposals

1. Taking into consideration the existing situation, the basic strategy outlined earlier and the planning constraints, an integrated plan has been evolved. The salient features of the plan are :

2. The plan utilises the available linking elements like waterfront and the road or railways which skirt or pass through the area. The waterfronts are mostly utilised for residential purpose. While the road and rail links are used for locating commercial activities, such as intensive office uses, near mass transit stops, the other offices, retail shopping, wholesale business activities, godowns and related services could be located along other major arterial routes and along railway links. Open spaces in the form of flowing links from bus stops on the major roads right upto the waterfront are also a major feature of the plan. Essential amenities for residential uses, such as schools, local shops, temples, clubs, community centres, etc., small gardens and play areas could as far as possible, be located along these amenity corridors linking the bus stops to the waterfront, through the residential areas.

3. Large chunks of unreclaimed open spaces are provided for maintaining the ecological quality, as also to protect the environmental conditions. Particularly the open space along the Southern part of Vakola Nalla (between Govt. colony and University and Maharashtra Housing Board transit camp), open space between the channel and the Dharavi Slum area as also the Bird Sanctuary between the channel, the Western Railway and the Sion-Mahim link Rd. need to be mentioned.

4. The old slaughter house land and some land owned by the Maharashtra Housing Board to the west & east of Bandra Railway Station are proposed to be developed as integrated intensive commercial centres providing space for offices on the upper floors and shopping on the lower floors. Thus these strategically located lands would be best utilised in the entire integrated plan.

5. The lands in the western most part along the Mahim bay are to be used for predominatly residential purpose with adequate amenities like cinema and drama theatre, schools, shopping, cultural centre, etc. for local needs to make good the deficiencies in the adjacent areas.

6. The eastern most part nearer Bandra-Kurla Rail link is mainly to be used for accommodating offices and wholesale commerce and godowns, preferably those shifting from south Bombay. A large portion of the residential component of the Dharavi area nearer the Sion Station to the south of the channel is proposed to cater to the residences of slum dwellers in the Dharavi slums. This area along with the slum renewal scheme for the remaining Dharavi area (between Mahim station on the west and railway lines on the east) will cater to the weaker sections of the society and the lower income groups, who are today living in the worst conditions in that area. The tanneries located in that part need to be shifted to a suitable location elsewhere to make some more room for the local dwellers and to improve the environmental conditions in the area. Extremely complex activities exist in the area. Redevelopment would need an accurate and detailed survey of the existing situations, and this could be done in due course.

7. Proposals for various Blocks :

Proposals for various Blocks are described as below :

7.1 Block 'A' :

- (i) In Block 'A', the provision is made predominantly for residential uses. The existing commitments and land allotments are properly integrated with the new planning proposals.
- (ii) The development of Block 'A' is proposed in two phases. Phase I is already reclaimed and Phase II (11 Ha.) will also be reclaimed hereafter. While drawing up the plans, the entire area has been taken into consideration, to have an integrated plan for the two phases together. It is further ensured that the development of the first phase will be complete and self-sufficient and not dependent on the subsequent phase. The salient feature of the layout is the provision of flowing open space so that in phase I, the open space forms an extension of the Mahim Bay and acts as a promenade and, when the Phase II is developed, the part of 37 M wide road at the southern end, can be developed as a promenade and the open space will form the main core or spine of the entire block.
- (iii) Layout of Block 'A' has been suitably modified with a view to provide adequate open spaces and other social amenities not only to cater to the pro-

posed population in 'A' Block but also to make up the deficiencies to some extent in the adjacent areas.

- (iv) An area of about 4 Ha. is provided for the cultural centre, as required by Bombay Municipal Corporation. Part of this will be available in Phase II.
- (v) The Bombay Municipal Corporation is planning to provide a sewage treatment plant to be located near 'A' Block as recommended by their consultants. All the sewage from Bandra east and Kurla etc. will be collected and pumped to this plant and after treatment it will be let into the deep-sea outfall sewer. The present sewage treatment plant at Sion will be discontinued. The requirement for an area of 35 acres, including 5 acres to accommodate housing for essential staff, has been indicated. The purification plant proper will be located west of the 'A' Block by reclaiming at the southern end of the land strip at Bandra. But the five acres of land required for residential purpose for the essential staff is to be made available to the Municipal Corporation from the western portion of Block 'A'. Further reclamation on the west for locating the purification plant will be done by the Bombay Municipal Corporation in consultation with the Central Water & Power Research Station, Khadakvasla, as tentatively shown on the layout plan.
- (vi) The various amenities provided are indicated in drawing No. D4, Statement of Land Uses. Of the total residential area, an area of 4.15 Ha. is designated for provision of shops on ground floor to meet the requirements of the area.

7.2 Blocks 'B', 'C' and 'D' :

The lands in these blocks are immediately to the west and east of Western Railway near Bandra Station and are intended to be developed intensively for commercial purposes, because of close proximity of Railway Station and also the bus terminals. In Block 'D', the zoning is indicated for commercial purposes after carving out the essential requirements for access road to future passenger terminal of Railways and bus terminus. A zonal office of Bombay Municipal Corporation is also to be located in Block 'B'.

7.3 Block 'D-1' :

The land in this block is owned by the Western Railways and in the planning proposals it is

earmarked for railway purposes. It is proposed by Western Railway to locate Auxiliary Passenger Terminal for inter city passenger trains at Bandra.

7.4 Block 'E' :

The land in Block 'E' is ideal for location of office premises and also for some residential purposes and has been so earmarked. It is a large single block close to the Bandra Railway Station and hardly about 1 kilometre away from it.

7.5 Block 'F' :

As per the recommendations of the Central Water & Power Research Station, only the northern part of the Block 'F' is reclaimable, while the southern part of 'F' Block is to be kept unreclaimed for flood absorption. In the planning proposals, the provision is made for Municipal stadium (with only stands and minimum structures) and cemetery in the northern part of the 'F' Block as required by the Bombay Municipal Corporation. The remaining land in this part is proposed to be earmarked for Institutional use etc. to accommodate by relocation the users to whom the lands are already allotted/committed by Government in the Complex.

7.6 Block 'G' : (old Blocks—'G' and 'G1')

Due to considerable reduction in the area of Block 'G1' as a result of Central Water & Power Research Station recommendations, the old Blocks 'G' and 'G1' are combined to be called as Block 'G'. The bulk of the land in this 'G' Block is earmarked for locating commercial and wholesale establishments and some part is earmarked as residential zone for complementary housing. Among the various activities to be Shifted/located in 'G' Block, there is a proposal to shift the cloth markets from south Bombay and to locate in Bandra-Kurla complex in this Block. The details are being separately worked out. Therefore, only zoning and major arterial links have been shown in the land use plan and the detailed layouts will be prepared to suit the purpose of the activities to be located, in due course. The reservations required for social facilities have also been indicated in the Statement of Land Uses. The detailed layouts will show all such provisions including public parking spaces, truck parking area, garages, petrol pumps, receiving station, sewage pumping station, etc.

At present high tension electric lines belonging to Tata Hydro-electric Company, cross the 'G' Block. The feasibility of converting

this into underground cables has been examined and it is found feasible, albeit costly. While drawing up the detailed layouts, depending upon the activities to be located, the presence of these lines and the consequent restriction on the construction in the adjoining strips, as well as the conversion of whole or part into the underground cables, will have to be taken into consideration.

7.7 Block 'H' :

(i) The reclaimable land in Block 'H' has been reduced considerably due to the recommendations of Central Water Power and Research Station, Khadakvasla. This Block has two distinguishing features. Firstly, it is adjacent to the proposed nature reserve (earmarked as Bird Sanctuary) and ideally suitable for provision of vast wooded areas to house the other nature reserve activities like arboreal bird enclosure, snake park, children park, tree cell, open spaces, etc. Secondly, it is located adjacent to the existing Dharavi slums and is ideal for having part of the land to serve as transit camp for Dharavi redevelopment. A balance has to be struck between these two important requirements. It is proposed to develop a wide, open belt along the northern and western boundary as wooded strips, snake park, arboreal bird enclosure, children park, play ground, nursery, etc. It fronts the water line on the creek and on the east it joins the open space below the high tension lines as well as adjoining green areas of the proposed Refuse Transfer Station. The total open space of 23.75 Hectares for all these purposes including that for the existing fort, is provided. This can be extended towards 'I' Block (without reclamation) to serve as water bird enclosure in marsh.

(ii) A part of the residential land to an extent of 9.00 Ha. is earmarked for rehabilitation of Dharavi Slum Dwellers. Since most of the area is already filled up with refuse, a topping of about 1 ft. murrum layer is to be made while carrying out development to make it habitable. As per the requirements of Bombay Municipal Corporation, an area of about 4 Ha. is earmarked for refuse transfer station which is located in the area between the Bombay Agra Road and Transmission Lines of Tata Power Supply Ltd. Provision for a hospital is also made considering the large population over 2.9 lakhs which is living in the southern part of the Dharavi Area of about 174 Ha. The existing purification plant of Bombay Municipal Corporation at the junction of Bombay Agra Road and Sion Dharavi Road will be discontinued after the establishment of the sewage purification

works at the western most end of 'A' Block, and this portion of Land will be used for purposes as shown on the plan.

7.8 Block 'I' :

The land in Block 'I', admeasuring about 24 Ha., is to be kept unreclaimed to absorb the flood water in case of high tide coinciding with a heavy rainfall. This low lying area can be used by birds that might be finding this area attractive. While development of the Bird Sanctuary, although proper arrangements will be welcome, the actual development may be carried out only after obtaining the no objection from the Civil Aviation Department of Government of India and with their concurrence, because the safety of the air traffic is of the prime importance. Any measure for development of Bird Sanctuary must also take into account the relevant recommendations of the Central Water & Power Research Station in regard to this area viz; that it has to function as a flood absorption reservoir in an unreclaimed condition. This area in the modified planning proposals is indicated as Bird Sanctuary and will serve as a sort of Nature Reserve.

8. Floor Space Index :

The net available area for reclamation in the Complex has got reduced as a result of the recommendations of Central Water & Power Research Station, Khadakwasla, thereby reducing the number of jobs to be provided for and the residences to be accommodated. Having regard to the need to provide more number of residences in the Complex and also to better standards of infrastructural facilities and the open spaces planned in the Complex, uniform Floor Space Index of 2 for commercial use and 1.5 for residential use will be permitted in the Complex. Past commitments in Block 'A' with Floor Space Index 2 for residential use will be allowed to be retained. The average density of population in the island is of the order of about 440 persons per hectare (based on 1971 census population figure) and in the suburbs about 123 persons per hectare, against which the density as per the above Floor Space Index would be about 206 persons per hectare (gross). The global Floor Space Index for the island and suburbs is of the order of 1.0 and 0.6 respectively on the basis of theoretical built up areas permissible in the development plan; the actual Floor Space Index in the island will be much in excess on account of the past constructions with higher Floor Space Index. With this, the global Floor Space Index in the Complex as per the above proposal works out to 0.55.

9. Residential use :

Including some existing provisions, particularly in 'A' Block and 'D' Block, the total land under residential uses would be about 55 Ha, (including about 13 Ha. existing development) supporting a population of about one lakh. The Statement of Land Uses drawing No. D4 indicates the population, this land could support. Nearly 9.0 Ha of this area is earmarked for redevelopment of Dharavi area. Except for Block 'A', where the past commitments are with a Floor Space Index of 2, the Floor Space Index for the new residential developments is proposed as 1.5 for all other areas in the Complex. The open spaces provided aggregate to 0.46 Ha. (1.13 Acres) per 1000 population. These would be in form of the playgrounds, gardens, wooded strips, pedestrian plazas, etc. Indoor games clubs can be located adjacent to open spaces in the residential zones. In addition, the channels and large unreclaimed areas, aggregating 203 Ha., are also available. Shopping on Ground Floor shall not be permitted in residential except where specifically indicated.

With large scale activities in the Bandra-Kurla area to the east of Western Railway taking place, it would be of immense advantage to have a bus terminus on the east, close to Bandra station. Because of the overground Bombay Municipal Corporation pipe line, the terminus has to be to the east of this pipe line and adjacent to the road access to the future Railway Passenger terminal, adjacent to Railway lands since the Western Railway has plans to use this entire land developing the Auxiliary Passenger Terminal in future. The access road has to be of sufficient width for this purpose.

10. Commercial use :

A total of 63 Ha. of land is proposed under commercial use. This is expected to provide for about 1,27,000 jobs. The Floor Space Index will be 2.0.

The lands in Blocks 'B' & 'C' (about 4.29 Ha.) would be used for commercial purposes — offices and shopping. This would have an access from the (to be remodelled) Bandra Station Road and extension of Senapati Bapat Marg.

The balance land in Block 'D', (about 0.74 Ha.) could be developed for office-commercial centre, keeping the needs of the Maharashtra Housing Board colonies and Government colonies in view.

Land in Block 'E' is ideal for location of office premises. It is a large single block close to the Bandra Railway station and

hardly about 1 km. away from it. It can provide for nearly 9960 office jobs with a very satisfactory complement of public utility services and social amenities including some residential zone.

Land in Block 'G' (old G & G1) can support nearly 97000 jobs in 48 Ha. for mixed commercial use like offices, trade and commerce, godowns, hotels, restaurants, public amenities, etc.

In 'H' Block a provision of 4 Ha. has been made, for commercial use and 2.5 Ha. is for para commercial use.

11. Social Facilities :

Considering the available social facilities in the surrounding area and the prospective residential population, the total social facilities are proposed as follows :

	No.	Blocks
Primary Schools }	18	A, E, G, H
Secondary Schools }		
College	1	A
Dispensary	3	A, G, H
Maternity Home	3	A, G, H
Hospital	3	A, G, H
Community Centres	2	G, H
Cultural Centre	1	A
Municipal Stadium	1	F
Fire Station	2	A, G
Cemetery	1	F

12. Service Functions :

A total of the following services are provided for :

	No.	Blocks.
Sewage Pumping Station	2	A, G

13. Para-Commercial activities :

	No.	Blocks
Telephone Exchange	2	A, G
Bus Depot & Terminal	5	A, B, D, G, H
Post & Telegraphic	1	G
Elec. Receiving Station	1	G
*Market	3	A, G, H
Swimming Pool	1	G
Drama Theatre		
(Commercial)	1	A

* Market provision in 'G' block is made to accommodate ancillary provisions of markets.

Along with the development of the area and the activities of residential and commercial nature and **in a time bound programme**, provision of these services must be ensured.

14. Development Pattern :

As mentioned earlier, the pattern of the development that is to be attempted in the Complex is of the integrated type whereby the open spaces and other facilities are pooled together for common use as far as possible and vehicular and pedestrian movements are segregated to the extent possible. This is aimed at improving the quality of environment and the facilities available for common public use with minimum disruption. The open spaces are provided in form of continuous flowing spaces from major transportation arteries to the water front, punctuated by social facilities. Use of the cul-de-sacs serving groups of building is made, where possible. It is envisaged that land-scaping and planting of trees in the specific open spaces and the wooded strips along side channel, will be simultaneously planned and carried out along with other development.

Because of the integrated pattern of development, in some of the Blocks the concept of Block Floor Space Index is introduced in place of the usual plot Floor Space Index. As regards the control on the building forms and heights, etc. the development is intended to be carried out in accordance with the Architectural Control Drawings to be approved by the BMRDA for individual buildings, which will generally be in accordance with the Development Control Rules of the Bombay Municipal Corporation. Barring control by way of defining the maximum size of the building, its location on the plot and the buildable floor space permissible for a particular building, freedom will be afforded to the developers in the other architectural matters. As regards the height of the buildings, it will be controlled by the limitations set out from time to time by the International Airport Authority of India constituted amongst others for the International Airport in Bombay under the International Airport Authority Act, 1971. The development in this area will be in accordance with the General Development Control Regulations, annexed hereto.

15. On the basis of the above proposals, the land use analysis and proposals are shown in the drawings enclosed.

General Development Control Regulations for Bandra-Kurla Complex

1. Preamble :

Whereas it is expedient to make Regulations for development of lands in the Bandra-Kurla Notified Area, it is hereby provided as follows:

2. Short Title Extent and Commencement :

- (i) These Regulations may be called the BMRDA Bandra-Kurla Notified Area Development Control Regulations, 1978.
- (ii) They shall apply to any development of land in the Bandra-Kurla Notified Area.
- (iii) They shall come into force from the date on which the proposals for the development of lands in the Bandra-Kurla Notified Area are approved by the Government of Maharashtra in accordance with the provisions of clause (d) of sub-section (3) of section 40 and other applicable provisions of the Maharashtra Regional and Town Planning Act, 1966.

3. Definitions :

In these Regulations, unless the context otherwise requires,

- (i) **"Architectural Control Drawing"** means a drawing or drawings issued or approved by the Metropolitan Commissioner, or by any officer designated by him with the approval of the Standing Committee, and specifying matters as stated in Regulation 5.

- (ii) **"Authority"** means the Bombay Metropolitan Region Development Authority constituted and established under the Bombay Metropolitan Region Development Authority Act, 1974.

- (iii) **"Floor Space"** means the combined gross floor area of all floors including the area occupied by all walls and mezzanine floors of a building, but shall not include :

- (a) A basement or cellar and space under a building constructed on stilts and used as a parking space, store-room and air-conditioning plant room, used as accessory to the principal use.
- (b) Electric cabin or Sub-station, watchmen's booth, pump house, and garbage shaft.
- (c) Projections and accessory buildings as specifically exempted under Development Control Rules of the Municipal Corporation of Greater Bombay.
- (d) Staircase room and/or lift rooms above the top-most storey, architectural features, chimneys and elevated tanks of dimensions as permissible under the rules.

- (iv) **"Hoarding"** means any surface or structure erected on ground or any portion of a roof of a building or on or above the wall or parapet, with characters, letters or illustrations applied thereto and displayed in any manner whatsoever out of doors for the purpose of advertising or to give information regarding or to attract the public to any place, persons, public performance, article or merchandise whatsoever.

- (v) **"Land Use"** means the use or uses of land for purposes allocated by the planning proposals.

- (vi) **"Notified Area"** means the part of the area specified by the Maharashtra Government Notification No. U.D. & P.H.D. No. BKR-1177/262-UD-5, dated the 7th March, 1977, in respect of which part, the foregoing proposals for the development of the lands are approved by the State Government under the provisions of clause (3) of section 115, as incorporated in clause (d) of sub-section (3) of section 40 of the Maharashtra Regional and Town Planning Act, 1966.

- (vii) **"Open Space"** means an area forming an integral part of any plot and left permanently open to the sky. Front open

space means an open space adjacent to the street from which a vehicular access to the plot has been permitted by the Authority. In case of access to a plot from two or more streets, the open space adjacent to the street wider of the two or widest of them, as the case may be, shall be deemed as the front open space. Side and Rear open spaces shall be construed with reference to the front open space.

(viii) "Planning Proposals" means the proposals of the Metropolitan Authority for the development of lands contained in the Notified Area, and approved by the Government.

(ix) "Social Facilities" means primary school, secondary school, college, fire brigade station, dispensary, maternity home, hospital, cemetery, community centre, public convenience, stadium, and such other facilities.

(x) "Standing Committee" means the Standing Committee constituted under Section 6 of the Bombay Metropolitan Region Development Authority Act, 1974.

(xi) All words and expressions used in these Regulations and not defined herein shall have meanings assigned to them under the Maharashtra Regional and Town Planning Act, 1966 or the Bombay Metropolitan Region Development Authority Act, 1974, or the National Building Code, or the Building Regulations and Bye-laws or the Development Control Regulations of the Municipal Corporation of Greater Bombay, as amended from time to time.

4. General Aspects :

(i) No land shall be used otherwise than for the purpose allocated to it by the Planning Proposals.

(ii) Floor Space Index for the purpose of development shall be as follows, that is to say :—

User	F.S.I.
Residential	1.5
	*(except that in respect of the land agreed to be leased or leased before 14.6.1977 by the Maharashtra Housing Board constituted and established under the Bombay Housing Board Act, 1948, the Floor Space Index shall be 2.0)
Commercial	2.0
Social Facilities	1.5

These values of Floor Space Index (except the one marked by asterisk*) are the values of the aggregate Floor Space Index in respect of total buildable area in a block of plots in the respective zones. The maximum permissible floor space in any plot shall be in accordance with the Architectural Control Drawing for that plot.

5. Notwithstanding anything contained herein to the contrary, but subject to provision of Regulation 4, the development of land shall be carried out in accordance with the Architectural Control Drawing which may specify, amongst others, the following matters, that is to say the maximum permissible floor space, height, coverage on the ground, connections with roads, pedestrian paths and other buildings, any projections such as balconies, galleries, overhangs, marginal open spaces on all sides, space for sign boards, name plates and hoardings, elevational or facade treatment, shopping line, parking areas, compound wall and such other details, which govern the total aspect of the building on the plot and its aesthetics. The maximum permissible height of buildings shall be subject to limitations, if any, set out from time to time by the International Air Port Authority of India constituted amongst others for the International Airport in Bombay under the International Airport Authority Act, 1971.

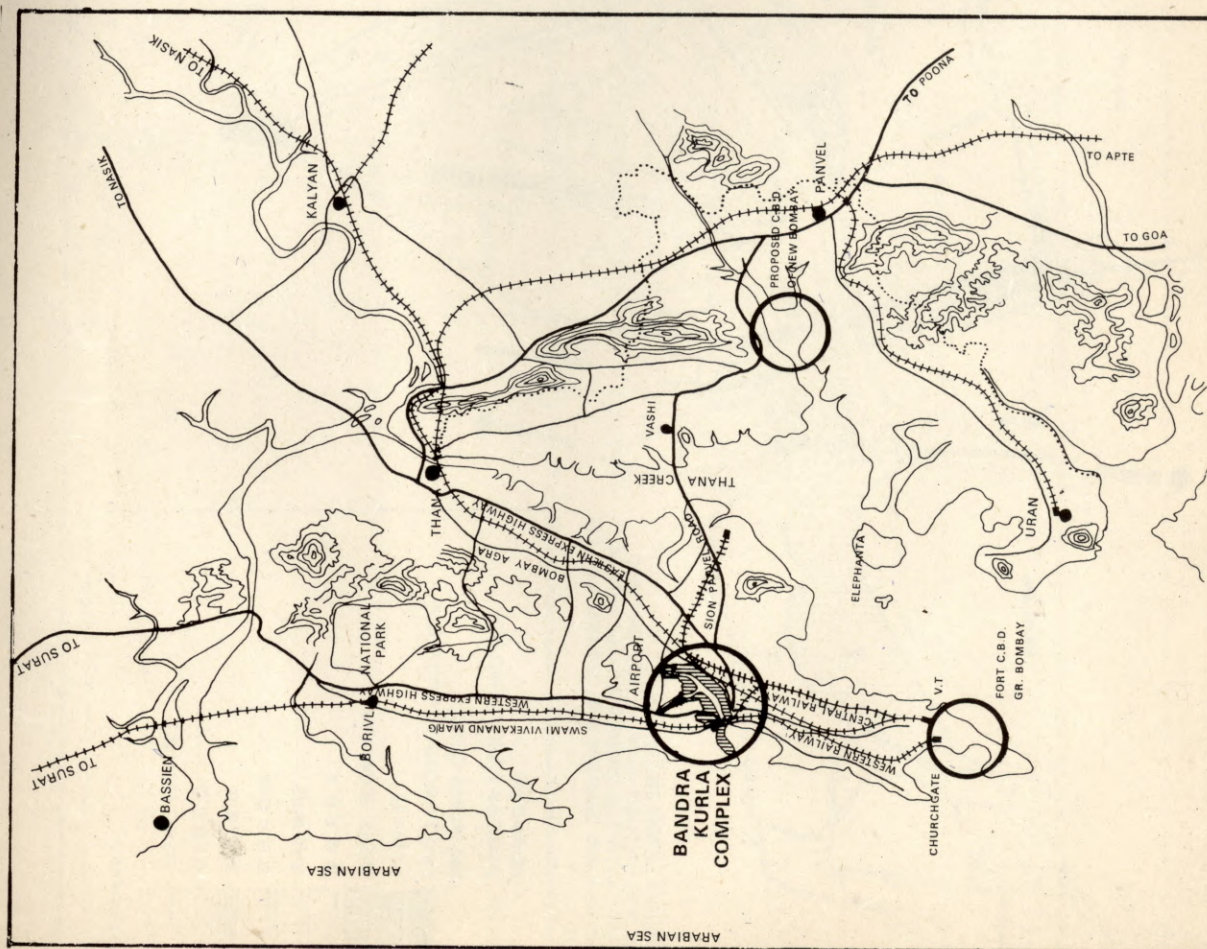
6. Application of the Development Control Rules :

Subject to the Regulation No. 5, the provisions of the Development Control Rules for Greater Bombay framed by the Municipal Corporation of Greater Bombay from time to time in exercise of its powers under Clause (m) of Section 22 and all other applicable sections of the Maharashtra Regional and Town Planning Act, 1966 shall apply *mutatis mutandis* to the development of land, with the modification that the expressions "Bombay Municipal Corporation" and "Municipal Commissioner" shall be substituted by the expressions "Standing Committee of Metropolitan Authority" and "Metropolitan Commissioner" respectively.

7. Nothing contained herein shall derogate from any right or power exercisable by the Municipal Corporation of Greater Bombay under the provisions of the Bombay Municipal Corporation Act, 1888 and the Rules, Regulations and Bye-laws made thereunder. Any development of land shall be carried out without prejudice to such provisions.

BANDRA KURLA COMPLEX
LOCATION IN BOMBAY METROPOLITAN REGION
 0 0.5 1 2 3 4 5 6 CM
D1
B.M.R.D.A.[™]
HOUSING, URBAN RENEWAL AND ECOLOGY BOARD 5TH FLOOR, GRIHA NIRMAN BHUVAN, BANDRA (EAST) BOMBAY 400 051.

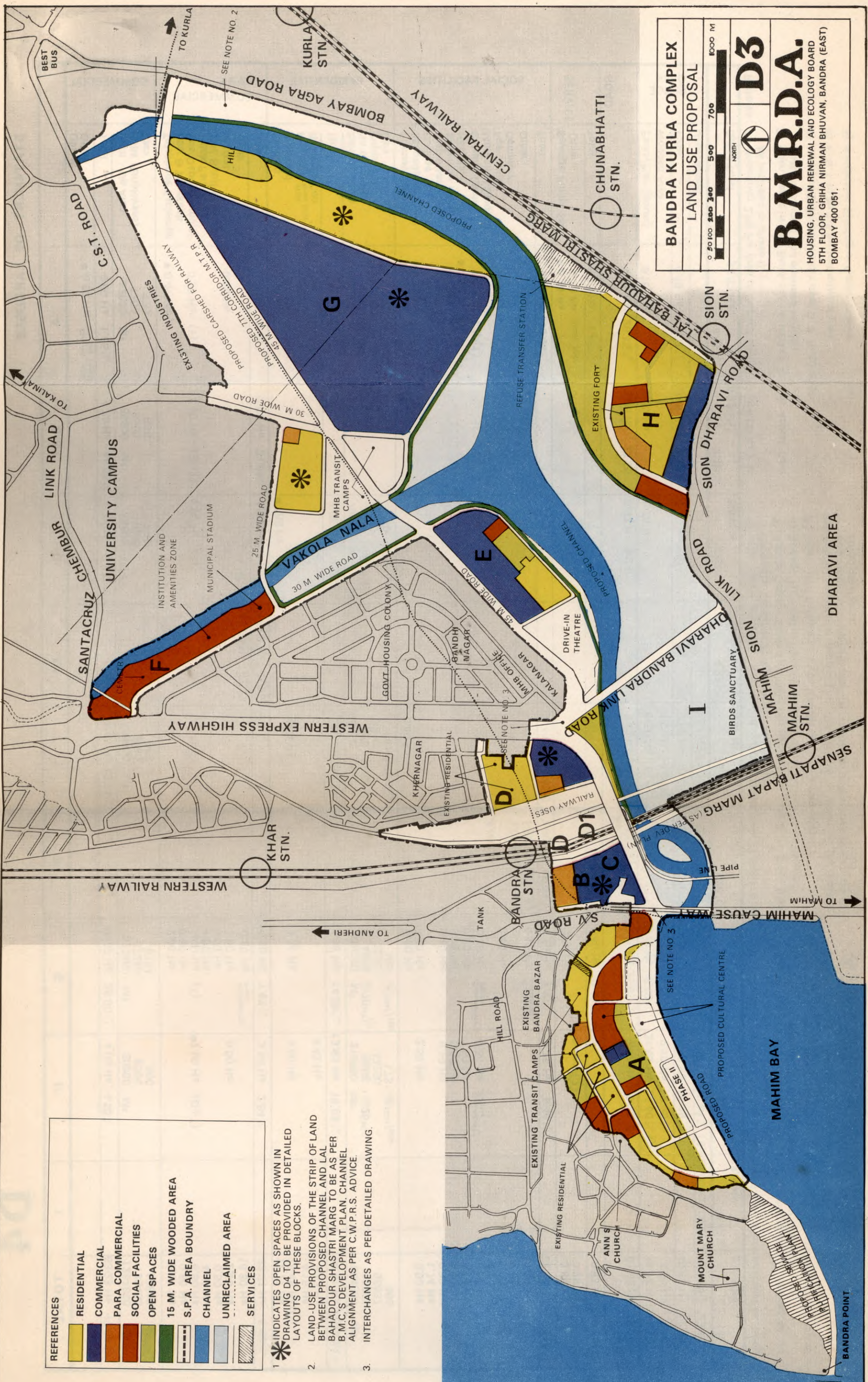
HOUSING, URBAN RENEWAL AND ECOLOGY BOARD
5TH FLOOR, GRIHA NIRMAN BHUVAN, BANDRA (EAST)
BOMBAY 400 051





REFERENCES	
	RESIDENTIAL
	COMMERCIAL
	PARA COMMERCIAL
	SOCIAL FACILITIES
	OPEN SPACES
	15 M. WIDE WOODED AREA
	S.P.A. AREA BOUNDARY
	CHANNEL
	UNRECLAIMED AREA
	SERVICES

1. * INDICATES OPEN SPACES AS SHOWN IN DRAWING D4 TO BE PROVIDED IN DETAILED LAYOUTS OF THESE BLOCKS.
2. LAND-USE PROVISIONS OF THE STRIP OF LAND BETWEEN PROPOSED CHANNEL AND LAL BAHADUR SHASTRI MARG TO BE AS PER B.M.C.'S DEVELOPMENT PLAN. CHANNEL ALIGNMENT AS PER C.W.P.R.S. ADVICE.
3. INTERCHANGES AS PER DETAILED DRAWING.



BANDRA KURLA COMPLEX	
LAND USE PROPOSAL	
0 50 100 200 300 500 700 1000 M	1000 M
NORTH	
D3	
B.M.R.D.A.	
HOUSING, URBAN RENEWAL AND ECOLOGY BOARD	
5TH FLOOR, GRIHA NIRMAN BHUVAN, BANDRA (EAST)	
BOMBAY 400 051.	

STATEMENT OF LANDUSES

	A	B & C	D	D1	E	F	G	H	I	TOTAL
COMMERCIAL	Offices Other	● 0.60 Ha Cinema and Drama Theatre								
	Total	0.60 Ha 1.65 %	0.74 Ha 7.44 %		4.98 Ha 19.94 %		48.62 Ha 36.00 %	4.00 Ha 4.55 %		63.23 Ha 17.06 %
	Built - Up Area Jobs (Employees) Cars	12000 M ² 1200 120	14800 M ² 1480 148		99600 M ² 9960 996		972400 M ² 97240 9724	80000 M ² 8000 800		1264600 M ² 126460 12646
PARA	Telephone Exchange Post & Telegraph Bus Depot/Terminal Truck Park Fuel Elec Sub/Recvg. Stn. Market Other	● 0.41 Ha 0.50 Ha (T) 0.50 Ha	1.00 Ha (T)	16.00 Ha Railway Uses			2.00 Ha 0.50 Ha 1.00 Ha (T) 4.00 Ha 0.50 Ha 1.50 Ha 0.80 Ha Swimming Pool	● 2.00 Ha (D+T) 0.50 Ha		2.41 Ha 0.50 Ha 0.50 Ha 6.50 Ha 4.00 Ha 0.50 Ha 2.50 Ha 16.80 Ha
	Total	1.41 Ha 3.88 %	1.00 Ha 10.06 %	16.00 Ha 100 %			10.30 Ha 7.62 %	2.50 Ha 2.84 %		33.21 Ha 8.96 %
	Existing Proposed With Shop Line Rehabilitation	● 5.69 Ha 1.59 Ha 4.15 Ha	● 7.08 Ha		3.09 Ha		19.28 Ha	4.50 Ha		12.77 Ha 28.46 Ha 4.15 Ha 9.43 Ha
RESIDENTIAL	Total	● 11.43 Ha 31.81 %	7.08 Ha 71.23 %		3.09 Ha 12.37 %		19.28 Ha 14.28 %	13.93 Ha 15.83 %		54.81 Ha 14.83 %
	Built-Up Area No of Houses Population Cars	202000 M ² 4040 20200 202 @ 1Car/20H	70800 M ² 1416 @ 50M ² /H 7080 70 @ 1Car/20H		46350 M ² 662 @ 70M ² /H 3310 66 @ 1Car/10H		319200 M ² 4559 @ 70M ² /H 22757 455 @ 1Car/10H	216450 M ² 8658 @ 25M ² /H 43290 173 @ 1Car/50H		854800 M ² 19335 96637 966
	Primary School Secondary School College Dispensary Maternity Home Hospital Cultural Centre Municipal Stadium Fire Station Cemetery Other	● 0.60 Ha ● 0.75 Ha 1.74 Ha 0.10 Ha 0.20 Ha ● 0.86 Ha 1.95 Ha 0.50 Ha			0.40 Ha		0.60 Ha 0.60 Ha 0.10 Ha 0.20 Ha 0.80 Ha 0.30 Ha 0.50 Ha	2.55 Ha 0.10 Ha 0.30 Ha 1.50 Ha 0.30 Ha Community Centre		5.50 Ha 1.74 Ha 0.30 Ha 0.30 Ha 3.16 Ha 2.55 Ha 4.00 Ha 1.00 Ha 2.00 Ha 1.10 Ha
SERVICE	Total	● 6.70 Ha 18.04 %			0.40 Ha 1.60 %		3.20 Ha 2.37 %	4.75 Ha 5.40 %		22.05 Ha 5.91 %
	Sewage Pump. Stn. Other	● 0.24 Ha ● 0.29 Ha Drain Note ⑧					0.40 Ha	See Note ⑦		0.64 Ha 0.29 Ha
	Total	0.53 Ha 1.46 %					0.40 Ha 0.30 %			0.93 Ha 0.25 %
ROAD										
	Parks/Play Ground Wooded Area	9.51 Ha 26.15 % 6.19 Ha	2.08 Ha 22.56 % 0.85 Ha	0.92 Ha 9.26 % 0.20 Ha	5.43 Ha 21.75 % 1.50 Ha 6.00 % 1.00 Ha 4.00 %	3.20 Ha 11.85 % 2.00 Ha 7.40 %	35.81 Ha 26.51 % 8.75 Ha 6.48 % 2.40 Ha 1.78 %	5.07 Ha 5.76 % 21.65 Ha 24.60 % 2.10 Ha 2.39 %		62.02 Ha 16.74 % 41.14 Ha 11.11 % 5.50 Ha 1.48 %
	Total Unreclaimed	6.19 Ha 17.02 %	0.20 Ha 2.01 %	See Note ②	2.50 Ha 10.00 % 8.57 Ha 34.32 %	2.00 Ha 7.40 % 14.80 Ha 54.82 %	11.15 Ha 8.26 % 6.30 Ha 4.66 %	23.75 Ha 26.99 % 34.00 Ha 38.64 %		46.64 Ha 12.59 % 87.67 Ha 23.66 %
	Grand Total	36.37 Ha 9.81 %	9.94 Ha 2.68 %	16.00 Ha 4.32 %	24.97 Ha 6.74 %	27.00 Ha 7.29 %	135.06 Ha 36.44 %	88.00 Ha 23.75 %	24.00 Ha 6.48 %	370.56 Ha 100 %

Remarks : 1) Remaining 2.05 Ha. Area of Cultural centre (Total 4.00 Ha.) to be provided in phase II.

2) Open space in 'D1' Block can be worked out on actual floor space consumed and provided suitably.

3) Includes Only Extra width over D. P. Road width.

4) F. S. I. to be 1.5 for Institutional uses.

5) ● Indicates Existing or Commitments.

6) Open space of 21.65 Ha. would include Snake Park, Arborial Bird Enclosure, Childrens Park, Maidan, Tree Cell, Etc.

7) Refuse Transfer Station includes Nursery and lies outside 'H' Block Area.

8) Sewage Purification Plant lies adjacent to 'A' Block area on its west.

9) Water Bird Enclosure can be located in Unreclaimed Area.

10) Public open spaces provided in the M. H. B.'S layout of the Existing Residential Development shall be retained as public open spaces and not put to other uses.

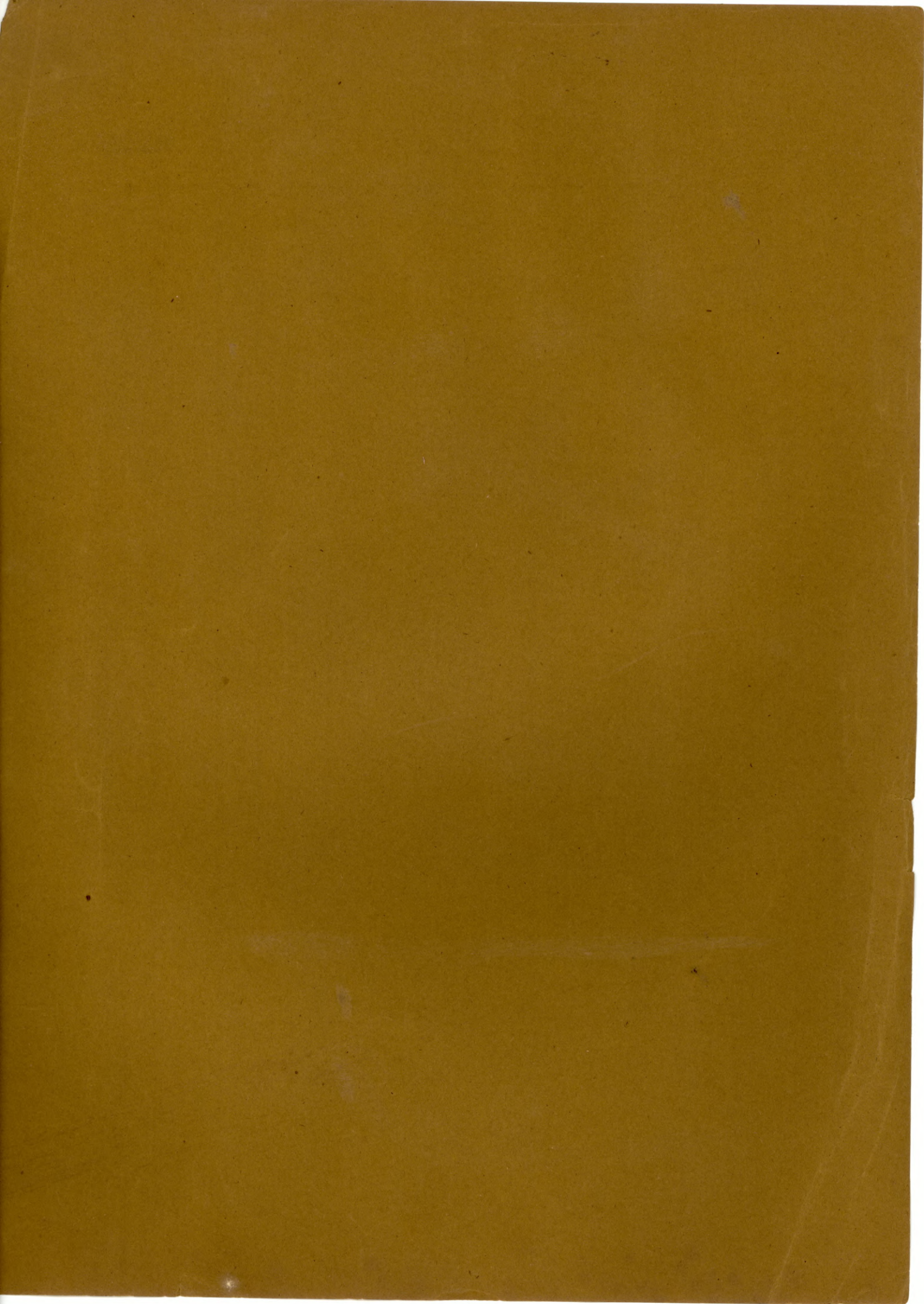
11) Shops in Residential Areas are permitted only where indicated as Shop Line in detailed layouts.

12) In Residential Zone the uses in building other than for Residential use shall be governed by the Architectural Control Drawings.

13) Net Usable Areas Excluding Roads and Open spaces work out to 174.53 Ha.

14) 23.57 % of 174.53 Ha. Usable Area.

Ⓐ Areas changed as per Govt. Notification No. BKR—1177/262—UD-5 dated 9th April 1979. Schedule of Modification.



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