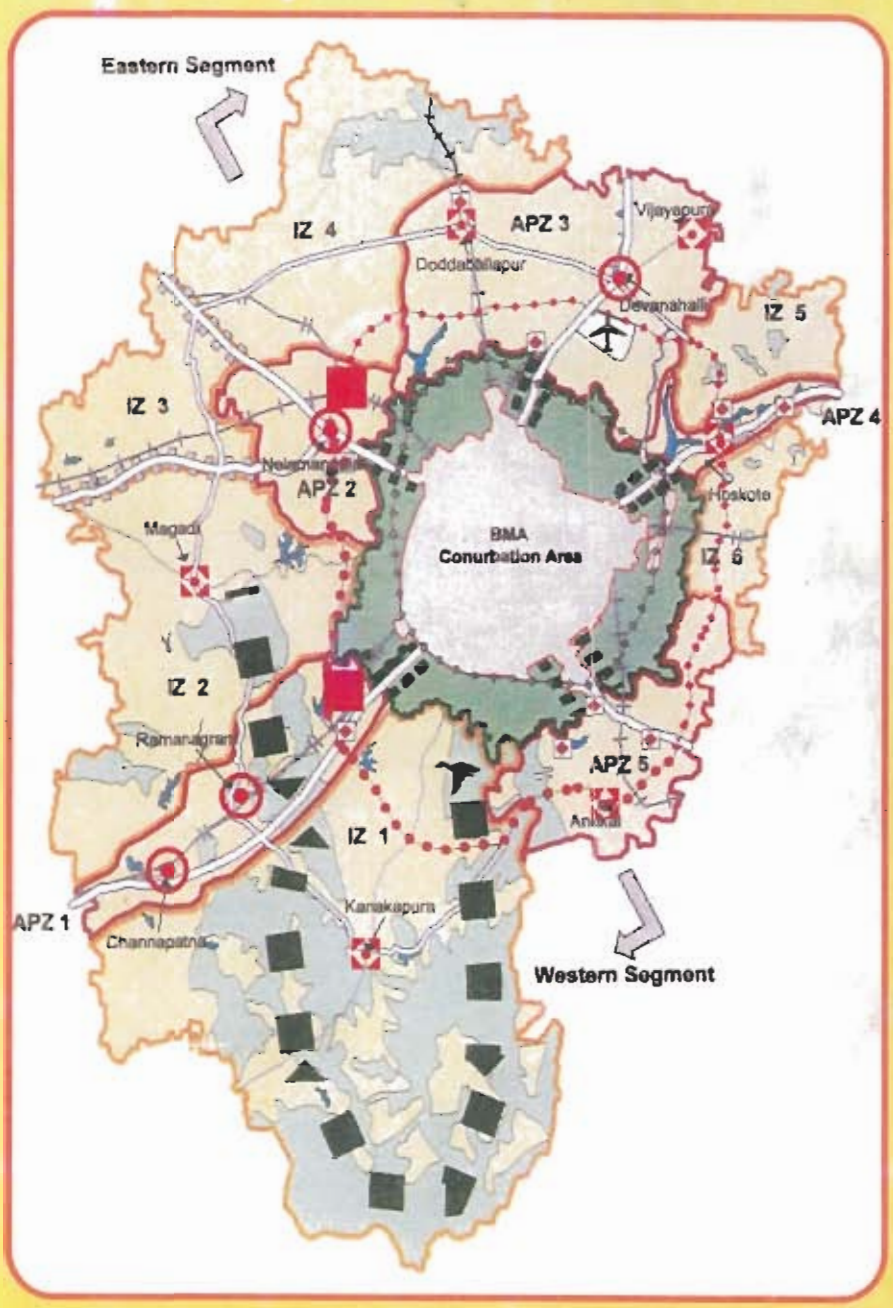
GOVERNMENT OF KARNATAKA

BANGALORE METROPOLITAN REGION (BMR)

STRUCTURE PLAN



BANGALORE METROPOLITAN REGION DEVELOPMENT AUTHORITY

Old LRDE Building, Ali Asker Road,
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GOVERNMENT OF KARNATAKA

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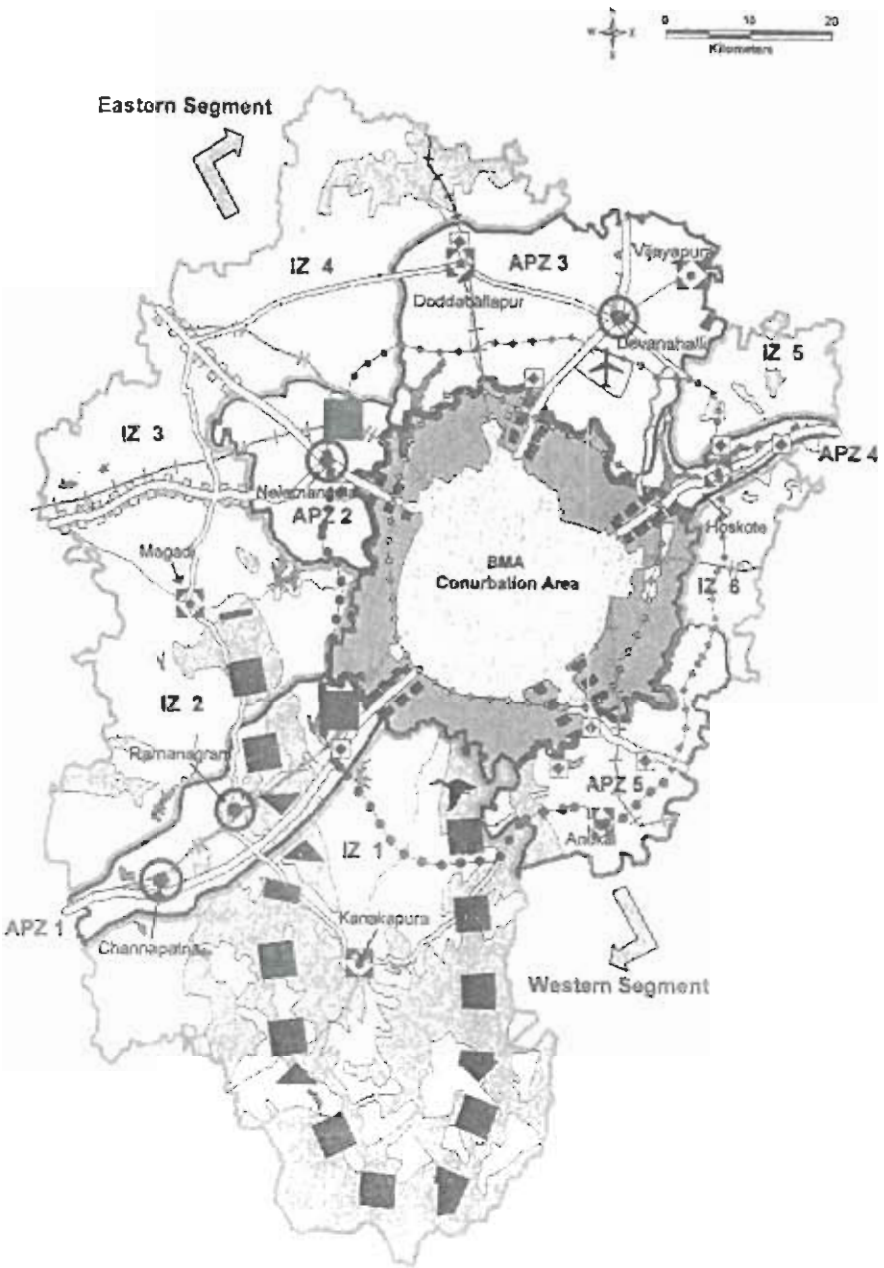

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EXPLANATORY NOTE

The Structure Plan for the Bangalore Metropolitan Region (BMR) has been prepared in terms of Section 9(1)(ii) of the Bangalore Metropolitan Region Development Authority Act, 1985. The BMRDA Act had originally defined the BMR to be comprising the entire area of the Bangalore Rural District, Bangalore Urban District and Malur Taluk of Kolar District. However, Malur Taluk was deleted from the BMR through the BMRDA (Amendment) Act, 2005 that was notified on and brought into effect from 23rd March 2005.

The Structure Plan was finalised, after inviting suggestions and objections to the draft document, and approved vide Government Order No. UDD 51 BMR 2002 dated 21st September 2005.

In terms of the Structure Plan, the entire BMR excluding the planning area of the Bangalore Development Authority has been classified into five Area Planning Zones (APZs) and six Interstitial Zones (IZs). The approach for a balanced and regulated all round development of each of these zones has been indicated in the Structure Plan document. However, the respective Local Planning Authorities (LPAs) are required to prepare detailed Master Plans for their respective planning areas in terms of the Karnataka Town and Country Planning Act, 1961 and other relevant legislation/regulations.

The following are the Planning Authorities functioning under the different Area Planning Zones.

APZ 1 – Ramanagara - Channapatna Urban Development Authority (RCUDA) and Bangalore Mysore Infrastructure Corridor Area Planning Authority (Part) - BMICAPA

APZ 2 – Nelamangala Planning Authority (NPA)

APZ 3 – Bangalore International Airport Area Planning Authority (BIAAPA)

APZ 4 – Hoskote Planning Authority (HPA)

APZ5 – Anekal Planning Authority (APA)

In addition to these, two more Planning Authorities are constituted from the Interstitial Zones 1 &2 viz :-

Kanakapura Planning Authority (From IZ - 1)

Magadi Planning Authority (From IZ-2)

The list of villages included in the jurisdiction of the respective LPAs and a copy of the Government Order dated 21st September 2005 approving the Structure Plan have also been included in this document. Further, this document has been placed on the website of BMRDA, namely, www.bmrda.org

Bangalore
10th March 2006

(Sudhir Krishna)
Metropolitan Commissioner
BMRDA

SUPPLEMENTARY NOTE FOR THE SECOND EDITION

The first edition of this document was published in March, 2006. The list of villages in various Local Planning Areas (LPAs) and Area Planning Zone – 1 (APZ – 1) has been corrected and duly incorporated in this edition. The maps of the LPAs, APZ-1 and BMRDA's new projects have also been added for the greater benefit of the users.

(Sudhir Krishna)
Metropolitan Commissioner

Bangalore
16th October 2006

ABBREVIATIONS

ADB	Asian Development Bank
ALPA	Anekal Local Planning Area (Proposed)
APZ	Area Planning Zone
ATI	Administrative Training Institute, Mysore
BCC	Bangalore City Corporation
BDA Act	Bangalore Development Authority Act 1976
BDA	Bangalore Development Authority
BDPC	Bangalore District Planning Committee
BDSDP	Bangalore District Structure Development Plan
BIAPAA	Bangalore International Airport Planning Area Authority
BLPA	Bidadi Local Planning Area
BMADP	Bangalore Metropolitan Area Development Plan
BMPC	Bangalore Metropolitan Planning Committee
BMR	Bangalore Metropolitan Region
BMRDAAct	Bangalore Metropolitan Region Development Authority Act - 1985
BMRDA	Bangalore Metropolitan Region Development Authority
BMRSDP	Bangalore Metropolitan Region Structure Development Plan
BOO	Built Own Operate
BOOT	Build Own Operate Transfer
BOT	Build Operate Transfer
BRD	Bangalore Rural District
BSRP	Bangalore Sub-Regional Plan -ADB Loan 1415-IND
BUD	Bangalore Urban District
BWSSB Act	Bangalore Water Supply & Sewerage Board Act - 1964
BWSSB	Bangalore Water Supply and Sewerage Board
CBO	Community-based organisation
CC	City Corporation
CDP	Comprehensive Development Plan
CDPC	Chamrajnagar District Planning Committee
CEO	Chief Executive Officer
CKR	Central Karnataka Region
CMC	City Municipal Council
CUMBAC	Committee for Urban Management of Bangalore City
DMA	Directorate of Municipal Administration, Govt. of Karnataka
DPC	District Planning Committee
DSDP	District Structure Development Plan
	Department of Town Planning GoK
DTUDP	Decentralised Training for Urban Development Project
EIA	Environment Impact Assessment
EIUS	Environmental Improvement of Urban Slums
EO	Executive Officer
FAR	Floor Area Ratio
FSI	Floor Space Index
GHKI	Gilmore Hankey Kirke International Ltd
GIS	Geographic Information System
GoI	Government of India
GoK	Government of Karnataka
GP	Grama Panchayat
GT	Grama Thana
HCMC	Hassan City Municipal Council
HDPC	Hassan District Planning Committee
	Department of Urban Development GoK
HUDA	Hassan Urban Development Authority
HUDCO	Housing and Urban Development Corporation Ltd
IDSMT	Programme for Integrated Development of Small and Medium Towns
IHSP	Indian Human Settlements Programme (Dutch funded)
IZ	Interstitial Zone
KCMC	Kolar City Municipal Council
KDPC	Kolar District Planning Committee
KHB Act	Karnataka Housing Board Act, 1962
KHB	Karnataka Housing Board
KIAD Act	Karnataka Industrial Area Development Act, 1966
KIADB	Karnataka Industrial Area Development Board
KM Act	Karnataka Municipality Act 1964
KMC Act	Karnataka Municipal Corporations' Act 1976
KPR Act	Karnataka Panchayat Raj Act 1996
KSA Act	Karnataka Slum Areas (Improvement & Clearance) Act, 1973
KSCB	Karnataka Slum Clearance Board

KSPCB	Karnataka State Pollution Control Board
KSPCB	Karnataka State Pollution Control Board
KTCP Act	Karnataka Town & Country Planning Act 1961
KUDA Act	Karnataka Urban Development Authority Act 1987
KUDA	Kolar Urban Development Authority
KUIDFC	Karnataka Urban Infrastructure Development and Finance Corporation
KUIDP	Karnataka Urban Infrastructure Development Project
KURPD Act	Karnataka Urban & Regional Planning & Development Act 1998
KUWS&DB	Karnataka Urban Water Supply and Drainage Board
KUWSDB Act	Karnataka Urban Water Supply & Drainage Board Act - 1975
LA Act	Land Acquisition Act 1894
LPA	Local Planning Authority (Area)
lpcd	Litres per capita per day
MaCMC	Mandya City Municipal Council
MaDPC	Mandya District Planning Committee
MaUDA	Mandya Urban Development Authority
MCC	Mysore City Corporation
MDPC	Mysore District Planning Committee
mld	Million litres per day
MLPA	Magadi Local Planning Area
MOEF	Ministry of Environment and Forests, GoI
MOR	Ministry of Railways, GoI
MOST	Ministry of Surface Transport, GoI
MOU	Memorandum of Understanding
MOUD	Ministry of Urban Development, GoI
MPC	Metropolitan Planning Committee
MUDA	Mysore Urban Development Authority
NAAI	National Airport Authority of India, GoI
NEKR	North-East Karnataka Region
NGO	Non-Governmental Organisation
NLPA	Nelamangala Local Planning Area
NP	Nagar Panchayat
NWKR	North-West Karnataka Region
O&M	Operation and Maintenance
OOP	Outline Development Plan
p.c.	Per capita
PHED	Public Health and Engineering Department, GoK
PIU	Project Implementation Unit KUIDP
PMC	Project Management Consultants
PMU	Project Management Unit-KUIDP
PWD	Public Works Department, GoK
RCUDA	Ramanagaram and Channapatna Urban Development Authority
Rs.	Indian Rupee
RTO	Regional Transport Office
SAPDA	Special Area Planning and Development Authority
SKR	South Karnataka Region
SKRCC	South Karnataka Region Coordination Committee
SKRCP	South Karnataka Region Concept Plan
	Southern Railways, GoI
STIUD	State Training Institute for Urban Development
SURPB	State Urban and Regional Planning Board
SWAM	Solid Waste Management
TCMC	Tumkur City Municipal Council
TCPO	Town and Country Planning Organisation, GoI
TDPC	Tumkur District Planning Committee
TDR	Transfer of Development Rights
TECS	Tata Economic Consultancy Services
TISS	Tata Institute of Social Sciences
TMC	Town Municipal Council
ToR	Terms-of-Reference
TPC	Taluk Planning Committee
TUDA	Tumkur Urban Development Authority
UBSP	Urban Basic Services for the Poor
UDA	Urban Development Authority
ULB	Urban Local Body
ULCR Act	Urban Land Ceiling & Regulation Act 1976
ULG	Urban Local Government
US$	United States of America dollar
WKR	West Karnataka Region
ZP	Zilla Panchayat

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PART ONE

INTRODUCTION

The Need for a Strategic Development Framework

Under the 73rd. and 74th. amendments to the Indian Constitution a third tier of government has been created and there is an obligation on State governments to decentralise and devolve responsibilities to this level. In support of this, it is the declared intent of the Karnataka State government to divert economic activity and growth away from Bangalore to other urban and rural areas to:

- redress regional disparities by increasing the potential of other urban centres and districts to attract inward investments and achieve greater fiscal autonomy: and

- contain the growth rate of Bangalore and in parallel augment urban management and planning capabilities and capacities to be to better tackle and harness the downward spiral in environmental and quality of life conditions of the city.

Unfortunately, the rhetoric of intent does not manifest itself through policy or actions on the ground. Major project development investment decisions continue to be made contrary to this intent, for example:

- mega projects are planned and promoted on a ad-hoc basis without the prior consideration of other sector needs;

- investment and land conversion decisions disregard resource management priorities and have no strategic rationale:

- industrial estates are located where existing infrastructure. in particular water and power, are inadequate, integration with housing and community needs is lacking, making the provision and extension of municipal services difficult if not impossible:

- new economic activities are established with little or no consideration of their environmental impacts;

As a result:

- land use and transportation planning lags behind development and in consequence has to resort to reactive 'fire fighting' corrective measures rather than been able to take a preventative forward planning approach;

- much of the land allocated for industrial development has remained undeveloped or under-utilised due to the absence of any demand assessment;

- increased industrial production costs are built-in due to the inefficiencies of supporting infrastructure and services making firms less competitive and sustainable:

- groundwater degradation and loss of productive agricultural and forest lands continue to erode fragile and finite resources;

- building sanctioning procedures and development control regulatory capacities are unable to keep pace with demand:

In summary, there is no strategic development framework whereby spatial and economic priorities can be integrated. In consequence, inept decisions result as an explicit outcome of a 'policy tension' which, on the one hand, does not want to loose out to other states in attracting multi-national and trans-national capital investments whilst, on the other hand, tacitly turning a blind eye to the negative impacts and incapacity of policy makers to act as custodians who care for the quality of life of its citizens. The ensuing discontent results in a reluctance to pay for the poor quality and delivery of municipal services, erosion of revenues and, in-turn, a further reduction in the corporation's capacity to deliver.

Ultimately, helping to break this 'viscous circle' is one of the key rationale of the interventions planned under this project. It aims to do so on the premise that without 'a plan' and a plan making and management capacity, the city fathers and its regional counterparts cannot hope to integrate public and private sector infrastructure investment and land development decision making.

Without this common 'vision' and political support to change the course of development onto the desired trajectory, diseconomies will continue unabated and the outcome of the 'do-nothing' scenario will be the creation of irreversible and unacceptable environmental conditions that could fuel social discontent.

1.1 BMR AND SKR PLANNING CONTEXT

BMR Context

The city and region of Bangalore has passed through many stages of planned development. Up to 1949 there were two independent cities - the City proper and the Civil and Military Station. The Civil and Military Station was developed for providing the primary needs of the Cantonment, with public offices and housing accommodation for the British settlers. Bangalore Municipality was established in 1862 with separate Municipal Boards for the City and the Cantonment.

In 1889 a Committee was constituted for the development of City 'extensions' to meet the demands of a growing population During the first quarter of the 20th

Century a number of newly planned development 'extensions' were developed with regular roads, open spaces and provisions for civic amenities (e.g. Fraser Town, Richmond Town, Sankarapuram and Viveswarapuram). However, there was no comprehensive approach for guiding the growth of the City in an integrated manner. As a result irregular developments occurred in between these extension areas. To deal with this situation, the City Improvement Trust was constituted in 1945 under special statute (Bangalore City Improvement Trust Board Act, 1945).

In 1949 the two cities were merged and the establishment of a number of key industries stimulated growth that resulted in an unprecedented 5.10 lakhs to 9.91 lakhs population increase during the 1941-51 intercensal period. In an attempt to cope with this rapid growth, a Committee was set up by the Government of Karnataka in 1952 to draw up a Development Plan, including broad land use proposals. But, in the main, the proposals were not implemented as there was no legal backing to enforce the Plan.

To address this the Government constituted the Bangalore Metropolitan Planning Board to prepare a Master Plan for the metropolitan region with the assistance of the State Town Planning Department. The result was the Outline Development Plan (ODP) for the Bangalore Metropolitan Region. This Plan was adopted by the Planning Authority constituted under the Karnataka Town and Country Planning Act, 1961 and was finally approved by the Government in 1972.

This Plan represented the first step towards a Development Plan for Bangalore. It was prepared for a period of 15 years (1961-76) and covered an area of 500 sq. kilometres. of which 220 sq. kilometres. was proposed for 'compact development' and designated as the Conurbation Area. The remaining 280 sq. kilometres.. outside the Conurbation Area, was earmarked as a green belt. The ODP remained in force until 1984, well beyond its plan period. By this time it outlived its utility and the City had grown beyond the Conurbation Area and encroached the green belt. The delay in preparing a Comprehensive Development Plan to timely supersede the ODP resulted n large scale unauthorised development.

There was lack of co-operation among the various agencies such as the Planning Authority, the City Improvement Trust Board, the Bangalore City Corporation, the Bangalore Water Supply and Sewerage Board, the Karnataka Housing Board and the Karnataka Electricity Board.

To counter this the Government constituted the Bangalore Development Authority (BDA), in 1976 under the statute of The Bangalore Development Authority Act, 1976, to amalgamate the duties of the Bangalore City Planning Authority and the City Improvement Trust Board and thereby combining the functions relating to plan preparation, enforcement and implementation under one agency. Thus, the BDA became not only the Planning Authority for the Bangalore Metropolitan Area but also a development agency.

An early task of the BDA was to prepare the Comprehensive Development Plan (CDP), to supplant the outdated ODP. But , it took nearly eight years to prepare this Plan and have it approved by the State Government.

The CDP had a planning time horizon of 15 years (1986-2001) and a target population of 7.0 million. The designated planning area was extended from 500 sq. kilometres. to 1,279 sq. kilometres.. The Conurbation Area covered 449 sq. kilometres., spreading over the entire green belt delineated in the ODP. In turn, the CDP recast the green belt beyond the new Conurbation Area limits with an area of 840 sq. kilometres.

Retrospectively it is considered that the BDA has performed better as a housing and infrastructure development agency than a planning and development control authority. Over the years the lack of co-ordination amongst the various authorities have become increasingly acute and the continued rapid growth of the City has posed new problems for which the CDP is inappropriate to deal with.

In an attempt to deal with these new but burgeoning urban problems, the Government in 1985 constituted the Bangalore Metropolitan Region Development Authority (BMRDA) by an Act of Legislature. This endowed it with, amongst others, the following powers and functions:

- to plan, co-ordinate and supervise the proper and orderly development of the areas within the jurisdiction of the entire districts of Bangalore and Malur Taluk of Kolar district;
- to carry out survey of the BMR, prepare structure plan, formulate schemes, to raise finance and extend assistance to local authorities (Section 9 of the BMRDA Act);
- to co-ordinate the activities of the BDA. BCC, BWSSB, KSIB, KEB. KIADB, KSRTC etc., (Section 9 of the BMRDA Act);
- to restrict any development within the BMR undertaken without the permission of the BMRDA, of the types notified by the Authority (Section 10 of the BMRDA Act).

In accordance with Section 9 of the Act the BMRDA in May 1995 issued a Structure Plan for the Bangalore Metropolitan Region together with a technical report on Integrated Resource Analysis[1]. The major objective of this project was to derive a broad based land use strategy. To this end, baseline information regarding natural resources were generated using remote sensing for the BMR at 1:250,000 scale. The report described in outline a mixed development strategy for land designation, delineation, reservation and acquisition. It highlighted the policy imperative to

1 *Preliminary Draft Structure Plan and Integrated Resource Analysis for the Structure Plan of The Bangalore Metran Region, Technical Report, March 1995 NRIMT (P)Ltd., and BMRDA*

encourage private sector participation for the provision of infrastructure, adoption of a betterment levy approach to land conversion, designation of nature preserves, and to give support for the provision of housing for the economically weaker section of society. It also set out a brief programme recommendation for the elaboration of local detailed plans, leading to a detailed cadestra within the framework of the draft structure plan.

It is acknowledged that this BMRDA initiative provided a useful contribution to the formulation of this revised and up-dated Draft BMR Structure Plan.

SKR (South Karnataka Region) Context

At the macro level, the planning process in Karnataka, as in India, is characterised by an emphasis on economic planning. However, due to the absence of urbanisation policies, both at the National and State levels, irrespective of the powerful correlation that exists between economic growth and urbanisation, there is effectively no integration between planning for urban development and planning for economic development.

Also, in the Indian urban planning context, the emphasis has been on physical planning only with little attention to the spatial aspects of social and economic changes and their influence on the future development prospects and problems. Over time, such perspectives have become critically important considerations as the metropolitan cities become increasingly complex urban systems heightening the importance on sector inter-dependencies and inter-relationships. Thus, any metropolitan planning initiative must aim at securing co-ordinated development of different sectors for the achievement of specific objectives.

Integration of demographic, economic, social, spatial, physical, infrastructure and investment planning is, therefore, a pre-condition for the success of any planning process, particularly in the metropolitan and regional context. In this respect, the preparation of the BMR Structure Plan within the context of the SKR has consistently been viewed strategically and spatially as a seamless continuum. This was firstly expressed in the early formulation of the Strategic Development "Vision" (July 1997) and, more recently (February 1998), in the preparation of the integrated BMR & SKR Development Strategy report.

Only at the later stages in the plan preparation was the integrated BMR & SKR Development Strategy Report split into two separate but strategically inter-locking plans (ref. Fig.1.1). The reason for the split pragmatically relates to their respective application and status. The SKR Concept Plan is essentially a 'strategic guidance' plan to which local governments will be encouraged to comply with when formulating their respective District Structure Plans. In doing so, structure and local area plans which take full account of up-to-date regional guidance will raise fewer major policy issues and proceed more speedily than where this is not the case. Whereas the

Structure Plan for the BMR shall ultimately be promulgated as a statutory planning document to which compliance by the third tier of government will be in principle mandatory when formulating their local area and action plans. Where it can be justifiably demonstrated that the content of local area plans warrants deviation from the structure plan, local plans shall take precedence.

1.2 STRUCTURE PLAN PREPARATION

The work flow sequence adopted for the preparation of the BMR Structure Plan is displayed in Fig. 1.1 Work Methodology and the process of structure plan preparation in Fig 1.2 Plan Preparation Process. The fact that this was essentially the 'first round' of structure plan preparation it was imperative that a Sub-Regional Plan (SKR Concept Plan) was prepared in parallel. Without this, no regional context for the structure plan would exist and, as such, the validity of the BMR Structure Plan would be questionable.

In time, as the planning process evolves, State-wide and inter-State perspective plans that combine economic and spatial considerations within an all-India national framework will be available. Ultimately this dynamic continuum of iterative planning will form the institutionalised process for an integrated process of union, state, regional, structure and local plan preparation. At each stage in the hierarchy of plan preparation the plans that are 'nested' within the broader context will accordingly require review and up-dating.

In the case of the Draft BMR Structure Plan, two steps in its future evolution can are immediately foreseen. Firstly, the existing Bangalore Comprehensive Development Plan (CDP), for which the BMR Structure Plan and SKR Concept Plan respectively provide a new strategic context, will require review and recasting to be integrated with the BMR Structure Plan in the form of a unified plan for Bangalore City and its Metropolitan Region. Secondly, as and when a Karnataka State (economic and spatial) perspective plan is formulated, all plans lower in the spatial hierarchy will require review and up-dating.

Rapid appraisal and the "Vision" - the inductive approach

It is noteworthy that in this first round of structure plan exercise it was considered necessary to adopt an 'inductive' rather than a 'deductive' approach to plan preparation. This was predicated by the fact that project had a prior commitment that the 'plans' should specifically address the objective of 'decentralising growth' away from Bangalore to harness and constrain its increasing primacy in the region, lessen regional disparities and relieve development pressure within the conurbation. To this end, a rapid sector and development appraisal was carried out to enable a 'Strategic Development Vision" to be formulated early in the plan formulation process. This

acted as a vehicle to solicit responses and establish an early broad strategic consensus by which to orientate and focus project survey and research tasks.

This 'inductive' approach may not be a suitable methodology for the preparation of plans for other sub-regions and metropolitan areas where the overarching strategic goal is not prescribed or so apparent. In such cases the survey stage will need to be open-ended and aim in the first instance at identifying the critical problems and defining the major goal(s).

Furthermore, by virtue of this plan preparation project coming under the auspices of an ADB project loan there was a prior need to identify 'bankable programmes and projects (within growth centres and local action area/corridors)', again this may not typify other plan preparation exercises. However, given the scale and rate of urbanisation growth in the Indian context, it is considered a wise policy to seek in parallel to identify 'action areas' and short-term programme and project priorities by which to activate the implementation process. The rate of change makes it impractical to wait for the promulgation of respective 'context' plans, prior to identifying these more tangible interventions.

Fig.1.1 below sets out the salient features of the work methodology and Fig 1.2 displays the key stages in plan preparation process and a description of each stage in this process follows.

Figure: 1.1 Work Methodology

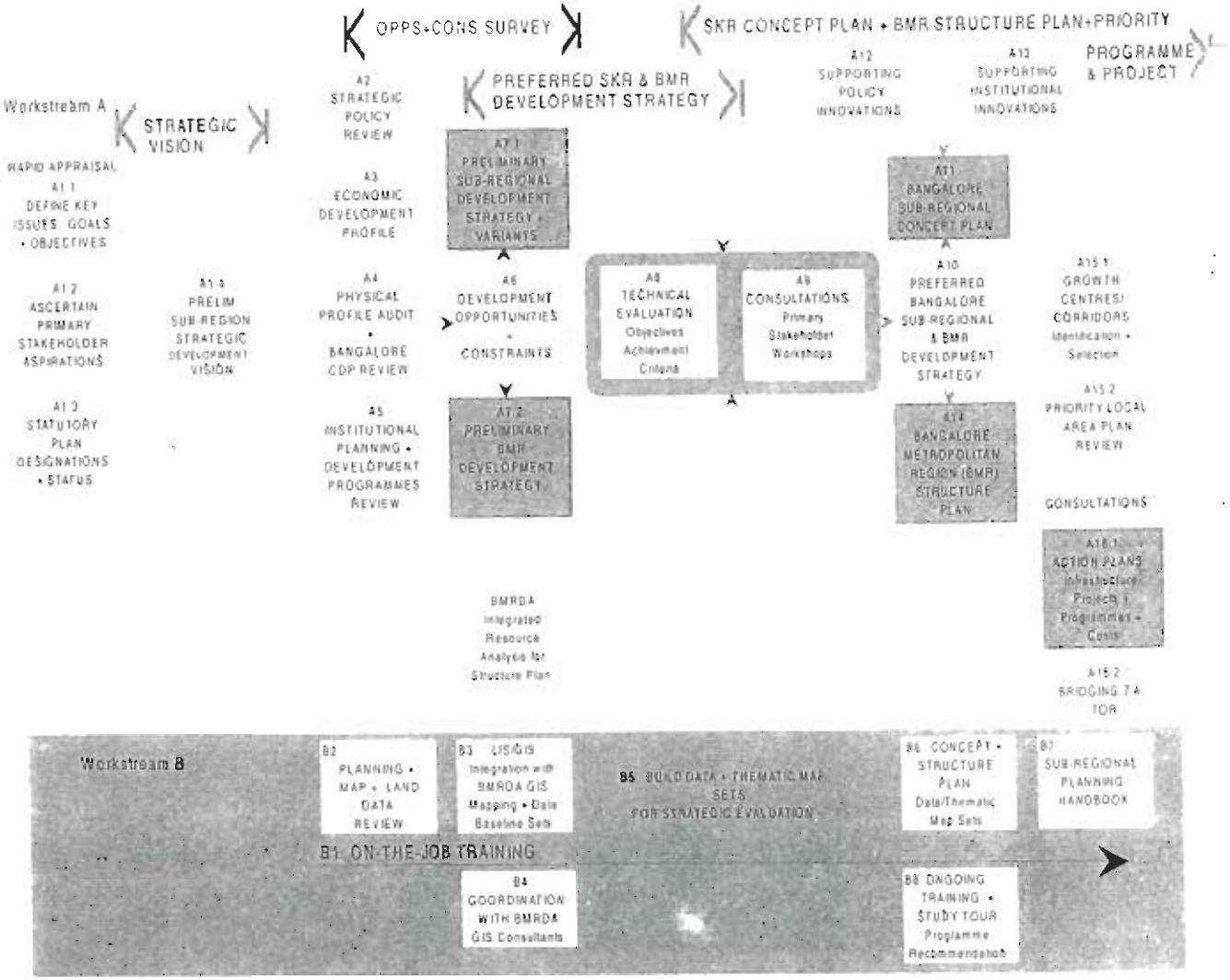
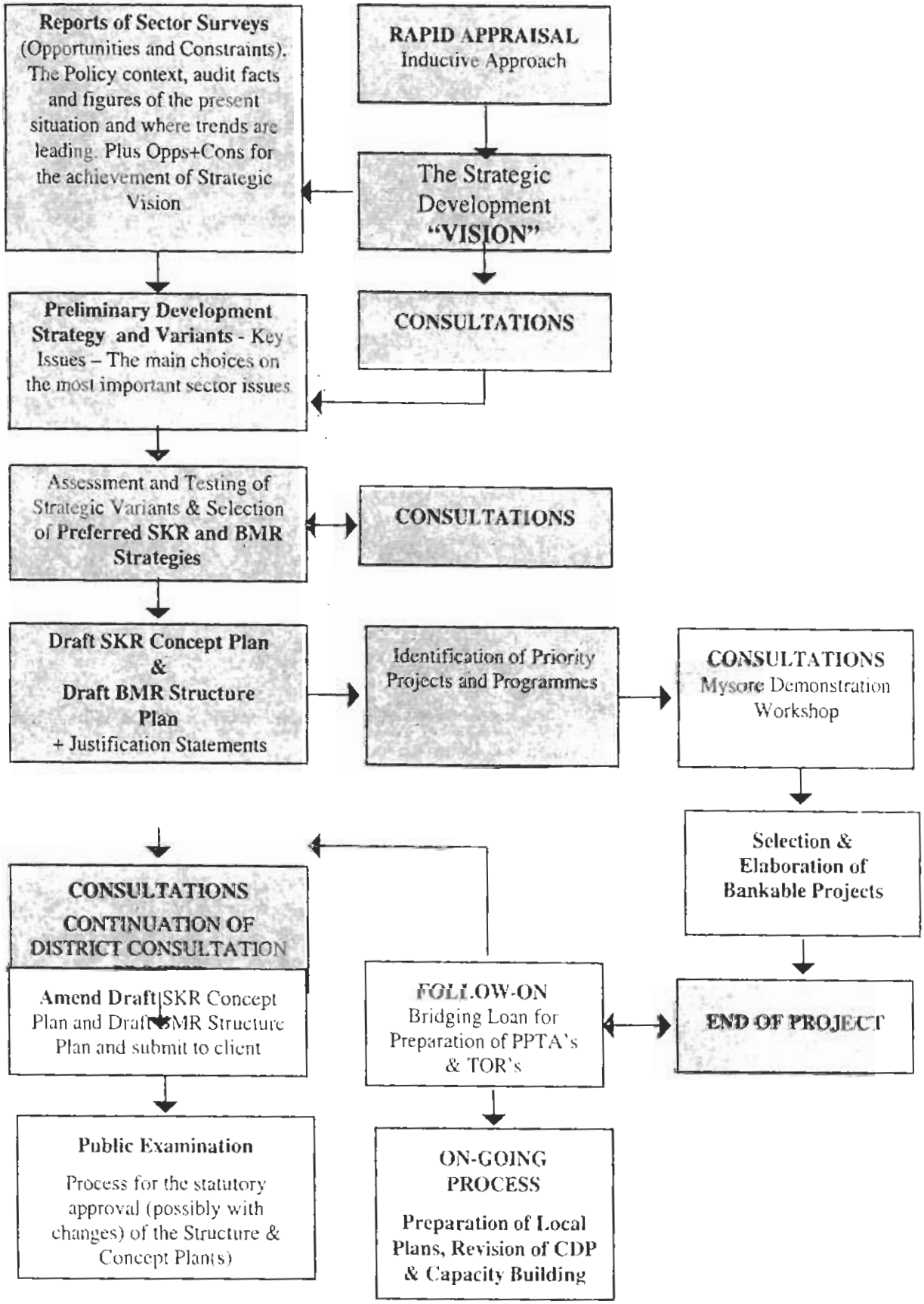


Figure: 1.2 Plan Preparation Process



Report of Survey

The inductive approach adopted, i.e. a 'closed' rather than 'open-ended' approach to the survey stage of plan preparation, increased the efficiency of the task undertaking by giving a specific context within which to 'frame' survey efforts. In consequence, the reports of survey are entitled on a sector by sector basis, Opportunities and Constraints, for the realisation of the strategic development 'vision' and are composed of the following volumes:

- Land Use and Land Cover
- Land Management
- Demography
- Induced Population in Viable Settlements
- Industrial Economy
- Transport
- Housing
- Utility Infrastructure
- Social Infrastructure
- Tourism

For each sector the facts and figures of the present situation, where trends are leading, and the implications for the achievement of strategic development 'vision' objectives are set out in respect of the overall sub-region and on a district by district basis.

Key Issues and Strategy Variants

For the BMR the strategic issues considered to be the key determinants of future development growth patterns were identified together with their implications for strategic intervention. A range of strategic intervention combinations were then assessed in terms of:

- how effectively they would compliment the achievement of the induced population growth targets and development interventions of the "preferred" regional (SKR) strategy, and
- how effectively they would counter the anomalies and negative development trends identified for the BMR.

Selection of the Preferred Strategy

The strategic variant or combination that was strategically assessed to be the most optimally desirable in terms of strategic objective achievement and realistic in its underlying assumptions was selected as the 'preferred' strategy.

Preparation of the Draft Structure Plan

The preferred strategy has been elaborated and refined to form an integrated set of domain and sector specific policies as a framework to guide the formulation of local plans and effectively co-ordinate and control future public and private sector investment decisions. Together with recommended implementation mechanisms - "The Way Forward" the Draft BMR Structure Plan is, in the main, composed of:-

- Structure Plan Sector and Area Policies codified and cross referenced to a Key Diagram of the BMR, incorporating
- Supporting Evidence and/or Justification statements.

Priority Projects and Programmes

To compliment the BMR Structure Plan a companion volume provides a descriptive listing of projects and programmes - (bankable projects) - that have been identified as suitable candidates for future short to medium term funding using a mixture of central, state, multi- or bi-lateral resources for their implementation. It is these that are considered necessary in the short-medium term to act as catalysts to start the process of shifting the trajectory of development onto a course that will achieve the principal long term strategic objective of decentralised and more balanced development within the BMR.

2nd Round Consultations

The Mysore Demonstration Workshop sets the scene for what is recommended to be a follow-on round of district workshops. The success of the Mysore Workshop clearly serves to illustrate the enormous benefit that can be derived from a transparent and participatory approach to plan formulation. Whilst a cadre of expertise represented by the SKR and BMR planning team remains in tact and accessible, it is highly recommended that the workshop 'road show' is extended to the other five districts including Bangalore rural and urban as one.

In support of this it is recommended that at the earliest the sector Opportunities and Constraints reports (reports of survey) be reconstituted as District specific compendiums and disseminated to district authorities along with a combined summary of the SKR Concept and BMR Structure Plan. This document dissemination process should pave the way for a second round series of district level consultations.

Regional Planning Handbook

In support of the district dissemination initiative advocated above, a Regional Planning Handbook has been published as part of the Structure and Regional Planning series. This describes systematically the project methodology to be adopted for the production of future sub-regional and metropolitan regional plans. Additionally, it sets out an indicative approach for translating the SKR and BMR plans into District (Structure) Plans and the modalities and techniques that this could involve - including Planning Data Information Management Systems and the key considerations for adopting, a Participatory Approach to plan formulation.

Follow-on PPTA's - End of the Project but the Process Goes On

The Programmes and Projects companion report to the BMR Structure Plan and SKR Concept Plan is a promotional portfolio for the KUIDFC aimed at securing funding support for the critical follow-on actions to sustain the inertia that has been created during the plan preparation period. Without concerted action to secure follow-on the benefits of the initiatives to date could evaporate.

Amend Draft Structure Plan

After taking account of further rounds of consultations and public participation workshops, the Draft Structure Plan should be amended and finally printed and submitted for statutory processing.

Public Examination- Finalising the Structure Plan

The responsible statutory authority holds Public Examination and approves the Plans (possibly with changes) and serves notice prior to official publication.

1.3 PURPOSE OF STRUCTURE PLAN

The response to Bangalore's growth has so far been sectoral in character. The political, legal and institutional issues have received scant attention. One reason appears to be the great complexity of the prevailing legal and institutional structure which has resulted in fragmentation of responsibility. Without the common denominator of a 'plan' that presents a set of strategic objectives that have the consensus support of elected representatives, key policy makers and administrators, co-ordination remains an anathema.

This problem has been compounded by poor inter-agency co-ordination. Investment planned by one agency often depends on lobbying for dependent strategic investments by another agency. The importance of synchronising these investments in the first instance seems not to have been appreciated. This manifests itself in the form of crisis urban management where the symptoms of urban dysfunction are attempted to be tackled post ad-hoc rather than in a pre-emptive or preventative manner.

> ***"Planning is by far the most important tool for coping with the increasing demands made by the growth of the city on housing, infrastructure and amenities. In the absence of proper planning, the city experiences infrastructural inadequacies and degeneration, and the authorities are driven to finding' ad-hoc' solutions and crisis management from time to time in respect of many of the city's requirements, to meet which advance action had not been taken.***
>
> *The Committee on Urban Management of Bangalore City, Chapter 4, p119, November 1997*

Purpose

National and State planning policies and regional guidance (i.e. The SKR Concept Plan), and the provisions of Structure Plans, aim at setting the broad framework for planning at the local level. It is intended that the Bangalore Metropolitan Region (BMR) Structure Plan should provide a generic model for the formulation of similar Structure Plans for Mysore, Mandya, Kolar, Tumkur, Hassan and Chamarajanagar as well as the other 22 districts of Karnataka, and :

- provide the strategic policy framework for planning and development control locally;
- ensure that the provision for development is realistic and complements with national, state and (SKR) regional policy guidance; as well as
- securing consistency between local plans for contiguous or neighbouring areas.

The strategic nature of structure plans is normally emphasised by the limitation that structure plans contain a "key" diagram rather than a map; these diagrams are not to be produced on a geographical base. To this end, the maps produced in the BMR Structure Plan are abstracts that have been generalised from the detailed 1:50,000 scale thematic maps produced from the original digitised satellite imagery. In this way undue detail is avoided whilst allowing plan and other data to be correlated, analysed, and revised more easily in the future at the overall BMR, district, taluk and local levels.

The BMR Structure Plan aims to provide a statement of the overall strategy for the future use of land in the BMR. Indicating how the balance between inducing decentralised concentration, managing containment and modifying the trends of development has been struck, and how development should be integrated with transport and utility infrastructure priorities. The Structure Plan includes land-use policies on the relevant topics covered in the sector 'opportunities and constraints reports'[2]. It is foreseen that as part of the on-going structure planning process additional sector or subject 'topics' may be covered at a later date and published as Development Control and Planning Policy Guidance Notes and Circulars together with Codes of Practice for Plan Preparation.

The Structure Plan should ensure that interactions between policies are fully considered; that the policies formulated under these headings form an integrated whole and that account is taken in general of their economic, social and environmental effects. However, environment does not appear in the list as a key topic in its own right, because environmental considerations should be taken into account in drawing up all policés and is as such ubiquitous.

The main function of the Structure Plan is to state in broad terms the general policies and proposals of strategic importance for the development and use of land in the area. Taking account of national, state and regional policies, and providing- the framework for the preparation of the more detailed policies and proposals of statutory district and local plans.

> ***Planning is important for raising public confidence and morale. Furthermore, planning helps to smoothen the relationship between the elected representatives and the officials in charge of the city. Residents of the city routinely - and quite rightly - blame the 'absence of planning' or 'poor planning' for everything from congestion on the roads to poor sanitation and water supply.***
>
> *The Committee on Urban Management of Bangalore City, Chapter 4, p119, November 1997*

2 Opportunities and Constraints reports are synonymous with 'Reports of Survey' and were prepared for 10 sectors between October 97 and April 98

STRATEGIC INTENT

The SKR Concept Plan and BMR Structure Plan must work together; the attainment of one is dependent on the success of the other. Indeed, in effect, there is but one development vision for the SKR and BMR, namely, "decentralised concentration" of development to the SKR combined with "containment and dispersed concentration" from the BMA to the BMR.

1.4 "MISSION STATEMENT" AND FUNDAMENTAL GOALS

The goals of the SKR and the BMR can be summarised in the following mission statement

> *"the mission of the integrated SKR and BMR development strategies is to change the landscape of investment opportunities of Southern Karnataka, so that development is appropriately managed in the BMR and successfully promoted in the surrounding SKR, thereby creating more equitable and sustainable regional economic conditions and growth prospects".*

The SKR and the BMR development strategies are "partners" in the task of ensuring that Bangalore and the surrounding Southern Karnataka Region develop in an appropriate and sustainable manner. These strategies, working together, are fundamental to the success of both the BMR and the SKR in the 21st Century.

The SKR and the BMR strategies must work together. For example, a key goal is to encourage investment in the SKR by promoting the decentralisation and/or deflection of economic activity from Bangalore. However, decentralisation / deflection must not be promoted to such a degree that the City loses either:-

- its pre-eminence in key wealth generating sectors such as software and electronics, or
- its function as a "gateway" to regional investments.

The form of the decentralisation and deflection from Bangalore must be that which relieves congestion and development pressure in the City and not that which might jeopardise the City's competitive position. The two goals must be harmonised and balanced to work in unison.

Bangalore's Fragile Future – "Do not shoot the goose that lays the golden egg"

Bangalore is perceived to be India's best city for business as evidenced by two successive surveys carried out by Business Today – Gallup MBA in 1994 and 1996. It enjoys a salubrious climate, has a relatively clean and green ambience, and provides a good quality of life to its citizens. It is India's "Garden City" and "Silicon Valley".

However, in a recent Asia Week Special Report (December 5, 1997), Bangalore was ranked 25th among 40 Asian cities based on a wide range of 24 quality of life parameters. Unfortunately for Bangalore, its Asian ranking reflects the fact that in the recent past its rate of growth has outstripped its custodian's capacity to carry out effective urban management. As a result, there is a consensus that the quality of life characterising the City is being increasingly eroded. To harness and control this negative trend, it is now necessary to give Bangalore time to 'get its house in order' and shift from crisis management to forward planning.

Safeguarding Bangalore's Assets through Strategic Planning

The pace and timing of growth now needs to be tempered and conditions created to better cope with the next cycle of economic growth. Speculative, unstructured and ad hoc urban growth needs to be substituted by strategic planning and policy decision making that will guide investments towards the desired developmental 'vision' of the future. Only by recognising that its high value, bankable 'garden city' assets are fragile and finite and therefore in need of careful and considerate exploitation, will Bangalore's capacity to attract and increase its future share of the Asian region's trans-national capital investments be realised. Therefore, important common goals of the SKR and BMR strategies are to set out an integrated strategy which will:

- **'contain' and 'guide' the future growth of Bangalore so that it maintains its competitive position to attract inward investment and encourage domestic investment , particularly in key sectors;**
- **through a renaissance of its garden city image, offer a unique quality of life;**
- **whilst simultaneously encouraging the decentralisation of economic activity for the benefit of the SKR and without jeopardising Bangalore's future .**

Thus, it will be of paramount importance to take concerted action to strike the right balance between:-

- harnessing the growth of Bangalore but not at the cost of slowing it down to such a degree that it loses its 'gateway to regional investments' function; and

- ensuring that the degree of growth stimulated in targeted strategic centres of Mysore and Hassan are adequate to ensure a rapid build-up of critical mass for self-sustaining growth, and result in the sort of change desired by the host communities.

It is the former component of this two pronged approach that constitutes the premise or hallmark on which the BMR strategy has been formulated and both population and employment targets set accordingly.

1.5 OBJECTIVES

It is necessary to translate the above stated goals into more operational objectives to enable a framework for the integration of sector investments within a common spatial framework to be formulated.

To this end it can be stated that the overall objective of the BMR Strategy is to promote the sustainable development of the metropolitan region by:-

- Taking strategic policy measures to encourage the concentrated decentralisation (through deflection of new or decanting existing selective economic activities), from the BMA to strategic satellite towns, growth centres and nodes in the periphery of the BMRDA. Thereby, alleviating the excessive burden of demand on urban services and resources of the BMR. Both these actions are designed to relieve Bangalore of excessive development pressures to create the opportunity to better plan and manage the City's future growth.

- Complimenting the strategic policy measures through the introduction of planning 'tools' (guidance, rules and regulations and land management procedures) which will allow decision-makers to appropriately guide and control urban growth, while simultaneously ensuring that Bangalore's significant position in the economic landscape of India is protected and maintained.

It is the prognosis of the Structure Plan that to control and manage Bangalore's growth rates within reasonably conservative targets and the desired urban form, will require the achievement of a set of high kudos objectives, namely :-

- a more rational and better use of land and water resources;

- improved utilisation of urban infrastructure and increased efficiency in the supply of municipal services;

- a more equitable and efficient distribution of community and technical facilities;

- a more optimal transport system that facilitates the efficient movement of goods and people, mitigates negative environmental impacts and enables the city to function at a more optimal level;

- a better economic return on public investments in particular in levering and inducing the desired private sector response;

- give the BMRDA, BDA and BCC city managers the breathing space to take stock and set the necessary ground rules to guide and control the next cycle of Bangalore's growth towards a strategic vision aimed at revitalising the City's inherent attributes and reinstating civic pride.

1.6 TARGETS AND INDICATORS

Indicators and targets are considered to be more quantifiable factors that are benchmarks by which the success or failure of strategic, or planning intent can be assessed during the course of the plan's operational time frame. If data feedback indicates that targets are not being met, then they may need modifying to reflect changing circumstances. If after review, they are considered to be unattainable, then goals and objectives may need reconsideration and new targets set. The process is dynamic and when plans are due for review, revision, or for up-dating, targets will need to be reflected upon in the light of past experience.

The sector topics for which target setting is appropriate is, at the level of regional and structure planning, necessarily broad in nature and relates, in the case of this Structure Plan, directly to the underlying population distribution methodology adopted for its formulation. In consequence, "induced population" and related "secondary sector employment demand" are the principal indicators with which to monitor future growth and change, and to assess the degree to which development is on course or at variance with the desired strategic development trajectory.

Over time a range of other (secondary) indicators which measure various aspects of the success or otherwise of the strategy should be introduced. In the case of this 'first round' Structure Plan the data necessary for such 'benchmarking' was unavailable and was impractical to generate as primary data since it would lack the essential time series dimension for carrying out statistically meaningful projections or forecasting. Collecting data to operationalise many secondary indicators is time consuming and resource intensive, but ultimately an essential tool for decision makers to have greater confidence in plans and policies. Hence, in the short-term it is recommended that all effort is devoted to the primary indicators and as and when resources become available, increasing use of secondary indicators should be made.

Recommended Primary and Indicative Secondary Indicators

• Primary Indicators and Targets - BMR	• induced population numbers in the satellite towns, growth centres and nodes in the BMR periphery; • secondary employment generation in the satellite towns, growth centres and nodes in the BMR periphery;
• Secondary Indicators and targets - BMR	• growth of key industrial sectors and increased economic participation rates; • increase in regional GDP benchmarked against leading regions in India and that of the Newly Industrialised Economies; • reduction in travel times and traffic congestion; • reduction in air pollution and associated health related problems; • improvement in wastewater treatment and solid waste collection and disposal; • reduction in the rate of loss of agricultural land • maintenance of green belt area;

If the strategy does not lead to an overall improvement in the performance of the regional economy, the future redistribution of population and employment, and congestion and unstructured growth intensify in Bangalore, then at a most important level, the strategy will have failed.

The achievement of the targets associated with the indicators of the success or otherwise of the integrated SKR Concept Plan and BMR Structure Plan will be dependent on two symbiotic factors:-

- **"pull factors"** - the timing and rate of implementation of major transport and physical infrastructure projects within the BMR and SKR, as key strategic development variables; and
- **"push factors"** - the degree of success of the development control mechanisms and instruments have in containing and guiding future area development within the BMR.

Both pull and push factors are key determinants of the pace at which spatial restructuring will take place between the BMR and SKR and, therefore, the pace of population and employment restructuring, and the relative economic development of the SKR vis a vis the BMR.

BMR STRATEGIC DEVELOPMENT "VISION"

During the first phase in the preparation of the BMR Structure Plan and its context plan - the SKR Concept Plan - a Strategic Development 'Vision" was formulated. The purpose of the 'Vision' was to provide an early holistic

A prerequisite to translate the broad strategic development 'Vision" into a more operational development strategy for the BMR, or for that matter any location or area. is the need to:

- establish overall population distribution and growth targets within particular planning time horizons;
- tormulate spatial development framework to meet these targets;
- introduce mechanisms and instruments to guide and control development towards the achievement of the desired strategic development vision.

1.7 POPULATION 'REDISTRIBUTION' TARGETS AND EMPLOYMENT IMPLICATIONS

Population Targets

The target population for Bangalore Metropolitan Area's (BMA) first Comprehensive Development Plan (CDP) was 7.0 million by the year 2001. After the 1981 census results indicated a sharp fall in the previous decennial growth rates from over 76 percent between 71-81 to slightly under 42 percent for 1981-91, the 7.0 million population target in the revised and approved CDP (1995) was shifted back a decade to the year 2011.

The assumptions underlying the revised CDP targets are:-

- **Interim Population target of 5.8 million for 2001**

  Decennial Growth Rates :

  1991 - 2001 = 41.95

  2001 - 2011 = 20.69 %

- **Compound Growth Rates :**

  1991 - 2001 = 3.6 %

  2001 - 2011 = 1.9 %

Only through forecasting a sharp downturn for the 2001-2011 decennial period can the total population be held at 7.0 million. The 1.9 percent average growth rate adopted for the 2001-2011 period (CDP, 1995), implies that during this period the BMA will experience only marginal inward migration. Given the last 40 year trends experienced in Bangalore and other Metros, a more realistic picture is that growth rates will continue to be held at around or above the 3.6 percent applied over the 1991-2001 decade period.

Metro Decennial Growth Rates (% ages)

CITIES	51-61	61-71	71-81	81-91	Average
Gt. Bombay	3.42	3.70	3.28	4.33	3.68
Calcutta	2.53	2.18	2.16	1.82	2.17
Delhi	5.09	4.47	4.62	3.94	4.53
Madras	2.34	5.00	3.08	2.39	3.20
Hyderabad	1.21	3.74	3.56	5.50	3.50
Bangalore	4.40	3.30	5.81	3.53	4.26

It is unlikely that the process of urbanisation (and in particular of metropolitanisation) in India will significantly decline over the next 15-20 years. More particular given Bangalore's attractive 'cosmopolitan lifestyle' advantages in an age of increasing globalisation of trade it is unlikely that, even after applying policies of growth constraint and decentralisation, that its compound growth rate will fall substantially below that which it has averaged over the last 40 years.

Furthermore, actions on the ground. in the form of large new projects located on the outer edge of the green belt in close proximity to the BMR. namely:

- Devanahalli International Airport (total estimated population 300,000 by year. 2011, to be revised upwards as a result of expansion of local planning area designation).
- Urbanisable Block total population 1.0 million (circa 100,000 population by year. 2011).
- Mysore Expressway and 5 Townships - population 150,000 each, one within the green belt (circa 5-600,000 by year. 2011).
- Other major projects associated with the completion of the Outer Ring Road (circa 100,000 by year. 2011).

Total 'Urban Fringe' induced population = circa 1.0 million by the year 2011

The most likely effects of these project initiatives will be to induce additional inward migration of a scale that could counter and substitute - the more localised outward shift of population and economic activity from the BMA. Without draconian measures to prohibit the spread and agglomeration effects of these major projects, they could fuel growth within both Bangalore Urban and Rural Districts (BUD and BRD).

Under this scenario:

Without strategic intervention, it is forecast that the 'new projects' will increase the overall quantum growth in economic activity within the BMR increasing the average 3.46 per cent annual compound population growth rate, and pushing the population of the expanded BMA (ref. 'Vision' Report[3]) to around 8.83+ million by the year 2011.

If these trends were allowed to continue along this trajectory, Bangalore is likely to end up with an alarming 14.0+ million population by the year 2020. By which time the entire BMA and the whole of the surrounding green belt would coalesce as a Bangalore urban conurbation and the 'spotted' development phenomena would extend along the principal radial corridors to the outer limits of the BMR .

This is not as unlikely as it may seem at first glance. Mumbai and Calcutta urban agglomerations already had populations of 12.6 and 11.0 million respectively as per the 1991 census and these cities are far more physically constrained against growth than Bangalore.

Under this scenario of accelerated urban agglomeration and accretion growth, effects could themselves in the form of:-

- *unplanned urban infill and densification of the City Core and BMA conurbation area ,*
- *extension, consolidation and lateral spread of ribbon development along the principal transit corridors, and*
- *uncontrollable urban sprawl and coalescence within the BUD and BRD.*

With strategic interventions, it is targeted that the population of the expanded BMA[4] should aim to be contained at around 7.60 million until the year 2011. This acknowledges that additional circa 0.5 million will be induced as a knock-on inertia effect resulting from the new projects in the BMR peripheral satellite towns and urbanisable block 'growth centres' (Nelamangala and Bidadi) and the International Airport development in Devanahalli.

3 Preparation of Bangalore Sub-Regional Plan, 'Strategic Development "Vision", July: 1997 Section A.2. page 25. (GHK) in association with TISS and TECS

4 Ref. SKR and BMR Development Strategies, Feb '98, Sect 5.2.2 page 78

Leaving 1.23 million (of the without intervention 8.83 million) to be deflected or attracted to the BMR satellite towns and growth centres, as well as the SKR's counter magnets, or its primary and secondary growth centres, through strategically induced growth.

From this broad population distribution strategy a more fine mesh population distribution scenario was derived. Firstly, the aggregate sum was analysed against the potential of settlements within the study area to absorb growth[5]. Next, the findings of this were set against SKR strategic intent based around the priority development of three macro transport-infrastructure corridors[6]. This resulted in a targeted 60:40 induced population split between the SKR and BMR respectively i.e. 0.74 million to the SKR and 0.49 million to the BMR. Finally, the BMR's 0.49 million induced population was split 70:30 between the Western:Eastern halves of the BMR respectively. This 'split' was derived after considering :-

- the strategic context and interface with the SKR corridor related priorities;
- the development opportunities offered by a combination of the principal transport, infrastructure and designated area development projects;
- and overall strategic objectives balanced against the major ground water constraints of the Eastern Segment of the BMR.

The resultant population distribution targets for the BMA and BMR are set out in the following table:

5 Ref.: *Opportunities and Constraints: Induced Population in Viable Settlements of the SKR to Regulate Growth of the BMR*

6 Ref. : *SKR and BMR Development Strategies, Feb.'98, Sect. 2.1.4, pp.17-29.*

Table 1.1 Total Population Distribution Targets for the Bangalore Metropolitan Region

Area/Sector	Population Targets (Lakhs)					
	1996	2011			1996-2011	
	Estimated	Normal	Induced	Target	Pop Growth	AAG (%)
1	2	3	4	5	6	7
BANGALORE METROPOLITAN AREA (BMA)	51.00	71.00	5.00	76.00	25.00	2.70
Western Segment						
APZ 1.BIDADI, KANAKPURA	8.26	11.38	2.30	13.68	5.42	3.38
APZ.2.NELAMANGALA-	1.57	2.13	1.00	3.13	1.56	4.71
MAGADI Interstitial Zone	2.11	3.05	0.20	3.25	1.14	2.92
Eastern Segment						
APZ 3.DEVANAHALLI AND DODDABALLAPUR-	4.22	5.88	0.80	6.68	2.46	3.11
APZ .4. HOSAKOTE-	2.06	2.80	0.20	3.00	0.94	2.54
APZ.5. ANEKAL	2.40	3.32	0.40	3.72	1.32	2.96
TOTAL BMR + BMA	**71.62**	**99.56**	**9.90**	**109.36**	**37.74**	**2.86**

Notes: Col 1: BMR is divided into 2 segments and 5 APZs
Col 2 to 5: Main Source: Opportunities and Constraints: Induced Population in Viable Settlements of the SKR to Regulate Growth of the BMA, Report Pages 27 & 30,.
Col 6: Indicates the resulting total population increase between 1996 and 2011.
Col 7: Average Annual Growth of total population between 1996 and 2011.

Employment Implications

For the purpose of deriving employment targets in the manufacturing and trading sectors and the corresponding need for industrial areas and general development, it more appropriate to work with projections of the urban population, rather than the total population.

Urban population in the BMR is estimated at 52.4 lakhs (5.3 million) in 1996 and is projected to increase to 85.8 lakhs (8.6 million) by the year 2011. The corresponding average annual growth rate in urban population is 3.35 per cent. The increase in urban population has been arrived at by summing the estimated normal and induced growths in population. BMR's urban population projection has been derived by aggregating together, the expected urban population in its composite sectors. The details of this estimate are presented in the table below.

Table 1.2 Urban Population Distribution Targets for the BMR

Area/Sector	Population Targets (Lakhs)					
	1996	2011			1996-2011	
	Estimated	Normal	Induced	Target	Pop Growth	AAG (%)
1	2	3	4	5	6	7
BANGALORE METROPOLITAN AREA (BMA)	48.67	71.00	5.00	76.00	27.33	3.02
Western Segment						
APZ 1.BIDADI, KANAKPURA	1.54	1.91	2.30	4.21	2.67	6.78
APZ.2.NELAMANGALA-	0.27	0.34	1.00	1.34	1.13	13.15
MAGADI Interstitial Zone	0.21	0.24	0.20	0.44	0.23	5.05
Eastern Segment						
APZ.3.DEVANAHALLI AND DODADDABALLAPUR-	1.08	1.47	0.80	2.27	1.19	5.08
APZ.4. HOSAKOTE-	0.31	0.54	0.20	0.74	0.43	5.97
APZ.5. -ANEKAL	0.36	0.55	0.40	0.95	0.59	6.68
TOTAL BMR + BMA	**52.38**	**76.05**	**9.90**	**85.85**	**33.47**	**3.35**

The figures in the above table, in effect envisage the complete urbanisation of the BMA (i.e., the enlarged BMA) by the year 2011. Sizeable urban population inducements are targeted around the urbanisable of Bidadi (2.2 lakhs) and Nelamangala (1.0 lakh) and in the core area of the designated planning area containing the Bangalore International Airport Authority Development Area (0.80 lakh). Urban population would increase fastest in the Nelamangala sector (13.15 per cent per annum) due to the low '96 base population, whereas in absolute terms, the Bidadi-Kanakapura zone constitutes over 23 percent of the total induced growth.

The urban population targets presented in the table above have been used to estimate the employment requirements in the manufacturing and commercial sectors. Based on available indications from census data on urban areas, the work participation rate is projected at 40 per cent of the total population, and a further 30 per cent thereof (i.e., 12 per cent of the total population) is expected to seek employment in the secondary/manufacturing sector. The balance 70 per cent is expected to take up jobs in the tertiary/commercial and informal sector.

By deducting estimates of the current number of industrial jobs in the BMR, estimates of the number of additional manufacturing jobs that are likely to be required up to the year 2011 have been made. The corresponding additional industrial area that would be needed has been worked out based on a norm assumption of 124 jobs per hectare (50 jobs per acre) of industrial land. The results arrived at are presented in the table below.

Table 1.3 Recommended Employment Pattern in the Manufacturing Sector for the Bangalore Metropolitan Region

	Population (000')		Industrial Jobs (000's)		Additional Industrial	Additional Industrial
Area/Sector	1996 Est.	2011 Target	1996 Est.	2011 Target	Jobs Requ. (000's)	Area Requ. (Hectares)
1	2	3	4	5	6	7
BANGALORE METROPOLITAN AREA (BMA	4867	7600	498	912	414	3351
Western Segment						
APZ 1. BIDADI, KANAKPURA	154	411	19	49	30	245
APZ 2.NELAMANGALA-	21	134	4	16	12	98
MAGADI Interstitial Zone	21	44	3	5	2	19
Eastern Segment						
APZ.3.DEVANAHALLI and DODDABALLAPUR	108	227	11	27	16	132
APZ.4. HOSAKOTE-SECTOR	31	74	5	9	4	32
APZ.5. ANEKAL	36	95	86	11	-75	-604
TOTAL BMR + BMA	**5238**	**8585**	**626**	**1030**	**404**	**3272**

The above table is based on the premise that the BMR does not have vacancies in existing designated industrial areas i.e. the land is committed in one way or another, but not necessarily developed or productive. Consequently, the entire additional industrial area required (as derived in Table above) would have to be provided for through new developments.

The negative sum against for the additional industrial area required in the Attibele – Anekal sector suggests that there is surplus industrial land available here. However, this is not the case. The negative sign reflects the fact that there is already excessive industrial development in this sector (i.e., primarily along the Hosur Road). The industrial areas in this sector are largely employing people from within the BMA who are commuting daily to their place of work. Inevitably the mismatch between an areas resident population and derived job demand, and job supply within the same area. However, overall the aggregate pattern will be a sound indication of the shortfall.

This mismatch displays itself most significantly in the BMR. In pure arithmetic terms demand in the BMA is for 3,300 hectares of industrial land if the projected population is to be provided requisite industrial jobs within the BMA itself. It is reasonable to assume that in the order of half the industrial employment in the BMA is in small and micro scale industries, which are less land-intensive when compared to medium and large scale units. Practically all of this demand will be absorbed into the urban fabric within mixed use and residential cottage industry type areas. Furthermore, given the relatively high cost of land in the BMA, of the remaining 1,650 hectares formal medium scale industrial demand most would, in actual practice, locate outside the BMA.

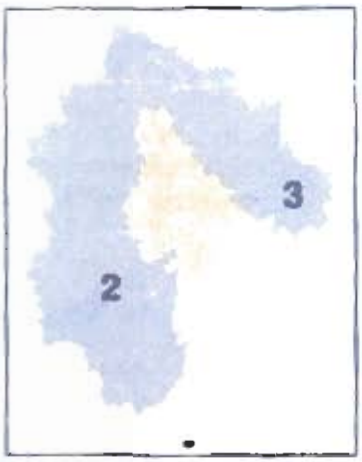
Assuming the Structure Plan strategies are successful, the majority of this demand would be decentralised and concentrated in the priority growth centres, nodes and corridors of the BMR. Thus, less 300 hectares designated for the BMA, of the remaining 1,350 hectares demand the main share is assumed to be provided in this way. To this a further 600 hectares demand generated by the BMR's own economically active base population need to be accounted for. Adopting the same 50/50 micro-small (informal) to formal sector ratio, adds a further demand for 300 hectares of secondary manufacturing and commercial land, yielding a total of 1,650 hectares demand for the BMR. Since over 80 percent of the BMR industrial area demand will be generated by workers living in the BMA this will result in a massive increase in the ebb and flow of daily commuter traffic between the BMA and the BMR. In consequence the efficiency of the capital's urban economy will be heavily reliant upon the capacity of the major radial roads and transport system to be able to cope with the increased target volumes.

Ultimately as Bangalore's urban economy matures and diversifies, it is foreseen that commuter patterns will gradually be reversed. To facilitate this, land uses catering for secondary manufacturing and commercial sector activities will need to be spatially integrated with housing and related community facilities in the form of more comprehensive, self sufficient 'township' type developments. Commuting patterns would then be reversed, driven by high order retail and commercial service sector, banking, government administration orientated jobs that market forces would concentrate in Bangalore's CBD (Central Business Districts). Preparing for this transition and ultimate transformation in the urban spatial economy of Bangalore is what this Structure Plan seeks to address.

1.8 SPATIAL DEVELOPMENT FRAMEWORK

Spatial and Administrative Anomalies

The Bangalore Metropolitan Region (BMR) as currently defined under the BMRDA Act 1985, administratively comprises of the 3 taluks of Bangalore Urban District (BUD); the 8 taluks of Bangalore Rural District (BRD) and 1 taluk of Kolar District** Planning jurisdictions comprise of the Bangalore Metropolitan Area and Metropolitan Region within which a number of local planning areas have been designated.

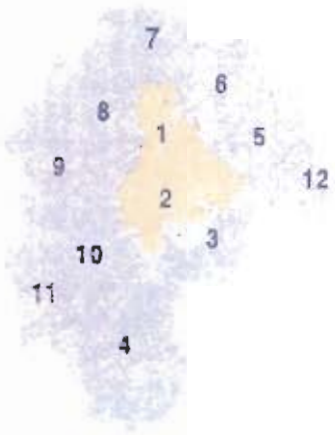


Administrative Jurisdictions within the BMR

1 Bangalore Urban District (3 taluks)
2 Bangalore Rural District (8 taluks)
3 Kolar District (1 taluk)

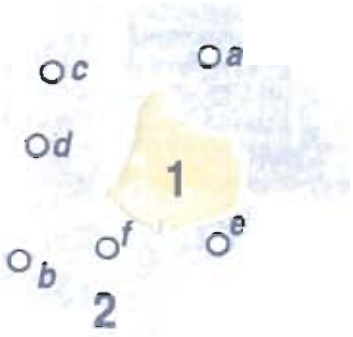
Taluk Divisions within the BMR

Taluk	Area (in sq.km)	Population (in million) 1991	Density persons/ sq.km
1 Bangalore N.	902	0.93*	1027
2 Bangalore S.	709	1.01*	1425
3 Anekal	528	0.19	360
4 Kanakapura	1590	0.32	201
5 Hosakote	546	0.18	330
6 Devanahalli	457	0.16	350
7 Doddaballapur	798	0.22	276
8 Nelamangala	524	0.14	267
9 Magadi	798	0.19	238
10 Ramanagaram	625	0.21	336
11 Channapatna	545	0.24	440
12 Malur	637	0.17	267



* Excluding BUA

** Malur Taluk of Kolar District as been excluded from BMR vide Karnataka Act ... of 2006



Planning Jurisdictions within the BMR

1 Bangalore Metropolitan Area
2 Bangalore Metropolitan Region
- *a* Devanahalli Proposed Airport Area
- *b* Ramanagaram & Channapatna Planning Area
- *c* Nelamangala Local Planning Area
- *d* Magadi Local Planning Area
- *e* Proposed Anekal Local Planning Area
- *f* Proposed Bidadi Local Planning Area

'Status Quo – No Changes in Existing Spatial and Administrative Juristriction'

Bangalore City Corporation
Bangalore Metropolitan Area
Bangalore Urban District – outside BMA
Bangalore Rural District
Bangalore Rural District within BMA
Malur Taluk of Kolar District (Excluded from BMR)

The overlapping plan preparation responsibilities that currently exist and need to evolve within these spatial jurisdictions as a result of the 73rd. and 74th. Constitutional Amendments are displayed in the figure above and the table on the following page.

Territory	Area (in sq. km)	Existing Plan Typology	Existing Institution Responsible	73rd / 74th Constitutional Amendments Implications
(1) Bangalore Metropolitan Area	1279	Comprehensive Development Plan	Bangalore Development Authority	Metropolitan Planning Committee / BDA / Local Bodies review & update CDP
(2) Bangalore Urban District	911	Structure Plan	Bangalore Metropolitan Region Development Authority	District Planning Committee / BMRDA / Local Bodies prepare District Development Plan
(3) Bangalore Rural District	5815			District Planning Committee / BMRDA / Local Bodies prepare District Development Plan
(4) Malur taluk of Kolar District	657			District Planning Committee / BMRDA / Local Bodies prepare District Development Plan

The mismatch between administrative areas and the nature of plans required to be prepared under the 73rd. and 74th. Constitutional Amendments can best be reconciled in one of two ways as illustrated opposite:

Option one : Expand Bangalore Metropolitan Area (BMA)

"Bangalore Metropolitan Area and Bangalore Urban District Co-terminus"

Proposed enlarged BMA (co-terminus with BUD)

new areas to be added

area to be removed

Proposed BMR Structure Plan Area (co-terminus with BRD)

Malur Taluk removed from BMR

Territory / Component	Bangalore Metropolitan Area	Bangalore Rural District
Geographical Area (sq.km)	2190	5815
Plan Typology	Comprehensive Development Plan (CDP)	Structure Plan
Existing Institution Responsible	Bangalore Development Authority	Bangalore Metropolitan Region Development Authority
73rd & 74th constitutional amendment implications	Metropolitan Planning Committee/BDA/Local Bodies review & revise CDP for larger area	District Planning Committee/ BMRDA / Local bodies prepare district development plan

Option Two : Expand Bangalore Rural District

"Add Area of Bangalore Urban District (excluding BMA) to Bangalore Rural District"

Proposed enlarged BMA (co-terminus with BUD)

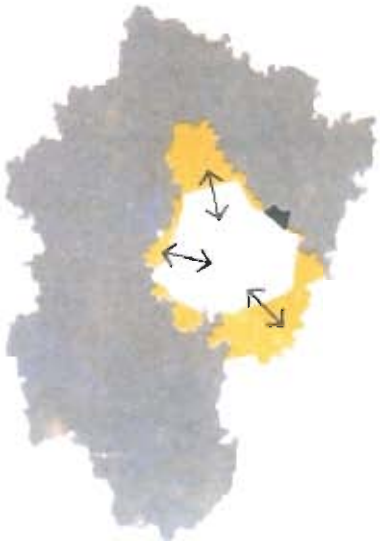
new areas to be added

area to be removed

Proposed BMR Structure Plan Area (co-terminus with BRD)

Malur Taluk removed from BMR

Territory / Component	Bangalore Metropolitan Area	Bangalore Rural District
Geographical Area (sq.km)	1279	6726
Plan Typology	Comprehensive Development Plan (CDP)	Structure Plan
Existing Institution Responsible	Bangalore Development Authority	Bangalore Metropolitan Region Development Authority
73rd & 74th constitutional amendment implications	Metropolitan Planning Committee/BDA/Local Bodies review & revise CDP	District Planning Committee/ BMRDA / Local bodies prepare district development plan



Given that the current urban management capacity of the BDA is already over-stretched, to expand its territorial responsibilities would be inappropriate. Therefore, it is recommended that Option Two is adopted to add the areas of Bangalore Urban District (excluding BMA) to Bangalore Rural District. This would unify the BMR into one district, and retain the logic of the green belt being theoretically the buffer zone between the conurbation and its rural metropolitan hinterland.

During the process of promulgating the Draft BMR Structure Plan as a statutory document, the review and up-date of the BDA Comprehensive Development Plan (CDP) with local bodies, will enable the two to be combined into an integrated Metropolitan (Unitary) Structure Plan. In this respect, steps have already been taken by the Karnataka State Government to restructure its administration in preparation for this eventuality.

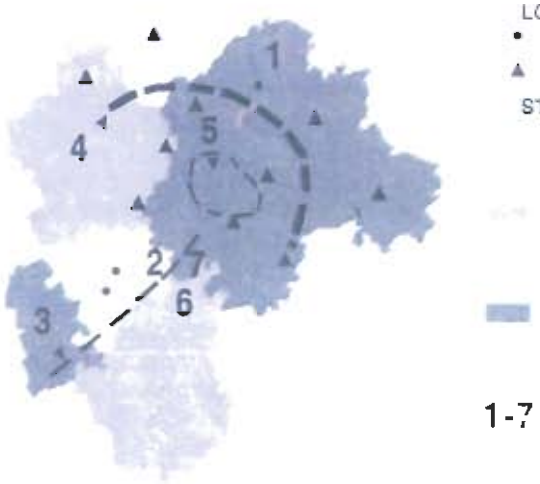
Development and Water Resource Conflicts

Locational decisions for industrial investments have tended to be opportunistic, lacking any comprehensive strategic rationale to guide decisions. This has lead to high concentration of industrial investments in BMR result over-exploitation of groundwater, encroachment on prime agricultural land and infilling of waterbodies and tanks for industrial development.

Efforts continue to meet BMR water demands which are generated in a spatially fragmented manner, and, in the main, in locations with dire water resource shortfalls.

BMR water demands for non-agricultural purposes account for around 50 percent of South Karnataka's regional total. It is urgent that demand lead responses are recast within a forward planning strategic framework to ensure more optimal use of scarce and finite resources.

Location of Major Committed and Proposed Industrial Area Developments and Groundwater Status



LOCATION OF INDUSTRIAL AREAS

- Existing Industrial Areas
- Proposed Industrial Areas

STATUS OF GROUNDWATER

White or Safe Area: If the projected net extraction in a taluk in year 5 is less than 65 percent of total utilisable ground water resource for irrigation

Grey Area: If the projected net extraction in a taluk in year 5 is between 65 and 85 percent of total utilisable ground water resource for irrigation

Dark Area: If the projected net extraction in a taluk in year 5 is in excess of 85 percent of total utilisable ground water resource for irrigation

1-7

Location of Major Committed and Potential Developments

1. Devanahalli International Airport
2. Urbanisable Block or New Township
3. Bangalore-Mysore Express Way and associated townships
4. Northern by-pass and Township
5. Outer Ring Road and adjoining development
6. Karnataka Power Corporation - Naphtha Power Project
7. Other major projects
   - Volvo Car Company
   - Toyota / Kirloskar
   - Eagleton Golf village
   - Xanadu International Village and
   - Large residential and commercial

The Metropolis Hinterland – The Urban Fringe

The metropolitan fringe is a dynamic zone which is increasingly being subjected to urban growth and migration pressures as centrally located land becomes scarcer, land values increase and the inconvenience of accessing central locations more apparent.

In parallel, within the Bangalore Metropolitan Region, the absence of a policy and strategic guidance plan for the BMR means :

- building sanctioning procedures and development control regulatory capacities are unable to keep pace with demand
- industrial and infrastructure investment decisions are uncoordinated particularly in the peri-urban areas where pressures for urban expansion are increasingly pronounced and difficult to monitor and control

Core Area
Satellites
Conurbation
Green Belt
Ribbon Development
Approved Northern By-Pass
Proposed Southern By-Pass

1.9 STRATEGIC RESPONSE - DEVELOPMENT THEMES

In the SKR & BMR Development Strategy Report (February 1998) the preferred development strategy was identified. The main thrust of this strategy centres around prioritising development along the Bangalore-Mysore and Nelamangala Corridors. The adoption of this twin pronged approach combines the objectives of:-

- Modulating and containing development pressures in the Eastern Segment whilst inducing investments in the Western Segment that will deflect and concentrate growth in strategically located areas;

- Integrating the metro BMR with macro SKR strategy which recommends focusing development, firstly, on infrastructure and 'nodal' growth along the Bangalore-Mysore corridor and, secondly, at Hassan and Nelamangala growth centres on the Mangalore-Bangalore corridor.

The strategy acknowledges that past events and the on-going momentum of development generated by both public and private sector development commitments and those high profile proposals in the pipeline, are not necessarily contrary to strategic intent. However, many such events as cited in the Strategy Report tend, due to unguided market forces and lack of sector co-ordination, to exacerbate and consolidate the problems associated with the lack of strategic integration between locational and area development investment decisions.

It is the 'strategic themes' that are recommended as the policy approach to ameliorate and solve these critical shortfalls that underpins the preferred development strategy. The strategic themes recommended and which characterise the BMR Structure Plan, are threefold, namely:

- Modified Trends
- Containment
- Dispersed Concentration

Modified Trends

The evolution of Bangalore's spatial development pattern clearly depicts an accumulative tendency to locate economic investments in the north Eastern Segment of the BMR where long-term sustainable development and future growth is severely limited due to water resource constraints and proximity of the inter-state boundary.

Trends: efforts continue to meet BMR water demands which are generated in a spatially fragmented manner, and often in locations with dire water resource shortfalls.

Needless to emphasise that water is the lifeline of economic development. Bangalore itself is not favourably endowed with water. Much of Bangalore's water requirement is met by pumping from the Cauvery river, about 100 km away, at enormous cost. Only a fraction of the cost is recovered through water charges. The northern and eastern sides of Bangalore are further away from the water source, while the southern and western sides are relatively closer to it.

Ironically, a substantial part of future developments on the cards for Bangalore are oriented towards the eastern and northern segments of the city, thus necessitating the pumping of water further away from the source. Some of these projects are:

- The Bangalore International Airport near Devanahalli: The establishment of the airport will lead to significant development within the designated Bangalore International Airport Area Planning Authority (BIAAPA).

- The Export Promotion Zone, Industrial Park and the Exhibition Centre and the Information Technology Park in the Whitefields area.

- The eastern segment of the South Periphery By-pass road connecting Hosakote, Devanahalli and Doddaballapur to be constructed by a private developer. Apart from the developmental impact of such a road, the private promoter is also slated to undertake extensive real estate developments to meet the cost of the road project.

- The second electronics city adjacent to the present one on the Hosur Road.

Some of the above developments, especially the establishment of the international airport at Devanahalli, would put a number of urban settlements such as Nelamangala, Doddaballapur, Vijayapura, Hosakote and Malur on the path of rapid development, especially when the proposed peripheral road is completed. With the exception of Nelamangala, the other centres are in ground water deficit areas.

The key observations that would emerge are:

- **The future growth of Bangalore should logically be re-oriented towards the West** and the South, rather than continue the past trend of development towards the east and the North.

- **The extent of water that can reasonably be diverted from the Cauvery to meet the growing requirements of Bangalore is limited,** especially in the context of the need to sustain agriculture and inter-state allocations. If a reasonable quantum of water is to be provided to the citizens of Bangalore (120 lpcd), the total water available could itself eventually put a cap on the growth of Bangalore.

As stated earlier, BMR water demands for non-agricultural uses account for around 50% of the South Karnataka region total. It is urgent that demand lead responses are recast within a forward planning strategic framework to ensure more optimal use of scarce and finite resources.

More particularly, the spatial orientation of development needs to be focused on the western Mysore and Hassan corridor axis. Strategically, through the major infrastructure corridor investments, this will enable the capital to be better integrated into the sub-region's territorial hinterland and thereby improve its economic 'gateway' and 'network' functions. In the longer term this will result in a transformation of the macro Southern India geo-economic perspective, placing Bangalore firmly on the map as the economic hub of trade flows between the national port of Mangalore in Karnataka and the national port of Chennai in Tamil Nadu.

To these ends, the Modified Trend strategic theme advocates a policy shift which aims at focusing development away from the BMR's Eastern quadrants and towards the 'Western Arc' through the promotion of the South sector ring-road and growth nodes interlocked with the SKR Mysore-Bangalore and Hassan-Bangalore corridor initiatives. (Fig. 1.3 Strategic Response- Modified Trends).

Containment

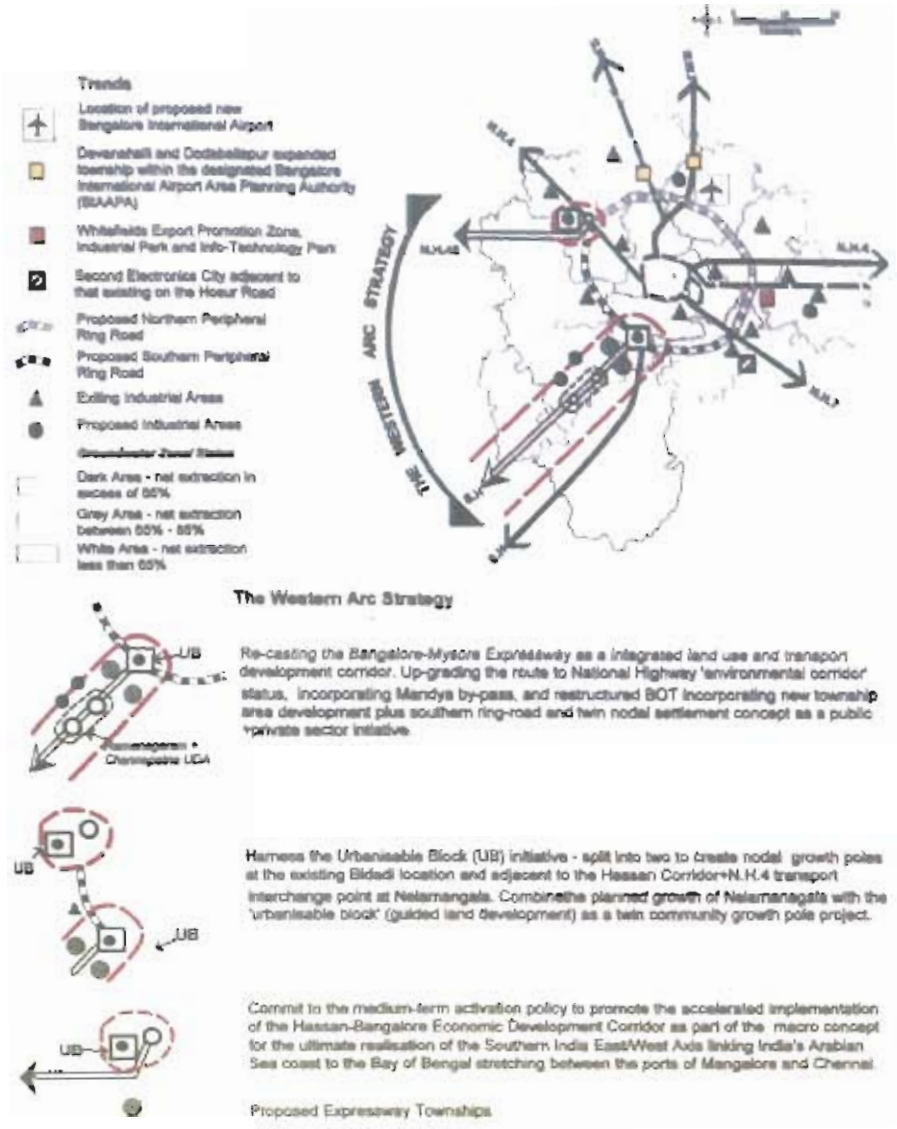
Urban sprawl resulting from the unplanned lateral expansion and accretion growth along a number of radial corridors creates major distortions and diseconomies in the functioning of the capital's urban systems.

Trends

In respect of the BMR, the lack of controlled access and egress on the city's key radials has spurned a process of ribbon development which, in turn, has spread laterally to fill in the urban wedges of the metropolis. The rate and unplanned nature of this accretion growth creates problematic conditions of a scale and complexity that are extremely difficult and costly to rectify on a post ad hoc basis. Areas become 'land locked' and difficult, if not impossible to service, land use conflicts are built in and difficult to relocate and adjust later.

Corrective measures without an adequate technical or legal cadestra result in a plethora of land disputes which severely hinder land readjustment, pooling or guided land development solutions. Furthermore, efforts to correct land use distortions imposes drain on public funds owing to increased compensation costs associated with land adjustment. Equally, if not of greater concern, it makes the effective structuring of BOT, BOOT etc. private sector infrastructure projects virtually untenable.

Figure: 1.3 Strategic Response- Modified Trends



Foremost examples of this phenomena can be cited as:

- **Bangalore-Hosur industrial development corridor** (N.H.7) though successful in its own right has triggered off considerable spontaneous development. Its 'success' has led to the demand to a replicate phenomena along the adjacent Sarjapur radial road and the threat the wedge of land between would become completely swallowed-up by lateral accretion growth. This scale of area development would likely render the on-going capacity upgrading of highway inadequate in the near future. A detailed examination of this is urgently required to establish a 'ceiling' carrying capacity and to prepare area plans to guide development accordingly.

- **Bangalore's airport corridor** (leading to the Information Technology Park) in the Whitefield zone has become a major radial bottleneck which is experiencing increased pressure from development. Recent project announcements include the development of a new Export Promotion Zone, Industrial Park, Exhibition Centre and leisure/hotel complexes related to the Golf Course. These developments, along with the implementation of the Volvo factory on the old Madras Road, will induce considerable pressure for ancillary developments.

Given the dire groundwater water constraints in this quadrant of the city, together with knock-on costs of piping Cauvery water and the need to prioritise tank harvested water in support of Kolar's agro-based industries; development will need area and corridor 'containment' planning to pre-empt jeopardising the viability of already sunken investments.

As a follow-on to the BMR strategy, it is foreseen that the thrust of development should orient more towards Bangarpet satellite town, and Kolar Goldfields within the framework of a tripartite state (Karnataka, Andhra Pradesh and Tamil Nadu) border policy of peripheral ring road access to the proposed new International Airport.

Key features of this strategic theme would be the pre-emption of ribbon development along the southern periphery ring road and the need for N.H.4 corridor and area constraint policies and area plans to be required to contain development within prescribed manageable thresholds.

- Bangalore, Nelamangala-Tumkur corridor (N.H.4). Tumkur is strategically placed on the road and rail route between Bangalore. The Bangalore –Tumkur corridor is one of the top-three high density road traffic corridors radiating out of Bangalore. This highway has been four-laned for a distance of 30 km from Bangalore, up-to Nelamangala. There is an urgent need to extend the four-laning beyond Nelamangala up-to Tumkur (a further distance of 40 km), even to meet the existing traffic requirements. With this infrastructure in place Tumkur falls well within a reasonable commuter catchment area of Bangalore and as such is likely to experience considerable growth pressure.

The principal drawback to the further growth of Tumkur is the acute shortage of water. However, Tumkur is shortly scheduled to experience a quantum leap in the availability of water to the city through an augmentation project from the Hemavathy canal. However, the projected future growth of the city suggests that the proposed water supply from the Hemavathy would be barely adequate to meet the requirements up to the year 2011 at 120 lpcd, thus inherently limiting its growth capacity.

However, there is an underlying danger in this presumption. Given the other advantages of Tumkur, a sudden quantum improvement in water supply position could act as a magnetic force attracting sizeable investments and population inflow into the city, until the situation deteriorates once again to the present condition (of around 60 lpcd of water supply).

Therefore, to manage growth within acceptable thresholds, Tumkur needs effective planning and regulatory mechanisms to moderate market effects that could otherwise lead to spontaneous uncontrolled growth which could necessitate difficult and expensive corrective measures at a later date.

A more effective mechanism would be to counter-balance the development of Tumkur, by the development of an urbanisable block near Nelamangala. Nelamangala is in a white ground water zone. It is at the junction of the Bangalore-Tumkur and Bangalore-Hassan road routes. Ultimately, it will also be close to a railway junction when the new Hassan – Bangalore rail link is established and is foreseen by the Strategy to be one of the nodes on the peripheral 'western arc' ring road.

In view of these advantages, it is recommended that the proposed urbanisable block be split into two - one at the end of the Mysore corridor and the other at the end of the Hassan corridor adjacent to Nelamangala - in a twin growth pole 'dumbbell' arrangement. It is proposed that they could be included in a restructured private sector promotion package as an area development trade-off incentive for construction of the 'western arc' peripheral ring road.

- New International Airport corridor (N.H.7). There is increasing confidence in the prospect of the new International Airport been developed 35km. from Bangalore just beyond Devanahalli. The lack of forward planning and pre-emptive land conversion measures has spurred of considerable speculative development within the vicinity of its proposed location and along the radial route into Bangalore. A number of policy issues still inhibit its realisation but through the formation of the Bangalore International Airport Area Planning Authority (BIAAPA) the statutory framework within which to regularise future corridor and area development now exists.

There is an urgent priority need to launch a programme to prepare a detailed 'action area' plan for this corridor to ensure that development takes place in an orderly fashion and results in a high quality environment that will be suitably representative as Bangalore's gateway arrival route.

Strategic Response

The strategy for the BMA under this theme proposes that means are found through direct government, bi-lateral or multi-lateral funding to carry out the corridor integrated land use and transport development planning programmes as a matter of urgency. These should include for geo-mapping and surveying of the corridor as well as the normal land use, transport and infrastructure planning considerations. Additionally, land management measures and instruments will need to be enforced to limit the conversion of non-urban land to urban uses and in particular introduce measures to prohibit development in un-planned areas.

A schematic of the strategy is displayed in the Figure 1.4 and forms the basis for the formulation of the proposed Area Planning Zones (APZ's) concept.

Dispersed Concentration

Bangalore has essentially nine satellite towns that are within Bangalore District and a a distance of between 20-40 kilometre from the city centre. In the context of the BMR Structure Plan, the dispersed concentration strategy is not based upon dispersing growth, somewhat uniformly, to this ring of satellite towns. Each has its own particular profile and potential to attract and absorb growth[7] without any significant intervention. However, past experiments of developing satellite or mini new towns has not in general met with much success elsewhere in India in terms of restricting the rapid growth of their respective metropolis. In many cases the argument has been posited that they act as the stepping stones to urban migration and as such exacerbate the problem.

Within the context of the BMR Structure Plan it is strongly advocated that planned and focused intervention at the 'peri-urban fringe' is vital at specific strategic growth nodes to bias development towards the western segment of the BMR. In this way, intervention in the BMR's peri-urban fringe will compliment and reflect the focused corridor and node development philosophy of the SKR Concept Plan. Furthermore this integral approach will bolster the potential for private sector participation in the provision of transport infrastructure and area development. For this to work containment of growth - 'the stick' - and incentives for focused Dispersed Concentration - 'the carrot' - must act in unison, respectively in the east and west segments of the BMR, to have the desired effect.

7 Ref.: *Opportunities and Constraints Report - Induced Population into Viable Settlements of the SKR and BMR to Regulate Growth of the BMA - October, 1997.*

Trends

Peri-urban fringe development is occurring in a haphazard manner and is increasingly pronounced, difficult to monitor, control and threatens to nullify strategic options to effectively plan for the future growth of the Bangalore's Metropolitan Region.

Land conversion pressures are increasingly exerted in the peri-urban fringe as speculative central area development exert an upward spiralling effect on land and property prices. Even the more recent downturn in real estate activity does not seem to have significantly reduced this phenomena since prices still remain at relatively high levels for central place locations.

In the short to medium term it is highly likely that the next 'boom' cycle of development will occur. For the city to be in a position to effectively manage these future pressures in a manner which yields more developmental than speculative results, it will be necessary to seamlessly integrate the planning of the whole metropolitan area with Bangalore urban conurbation and the sub-region to enable the peri-urban fringe to play its proper role in development.

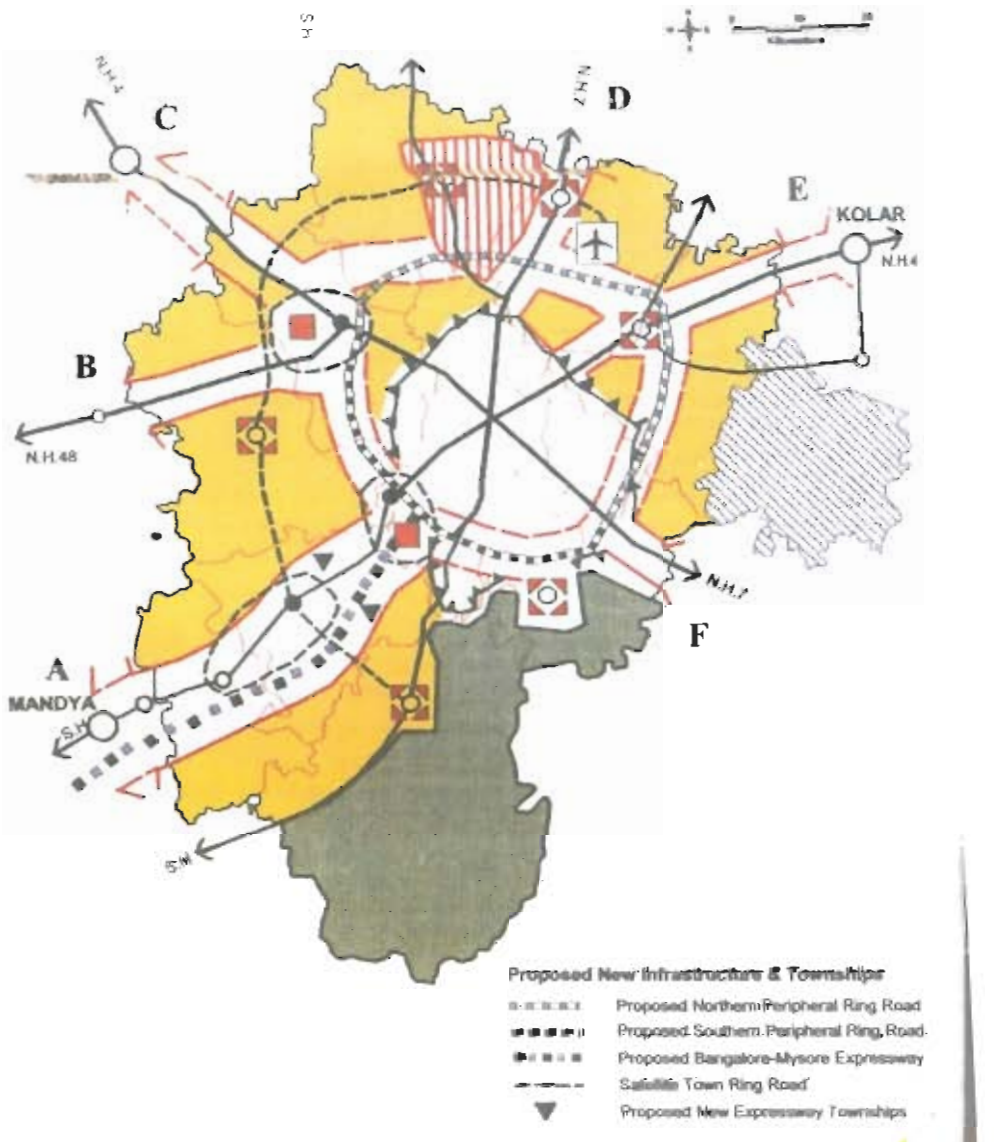
Without this holistic approach the loss of good agricultural land will continue unabated. Opportunities to create well distributed and accessible recreational areas will be lost. Encroachments into environmentally sensitive areas will destroy scarce and finite resources and further encroachments into the green belt will render the restructuring of the concept un-viable.

Strategic Response

The strategy of 'dispersed' concentration for the BMR parallels that of 'decentralised' concentration for the SKR. The essential difference is that the former is a strategy with which to better manage growth within the city's metropolitan area whereas, the latter aims at deflecting and attracting growth away from the city to key sub-regional centres and districts.

For the urban periphery the 'dispersed concentration' and 'containment' strategies marry up with the aim of attracting and controlling growth in strategic satellite towns and transport interchange 'growth nodes' (Ramanagaram and Channapatna UDA + Bidadi Urbanisable Block and Nelamangala Town + adjacent Urbanisable Block).

Figure: 1.4 BMR The Strategic Response-
Containment & Dispersed Concentration



Containment

A-F

Priority Corridors - Local 'Action Plan' Areas (A-F) Corridor mapping and surveying, detailed land use, infrastructure and transportation planning including capacity threshold analysis, and application measures to mitigate of appropriate land and environmental management measures and instruments- e.g. 'buffer zone' control against ribbon development and provide protection to environmentally sensitive areas (ref : Bankable Projects). Priority Areas i

A Bidadi to Maddur - as part of the Bangalore-Mysore Corridor Action Area Plan
B Hassan corridor containment policy plan

C Bangalore-Nelamangala-Tumkur Corridor Action Plan integrated with the Nelamangala Local Area Plan and Urbanisable Block
D International Airport Corridor- integral to the preparation of the Action Plan, it is recommended that an enhanced aerial photographic survey is carried out for the designated BIAAPA to improve development control and facilitate detailed land registration of the area.
E Integrated Hoskote UDA and Bangalore-Kolar Corridor Action Plan
F Hosur Corridor 'Capacity' Action Plan

Green Belt restructuring

Policies and measures to i)consolidation of selected 'outer edges' of the existing green belt (BMA outer boundary ii) extensions as planned green wedges - designated 'urban parkways' through the BUD and on the western edge linking under the by-pass to the agro-tech core region of Mandya - designated regionalopen space, recreational uses plus special provision for market garden and productive small holdings iii) permitted use ordinance for extensive recreational pursuits (both passive and active), protected woodlands and water bodies and limited cluster 'farm house' productive agricultural type development iv) extension urban parkway linking into designated Bannrghatta National Park

Urban Envelopes

For 7 of the 9 satellite towns a policy of urban containment and development consolidation is advocated aimed at, in the short-term, harnessing out-migration and in the medium-term at inducing contained growth. As part of the on-going Structure Planning process it is advocated that urban 'containment' envelopes be delineated to 'red line' the limits for satellite towns within which urban development will be permitted and considered for appr

BMR Limits

Transfer of the Malur Taluk statutory administrative area to Kolar District subject to the landuse and water resource management regimes advocated for the district under the SKR Concept Plan.

Interstitial Zones

The extensive wedge areas delineated by the BMR boundary limits, outer edge of the green belt and bracketed between the 'action area corridors' will have 'best use' policies prescribed under the Draft BMR Structure Plan. In general these areas encompass the 'urban containment 'satellite envelopes' for which local urban plans will need to prepared.

Strict Environmental Protection Zone

Dispersed Concentration

Priority Growth Poles

For two identified 'growth poles' a combined policy of consolidation and containment growth within designated urban envelopes, plus growth expansion into nearby planned development within designated 'urbanisable blocks' This twin growth pole concept is advocated in two locations

- Nelamangalaat the junction of Hassan corridor, Tumkur radial and southern by-passing road, and
- Bidadi (Ramnagar Taluk, Bangalore District) 'urbanisable block' located between the existing Mysore Road and Vrishabhavati River

Policies

i) To prepare a local are plan for Nelamangala as an integral part of the corridor action area plan (ref.: containment above), and

ii). To prepare local area development plans for both 'urbanisable' blocks as an integral part of southern periphery by-pass road BOT promotional package

iii) To prepare action area plan to incorporate the restructured 'expressway concept' (upgrading of Mysore Road to N.H. status) for Ramanagaram and Channapatna as a designated combined urban development authority

It is foreseen that through the phased release and marketing of planned and serviced land in these strategic locations within the BMR, a substantial proportion of future growth can be decentralised and concentrated in the target Growth Centres and Nodes within the designated Area Planning Zones (APZ's 1 and 2).To foster this strategy, the decanting of selective non-conforming, congestion generating, extensive land consuming economic activities from the BMA's Central Business Districts should be planned and encouraged to relocate to these strategic 'nodal' locations within the BMR. Furthermore, co-ordinated initiatives should incorporate the industrial investment priorities of the KIADB and seek to ensure that major new job generating industrial initiatives are directed to these locations.

The 'concentration' strand of the 'decentralised concentration' strategic response centres around the concept of delineating the municipal urban envelopes and 'red lining' them as the limits of 'permitted' urban development within which extension of municipal services and approved land conversion will be facilitated. This approach will require harmonising through a process of local planning at the taluk level and at the level of :

- the nagar panchayats;
- gram panchayats; and
- village level.

The ultimate aim is that the three pronged ' modified trends', 'containment' and 'dispersed concentration' strategy for the BMR interfaces and meshes with the broader SKR spatial strategy to be mutually reinforcing. By being pragmatically based, it can be incrementally implemented through the BMRDA's consensus and co-ordinated policy functions and the application of appropriate land use and development control mechanisms and instruments at the various levels of local government administration (this issue is further explored in Part Three: The Way Forward - Implementation Mechanisms).

PREFERRED DEVELOPMENT STRATEGY

Spatially, the SKR and the Bangalore Metropolitan Region (BMR) are an interactive continuum due to which, the development strategy for the BMR has to be an integral part of the SKR development vision. In particular, in this respect, the infrastructure corridor imperatives of the BMR are designed to mesh with those of the SKR, combining the "golden triangle" with the "western arc" concept and thereby mutually reinforcing.

1.10 CRITICAL VARIABLES

For the selection of the preferred BMR development strategy three critical variables were considered, namely:-

- Water Resources - surface and groundwater;
- Development Corridors; and
- Satellite Towns and New Growth Centres (Nodes).

Water Resources the Overarching Constraint - "The East / West Divide"

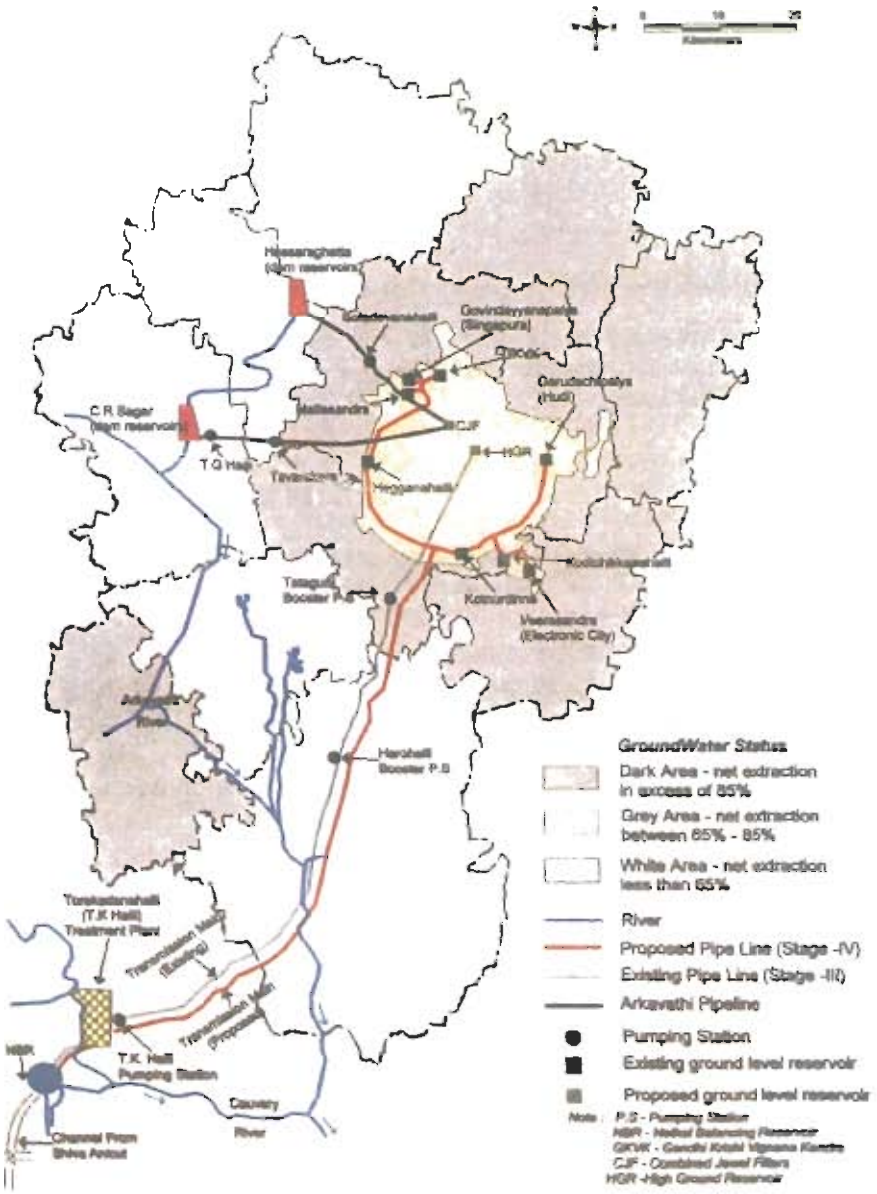
Needless to emphasise that water is the lifeline of economic development. Bangalore itself is not favourably endowed with water neither from a surface or groundwater point of view.

Much of Bangalore's water requirement is met by pumping from the Cauvery river, about 100 km away, at enormous cost. Only a fraction of the cost is recovered through water charges. The northern and eastern sides of Bangalore are further away from the water source, while the southern and western sides are relatively closer to it.

Similarly, groundwater resource conditions are generally assessed to be in a better state in the south western half of the metropolitan region. Over 75% of the BMR area in the north-east is categorised as a 'dark area' (net extraction estimated to be in excess of 85%) and the remainder is classified as a 'grey area' (net extraction estimated to be between 65% and 85%). Whereas in the south-western segment of the BMR over 75% of the area is assessed to be a 'white area' groundwater zone (net extraction less than 65%).

It is clear from the figure on the following page, that the main surface water resource for Bangalore city is derived from the perennial River Cauvery with its source 100 kms - to the south. The earlier source of water supply to the city was from the Hassaraghatta Lake and the Chamaraja Sagar dam at Thippagondanahalli. This is indicated in the north-west part of Bangalore. These schemes were initially intended for the supply to the defence personnel living in Bangalore contonement. In view of the unreliable monsoon and changes in land use patterns, these schemes have become inadequate.

Figure: 1.5 Ground Water and Surface Water Facilities



The existing pipeline route from the treatment works at T.K. Halli to the High Grounds Reservoir (HGR) was commissioned under Cauvery Water Supply Stage III. The proposed Cauvery Stage IV pipeline system, with two booster pumping stations – one each at Harohalli and Tatauni is planned to delivery an additional 270 mld of water to the city. The existing main ground level reservoirs, including the proposed ones under Stage IV, are also displayed in the diagram opposite.

Ironically, much of development in the recent past has occurred in the north-east of the metropolitan area and a substantial part of development on the cards for Bangalore is oriented towards the eastern and northern directions of the city, thus necessitating the pumping of water further away from the source. Just as importantly, much of the development that has occurred lacks inter-sectoral co-ordination and makes ad-hoc demands on groundwater resources in an unregulated manner. Whilst resources last, this creates artificially low overhead costs of production and living. This pertains until such times that resources become gradually all but fully depleted and major costs hikes are suddenly felt when water has to be delivered at great cost by tankers. Without planned intervention this scenario will become increasingly common, costs of production will spiral and the urban economy will become increasingly uncompetitive.

With this perspective in mind, it is recommended that conceptually the City should be viewed in two halves: the north-east and east as a relatively water starved division of the City, and the south-west and west as the relatively well endowed water resource division. For each division, a particular strategic policy approach would be appropriate as follows.

BMR Eastern Segment – Modified Trends and Containment

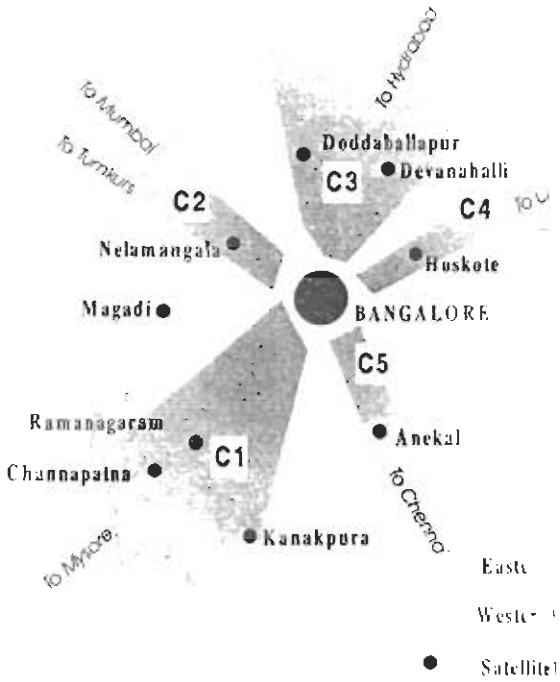
The critical water situation and the high cost of delivery in the Eastern Segment of the BMR makes a policy to adopt "modifying trends" and "containment" strategic themes necessary. Therefore overall development guidelines and controls that will reflect these strategic themes will be applicable to Development Corridors 3, 4 and 5 (ref. below). Any strategy which negates these objectives would therefore be undesirable.

BMR Western Segment – Dispersed Concentration

For the western segment of BMR the objective would be to attract development that would otherwise locate in the City's central or Eastern Segments, absorb decanted incompatible activities from the city core, and capture these within target growth centres/nodes or satellite towns. Therefore, overall development guidelines and controls that will reflect these strategic themes will be applicable to Development Corridors 1 and 2 (ref. below). Any strategy which negates these objectives would therefore be undesirable.

Development Corridors

- Corridor 1 : Bangalore - Bidadi (C1)
- Corridor 2 : Bangalore – Nelamangala (C2)
- Corridor 3 : Bangalore – Devanahalli (C3)
- Corridor 4 : Bangalore - Whitefield-Hosakote (C4)
- Corridor 5 : Bangalore - Anekal-Sarjapur, Hosur 4(C5)



Only through a concerted and sustained program of high level intervention aimed at positively discriminating in favour of development within corridors 1 and 2 will the current trends in development be shifted in favour of the western segment of Bangalore.

If this is done it will also have the spin-off benefit of strengthening the network links between Bangalore and Mysore and Bangalore and Hassan and thereby interlocking well with the more macro strategic framework recommended for the SKR.

Growth Centres - Satellite Towns and Urbanisable Blocks

As stated earlier under Strategic Themes - Dispersed Concentration, Bangalore has essentially nine satellite towns that lie within Bangalore District and are at a distance of between 20-40 kilometre from the city centre.

Recently, an extensive 'Urbanisable Block' has been designated for development at Bidadi just on the edge of the green belt on the Bangalore - Mysore conurbation exit. Together with the on-going infrastructure improvements been made within the Ramanagaram and Channapatna UDA, plus the proposal for a high speed Expressway transit scheme 2-3 new settlements within the same vicinity, makes this Mysore corridor relatively over-endowed with development proposals.

Focused development is certainly advocated, but in this instance the accumulation of project interdependencies and uncertainties increases the potential for conflicts of interest to set in, which, in-turn, increases the risk exposure for predictable success. A number of complex overlapping interests need to be resolved with clarity if effective private sector involvement is to be realised and this needs to set within a more 'robust strategy'.

The BMR Structure Plan seeks to provide this 'robust strategy'. By recommending splitting the proposed Bidadi Urbanisable Block (UB) into two and locating one part at, or near, Nelamangala, two mutually reinforcing strategically well-positioned growth centres are created - one at each end of the Hassan and Mysore corridors. Together

they act as a 'dumb-bell', strategy creating the push and pull development forces that will enhance the development potential of the Bangalore Intermediate Ring Road (IRR) section linking the two growth centres.

This 'dumb-bell' approach creates the potential to combine the southern section of the IRR and the area development potentials of the UB's into an attractive infrastructure and area package with a good chance of attracting private sector participation on a BOOT type arrangement.

In the event of policy being taken to restructure the Expressway proposal, to a rail (doubling and electrification) plus highway up-grading and by-pass combination; this IRR+UB's package could be 'piggy-backed' with the first stage of the proposed expressway to make-up for the reduced value of the original 'expressway' scheme.

1.11 SELECTING THE PREFERRED STRATEGY

For the SKR a target to attract 740,000 (60 percent - 7.4 lakhs) of the induced population generated between now and 2011 was set. Leaving 490,000 (4.9 lakhs) to be accommodated within the BMR. Recognising that committed developments in the eastern segment of BMR will account for about 150,000 (30 percent) of this, leaving 340,000 (70 percent - 3.4 lakhs) to be taken up in the proposed growth centres and existing satellite towns in the BMR's western segment.

To achieve this level of decentralisation within the BMR, three strategic 'variants' of the general development 'vision' were elaborated assuming differing levels of strategic intervention. Each under a different set of assumptions aimed at shifting the trend of development away from the eastern and towards the western segment of the Bangalore Metropolitan Region between the Nelamangala/Tumkur and Mysore/Kanakapura radials - the 'western arc'[8].

These were comparatively evaluated in respect of the 'critical variables' (ref.: 1.10, above) and the variant that was judged most likely to result in an optimal balance of benefits was selected as the 'preferred strategy' vis a vis the following:

- optimal groundwater resource conservation and proximity to the existing primary water supply system;
- effective inter-meshing with the SKR Concept Plan corridor priorities;
- maximisation of transport infrastructure and area development synergy effects to lever private sector participation;
- potential to positively harness and integrate existing public and private sector initiatives without jeopardising the achievement of strategic objectives;

8 Ref.: SKR & BMR Development Strategies, Section 2.2.3,pp.40-46, - February, 1998

- offers the most likely scenario to achieve the population redistribution targets;
- offers a strategic response that is robust due to its bi-polar rather than mono-polar growth concept.

The variants considered pragmatically focused on the transit radial and nodal growth centres contained within:

- Corridor 1 : Bangalore - Bidadi / Ramanagaram and Channapatna (C1)
- Corridor 2 : Bangalore - Nelamangala (C2)

Essentially the variants were derived from a combination of focusing development, promotion and planning initiatives either on C1 or C2, or combining developments efforts, in a balanced way, on both C1 and C2. Not surprisingly, the latter was selected - not because it was a compromise - but because it better addressed the positive impacts sought from the application of the strategic development themes.

With the implementation of the preferred strategy it is forecast that the population balance will shift in favour of the western segment of the BMR by a ratio of 56:46 percent. Even under this scenario the total population of the western segment of the BMR would account for only approximately 15 percent of the total Bangalore Metropolis (BMR+BMA).

This shift in population redistribution is likely to be significantly greater if the proposed new International Airport at Devanahalli is unrealised. In this eventuality the ratio could easily shift to between 58-60 percent in favour of the western segment of the BMR and increase its share of the Metropolis population to 16 percent.

The population distribution targets for the preferred strategy are displayed in the table on the following page:

Table 1.4 Preferred Strategy - Target Induced Population Distributions

Satellite Towns & Urbanisable Block Growth Centres	Induced Population % Additional Pop.000's
	Variant Three
Eastern Segment	
Anekal	8% 40,000
Hosakote	4% 20,000
Devanahalli	9% 40,000
Doddaballapur	9% 40,000
Sub-total Eastern Segment	30% 140,000
Western Segment	
Nelamangala Satellite Town and New Urbanisable Block	20% 100,000
Magadi	5% 20,000
Ramanagaram + Channapatna, plus New Urbanisable Block	40% 200,000
Kanakapura	5% 20,000
Sub-total Western Segment	70% 340,000
TOTAL BMR	**100%** **490,000**

Implications for Satellite Towns and Growth Centres

- The Urbanisable Block (within the proposed Bidadi Local Planning Area), together with the Ramanagaram and Channapatna Urban Development Authority Area, is targeted to attract 40 percent (2 lakhs, 200,000) of the total 4.9 lakhs population to be decentralised by the year 2011. The implications of this scale of induced growth is that the aggregate population of the combined areas would need to increase by some 78 percent.

  However, it is foreseen that at least 45 percent of this growth would be directed to the Bidadi Urbanisable Block which would incorporate the proposed new Expressway settlement that was originally located in the green belt zone. This would leave the Ramanagaram and Channapatna UDA to grow at a realistic average annual compound growth rate of approximately 3% over the decade to year 2011.

- Nelamangala and the proposed new Urbanisable Block (UB) is targeted to attract 20 percent (1 lakh, 100,000) of the gross decentralised population by the year 2011. The implications of this scale of induced growth is that the aggregate population of the combined areas would need to increase by some 93 percent from its current base.

  However, given that the Nelamangala UB is a 'green field' site and is targeted to attract around 50% of this growth, Nelamangala itself is anticipated to grow at a realistic average annual compound growth rate of just over 3.5% over the decade to year 2011.

- Doddaballapur, Devanahalli, Hosakote and Anekal satellite towns in the Eastern Segment of BMR are together targeted to absorb 30 percent (1.5 lakh) of induced population deflected from the BMA.

  However, without significant pro-active intervention and marketing to launch the western segment 'growth centre' development initiatives, this proportion is likely increase significantly and threaten the integrity and objectives of the 'western arc' strategy.

Prerequisites

- Strengthening and upgradation of Public Works Department's loop road, early construction of the southern peripheral ring road, improvement of the Bangalore-Mysore State Highway, four laning of the Nelamangala – Tumkur NH, doubling and electrification of Bangalore-Mysore rail system upgrading and the development of the urbanisable blocks will be critical to the achievement of the 'western arc' strategy.

- Construction of the International Airport at Devanahalli and the construction of the northern peripheral ring road will increase the growth potential of the satellite towns in the Eastern Segment.

AREA PLANNING ZONES (APZ'S) DEFINED

For the administrative territory of the BMR it is recommended that five 'Area Planning Zones' are designated and for the remaining area it is recommended that it they be designated as six 'Interstitial Zones' (IZ's). As their name suggests, the latter are essentially the land areas lying between the APZ's and / or corridors (ref.: Fig. 1.6 Area Planning Zones).

The APZ's are considered as areas within which the preparation of short-term 'Action Plans' is a priority. As such, they are the subjects of the Draft BMR Structure Plan's follow-on outline terms of reference (ref. Companion Report) for undertaking Project and/or Programme Preparation for Technical Assistance (PPTA's). For the priority growth poles or centres (ref.: Fig. 1.4 BMR The Strategic Response - Containment &

Dispersed Concentration) it is foreseen that Special Area Planning and Development Authorities (SAPDA's) will be advocated to take responsibility for implementation

For the Interstitial Zones (IZ's) best use area development policy guidelines are set out in Part 2, Section 2.1.1 of this Draft BMR Structure Plan. These have been derived from a detailed analysis of the 1:50,000 remote sensing data themes (land use and cover, transport networks, drainage and contours), confirmed by site visits and presented in a series of APZ 'thumbnail' diagrams and in composite as an abstract Key Diagram.

The APZ Rationale

Besides making the 'development themes' of the BMR preferred strategy operational, an additional rationale for adopting the concept of Area Planning Zones is to provide a simple unambiguous land use planning tool for maximising the utilisation of existing and available infrastructure, and to minimise the need for conversion of agricultural land.

This essentially corridor based approach to the designation of the APZ's recognises that the pressures of development find greatest expression along the main arterial roads that radiate out from the city core, and in the main, manifests itself as unplanned ribbon development. One of the fundamental aims of the APZ concept is to harness and transform ribbon and associated unplanned accretion growth into planned, focused nodal growth. Thereby increasing, transit, resource conservation and infrastructure benefits associated with economy of scale and agglomeration containment advantages.

In respect of the proposed APZ rationale, if consensus agreement can be obtained from all agencies and authorities concerned with development in the Bangalore Metropolitan Region, then this will provide:

- A baseline policy reference for inter-sectoral co-ordination and prioritisation of budget requests and investment decisions within a common spatial framework;

- A comprehensive setting for the establishment of settlement Planning and Development Authorities (PDA's) and for the formulation of integrated local plans and schemes having contiguous boundaries.

- A common denominator for consideration and promotion of private sector area planning and development proposals;

APZ's Delineated

Delineation of the proposed APZ's is based upon an amalgam of:

- The 'corridor' land use and transport strategic framework of the preferred strategy;
- Incorporation of the BMR's local area designations;
- Adjustments have been made where area designations would make them co-terminus with Taluk administrative boundaries;
- Peri-urban and green belt corridor development control zone extensions to ensure strategic policy continuity between the Bangalore City conurbation outer fringe and the BMR outer administrative boundary;
- Nominal conceptual division of the metropolitan area into broad Eastern and Western Segment zones in respect of the overarching strategy to shift the trend of development from its predominance in the east to the West.

The proposed Area Planning Zones (APZ's) are illustrated on the following page.

1.12 BMR WESTERN SEGMENT

APZ.1 It is proposed that this should circumscribe a corridor that would integrate the existing Ramanagaram and Channapatna Urban Development Authority area, the proposed alignment of the Expressway and contain the designated Toyota factory site plus a bifurcated version of the Urbanisable Block (UB).

The proposed APZ.1 corridor would span between the existing BDA/Green Belt outer limit to the fringe of the BMR administrative area. It is proposed that this area would be reconstituted as a Special Area Planning and Development Authority (SAPDA) with the advantage that it would facilitate the integrated development planning of the currently 'free-standing' development initiatives. It will also provide a framework within which a common land use and transportation development strategy could be extended and meshed with the broader perspective of the SKR Concept Plan, which advocates a recasting of the Expressway scheme.

APZ.2 essentially reflects the area already designated as the Nelamangala Local Planning Area (NLPA). It is proposed that the boundary of the NLPA be adjusted in the north east corner to follow the taluk boundary and converge with the limit of existing outer green belt boundary. In addition, it is proposed that special corridor controls be extended along the Mumbai (N.H.4) and Hassan (N.H.48) road corridors to pre-empt unplanned ribbon development .

It is within this marginally expanded NLPA that the proposal is made, in accordance with the combined SKR & BMR Strategy, to promote the development of the twin Nelamangala township concept. One of which would be a new 'green-field' Urbanisable Block to which it is recommended the KIADB should promote as a high priority site for the location of a major new inward investment for industrial development.

1.13 BMR EASTERN SEGMENT

APZ.3 consists of the entire area already designated as the Bangalore International Airport Area Planning Authority (BIAAPA). It is considered that the area designation is too large in extent and that the originally designated area should be considered as the 'Core Planning' area. The broader (BIAAPA) area should be subject to special environmental area controls, and an 'Action Area Corridor' should be determined spanning between the proposed Northern Peripheral Ring Road and the city conurbation. Development design guidelines and controls should ensure that this corridor becomes a high quality 'processional way', representative of the gateway to the capital of the State.

The Action Area Corridor is recommended to reflect the high priority that needs to be given to ensure that the entry gate to Bangalore from the proposed new International Airport is a high quality, representative processional way into the city.

APZ.4 is a narrowly defined corridor that embraces Hosakote town which is under considerable growth pressure and for which a policy of urban containment is advocated. The corridor circumscribes a chain of seasonal water bodies for which it is recommended a common 'tank' water management agency should be constituted.

APZ.5 embraces the area currently proposed for designation as the Anekal Local Planning Area, plus a substantial extension of the western boundary to coincide with Anekal taluk boundary and, more importantly, to coincide with the boundary of the State Forestry Department's territory containing the Bannerghata National Park. It is proposed that these areas will be extended and linked as a major 'regional park' scheme and designation as a strict environmental protection zone.

The proposed extension of Anekal Local Planning Area will facilitate the creation of an extension buffer zone between the Bangalore-Hosur corridor, which continues to generate a burgeoning pressure for further development spreading out from the original ribbon form as accretion and urban sprawl. Only by re-casting this potential problem area within a broader local strategic and administrative context, is planning likely to be able to guide and control development towards a desirable end state.

Interstitial Zones (1-6)

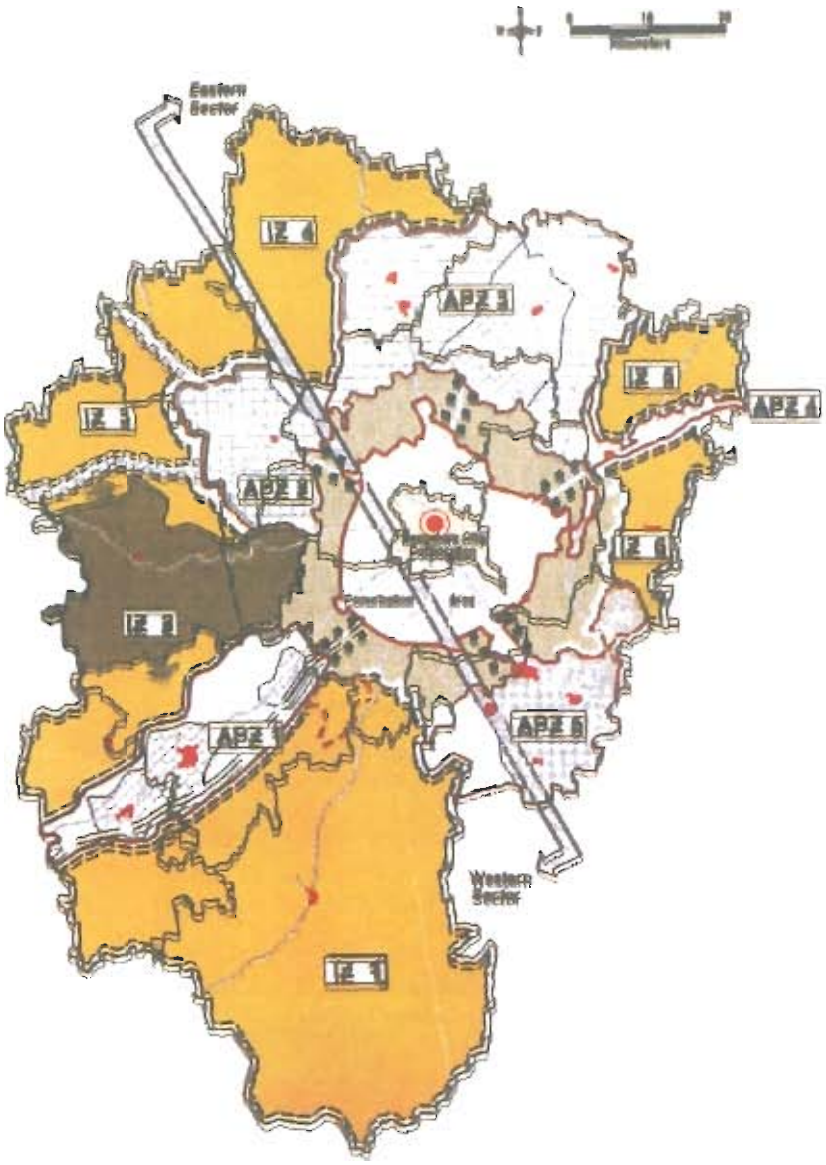
CFor the interstitial zones 'best use' policies have been formulated from an analysis of the 1:50,000-scale remote sensing geographical information thematic maps. In the case of the proposed designation of the Magadi Local Planning Area, it is advocated that this be reconsidered for re-designation as an interstitial zone (IZ.2) and that for the town of Magadi a policy of 'urban containment' is followed.

Green Belt Corridor Development Zones

To link the BMR recommended spatial policy with Bangalore's urban conurbation it is recommended that for each of the APZ's green belt corridor development zonal policies are formulated for each of the primary transport radial corridors. Within these a special set of 'best use' polices have been drafted to ensure that as far as possible a pragmatic and rational approach to sustaining the 'green belt' philosophy can be maintained.

Area Planning Zones (APZ's)

Figure: 1.6 Area Planning Zones (APZ's)



APZ 1

Ramanagaram & Channapatna Urban Development Authority

Proposed Reduced Urbanisable Block

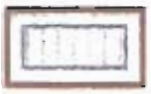
APZ 2

Nelamangala Local Planning Area

APZ 3

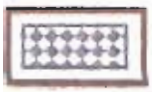
Doddaballapur & Devanhalli - Bangalore International Airport Area Planning Authority

Bangalore International Airport Area Planning Authority Core area



APZ 4

Hoskote



APZ 5

Proposed Anekal Local Planning Area

Corridors

Peri-urban Corridor Development Control Zone

Green Belt Corridor Development Control Zone

Interstitial Zone (IZ)

Interstitial Zones (IZ 1 to IZ 6)

Magadi Local Planning Area within IZ 2

Area to be removed from Urbanisable Block and added to IZ 1

BMA Green Belt

PART TWO

GENERAL SECTOR POLICIES

This part of the Structure Plan set describes the policy guidelines and their rationale under two sub-categories:

1. general policies that are considered applicable at an overall BMR level, and

2. more spatially specific policy guidelines that relate to the BMR's *Western and Eastern Segments* and respective individual Area Planning Zones (APZ's) and Interstitial Zones (IZ's).

For each, the policy guidelines are set out on a sector by sector basis as and where appropriate. At the end of Part Two, the Structure Plan – 'Key Diagram' - illustrates the principal area policies, and a Policy Matrix cross-references the APZ's and IZ's to the respective sector policies. By folding out the matrix, sector policies that relate to particular area can easily be found.

As the various sector and area policies are either confirmed, modified or rejected, as the case may be, through the on-going process of Structure Plan promulgation; Part Two and the associated policy matrix will need accordingly up-dating.

2.1 LAND RESOURCE MANAGEMENT

"Economic and industrial development should be carried out in such a way as to ensure a balanced ecosystem and the preservation of natural land resources".

The basic objectives of land resource management policy and development guidelines in the BMR are:

- *To harness and pre-empt any further deterioration of the land resources by adopting and enforcing the necessary land management legislative instruments and development control measures.*
- *To restore the productivity of the degraded forests and land with and without scrub; and*
- *To identify potential areas for future urban expansion in accordance with the strategic objectives of the draft Structure Plan.*

Policy GL1: **Land Resource Inventory**

The BMRDA should make an inventory of mapped and unmapped data of land resources in its area including that in the BMA. This should be updated at least once a year. The data should be made available for public inspection as and when required.

This inventory is meant to provide information on land cover and changes in the use of land and not on land ownership. It should be prepared by the BMRDA through the District Natural Resources Data Management System Centre (NRDMS), Zilla Panhayat, Deputy Commissioner's office, the Municipal Corporation and urban local bodies among others. (ref. Report on Regional Planning – Data System Report).

Forest Resource Management

Policy GL2: **Protection and expansion of Forest lands. Forest lands are not only to be protected and enriched with qualitative genetic improvements but upgraded and expanded.**

The area under forests is estimated as 89,200 ha., or 11 percent[1] of the BMR area (ref. Fig. 2.1-1). The National Policy (1998) recommends that 33 percent of the total geographical area be under forest cover. This would be difficult to achieve to any substantial degree in the BMR but all forest department lands are to be protected and their usage enhanced in keeping with national policy.

Forest lands comprise of :

- ***Primary Forest Areas with rich close tree cover forest areas – to be either harvested in a controlled manner or otherwise enriched and protected.***

[1] *Source: Technical Report on Preparation of Thematic Maps for BMR.*

- ***Secondary Forest Areas : comprising of sparse tree cover – to be upgraded with appropriate investments into primary forest areas.***
- ***Degraded / Scrub Areas comprising of little or no tree cover and wher depletion of tree cover can be attributed to grazing pressure and fuel-wood collection.***
  (ref. Fig 2.1-1)

Where environmentally cost effective degraded / scrub forest areas could be brougt under vegetative cover with reasonable effort. In some areas such lands are currently under-utilised and in other areas they have deteriorated due to lack of appropriat water and soil management practices. Therefore, through appropriate investments - plantations, particularly high yielding species like teak, rosewood, etc should be take up; otherwise vegetative cover should in any case be increased to control soi erosion, enhance water retention and aquifer recharge, for productive use.

Agricultural Resource Management

Policy GL3 : Conservation of prime agriculture lands

Prime agriculture lands (plantations, double croppe areas – including lands under horticulture and floriculture) should be conserved for their high productivity value.

Approximately 5.33 lakh ha., or 67 percent[2] of the BMR, consists of agricultural lan About half of this are of existing and potential high productive value and to be conserved and protected from conversion to non-agricultural uses (ref. Fig 2.1-3, The BMR does not have too much of double cropped areas (and which are primarily reliant on irrigation). It however has substantial plantation areas (about 1.82 lakh ha., and market gardens (ref. Fig 2.1-1). Of late, floriculture and exotic varieties of fruit and vegetables are being cultivated. Poultry farms and areas under sericulture are also being increased. Despite this, some of these lands have been sub-divided fo non-agricultural purposes. This should not only be discontinued but more lands be brought under this use.

Policy GL4: Upgrading of Single Cropped Land

Single Cropped land should be increased and enriche with qualitative improvements. If the enhancement and intensification of agriculture involves possible overus of ground water, measures should be taken to contro

[2] *Source: Technical Report on Preparation of Thematic Maps for BMR, prepared by IN-RIMT.*

farming practices in order to protect ground water resources. (ref. Agro-economy policies in section 2 of this report).

About half the agricultural lands in the BMR are in single cropped lands. Some of these could be improved for better yields. Also their areas could be increased through better usage of wastelands (ref. Fig 2.1-2). In any event, permission should not be given to convert some of these areas to non-agricultural use.

Latterly, Eucalyptus is being planted in this area as a quick source of income. This has exerted increasingly pressure on ground water resources, particularly in the eastern segment of the BMR. The concerned departments should provide incentives (such as technical guidance and bank credit etc.) to facilitate conversion of eucalyptus plantations into orchards and other plantations.

Water Resource Management

Policy GL5: Surface Water Bodies

Rivers, reservoirs and tanks in the BMR should be protected, maintained and enhanced in capacity so as to provide not only extra water for drinking, civic purposes, agriculture and industrial use but also to maintain an ecological balance. The community / local authority should be actively involved in maintaining these water bodies and tanks and eliminating encroachments around them through adequate buffer zones and fences.

Several of these water bodies have permanently dried up largely due to negligence. (ref. Fig 2.1-1) Many are polluted, through sewage being let into them from the surrounding developments. The first step therefore towards restoration would be to prevent the entry of untreated sewage into them. Also, de-weeding operations need to be carried out mainly to prevent the possible breeding of mosquitoes which may prove to be a health hazard. De-silting is also required and for this not only the resources are needed but the community have to be actively involved.

Policy GL6 : New Life for Old Tanks

If dried up water tanks cannot be restored they should be converted into parks or plantation to help maintain groundwater recharge and ecological balance.

If dried up water tanks cannot be rejuvenated they should be left as soft surface areas like parks, plantations, etc. so as to encourage ground water percolation as aquifer recharge structures and to maintain the ecological balance. It would help if such areas are fenced.

Policy GL7 : Water-based recreation activities that consume large quantities of water should be discouraged

Of late, resorts often containing water park themes have been established at a number of places with poor groundwater conditions. Generally these operations resort to bore-wells for their supplies and exert high demands on groundwater extraction. If their viability relies upon ground water extraction, development permission should not be granted. Furthermore, ameliorative or mitigating measures need to be considered for such structures that are already established.

Policy GL8 : Prevention of Over-exploitation of Groundwater

In areas where there is over-exploitation of ground water, the local authority should co-ordinate with the Department of Mines and Geology to prevent the unauthorised provision of bore-wells. The local authority should also strictly monitor the use of bore-wells in their area.

The grama panchayats have a major role to play in this monitoring. The community have also to be educated so as to help in the prevention of the abuse by the unauthorised / excessive withdrawal of this resource. In any event, a regulation on the extent of drilling of bore-wells and setting out licences on the same is necessary. (ref. Agro-economic policies in Part 2 of this report.)

Policy GL9: Watershed Management

Local authorities should be actively involved in watershed management by restricting developments in aquifer recharge areas and along watercourses that naturally regulate the movement of surface water and ground water. Such areas should be provided with adequate buffer zones and fences.

It is also necessary to carry out water conservation methods like rain water harvesting to enhance the recharge of ground water resources. (ref. Agro-economic policies in part 2.7 of this report)

Environmentally Sensitive Areas

Policy GL10 : Protection of National parks and Environmentally Sensitive Areas

Developments should not be permitted within national parks, (Bannerghata) environmentally sensitive areas (eg. wildlife / bird sanctuaries), or areas of scientific interest which may detract from the objectives of nature conservation. (ref. Fig 2.1-3) Such areas should be considered as 'core' protection areas requiring substantial protective 'buffer' zones around them to ensure their sustainability.

Though such parks are under the control of a special department of government, it is necessary for local authorities to ensure that this resource is protected and maintained and to ensure that unauthorised development does not take place within the parks and their delineated buffer zones. This distance or buffer should normally be a minimum of one kilometre 'core' protection area surrounded by a buffer management zone (a boundary to be specified). Where sites are considered suitable for tourism, visitor management schemes should be implemented. (ref. Tourism policies in part 2 of this report).

Policy GL11 : Area conservation polices should be implemented and enforced for heritage sites.

No industrial activities should be permitted within the vicinity of heritage sites and other areas identified as being of cultural or historical value and importance that might in any way prejudice the integrity of the asset.

This scale of 'buffer' zones should afford adequate environmental impact protection to the 'core' protection area within which heritage sites are located.

Major sites require identification and designation within development plans prior to the delineation of buffer zones and the implementation of (visitor) management schemes ref. 2.7 Recreation and Tourism).

Wastelands Development

Policy GL12 : **Land for conversion to forests, agriculture, social forestry, and development activities.**

Degraded land and land with or without scrub areas in the BMR should be upgraded. Wastelands development programmes should be accelerated in the BMR.

It is essential to make full use of them so as to economically bring such wastelands to productive use in terms of increasing forest cover, agriculture and to meet the growing demand for food, fodder and fuel through social forestry programmes with the participation of the people. (ref. Fig 2.1-2 Proposed Utilisation of Wastelands)

Mining and Quarrying

Policy GL13 : **Surface mining for brick making, sand and other building / development purposes as also for quarrying stones and grit for building / development should be encouraged in the BMR but under strictly controlled and frequently monitored environmental protection parameters.**

Basic material for the building industry has to be near development activities so as to reduce costs in transport and inter-state taxes. Sites should be selected only after comprehensive Environmental Impact Assessments (EIA's) have been judiciously undertaken.

Green Belt Management

Policy GL14 : **Within the green-belt(ref. Fig 2.1-1) and with reference to delineated settlement boundaries (village Gram Thana limits) it should be a policy that:-**

i). until separate plans are approved for each village, uses be permitted only within the existing village limits (Gram Thana) that accord with development guidelines which seek to upgrade existing socio-economic conditions;

ii). outside the village limits (Gram Thana), only uses be permitted that accord with the structure plan policies and/or other detailed development plans. Otherwise, no change of use should be permitted.

Permission for sub-division of land outside settlement envelopes should only be such that no plot becomes less than one hectare in size. This would enable the construction of farm-houses up-to 2 storeys and a plinth area not exceeding 500m^2 or 5 percent of the total net plot, whichever is less.

Policy GL15 : Local authorities should take a leading role in setting up a "greening plan" in their area. Local communities should be encouraged to take action in creating and maintaining local green areas.

Community action helps in maintaining and developing neighbourhood parks and other common amenity areas.

Development Opportunities

Policy GL16 : Urban and industrial development should be encouraged more in the western segment rather than the eastern segment of the BMR.

The south-western arc from Hosur road to Nelamangala - Tumkur road has less of a water resource problem than the north-eastern segment of the BMR. Therefore, with comprehensive water resource operational, maintenance management measures, it is more able to sustain development at acceptable standards than the north-eastern segment.

Policy GL17 : Land for industry should be selected in key strategic locations.

Land provided for industrial development should be well located in relation to accessibility from existing and proposed major highway and rail networks.

Future urban and industrial growth should be concentrated in a few locations to create economies of scale and to underpin and ensure that agglomeration effects generate successful urban centres that can support a full range of higher order services and thereby, successfully compete with the BMA in attracting growth. (ref. Fig 2.1-3)

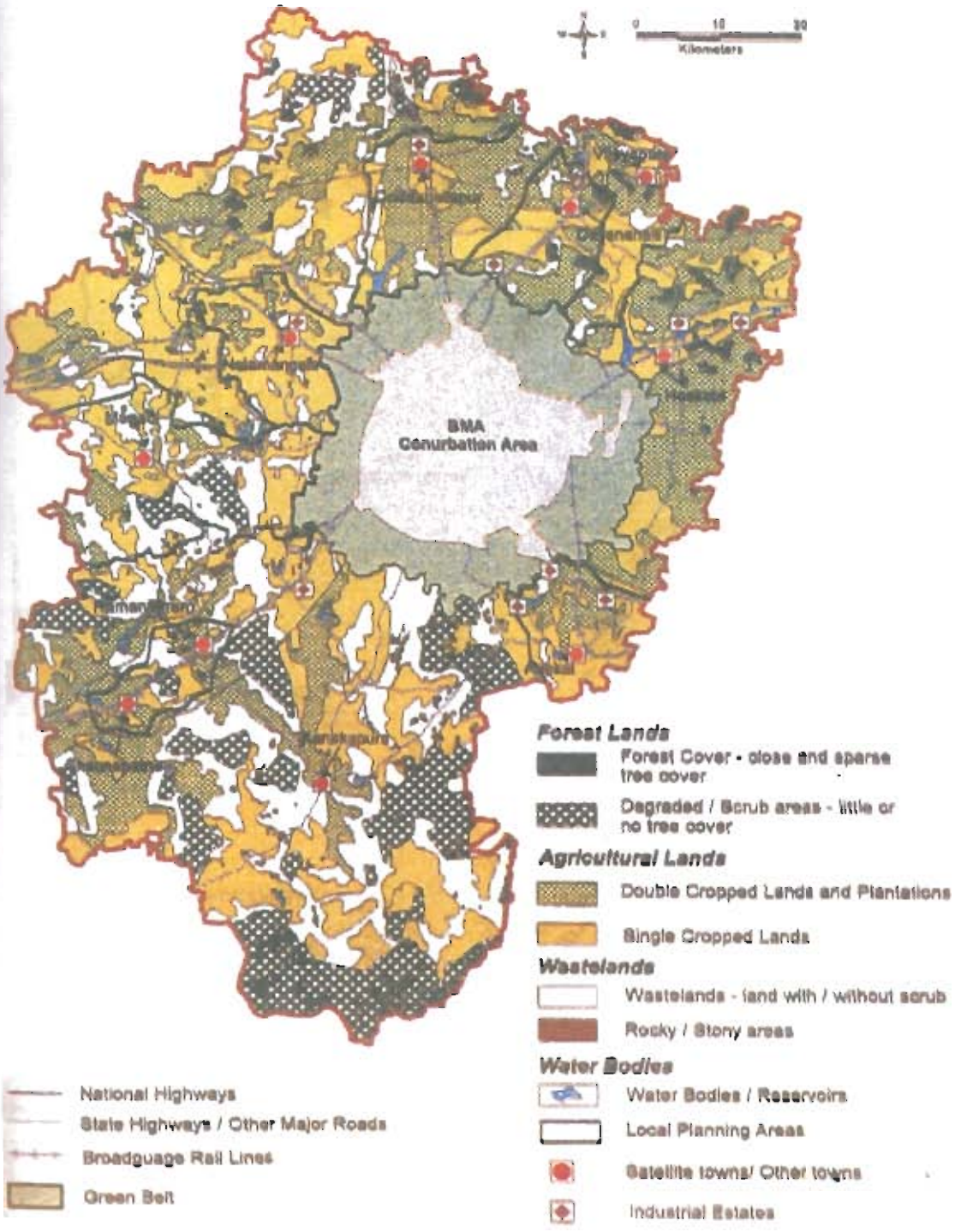
This is more likely to be achieved if a policy of integrated industrial estates structured with good backward and forward economic linkages, are developed in association with housing and community facilities conceived of as relatively homogeneous clusters. In this respect 'Spot Zoning' of industries should not be allowed.

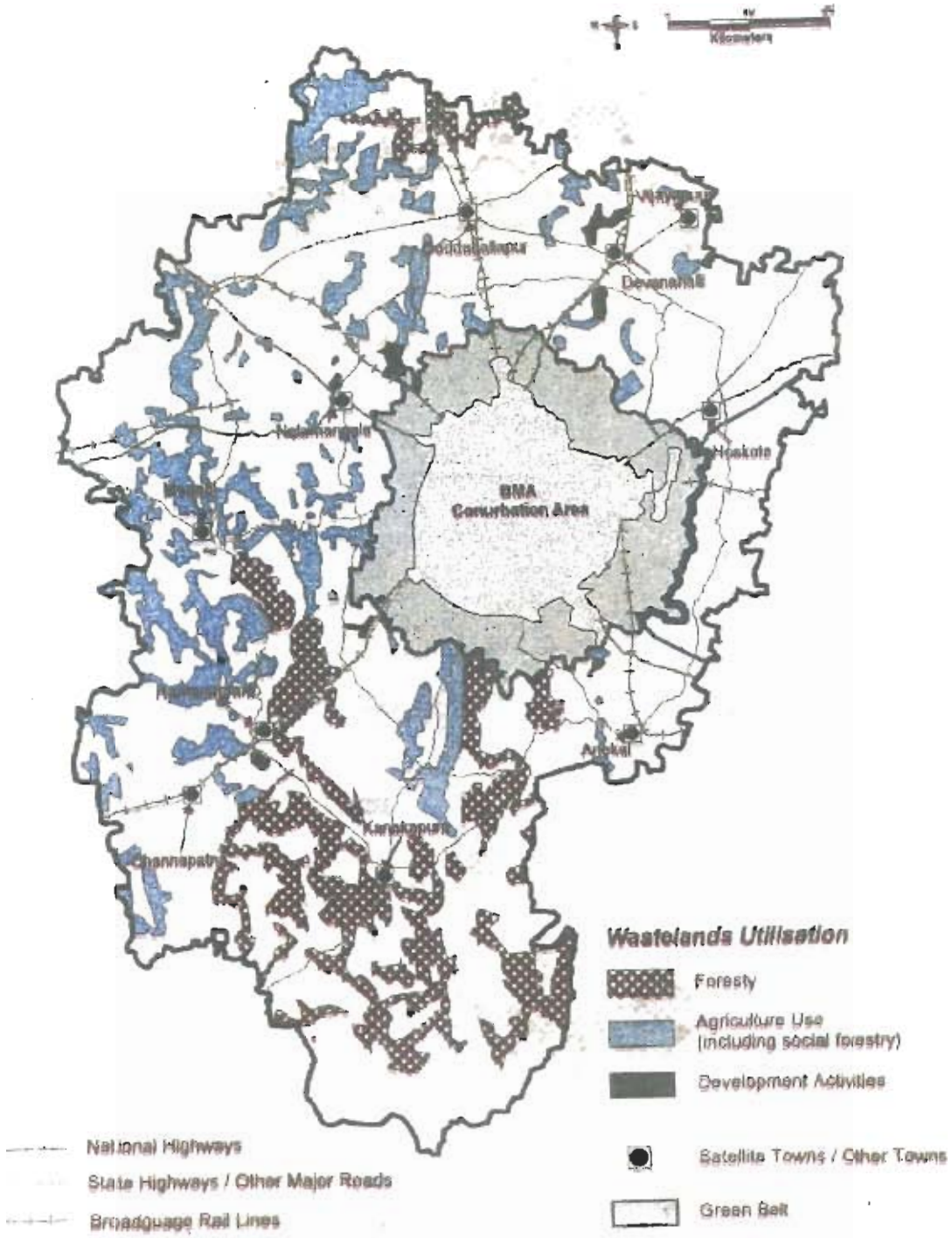
Policy GL18 : Ribbon development should as far as possible be contained as focused 'nodal' development located at key strategic. locations

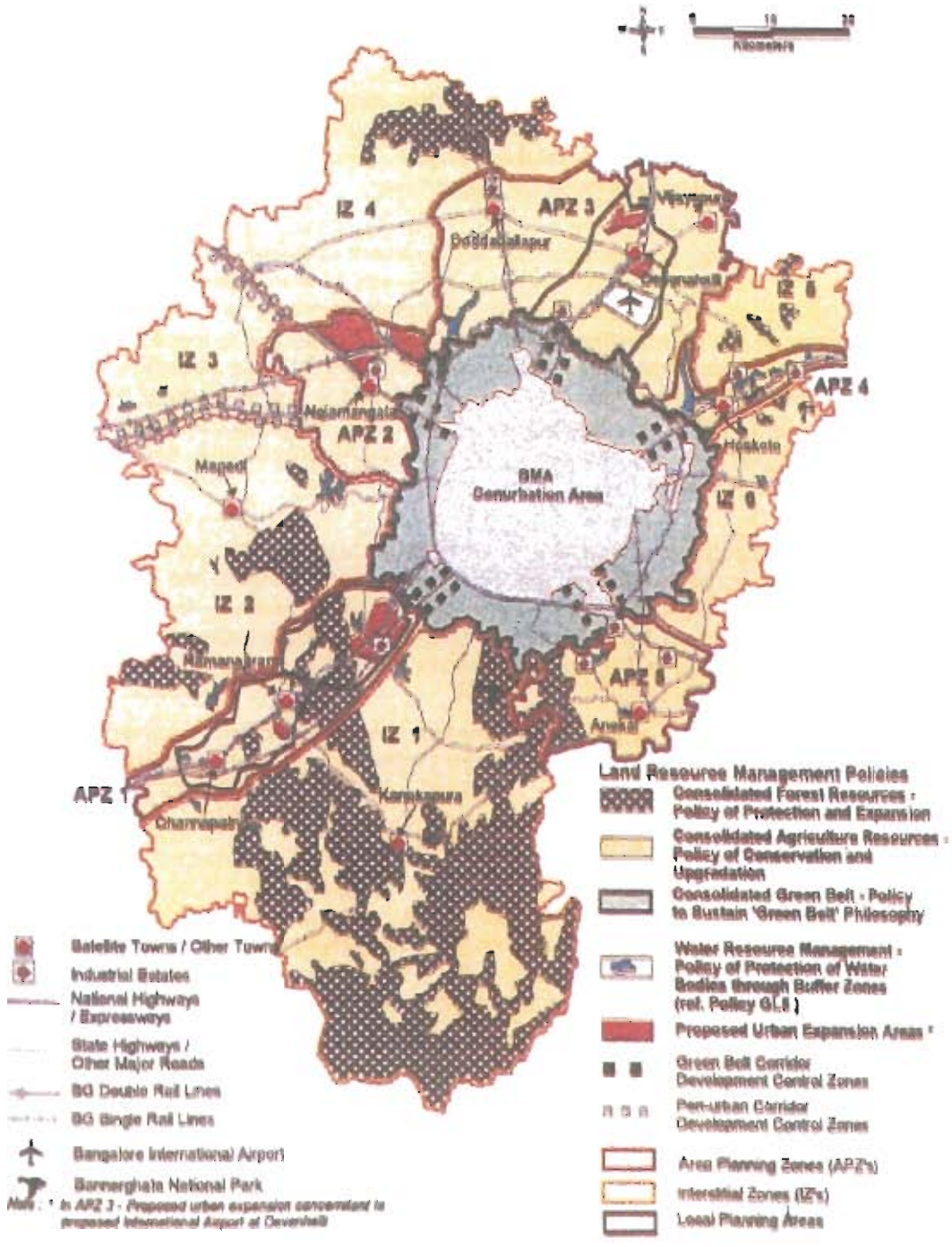
Due to lack of forward planning and the effective application of development controls, all the primary radial transit routes to the city are rendered inefficient due to ribbon development. Ribbon development, by and large, is dependent upon uncontrolled access and egress to and from primary transit routes. This in turn creates congestion, poor utilisation of the right-of-way, increased travel times, increased air pollution and a reduction in the efficiency of the urban economy as a whole. It diffuses urban investments in land conversion and, in doing so, consumes valuable agricultural resources and results in urban sprawl rather than focused, efficient and viable urban centres. Furthermore, linear urban sprawl, triggers lateral infill and culminates in vast tracts of land-locked, informal carpet development making it extremely costly and difficult in the future to restructure to facilitate utility and access infrastructure.

To avoid these diseconomies, it should be a mandate to local authorities to discourage ribbon development by taking measures and applying land management instruments to enforce appropriate rules and regulations. In particular efforts are needed to limit inappropriate ribbon development along primary transit routes. (ref. Fig 2.1-3)

Ribbon development should be severely curtailed within the jurisdiction of the BMR and in particular in the proposed APZ areas where pressures for such development patterns will be exacerbated due to their implicit strategic importance and the high profile that they will be given to promote and attract development.


0 10 20
Kilometers
BMA
Conurbation Area
Forest Lands
Forest Cover - close and sparse tree cover
Degraded / Scrub areas - little or no tree cover
Agricultural Lands
Double Cropped Lands and Plantations
Single Cropped Lands
Wastelands
Wastelands - land with / without scrub
Rocky / Stony areas
Water Bodies
Water Bodies / Reservoirs
Local Planning Areas
Satellite towns/ Other towns
Industrial Estates
National Highways
State Highways / Other Major Roads
Broadguage Rail Lines
Green Belt


Kilometers
Devanahalli
Hoskote
BMA
Conurbation Area
Anekal
Kanakapura
Channapatna
Wastelands Utilisation
Forestry
Agriculture Use
(including social forestry)
Development Activities
National Highways
State Highways / Other Major Roads
Broadgauge Rail Lines
Satellite Towns / Other Towns
Green Belt


Kilometers
IZ 4
APZ 3
Devanahalli
IZ 5
IZ 3
APZ 4
Nelamangala
APZ 2
Hoskote
Magadi
BMA
Conurbation Area
IZ 6
IZ 2
Ramanagaram
APZ 5
Anekal
IZ 1
APZ 1
Kanakapura
Channapatna
Satellite Towns / Other Towns
Industrial Estates
National Highways / Expressways
State Highways / Other Major Roads
BG Double Rail Lines
BG Single Rail Lines
Bangalore International Airport
Bannerghata National Park
Note : * In APZ 3 - Proposed urban expansion concomitant to proposed International Airport at Devanhalli
Land Resource Management Policies
Consolidated Forest Resources - Policy of Protection and Expansion
Consolidated Agriculture Resources - Policy of Conservation and Upgradation
Consolidated Green Belt - Policy to Sustain 'Green Belt' Philosophy
Water Resource Management - Policy of Protection of Water Bodies through Buffer Zones (ref. Policy GL8)
Proposed Urban Expansion Areas *
Green Belt Corridor Development Control Zones
Peri-urban Corridor Development Control Zones
Area Planning Zones (APZ's)
Interstitial Zones (IZ's)
Local Planning Areas

2.2 ECONOMIC DEVELOPMENT

The population of Bangalore Urban Agglomeration grew tenfold from 0.41 million in 1941 to 4.1 million in 1991. It is estimated that migration alone was responsible for 61 per cent of the total population increase during this period. Changes in urban agglomeration boundaries and natural increase in population contributed to 21 and 18 per cent of the population increase respectively.

Bangalore's industrial and commercial development is largely imposed from outside the state, and the city has relatively weak links with its immediate hinterland in terms of dependence on natural resources or traditional economy of the region. Further, vast majority of the entrepreneurs and employees in Bangalore too are from outside the state. The population pressures in other states creates a strong momentum of migration into Bangalore. Also, the local population in the immediate hinterland of Bangalore is unable to adequately meet the required demand for skills. Consequently, the city is acquiring an increasingly heterogeneous and cosmopolitan demographic composition.

The popular belief that software and electronics have driven the growth of Bangalore is only partly true. While these have contributed significantly to the economy of the city, they have not provided employment on a large scale. At the same time, progressive downsizing by the major PSUs is neutralising some of the additional employment generated in the organised sector.

In terms of employment generation and addition to Bangalore's population, it is the large unorganised sector (which employs unskilled and semi-skilled workforce in manufacturing, trade and service functions) that has contributed the most. An estimate of the informal sector employment in Bangalore Urban Agglomeration in 1991 put it at 67 per cent of the total workforce.

Given the high-tech nature of modern industries, employment in the organised sector is unlikely to grow very rapidly. Much of the employment growth (including multiplier effects of the investments made in the organised sector), would be in the unorganised sector, which offers relatively lower wages.

The 74th Constitutional Amendment empowers ward committees in urban areas to take decisions related to the provision of amenities and services. By virtue of their clout and ability to pay for better services, the affluent areas are likely to receive a better deal. This trend is already seen in solid waste disposal being provided for a fee in some localities of Bangalore. Privatisation of land development and civic services is likely to push up their prices. The elite would tend to concentrate in the core and relatively better areas of the city. These aspects are likely to institutionalise disparity in the availability of civic amenities between the rich and the poor.

With the better areas of the city increasingly experiencing land and property price distortions, unguided market forces are squeezing the lower-middle and low income grouping out to the peripheral areas of the city. As a result, large tracts of former agricultural land are been converted into, often informal, middle class residential sub-divisions. Industrial areas and new sub-divisions have clusters of *parasite* squatter settlements and primary radial corridors, even within the green-belt, are subject to irregular constructions and slums. In aggregate, these phenomena are leading to the haphazard growth of the city in all directions. With the BDA gradually moving out of housing development field and the KHB needing a complete revamp, there is a vacuum in the institutional set-up for providing housing to the lower-middle and low income groups.

The shift of capital from other investment avenues to real estate fuelled the development of Bangalore during the seventies and eighties. Well-to-do investors from other major cities of India and NRIs were attracted by the relatively low price of real estate in Bangalore as compared to places like Mumbai and Delhi. As a result, large tracts of land were developed, without much regulation. Most of this was aimed at the high income groups and was largely speculative rather than developmental. A sound planning framework would have provided the opportunity to channel this activity into focused development for the better long term benefit of the city.

Planning for the city is by and large done independently by each of the line agencies/departments, without much of an integration or an overall perspective. For example, large industrial areas have been developed in different places around Bangalore with little thought as to the requirements of transport, water, housing and related facilities.

Unplanned growth of Bangalore eventually creates add-on costs, higher risks and lower quality of life for all segments of the society, thus progressively diminishing the attractiveness of the city. There are already signs of Bangalore losing out to places like Hyderabad, Chennai and Pune, where there appears to be a stronger political willingness to address the problems and deficiencies and take concerted action for attracting investments. If Bangalore does not wake up to the needs of the future, it could eventually end up being having to revert back to its image as the *'pensioners' paradise'*, which was the sobriquet that it enjoyed before it became *'the Silicon Valley of India'*.

The policy proposals made below are formulated within the context of the above perspective.

Economic Development - Environmental Aspects

Policy GE.1 The government needs to change the structure of its pollution control mechanisms and shift towards market based instruments.

Individual factor owners do not perceive an improvement in environmental quality to be in their own interest. And if that interest is to be activated it is not enough to remind them of their social responsibilities. They have to see a monetary benefit, not just a case of cost minimisation, as with the current government schemes. This is true of industry anywhere in the world. If an industrialist anywhere has reduced pollution from his factory, it is because he has seen the 'carrot' as well as the 'stick'

It is time to abandon the 'command and control' method which sets precise norms in an attempt to reduce pollution. It does not however build-in incentives for better performance. Nor does it exert incremental penalties proportionate to the degree to which stipulated norms are exceeded.

What makes more sense is the kind of law that stipulates, for example, if concentrations of suspended particle matter (SPM) less than the stipulated norm are achieved, then the industrialist will be rewarded in terms of money in proportion to the extent of success in controlling pollution. Similarly penalties would have to be paid to the State Pollution Control Board (SPCB) in proportion to the extent of the violation. This approach is essentially an elementary way of applying market based instruments (MBI's) to control pollution.

This approach can be applied on an 'area' basis. The SPCB should stipulate that the total amount of a particular pollutant in a given area or a given body of water must be below a certain level. Then it is up to the various tenants in accordance with their covenants to trade between themselves and decide who will reduce pollution to what extent to achieve the target discharge quality. As long as the total remains within the limit, the social purpose of pollution control is served, while each factory or tenant can optimise its pollution control costs.

Policy GE.2 Decisions on the location of industrial areas should be guided by strategic and environmental guidelines

Decisions on the location of industrial areas should be guided by an overall framework which sets out specific criteria for identifying potential industrial sites. Identification of industrial areas should be based on environmental suitability (considering present land use, soil characteristics, ground-water and drainage, habitat and ecological balance, geological features, prevailing winds etc., etc.), transportation and accessibility plus infrastructure considerations.

To date industrial location decisions have in many instances taken in isolation of other factors. Without any sound site selection criteria. negative environmental impacts and sub-optimal operational conditions will be built-in and become increasingly difficult and costly to ameliorate or mitigate in the future are prone to problems which may often be realised only later:

Policy GE.3 **Environmental benchmark monitoring procedures and locational guidelines and criteria norms need to be established and enforced.**

Measures need to be taken to harmonise industrial location and environment impact concerns to improve long term sustainability prospects.

Karnataka State Council for Science and Technology has prepared draft industrial zoning atlases for Mysore and Hassan districts on behalf of the National Pollution Control Board. These atlases identify areas within each district which are suitable for locating air and water polluting industries, based on environmental criteria. These atlases should be got finalised and approved at the earliest and made use of in location decisions regarding industries. Similar atlases should be prepared for the other districts of the SKR.

Note: Examples of locating industries based on environmental considerations as applicable to Mysore and Hassan are presented in the respective sections on the districts concerned in Section 2.3.

Policy GE.4 **Industrial areas should have an integral design based on appropriate environmental and best practice estate management standards. All requisite utility and transport infrastructure (in particular reliable power and water supply) should be determined in advance and supplied, as far as possible.**

[3] Industries are often left to meet part of their power requirements through captive generators, and water requirements through their own bore wells or bought out water in tankers. This leads to additional costs for the industries and also causes unplanned pollution and detrimental effect on the ground water resources in the neighbourhood.

3 One is often faced with the dilemma as to which should come first - infrastructure or the projects that would use the infrastructure? Clearly, industry cannot be expected to survive, being left endlessly gasping for infrastructure

Ref: Economic Times of India 23.06.97

Policy GE.5 **Where environmentally compatible, places of work and residence should be integrated**

Small scale and light industries may be permitted in residential or other areas not specifically designated for industry, provided there is no harmful environmental effect.

This helps in better integration of job opportunities with residential areas, thus minimising the need for commuting, thereby reducing travel times, air pollution, energy consumption and helping to improve the overall performance of the urban economy.

The estate for small scale industries at Rajajinagar in Bangalore is a concept worth emulating in other centres, with the proviso that such estates will not cause any detrimental impact on the surrounding areas.

Policy GE.6 **Residential areas should, whenever appropriate, be planned in readily accessible locations to industry**

Residential areas of appropriate nature, with requisite social infrastructure and services, should be planned in close proximity to industrial areas so that a majority of the industrial employees are able to reside near their place of work. Large industries should be permitted and encouraged to construct housing for their employees.

Though the converse of *Policy 1.4*, it has the same rationale. At present, most industrial areas are isolated from other support services, thus leading to additional hardship and expenditure to the industries and their employees. This situation leads to mass commuting, necessitating large investments and subsidies on public transport and roads.

Policy GE.7 **Improved structuring of Industrial Areas and Facilities Required**

Industrial areas should have provision for a symbiotic mix of large, medium and small scale industries so as to benefit from linkage advantages. A conscious effort should be made to attract to an industrial area, industrial units which can benefit from each other through ancillary – principal relationships.

Policy GE.8 **Industrial areas should, whenever possible, incorporate backward and forward supply and production linkages**

Industrial areas should also provide designated space for service sector enterprises that are useful in an industrial area (e.g., suppliers of commonly used raw materials & consumables, transport agents, workshops & tool-rooms, etc.).

Availability of required services at one's door steps enhances industry's efficiency and also provides profitable business to the service providers / ancillaries.

Policy GE.9 **Industrial areas should have common facilities related to effluent treatment, waste disposal, water recycling, energy conservation, and be supported by user incentives, covenant agreements and environmental performance and monitoring procedures.**

Entry into the industrial areas should be based on specific criteria and adherence to well defined norms, which may vary across industrial areas depending on their individual focus and local conditions. All units signing on to an industrial area should commit themselves to a way of life for their common good, rather than act independently to the detriment of each other.

Laissez faire approach to utilisation of resources (such as ground water) and disposal of wastes should be discontinued. Many facilities can be easily established on a collective basis. Low cost alternatives can be considered wherever necessary.

The KIADB should promote the setting-up of common effluent and treatment plants (CETP's) in industrial areas with clusters of SME's and in doing so follow the guidelines of the National Environmental Engineering Research Institute (NEERI).

Policy GE.10 **Existing industrial areas and land resources should be optimised**

Industrial areas which have not found adequate takers should be restructured. Excess industrial land should be re-designated for other alternative uses. It is also imperative to put in place a mechanism so that industrial land not utilised by the allottees within reasonable time can be taken back and re-allotted without having to go through a prolonged legal battle.

Sizeable tracts of industrial area developed by KIADB remain vacant, as the allottees have not utilised the land for long periods. There is urgent need for better utilisation of industrial area that is already developed.

Policy GE.11 **The provision of effective public transit must be integral to industrial area development**

Industrial areas should be linked by adequate public transport services with important residential and commercial areas.

An option that could be considered is for the management of the industrial areas to contract out public transport services as per suitable route plans and time schedules to private operators, with the permission of the concerned government authorities. Minibuses and vans could be operated where traffic volumes do not justify large capacity vehicles and corporate tenants of industrial estates should be encouraged to provide and operate workers transport.

Policy GE.12 **Industrial areas should have common day care facilities for children to facilitate better work participation by women.**

Women's participation in industrial activity is woefully minimal. Housing in proximity to industrial areas and better public transport facilities to industrial areas will mitigate this problem to an extent. While small units may not be able to provide for day-care facility on their own, the concept of a common shared facility should be promoted.

Policy GE.13 **KIADB should investigate the potential to introduce innovative management reforms into industrial estates.**

KIADB should investigate the potential to provide start up and incubator facilities and functions, and gradually hand over management of industrial areas to the occupants' associations under tenancy covenants.

Introduction of such innovative practices would increase administrative efficiency of industrial areas based on gradual transfer to a self-help approach, with the government playing a activation, support and facilitative role.

Policy GE.14 **Measures should be taken for skill upgrading of local people and promotion of rural industries**

Provision for technical and vocational education & training should be augmented & upgraded in tune with market requirements in the vicinity of the industrial growth centres. This is to ensure that people from the surrounding areas are equipped to benefit from the resultant employment opportunities.

In the absence of this measure, economic development would primarily benefit migrant population from outside. The local population would become increasingly marginalised, as has been happening all along in the SKR and in particular in the BMR.

Policy GE.15 **Strategic measures should be made to match the development of rural skills with vocational opportunities**

Appropriate agricultural and rural industries based on local resources and skills should be identified for active encouragement in rural areas. Vocational training should be given at high school/higher secondary school levels, in rural areas.

Exclusive focus on large hi-tech modern industries will primarily provide employment to the educated elite, majority of whom would be from urban areas. Development of rural industries will provide alternative source of employment to the rural population and assist in stemming migration to urban areas whilst improving the overall resource utilisation of the region.

Policy GE.16 **Additional industrial land should be made available net of designated vacant industrial land plus land already committed for industrial use.**

Currently there is considerable under-utilisation of land within existing industrial estates and designated areas. The retention of industrial land resources out of productive use exerts a negative impact on the urban economy. In many instances lack of development take-up has prevailed for a considerable length of time. This may signify that either the KIADB's covenants of tenancy are too lax, the sites are not effectively packaged in terms of infrastructure provision and marketing, or other location factors render the areas unsuited to attract positive investment.

The reasons for non take-up and the viability to rejuvenate the areas need to be ascertained. If it can be demonstrated that it would be economically rationale to rectify the defects and to do so would not jeopardise the Structure Plan's strategic intent, then policy measures should be taken to re-activate these latent areas. Where

lands are deemed unsuitable for industrial rejuvenation, they should be re-cycled for other appropriate and compatible uses under the auspices of other agencies if necessary.

Within this perspective, the actual provision for additional industrial land should be adjusted net of existing designated vacant industrial land and land already committed for industrial use.

At current economic activity rates and average industrial area densities, it is estimated that approximately 1,950 ha of additional industrial land is likely to be required to meet the employment needs generated from the Structure Plan's combined target populations for the BMA and BMR by year 2011[4].

Policy GE.17 **As a broad policy indication, the total forecasted demand for additional industrial area of 1950 ha may be broadly distributed as follows:**

BMA	300 ha
APZ.1	600 ha
APZ.2	400 ha
IZ.2	100 ha (Magadi)
APZ.3	300 ha
APZ.4	150 ha
APZ.5	100 ha

The exact quantum of land and their precise locations should be decided with reference to ***policy GE.17***, the parameters set out for the APZ's and in consideration of local plan priorities.

The suggested distribution of industrial area is based on a broad assessment of the carrying capacity of the respective zones superimposed on the population and employment targets. The theoretical objective of matching jobs to the resident workforce was also a guiding parameter.

[4] *Ref. The Economy of the Bangalore Sub-Region – Opportunities and Constraints Report, Page 36, Table 6.1 - GHK, October 1997*

Policy GE.18 **Priority should be given to developing Industrial areas in the Western Segment within the municipal conurbation area, and designated urban envelopes of priority growth centres (urbanisable blocks and satellite townships) of the Area Planning Zones (APZ's).**

This policy aims at ensuring that economies of scale and agglomeration effect benefits are maximised. Conversely, it seeks to pre-empt ribbon development and lateral unplanned accretion growth along the primary transport corridors which often manifests itself as unregulated development in the green belt and interstitial zones.

Policy GE.19 **Priority industrial development initiatives should be appropriately phased and monitored. This will reduce risk exposure related to market uncertainties and better facilitate taking corrective actions to readjust and synchronise supply and demand.**

Progressive development in phases is important to ensure flexibility to respond to changing circumstances. From a market point of view the only real constant is 'change' and the more rigid a development plan is the more prone it will be to failure. This is more so for the industrial economy in an era of increasing globalisation of trade. A key contemporary economic development concept applied to human resource development is "flexible specialisation", this concept applies equally well to the development of the workplace.

2.3 TRANSPORT

Concentration of socio-economic activities within the Bangalore Urban District (BUD) continues to attract significant immigrants into the area. Planned and unplanned developments have been taking place in the expanding peripheral areas of the metropolis to meet the constant demand for urbanisable space. With the demand for urban infrastructure and services outpacing the rate of supply, the quality of urban environment and living has gradually deteriorated to levels, which are below acceptable standards. This is true of urban transport infrastructure as well. A three pronged strategy is needed to contain the widening gap between the demand for urban transport infrastructure and the rate of its supply:

- *Primarily, the effort will be to increase the rate of infrastructure provision,*
- *Secondly, there will be complimenting strategies to enhance the utility of existing infrastructure, and*
- *Thirdly, measures will be formulated to manage the growth in demand.*

This Structure Plan aims to guide developments within the BMR over the long-term (i.e. over two or three five-year plan periods). Due to the planned spatial developments within the BMR, substantial changes in transport demand as well as in travel characteristics can be expected. Though there is a high degree of uncertainty about forecasting such long term changes, this does not preclude the necessity for such an exercise primarily due to the need for transitioning the structure plan into a functional five year plan and there after into executable annual plans.

Transport Scenario

Some of the salient scenarios within the BMR are as follows:

Population Distribution

Bangalore City Corporation (BCC) area has almost reached its population holding capacity. Further addition of population will be limited hence the average annual growth of population (AAGP) within the BCC area will be low.

Average Annual Growth of Population in BMR

Year	*BCC*	BUD (excl. BCC)	*BRD*	BMR
1961-71	3.05%	7.22%	1.58%	3.00%
1971-81	4.86%	4.68%	2.31%	3.93%
1981-91	0.68%	9.68%	0.43%	2.79%

Source: Census of India

On the other hand, the AAGP within the peri-urban areas of Bangalore Urban District (BUD) and the Bangalore Rural District (BRD) will be comparatively higher as these will be the new development areas within the BMR.

Motor Vehicle Ownership

Over the past decade, the increase in the number of personal motor vehicles has been over 10 percent per annum.

Motor Vehicle Ownership per 100 persons in the BMR

Year	*Motor Cars*	Motor Cycles
1988	1.23	5.28
1993	1.46	7.88
1997	1.91	10.03

Source: Transport Commissioner, GoK

In 1988, one in 16 families owned a motorcar and one in four owned a motor cycle. Now, every 10th family owns a motor car and every alternate family owns a motor cycle

With motor vehicle ownership having doubled within a decade and this trend likely to continue in the short and medium term, the traffic environment within the BMA, is expected to deteriorate fairly rapidly in the years ahead.

Growth of traffic

National Highways and State Highways in the BMR carry most of the road traffic generated from the BMA. The average annual growth of traffic on these roads has been in the range of 9 percent. The pressure on these roads will continue until alternative

Road Accident Fatalities

With the increase in traffic, road accidents have also increased at a similar rate. Each year, the number of road accident fatalities per lakh population is gradually increasing. The safety situation on BMR roads needs to be addressed urgently.

Road Accident Fatalities within the BMR

Year	Total	Per 1000 MV	Per lakh persons
1988	741	1.70	12.36
1993	1018	1.43	14.80
1997	1359	1.31	17.69

Source: Transport Commissioner, GoK

Travel Speeds

Due to the high density of traffic within the metropolitan core, operating speeds have been as low as 20kph. Roads within the peri-urban areas offer better speeds, which reach up to 40 kph. Beyond the metropolitan fringe, better roads offer speeds, which are in the range of 60 kph.

Travel Distances

Within the BMA, the average travel distances have gradually increased. In the late60's, home to work distances were less than 5 kms whereas it is in the range of 8 kms now. With new work centres being developed beyond the metropolitan fringe, there is every likelihood of inducing longer commuting distances unless residential layouts are planned and developed as an integral part of work centres.

Bus Transport System

The sluggish growth of bus transport system within the BMA has encouraged the proliferation of private motor vehicles. In this process, bus transport has gradually lost its share of traffic. While in the early 70's, buses were transporting about 60 percent of the urban commuters; they now carry less than 50 percent of the urban commuters. Urban mass transport systems (bus and rail) need to be augmented to reduce the pressure on urban roads.

Transport in General

Policy GT1 **Transport policies should aim at guiding urban growth**

From strategic urban development considerations, provision of transport infrastructure in appropriate

locations at the right time will help in inducing urban growth in areas, which are planned for such developments.

Such investments may not appear to be cost effective in the short term but generate significant benefits over the long term.

Policy GT2 **Increasing the share of public transport systems**

All transport infrastructure development projects and programs will give priority for public transport systems so as to enable their efficient operation with high level of service.

The gradual decline in the share of traffic handled by the public transport systems and the undesirable increase of private motor vehicle traffic has to be reversed. To achieve this, there has to be a concerted effort towards planning and providing public transport facilities as an integral part of all transport infrastructure projects undertaken in the BMR.

Policy GT3 **Managing demand**

Managing transport demand within the BMA through physical restrictions, time restrictions, congestion pricing and user charges will be encouraged to curb the usage of private motor vehicles and thus moderate the growth of vehicular traffic.

One of the major tasks of urban transport managers will be to reduce the widening gap between the rapidly increasing transport demand and the slow rate of infrastructure supply. The rapid growth of personal motor vehicle traffic within the BMA has to be contained through the use of conventional and innovative traffic demand management measures.

Policy GT4 **Co-ordinating developments**

Concerned State Departments and the Zilla Panchayats will be advised to incorporate the BMR transport infrastructure development programs and priorities. They will take appropriate measures to allocate necessary funds from their budgets to integrate developments at the local plan level.

Multiple agencies are involved in the implementation and maintenance of transport infrastructure within the BMR. The BMRDA will co-ordinate and monitor the transport infrastructure developments as envisaged in this structure plan.

Policy GT5 Private participation in transport infrastructure development

In principal, many transport infrastructure projects could be implemented through private sector investments. Typical of project that could be structured under BOT/BOOT scheme are:

- The BMA-Northern Peripheral Road (BMA-NPR)
- Bus and Truck Terminals.

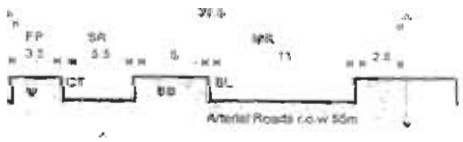
The scale of investments required for a satisfactory supply of transport infrastructure within the BMR is significantly higher than what can be provided by the state or the local bodies. Since traffic demands in the vicinity of the BMA make it worthwhile for the private sector to build and operate certain transport infrastructure, supportive policies will be formulated to facilitate this.

Road Transportation

Policy GT6 Classification of Roads

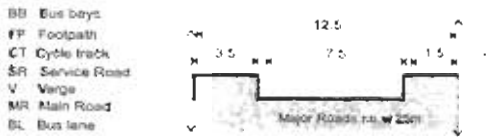
Based on functional and financial considerations, existing major roads have been classified into three categories to facilitate their construction or upgradation in support of the

a). **Arterial Roads** will have a minimum of 55 metre right-of-way to finally accommodate a divided 6-lane carriageway with exclusive bus lanes and segregated service roads on either side.



b). **Sub-arterial Roads** will have a minimum of 35 metre right-of-way to finally accommodate a divided 6 lane carriageway with exclusive bus lanes.

c). **Other Major Roads** will have a minimum of 25 metre right-of-way to finally accommodate a divided four-lane carriageway.



There has to be a hierarchy established among the 2400 kms of primary road network in the BMR to enable investments to be prioritised through a sustained cost effective development program. Since all the major roads within the BMR have been gradually upgraded to their present status, they continue to inherit the poor road geometric, pavement strength and narrow right-of-way. Such deficiencies have to be eliminated on such of these roads which now have to operate as the arterials and sub-arterials of the BMR.

Policy GT7 **Improving Regional Accessibility**

Three concentric arterial roads will be developed beyond the conurbation area of the BMA. These have been identified as:

a) **BMA Southern Peripheral Road (BMA-SPR)** is on a new alignment, which skirts the southern conurbation limits of the BMA. Since this is being implemented as an integral part of the Bangalore-Mysore Expressway BOT project, the private consortium will be encouraged to complete this on priority.

b). **BMA Northern Peripheral Road (BMA-NPR)** skirts the outer limits of the green belt in the northern area of the BMA. It generally overlaps existing road alignments except in a few stretches where there are no roads. Development of this road will be taken up on priority preferably as a BOT project.

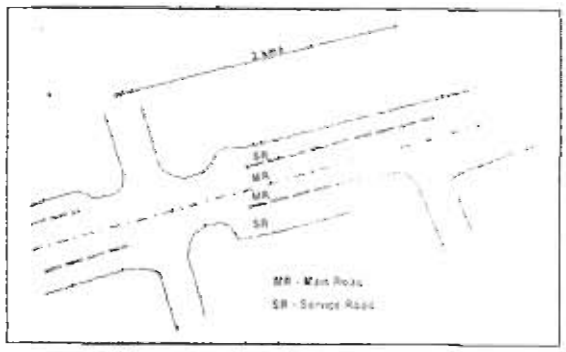
c). **BMR Intermediate Ring Road (BMR-IRR)** links the proposed urbanisable blocks at Bidadi and Nelamangala with the proposed international airport on Devanahalli Road and other radial roads emanating from Bangalore. Most of this road follows existing road alignments except at a few stretches where new roads need to be constructed.

d). **BMR Satellite Town Ring Road (BMR-STRR)** links the nine satellite towns to Bangalore through an existing circular road. This SH road will be upgraded to an arterial road standard in a phased manner.

Existing radial pattern of the primary road network within the BMR forces nearly 15,000 inter-city motor vehicles to pass through the Bangalore Metropolitan Area (BMA) each day. With the steady outward expansion of the BMA, the traffic generated in the newly developing peripheral areas, are also forced on to these radial roads to access other sectors of the metropolis. In order to reduce congestion, hazards and pollution on the major radial routes and to improve accessibility and convenience to the newly emerging travel patterns, a network of circular roads needs to be identified and developed.

Policy GT8 Improving travel speeds with safety

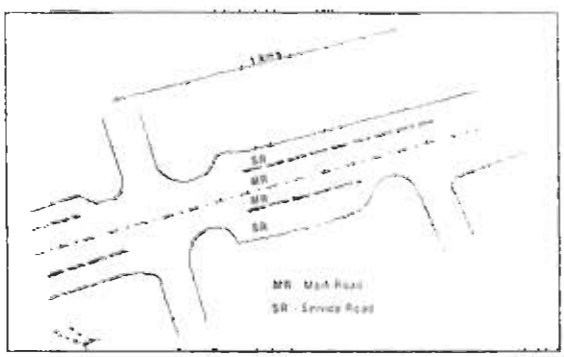
On Arterial Roads, access to roadside properties will be from the service roads. Access from the service roads to the main carriageway will be controlled. Openings in the central median and intersections along the alignment will be spaced more than 2 kms apart. Intersections with other arterial/sub-arterial roads will be grade separated as and when the traffic levels demand such a facility.



Policy GT9 Improving travel speeds with safety

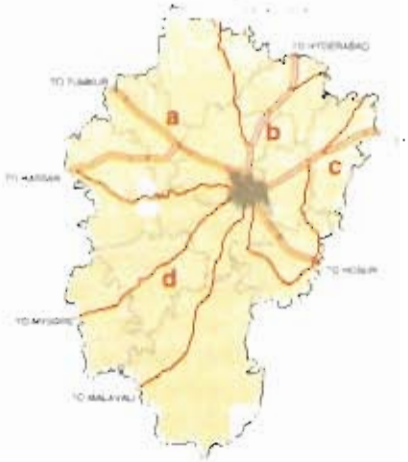
On Sub-Arterial Roads, there will be free access to the main carriageway from the adjoining properties. However, openings in the central median and intersections along the alignment will be spaced at least a kilometre apart.

With more than 700 road accident fatalities occurring within the BMA each year, measures to improve the safety on roads has assumed great importance. Most of the road accidents within the BMA are attributed to the transit of inter-city heavy commercial vehicles through the local city roads. Engineering measures to reduce hazards on high speed, heavy traffic roads would include access control regulations and adequate spacing of intersections.



Policy GT10 Increasing the capacity of Major Radial Roads

Upgrading of the existing radial roads to sub-arterial road standards will be taken up on a priority as indicated below:



a). **Nelamangala to Tumkur NH 4 The** NH4 between Bangalore and Nelamangala is a four lane highway. Due to the ribbon developments and absence of any access controls, there is an increasing incidence of congestion. Construction of service roads on either side of the main carriageway has become essential and needs to be undertaken immediately. The NH Authority of India (NHAI) has initiated the process for four laning of the section between Nelamangala and Tumkur.

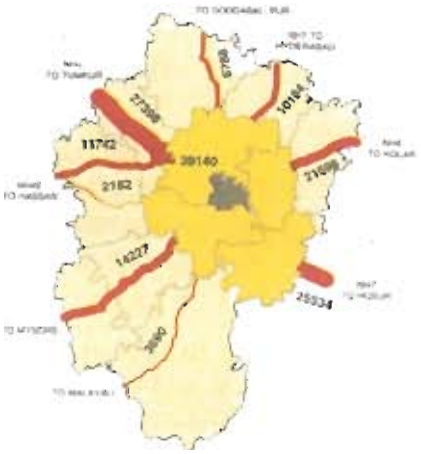
b). **Bangalore to Devanahalli NH 7** With the development of the international Airport near Devanahalli this section of NH will require to be upgraded into a high-speed high capacity highway. This will be done in co-ordination with the developments at the international airport area.

c). **Bangalore to Hosakote NH 4** The NHAI will be advised to undertake this project on a priority basis.

d). **Bangalore to Channapatna SH 17** There is a need for preparing a comprehensive land-use transport plan for this sector to assess the transport infrastructure requirements and to work out a strategy for the optimum utilisation of existing transport infrastructure.

Road	1977 Average Daily Traffic in PCU
Hosur	25534
Anekal	1913
Kanakapura	3690
Mysore	14227
Magadi	2182
Tumkur	39140
Doddaballapur	6788
Devanahalli	10184
Kolar	21698
Sarjapur	4700

Source: GBKI Transport Survey Report



Of the 60,000 motor vehicles entering and leaving the BUD each day, the roads to Hosur, Kolar, Devanahalli, Tumkur and Mysore transport nearly 70 percent of the road traffic. With growth of traffic in excess of 10 percent per annum, all these roads require widening to cater to the future traffic requirements. Increasing road capacity to match the rate of growth in traffic may not be cost effective in the long term. Alternative roads have to be identified and developed to reduce the concentration of vehicles on these radial roads and to minimise the capital investment required for frequent capacity augmentation.

Policy GT11 Bus Terminals

Integrated terminals for private and state bus services will be developed in the periphery of the BMA adjacent the BMR-IRR. Wherever possible, these terminals will be integrated with the rail terminals. Priority locations will be near:

a). Electronic City on Hosur Road

b). Bidadi on Mysore Road

c). Nelamangala on Tumkur Road

d). BIAAPA area on Devanahalli Road

e). Kondasapura on Kolar Road

These will be developed as joint venture projects with the intention of making them autonomous self- sustaining entities.

Policy GT12 Bus services

With the development of these bus terminals, bus services will be re-organised to facilitate better accessibility to other areas of the BMR and thereby help reduce bus congestion on the inner city roads.

Each day about 12,000 private motor cars and 12,000 motor cycles transport over 50,000 people in and out of the BUD. This volume of private motor vehicle traffic adds on to the city traffic causing congestion, pollution and accidents. A significant proportion of this traffic could be expected to transfer on to the bus and rail transport systems if adequate facilities are provided. Considering the future expansion of the city and the resulting growth in traffic, there has to be a concerted effort to improve and integrate the bus and rail transport systems to facilitate the shift of traffic from private modes to mass transport systems.

About 300,000 passengers are transported in and out of the BMA by the 6,000 bus trips generated from the city. Most of these originate from the terminals in the city centre. The approach roads to these bus terminals are perpetually congested due to the high density of bus traffic on these roads.

Policy GT13 Freight Transportation

An integrated road and rail freight station will be developed near:

a). Nelamangala

Integrated wholesale markets, ware-houses and truck terminals will be developed along major radial roads linking the city.

b). Near Attibele on Hosur Road

c). Near Bidadi on Mysore Road

d). Near BIAAPA area on Devanahalli Road

e). At Kondasapura on Kolar Road

About 25,000 trucks enter and leave the BUD each day and transport 90,000 tonnes of freight. Of this about 50 percent is generated within the city corporation limits. Significantly, about 25 percent of the truck traffic transits through the city area for want of by-passable roads. Since road based freight transportation is essentially handled by the private sector, Urban Local Bodies and the State Government have not been seriously involved in providing freight transport facilities and infrastructure. This has resulted in unregulated and informal developments and has caused considerable problems of congestion and parking along major arterial routes to the city. There is a need for planning and providing freight transportation facilities to help decongest the central areas of the city as well as encourage shifting of whole-sale and warehousing activities from the city centre.

Rail Transportation

Policy GT14 Rail Route Upgrading

Rail transport system along the Mysore route, Tumkur route and the Devanahalli route will be upgraded to facilitate introduction of suburban rail transit services.

Proposed developments at Bidadi and the adjoining urbanisable block along the Mysore route are expected to attract significant population into this area. Similarly, the developments at Nelamangala and Tumkur will generate considerable commuter traffic between these towns and Bangalore. The rail transport system towards Mysore and Tumkur should be upgraded and made to handle a major share of the passenger travel demand along this corridor. If this is not done, the road transport system will have to transport bulk of this traffic. New roads will have to be built or existing roads widened to provide additional capacity.

Much of the traffic likely to be generated by the developments anticipated at the Bangalore International Airport area near Devanahalli, should be catered by the rail transport system to minimise the undesirable increase of road traffic. Supportive track upgradation and introduction of high-speed city-airport rail transit services will be necessary to achieve this objective.

Policy GT15 **Access to New International Airport**

Recognising the need for high-speed multi-modal access to the airport from the city, the road and rail linkages will be upgraded by the time the airport is made operational. **(Refer to Policies T10b and T14)**

Bangalore is the national and international gateway for air traffic to this region. To meet the requirements of the anticipated growth in air traffic, a new international airport is expected to be built and operated by a private consortium near Devanahalli. As this will catalyse urban development in the vicinity of the airport, the Government has already constituted the Bangalore International Airport Area Planning Authority (BIAAPA) to guide and regulate developments here. In order to provide high speed multi-modal access between the city and the airport, there is a need for upgrading the existing transport linkages.

2.4 INFRASTRUCTURE

The following sectors have been considered in evolving an overall policy framework for infrastructure in the Bangalore Metropolitan Region:

- ***Water Resources and Supply***
- ***Environmental Sanitation (including solid and liquid wastes)***
- ***Power Supply***
- ***Telecommunications***

The basic principle adopted in evolving the policies in these areas of physical infrastructure is essentially to encourage decentralisation from the core urban metropolis of Bangalore to (i) the outer BMR, and particularly the identified urbanisable blocks, and (ii) other districts of the SKR. These policy statements establish a framework for the development of infrastructure in the BMR, and guide the development of infrastructure within the structure plan. In addition, the policies address the issue of the mechanisms required to ensure efficient provision and management of infrastructure and services.

The Delivery and Management of Urban Services

Policy GI1 **Maximise the efficiency of urban service and infrastructure provision and management through encouraging an increased role for the private sector.**

Notwithstanding the sectoral policies presented below, ***the efficiency and speed with which urban services are extended, delivered and managed must be enhanced*** if the SKR is to develop as proposed. Government has neither the financial resources nor technical capacity to satisfy the demand for urban services and infrastructure; ***the private sector can find these resources.*** Furthermore, the day-to-day management and operational efficiency of all urban services and infrastructure must be improved in order to meet the more stringent demands of the

developing urban economy. Experience dictates that this can best be achieved by ***exploring the opportunities for, and facilitating, private sector involvement in the provision and management of infrastructure and services.*** The Government of Karnataka has recognised this, and in December 1997 has passed legislation in support of an infrastructure policy. This, *inter alia*, sets out a framework for public-private sector partnerships in infrastructure provision, and provides certain incentives to potential investors in the infrastructure sector.

Water Resources and Supply

Water resources in the south and south western areas of BMR are better than those in the northern and eastern areas. The main reasons responsible for this situation are: a) topography and geology of the area; b) rainfall pattern; and c) proximity to perennial sources of surface water. The River Arkavati is the main surface water source in the north western part of BMR while the River Cauvery is the main perennial source in the southern part. (ref.: Report on "*Physical Infrastructure Development – Opportunities and Constraints*"[5]). In view of the relatively closer proximity of the River Cauvery, water supply to the South West of the BMA and particularly the towns of Anekal, Sarjapur, Kanakapura, Bidadi, Ramanagaram and Channapatna will pose less of a problem than other areas.

Large areas in the southern region of BMR have piped surface water supply systems with ground level reservoirs and over head tanks for distribution. This is further supplemented with the supplies from bore wells - largely in the extended and peripheral areas. Conversely, the northern part of BMR has substantial areas depending solely on groundwater for their supplies. The aquifers in these areas are exploited to over 85 percent of their capacities, and it is therefore evident that opportunities for further long-term exploitation of water resources in these northern areas are bleak. This highlights the need for more effective conservation methods even to sustain existing supplies.

Policy GWS1 **Implement measures to augment the water supply to the South and South western regions of BMR**

The augmentation of water supply to the identified areas should encourage further growth consistent with the strategy and structure plan, and ultimately aid in the decentralisation of the population from the core area of Bangalore. Better water supply should further result in improved socio-economic conditions and allied developments in the region.

5 October 1997, GHK International et al

Since the River Cauvery is the perennial surface water source for the southern region, the augmentation of water supplies in the identified sectors of BMR will emerge from the on-going Cauvery Water Supply Stage-IV project. Towns like Kanakapura and Ramanagaram (also the beneficiary of water supply improvements under the ADB assisted KUIDP) are in close proximity to the clear water transmission main, and hence augmentation of water supplies in these towns from this source should not present a difficulty.

Policy GWS2 **Reduce the water leakage problems by carrying out 'Unaccounted-for-water' studies and employ remedial measures.**

Water distribution is partial and not fully efficient in most areas of the BMR, and a ***substantial quantity of water is lost in the form of leakage or wastage***. This may be due to leakage from defective pipes or due to illegal connections or tampering with supply mains by the public. It is therefore necessary that surveys are carried out to identify the causes of high levels of unaccounted-for-water and that remedial measures are formulated to overcome these problems. Furthermore, leaking pipes can suffer from infiltration of ground water contaminated with sewerage during periods of low pressure. This leads to contamination of water supplies and constitutes a serious health hazard. ***Unaccounted-for-water studies as a prelude to system improvements constitute a vital policy action*** if the quality and quantity of water supplies are to be protected.

Policy GWS3 **Maximise the potential to recharge ground water resources, particularly in partially urbanised or non-urbanised areas, and implementation of water conservation methods**

In view of the increasing levels of urban population and limited availability of sustainable sources for potable water, alternative methods for ***water conservation*** such as ***rainwater harvesting*** need to be implemented. This is best focused at locations where existing natural tanks and their catchments can be rehabilitated and maintained and their carrying capacities increased to impound rainwater for subsequent use by the end users, and to enhance groundwater recharge. Rehabilitation of tanks will include de-weeding and de-silting operations, and catchment improvements would involve measures to minimise siltation and maximise storm water flows to tanks.

Policy GWS4 **Undertake bulk metering studies to help improve system management and realise effective revenue collection.**

To assist in solving operational and maintenance problems faced by the agencies in charge of the water supply and distribution bulk metering is a valuable tool. This will assist managers in monitoring patterns of water use, and identify and prevent the wastage of water by facilitating an accurate audit of the water usage and wastage.

Policy GWS5 **Restrict exploitation of groundwater to sustainable quantities**

The water table is currently being drawn down as a result of the ***unsustainable exploitation of groundwater*** over much of the BMR area. If not addressed, the over-exploitation of this resource will result in extensive drying up of bore wells and is a danger to the long-term availability of the resource. This can only be reversed through tighter control of bore wells achieved through such measures as ***licensing of bore well contractors***, ***restricting the depth of bores*** and ***improved aquifer monitoring procedures.***

Environmental Sanitation

Environmental sanitation includes both the solid and liquid waste management sectors and is becoming an ***increasingly significant concern*** in the BMR, particularly as the urban sector expands.

A majority of the sectors of BMR maintain sewerage systems only in the core urban areas. Where piped separate sewerage systems are installed, these are frequently old and either blocked or in a poor state of repair or both. The urban areas in particular also suffer from inadequate levels of environmental sanitation and from the impacts of poor wastewater and solid waste management practices. Added to this problem is the fact that the sewage collected is either not treated, or if it is, the mechanised process of treatment provided is not cost effective and is frequently ill-maintained. In order to implement a complete sewerage system and to maintain an acceptable standard of living and of public health, it is essential to implement the following management strategies in the BMR:

Policy GES1 **Maximise the utility and efficiency of the existing sewerage systems in the BMR through rehabilitation**

Most of the urban areas of the BMR are only served with sewerage systems in their core or old areas, while the more recently developed extended and peripheral areas

are partially or not serviced at all. ***Rehabilitation of the existing sewerage systems is necessary to maximise the utility of the existing infrastructure***, and to reduce the infiltration to the systems and ex-filtration from them (which can constitute a health hazard). The rehabilitation would involve:

- ***Cleaning and de-silting of sewers***
- ***Replacement of old sewer sections as necessary***
- ***Rehabilitation of sewage pumps and pump stations (or their replacement) as necessary.***

Policy GES2 **Augment the sewerage and sanitation systems in the BMR through sewerage extensions.**

The extended and peripheral areas of the urban core of BMR are unsewered or partly sewered. Most of the residents in these developing areas have their own soak pits or septic tanks as a mode of treatment, and frequently the sewage generated in such areas is discharged untreated into natural valleys which may join streams rivers or other water bodies. It is essential that such areas are progressively connected to a sewerage system and thus that progressive augmentation of the sewerage network is implemented to ensure the effective collection and disposal of waste.

Policy GES3 **Provide adequate levels of wastewater treatment using appropriate treatment technologies so as to protect public health and the environment.**

Wastewater treatment is provided for some collection systems but not for others. Absent or poorly functioning treatment plants are responsible for allowing the discharge of untreated or partially treated waste waters which ***pollute surface waters and create potential health hazards***. Malfunctioning systems require rehabilitation and operational improvements. Appropriate and cost effective treatment technologies which are suitable for the conditions in the BMR need to be adopted in the provision of new treatment plants. To contribute to improved water conservation and management in the BMR, wherever possible, ***wastewater treatment systems should incorporate methods for effluent reuse***. Recycling efforts should focus on providing raw water ***for non-potable uses such as irrigation, industrial processes etc***.

Policy GES4 ***Develop and implement improved waste management and operational practices.***

For public hygiene to be protected and the environment safeguarded, management of waste collection treatment and disposal (for solid and liquid wastes) must be improved. In the solid waste management sector, ***improved collection throughout the BMR is vital to improve environmental sanitation conditions and avoid damage to infrastructure from uncollected waste*** (blockage of storm drains causing flooding and in turn damage to storm drainage and road networks). In the solid and liquid waste sectors, ***improved management of collection, treatment and disposal is required to protect public health and the environment.*** Solid waste management improvements should include the exploitation of opportunities for ***waste recycling, recovery and reuse*** (e.g. composting and metals and glass recovery), and the separation of non-domestic (e.g. hospital and toxic) wastes for separate treatment and disposal .

Policy GES5 **Enforce due diligence by industrial waste generators.**

Industrial waste is currently largely uncontrolled and many industrial wastes are discharged or dumped unchecked with attendant risks of groundwater, surface water and air pollution, and associated health risks. There is a need to conduct effluent and discharge quality surveillance and enforce associated effluent and discharge quality standards. Industries must be encouraged to treat wastes (particularly toxic wastes) on site and discharge only wastes complying with discharge standards for collective treatment. Opportunities for the recycling and reuse of both liquid and (non-toxic) industrial solid waste must be maximised.

Power

The power sector is particularly vital in that apart from its own significance, it is responsible for affecting the performance of other critical areas of physical infrastructure, and particularly water supply and environmental sanitation. There has for some time been a serious power shortage in the State as a whole, and in Bangalore in particular. ***Continuous power is necessary for economic activity and for efficient water extraction, treatment and distribution and effective sewage treatment and disposal.*** In order that ***decentralised growth is realised*** in the BMR suburbs, it is essential that the following policies are adopted to facilitate strategy implementation.

Policy GPS1 **Increase the power generation capacity within the BMR through:**

- Facilitating the execution of agreements already reached or in the process of being reached with the private sector for power generation.
- Encouraging increased investment by the private sector in small and non-traditional sources of power.
- Encouraging private sector participation in initiating the renovation and modernisation of old power plants.
- Achieving better co-ordination of the supply of coal and other hydrocarbon fuels to existing plants.

In response to Government invitation, a number of ***independent power producers*** have come forward with the intention of establishing new power plants to meet the growing demand (Refer Report on *Physical Infrastructure – Opportunities and Constraints*). However, many of the agreements between these producers and Government are held up for a variety of procedural reasons. Government needs to make further efforts to resolve outstanding problems to enable these agreements to come into effect. Location of small (up to 200MW) or larger power generating plants within an Area Planning Zone (e.g. Bidadi) is likely to result in improved access to reliable power supplies which should in turn encourage growth in this area.

- ***Power shortages are often caused by low plant load factors (PLFs) which are frequently on account of:***
- Erratic coal supply ***to thermal power plants leading to disruption in generation and longer maintenance shutdowns.***
- Inadequate commitments ***towards investment in necessary*** renovation, maintenance and modernisation of existing facilities.
- ***Addressing these issues will improve the power availability in the BMR.***

Policy GPS2 **Introduce better load management practices through supporting moves to:**

- ***Establish inter-regional grids through use of high voltage DC lines to facilitate optimal exchange of power.***
- ***Optimise system operations through the creation of regional electricity boards and regional load dispatch centres.***
- ***Replace old and poorly maintained medium and low tension distribution lines.***

Poor operational efficiency results from ***high transmission and distribution (T&D) losses.*** The T&D losses in Karnataka are likely to be similar to those in the rest of the country which are ***high at about 21-22%*** against the average figures of ***6-12% for developed and some developing countries.*** The losses are suffered predominantly from the distribution systems, the main reasons being:

- ***Unplanned network development***
- ***Poor system maintenance***
- ***Illegal connections***
-

Improved system management and increased investrnent in transmission and distribution systems in the targeted growth magnets and centres will reduce the T&D losses.

Policy GPS3 *Introduce improved mechanisms for demand side management by:*

- *Rationalising energy prices - moving towards economic resource pricing.*
- *Building up general awareness and promotional campaigns encouraging end-use efficiency.*
- *Establishing a network of energy management advisory centres to undertake energy audit services.*
- *Reducing consumption in energy intensive industries through R&D efforts and pilot or demonstration plants.*
- *Supporting formulation of selective legislation for energy conservation.*

The levels of cost recovery achieved by the SEBs are poor, and generally inadequate to recover the full cost of generation. This is due to:

- *inefficiencies in tariff collection and theft of power.*
- *The heavy power subsidies paid to the agricultural sector.*

Since the supply to the agriculture sector comprises approximately 30% of the total power supplied by the SEBs, the financial losses are significant. Losses accruing from supply to the agriculture sector are *cross-subsidised* by levying a higher tariff on industrial and commercial consumers. However, the supply of free power to farmers *encourages profligate use of power, and due to the intermittent nature of supplies, excessive abstraction of scarce groundwater for irrigation. The progressive introduction of economic resource pricing for electricity used by farmers is vital if excessive power consumption is to be avoided and groundwater resources conserved.*

Telecommunication

The Indian telecommunications sector has undergone a major transformation since its deregulation in 1964. However, financial resource constraints, financial scams, political uncertainty and other factors have limited the extent of efficiency improvements generated. In line with the global telecommunication trends, changes in the sector have been witnessed in three primary areas – ***technology, market***

structure and services offered. Despite these changes, there remains an urgent need for improvement and modernisation of the system throughout the BMR.

Telecommunication improvements are a prerequisite of the industrial and economic growth which is anticipated is to occur - especially in the light of the increasing globalisation of trade, and the demand this places on rapid and high volume communications. These issues are explored in greater detail in section 2.2 which includes the economic strategy statements for the SKR.

Policy GTC1 Enhance the capacities of telephone exchanges

Many telephone exchanges within the Sub-region are operating at or near capacity. With the ***increase in population and industrialisation*** it is essential that the telephone exchange capacities are increased to facilitate ***effective and faster*** communication.

Policy GTC2

1. ***Upgrade manual and mechanical telephone exchanges with digital units.***
2. ***Replace old co-axial cables with new fibre optic cables.***
3. ***Facilitate introduction of higher value added services.***

In order to cater for a greater number of consumers, and to be able to offer consumers the range of services now available in the sector and effectively operate and maintain them, it is essential to ***upgrade from manual or mechanical to digital exchange technology.***

Furthermore, installation of new optical fibre cables overcomes the problem of interference with other underground utilities which are a feature of coaxial systems, and they have a ***far higher capacity for carrying data, and at higher speeds.***

Developments in telecommunication technology in areas such as optic fibres, satellite communication and the growth of sectors linking telecommunication and computers have affected dramatic changes in methods of communication and data transfer. Support infrastructure and incentive frameworks must be put in place to ensure that the latest technology is made available to consumers in the sub region. In this sector, this is best achieved by facilitating the full involvement of the private sector.

2.5 AGRO-ECONOMICS

The land resources in the area are generally red laterite soils, sand loam and rocky. The area is irrigated by tanks and seasonal rivers. The ground water irrigation has become popular in recent times.

The Bangalore urban district has a rainfall of 867 mm with a net sown area of 98330 hectares of which the net irrigated is 16482 ha. accounted for by wells (1382ha), tanks (4909 ha) and tube wells (10191 ha).

The major crops grown are cereals like ragi and paddy, commercial crops like sugarcane and ground nut and plantation crops like mango, guava, banana, grapes, vegetables, etc. Sericulture occupies a very important place of the rural economy of the district with 21000 ha under Mulberry cultivation.

The forest cover is about .03 lakh ha. and about 54 per cent of the gross cropped area is under cereals like ragi and maize, 11 percent under pulses, 6 percent under oil seeds and the remaining under plantation/horticulture plants, sugarcane, mulberry, etc.

Over exploitation of ground water has resulted in Bangalore and Channapatna in the Western Segment, Devanahalli, Hosakote and Anekal in the Eastern Segment becoming dark areas. Dodaballapura and Ramanagara are grey zones.

The only area where the re-charge of groundwater comfortably exceeds the net draft is Kanakapura, Magadi and Nelamangala in the Western Segment. In general the eastern region is poorly endowed as far as the ground water re-charge is concerned. The details are presented in the table below:

Sl No	Name of the Block	Utilizable recharge (ha-m)	Net draft as on 31-12-96 (ha-m)	Balance ground water available(Ha-m)	Approximate feasible wells	
					Dug wells	Bore wells
1	Channapatna	Dark				
2	Devanahally	Dark				
3	Doddaballapur	6522	4429	1115	354	749
4	Kanakapura	12343	3370	7122	2260	4787
5	Magadi	8245	3209	3799	1206	2554
6	Nelamangala	5814	2160	2782	883	2922
7	Ramanagara	4586	2674	1224	388	822
8	Hosakote	Dark				

Unsustainable use of groundwater resources is manifested directly in terms of increasing depth and high rate of well failure. The reduced yields of irrigation water are, the increased cost of well improvement and increased cost of extraction in the form of additional compressor cost and increase in the horsepower of the pumps.

Policy GAg1 **Electricity consumption should be metered and charged on a pro- rata basis to prevent the indiscriminate use.**

The electricity connection to the irrigation pumps shall be given on if they conform to the specification of inter well distance prescribed for a particular area based on the availability of groundwater re-charge.

This is a problem confronting the entire BMR area and has to be addressed in the region.

In a study conducted by Satisha(1997), in Madhugiri in Tumkur district, estimated the negative impact of over exploitation. The negative externality, which has been defined as the cost, associated with failure of wells prior to its average life in the region. For small farmers in high well interference areas, the negative externality was Rs. 17861 per acre, in tank command areas, whereas for small farmers it is Rs.3071 per acre in the tank command areas. In non-tank command areas it was Rs. 9037 per acre, however in low well interference the negative externalities was very low. Further he estimated that the marginal return from ground water use is Rs. 3106 per acre. In high well interference areas and Rs. 4314 per acre in low well interference areas. The marginal costs for the corresponding areas were estimated by the author at Rs. 1357 and Rs. 4345, respectively. This goes to show that the spread between additional tank command areas is Rs. 1749. And in the non-tank command areas the added returns is on par with the added cost.

TANK NUMBERS AND AREA IRRIGATED IN BANGALORE DISTRICT (1-4-97)

BANGALORE RURAL

Taluks	Tanks		Pickup		Others		Total	
	No.	Area	No.	Area	No.	Area	No.	Area
CHANNAPATNA	112	3863	24	482	0	0	136	4345
DEVANHALLI	117	3621			0	0	117	3621
DODABALLAPUR	165	4824	11	144	0	1	176	4969
HOSKOTE	198	4915	4	203	3	265	205	5383
KANAKAPURA	238	7725	30	374	3	431	271	8530
MAGADI	346	4780	34	371	1	50	381	5201
NELLAMANGALA	258	4401	6	67	100	0	364	4468
RAMNAGARA	46	3871	67	605	56	664	169	5140
TOTAL	1530	37998	176	2247	13	1412	1719	41657

BANGALORE URBAN

Taluks	Tanks		Pickup		Others		Total	
	No.	Area	No.	Area	No.	Area	No.	Area
ANEKAL	244	4696	1	6	1	121	246	4823
BANGALORE (NORTH)	118	2148	9	45	0	0	127	2193
BANGALORE (SOUTH)	197	4857	9	366	4	1007	210	6230
TOTAL	559	11701	19	417	5	1128	583	13246

TANK NUMBERS AND AREA IRRIGATED IN BANGALORE DISTRICT (1-4-87)

BANGALORE RURAL

Taluks	Tanks		Pickup		Others		Total	
	No.	Area	No.	Area	No.	Area	No.	Area
CHANNAPATNA	93	3774	24	482	0	5	117	4261
DEVANHALLI	103	3525			40	0	143	3525
DODABALLAPUR	145	5048	11	145	2	19	158	5212
HOSKOTE	167	4825	4	203	3	365	174	5393
KANAKAPURA	140	3826	31	857	6	758	177	5441
MAGADI	175	4250	33	357	2	-142	210	4465
NELLAMANGALA	185	4196	6	67	0	0	191	4263
RAMNAGARA	70	2015	67	605	1	69	138	2689
TOTAL	1078	31444	176	2176	14	1629	1268	35249

BANGALORE URBAN

Taluks	Tanks		Pickup		Others		Total	
	No.	Area	No.	Area	No.	Area	No.	Area
ANEKAL	197	4502	1	6	3	136	201	4644
BANGALORE (NORTH)	166	4447	9	306	4	767	179	5520
BANGALORE (SOUTH)	98	2102	9	45	1	10	108	2157
TOTAL	421	11051	19	417	469	853	488	12321

The number of tanks in Bangalore district has increased quit substantially during the last 10 years in both the districts, viz. Bangalore Urban and rural. This shows that there is a growing awareness regarding the importance of tank irrigation in the region.

In a study conducted by Gireesh et al (1997) on tank rehabilitation and its benefits in Muttur and Kasraghatta tanks of Kolar district found that the benefits from tank rehabilitation included increased in productivity and ground water recharge. The Benefit cost ratio was 1.13 and 1.7 in Muttur and Kasraghatta, respectively.

Policy GAg2 **Tank rehabilitation should be taken up as a priority through the formation of a tank management Authority set up to oversee tank operations and maintenance and set-up revenue generating schemes.**

There are a number of tanks in the region, which have run dry for want of maintenance. Rehabilitation and recovery of such tanks through de-silting can improve the ground water re-charge. Tank maintenance can be promoted through in-land fisheries development, creation of recreational facilities around tanks. The tank management committee should ensure that the tank catchment is well maintained and recovered if encroached. Precise information on the extent of encroachment of tank bed areas can be ascertained through remote sensing data with the ISRO.

Policy GAg3 **A separate institution need to be constituted with suitable powers and sources of funds to oversee the management of post period of the watershed development programmes.**

Since tank rehabilitation can be made economically viable, provided costs are reined in. Every effort should be made to rehabilitate tanks with people's participation and regular maintenance.

Floricultural activities are becoming popular. At present there are 21 flori-tech units with over 60 ha under green house producing mainly for the export market.

Being close to Bangalore city these areas are well endowed with infrastructure facilities like outlets for agriculture and horticulture produce, technical know how and accessibility to information.

The status of the environment is not favourable as forest cover is low and poorly maintained, soils are eroded and ground water exploitation is not sustainable in most of the areas. Tank, which formed a major source of irrigation, is badly neglected and not able to irrigate the areas envisaged.

Water shed development, which involves soil conservation measures like bunding, terracing, soil improvements, construction of field channels, farm ponds and composting will preserve the natural resources of the region.

Policy GAg4 **To ease the labour problem and circumvent the problem of high wages, facilities for custom hiring services of farm machinery should be created.**

Due to the industrial demand for labour, labour scarcity has affected agricultural activity of the region the Western Segment region. There is a need to provide facilities for hiring farm machinery. This could initially be supported by the Karnataka Agro Industries Corporation (KAIC) utilising the services of Agricultural graduates under a franchisee scheme for entrepreneur development scheme of the Government.

2.6 HOUSING

Trends indicate that the distribution of investment has been considerably skewed with Bangalore alone receiving 67 percent of all housing and urban investment between 1980-94. Another handful of cities absorbed a further 10-20 percent while the remainder was spread over a large number of smaller towns. Ninety towns did not receive a single housing project between 1980-94 and 25 cities were excluded from the urban investment developments altogether. This was in contrast to the intended policies of balanced economic and demographic development and diametrically goes against the strategic intent of decentralisation.

housing shortage

The phenomenon of rising land prices coupled with the high cost of construction has resulted in severe imbalances in the housing and related land market of Bangalore.

Estimates of housing shortages for Bangalore are difficult to make due to lack of basic data on supply and demand characteristics. Nevertheless, to gain a grasp of the scale of the problem it is worthwhile to attempt a ball park global estimate. In 1981 , the deficit for the BMA was placed at 51,300+ houses and was expected to show a slight decline by 1991[6]. to 46,120+ based upon registered number of houses, census population and average household size. Adding the BMR population to the 1991 figure is likely to increase the shortage to around to 65,000.

Projecting these figures forwards under the same parameters, and adopting the Structure Plan's induced population targets, results in gross housing shortfalls of circa 125,000 and 300,000 for the years 2001 and 2011 respectively. Of these 30%, circa 37,500 and 90,000 are forecast to be required in the BMR, an input requirement of on average just short of 6,000 units per year for the region.

6 *Metropolitan Bangalore - A Management Perspective, based on a research study sponsored by BMRDA, The Times Research Foundation, June 1992.*

housing supply and demand anomalies

Actual housing production remained a fraction of the estimated shortage at around only 4 percent[7] and the selection of schemes has in no way contributed to the sought after urban dispersal policies. Furthermore, there has been little or no co-ordination with other agencies responsible for slum upgrading, water supply, low cost sanitation and the central government sponsored schemes. As a result the public sector supply side of the '*market*' fails to address the needs of the majority of relatively less well-off urban dwellers. Instead reliance has to be placed on the private rented sector where, amongst other factors, the lack of adequate tenure and rent control measures creates social and financial insecurity.

At the more micro level, as housing demand surveys are not conducted regularly there is no basis by which to assess and match the parameters of demand and supply. Lack of affordability data negates an assessment of target groups effective demand. Registration procedures and loans and repayment conditions are unsuited to the unstable income characteristics of low income households. Thus, low-income families are by default ineligible for most supply models.

Furthermore, existing housing policies, town planning legislation and building by-laws do not provide for tenure followed by incremental and progressive housing development on a self-build basis by the urban poor. It only provides for conventional housing approaches. It seems that the formal agencies have little inclination to promote populist schemes in a demand-driven participatory manner.

It has been often cited that had the Karnataka Housing Board (KHB) concentrated on the supply of mass low-cost housing the mismatch between housing need and supply would not be so stark. Unfortunately, the KHB showed little interest in this segment of housing need. Instead it focused on conventional housing schemes and due to price escalation, repayments were well beyond the affordability range of low-income households.

It has been observed that only in the low volume 'composite housing schemes', where a mix of income types enabled cross-subsidy to be an implicit part of the provision formula, has a reasonable match between standards, costs and income of households been achieved. Unfortunately this approach has been jeopardised through pre-emptive sale or on-rental by allottees in violation of the KHB rules; thus eroding the precept on which composite housing schemes were meant to be developed.

7 *A housing shortage of 1.6 million for the year 1990 was mentioned in the Annual Report of 1991-92, Housing and Urban Development Department, Government of Karnataka.*

public and private sector roles- urban development forces

Analysis would indicate that investments by the Government of Karnataka in housing and urban development constitute only a very small fraction of the total[8] . Further, it has been estimated that up to 50 percent of Gross National Product is made up of the *'exotic'* , or *'black'* economy. The circulation of such huge resources tends to gravitate towards sectors where it can more discreetly and easily be absorbed. These forces are particularly evident in the land and property sectors and has lead to undesirable price escalation's and undoubtedly accelerated the conversion of agricultural and scrub land at the urban periphery.

The demonstrable lack of control that has been possible to exert on these forces has limited the role of government agencies in the urban sector, at most, they have been regulatory with little emphasis on interventions at a developmental level. Furthermore, recent attempts to reduce governmental control by seeking to facilitate public / private sector partnership arrangements have significantly failed to change housing and urban development trends.

urban development and housing policy

At the macro level, the typical five-year plans serve a mere administrative and budgetary purpose without a deliberate attempt to provide a policy framework for housing and urban development schemes. While Karnataka drafted a housing policy in 1995 and urban development strategy papers in 1992 and 1994, they never acquired official status. Additionally they suffered from two fundamental weaknesses. Firstly, urbanisation was perceived as the negative effect of rural poverty and as such a symptom that should be contained at the source. Secondly, it was believed that the problem of rapid urbanisation could be solved by a policy of dispersing growth to a large number of secondary cities. These cities had to be hierarchically ordered, a concept borrowed from rigid locational theorists. Little or no attempt was made to analyse and understand the dynamics of city growth and rural-urban migration. Thus, these documents have suffered from basic misconceptions and failed to provide a policy or direction for housing and urban development.

8 *Urban Development in the State of Karnataka, India; Policies, Actors and Outcomes - Summary and Conclusions of the Dissertation by Harry Albertus Mengers, February, 1998.*

Sector Policies

Policy H1 **Government land should be supplied within the priority growth centres and new urbanisable blocks for 'composite' and 'joint venture' housing schemes to be developed in partnership with the private sector.**

Providing access to serviced land and resources for the construction of habitat with secure tenancy arrangements is one of the key mechanisms to give priority growth centres a competitive edge over other central metropolitan locations. If this can be linked together with the provision of jobs and reasonable transport facilities, the 'kingpin' of decentralised concentration and sustainable growth will be in place.

The Special Area Planning and Development Authorities (SAPDA's) recommended to be set up for the designated Area Planning Zones should earmark and 'bank' government land for group housing particularly of low income groups, and make them available for joint ventures with developers for the construction of housing. A single window agency to handle all regulations for facilitating land transfer to promoters and developers should be set up in support of this.

The developer would be provided with land at controlled or subsidised prices and be bound by agreement and suitable security covenants to construct houses of specified standards and costs within an agreed period, and be allotted through fair and transparent means to those registered on an official housing waiting lists. Special needs groups, defined by specific criteria, should be afforded priority.

Policy H2 **A policy to restructure the functions, roles and operations of the Karnataka Housing Board (KHB), through innovatory changes in the regulatory framework, should be implemented to shift its focus from house builder to land assembler and infrastructure facilitator as a joint-venture partner with the private sector for the provision of housing.**

The reputation of the KHB has been gradually eroded over the last decade. In particular, aspects relating to the quality of housing and maintaining the time-bound implementation of schemes has suffered. Criticism has been levelled at the lack of concern for effective financial management or organisational performance. The frequent transfers of personnel has hampered any continuity of and commitment to the organisation. As a result, housing schemes have virtually become a liability to the government.

Furthermore, the disappointing efforts in the area of affordable mass housing by the KHB, combined with the achievements and strong upward price trend in conventional housing, serve to illustrate that the KHB has neglected a major part of its mission to provide housing for the urban and rural low-income groups. The KHB should increasingly assemble land so that co-operatives and individual plot beneficiaries would undertake development but within a specified time frame and other rules.

Policy H3 **Measures are required to be taken to provide land for group housing for the urban poor at subsidised or controlled prices**

A major problem arising from inefficiencies in the land market is inequity. Since land and real estate prices tend to be particularly high in large urban areas in comparison with other prices, a large majority are virtually excluded from land ownership. It is estimated that that the urban poor constitute 30 to 40% of the city population and the majority have no access to land or housing[9]. The same source reckoned that the demand for land for housing by the year 2001 would be in the order of 14,400 hectares.

To assist in closing this demand gap the Government's role should be focused on the speedy transfer of land and facilitation of infrastructure within the strategic framework of the BMR Structure Plan. Currently elitist politico-administrative arrangements have resulted in the delivery of prime lands to the more affluent groups in society at unrealistically low market prices.

Housing of the genuinely poor is a challenging task in urban centres because their capacity to pay for the cost of land and construction are severely limited. Hence the poor are more often than not, relegated to unsanitary parts of the city, fringe areas, and slums.

Policy H4 **The main focus of the Karnataka Slum Clearance Board (KSCB) should be on in-situ up-grading through self-help processes incorporating the participation of appropriate NGO's.**

It is estimated that in the order of 10 percent of the population of the city are living in slum settlements, with an average of about 800 persons in each settlement. In total the KSCB reckons that about half a million people reside in slums in the Bangalore metropolis and these are scattered in some 340 pockets located in 15 main localities. Significant though this is, it is modest compared to Mumbai and Delhi, where it is assessed that in the order of 50% and 33% respectively of the total city population live in slums.

9 *Committee on Urban Management of Bangalore City (CUMBC), 1997, Recommended Shelter Strategy.*

Abject housing poverty manifested in the form of slums should be dealt with mainly by the KSCB through in-situ upgrading programmes that provide affordable sanitary infrastructure and security of tenure. Programmes should be subject to the condition that that their implementation will pose no overarching environmental negative impact or jeopardise the strategic intent of the Structure Plan.

Programmes will need to focus on detailed consideration of the needs of the urban low income groups. In particular, economic, satisfaction of effective demand, efficiency and sustainability. Conventional approaches to the provision of municipal services will need rethinking. Appropriate skills among technical staff will need recruiting to deal with social, communication and economic aspects, and to tap the support of voluntary or community based organisations.

Policy H5 **A range of innovative housing supply solutions, including rental housing, should be encouraged to help meet the housing needs of the urban poor.**

To facilitate individuals and families to move out to new pioneering fringe communities or to catch rural-urban or inter-state migrants at 'key nodes' on the urban periphery, there is a need for the creation of innovative housing solutions. Besides serviced land, starter units, incremental financing, self-build, and composite housing scheme solutions, efforts should be made to establish conditions that are conducive to the creation of a rental housing stock. This will provide a low entry cost for new arrivals, facilitate filtration within the stock to accommodate changing family needs and increase labour mobility.

In this connection there is the need for rent control laws to be reformed and more exotic financing mechanisms to be introduced. For example, thrift and credit societies, mortgage loan arrangements that acknowledge 'land' tenure rights as leverage collateral and rental streams as security. These need to be specifically structured and targeted at the poor. In this respect HUDCO's financing modalities have in the past ensured that a proportion of housing is built and allotted to the urban poor and their concern with recoverability of loans, made them into a kind of watchdog agency over borrowing agencies. However, more recently, competition from other financing agencies and the need to achieve financial and physical targets have made HUDCO more tolerant of practices that are not in the interest of low income target groups.

Policy H6 **A programme to carry out regular housing needs surveys and to maintain an appropriate housing management information system is essential to support the formulation of effective housing policy and supply targets**

There is no reliable data about the nature of housing need and supply. Here a distinction is essential to be made between *need* and *demand*. While *need* indicates a shortage or deficit in terms of socially acceptable standards or norms, independent of price or income, *demand* is determined basically by the ability of people to pay for housing.

It is essential to estimate actual housing needs of the people, particularly those of the economically disadvantaged (poor and low income groups). To achieve this a policy should to made to institutionalise the process of carrying out regular time series housing needs surveys. This will enable meaningful housing policy programmes to be drawn up for the provision of minimum housing needs according to desired standards and monitored for performance against targets and benchmarks.

The National Housing Policy (VIII th Plan) has stressed on an appropriate management information system on housing and urban services to be developed at various levels of government, and a comprehensive housing census to be taken up by concerned agencies.

Policy H7 **Unauthorised layouts should be regularised where they do not jeopardise the integrity of overall strategic intent of the Structure Plan**

Informal development in the form of unauthorised housing subdivisions constitute a major part of uncontrolled urban sprawl within the BMR. The haphazard accretion growth of such areas constitute a major threat to organised growth in the future as areas become land-locked, making access and infrastructure provision virtually impossible, disproportionately costly and prone to dispute. Furthermore, these extensive areas of unauthorised development freeze land assets, exert a negative impact on the economic functioning of the city and whilst contributing nothing to municipal revenues.

With a view to rationalising the irrational, a pragmatic policy of formalising unauthorised subdivisions through land regularisation instruments and the application of betterment levies plus p user charges for services should be pursued in a systematic manner

2.7 TOURISM AND RECREATION

Tourism is already considered the world's greatest industry with 593 million people travelling and accounting for an earning of $423 billion excluding airfares. Tourism is also the world's largest export industry accounting for about 8 per cent of the total exports and more than 30 per cent of international trade in services. Furthermore. World Tourism Organisation (WTO) statistics indicate that the growth potential of tourism in the coming decade is enormous. More importantly, the WTO forecasted that tourism's contribution to the Indian Ocean Region's GNP is likely to register a 118 percent increase over the next decade.

Regardless of the scale and significance of the sector, tourism is one of the neglected sectors in India today. The tendency has been to view the travel and tourism industry as an elite industry catering to the needs of a few affluent tourists and, therefore, an industry which should be viewed as been outside the mainstream of economic activity. As a result, it was not even mentioned in the pre-budget Economic Survey until two years ago. This is in spite of the fact that tourism is acknowledged as the second largest net foreign exchange earner in the country with about Rs. 10,000 crore - next to textiles. Given these past misconceptions of the industry, it is good that the recently held World Economic Forum in Delhi has focused on tourism and emphasised its importance.

We have to get out of the mindset that tourism is a frivolous activity and make sector policies to support investment in the sector

Economic Times 10.01.98 - G.Sundaram former Tourism Secretary of the government of India

Policy GTR.1 **Recreational open space provision codes and standards need to be formulated and applied in the preparation of development plans.**

Beside the broader strategic sector policies which form the principal subject matter of the Structure Plan, it is necessary to highlight the importance of planning for recreational open space. Within the BMR, a minimum per capita space standard for the provision of recreational open space at various levels of statutory plan formulation should be mandatory for any proposed community area development. Currently there is no codified requirement that ensures the incorporation any such standards into

plan preparation. The continuation of this Structure Plan initiative provides an opportunity to address this shortfall by establishing suitable *planning codes* for the elaboration of the APZ Priority Area Plans. Each of these could provide an ideal vehicle on which to establish open space and recreational codes that could eventually form part of a comprehensive set of planning standards for Karnataka State.

Policy GTR.2 **Flagship developments such as the proposed International Airport are important market image builders for international trade.**

The quality of the physical infrastructure and the hospitality service industries will determine the visitors perceptions on arrival at the gateway to the State. Similarly the first impressions gained on entering the city along the airport corridor will be important for the creation of a positive city image and inducing a sense of civic pride. These values and judgements are critical factors in the process of building a high profile destination image that seeks a good ranking in the international market place. Hence, it is important that planning and development controls and design guidelines ensure that the route to the proposed international airport results in a high quality environment.

Policy GTR.3 **Priority should be given to ensuring that the approach road to Bannerghatta National Park is up-graded and that, as far as possible, the environs along the visual corridor of the approach road is maintained as a quality landscape environment.**

The Bannerghatta National Park is a major recreational and tourism asset for the residents of the Metropolis and visitors to the region. Furthermore, a major land use management recommendation is that it should be expanded in the form of a 'necklace' of inter-linked forest pockets to form a Regional Forest Park sweeping in a wide arc from the green belt to APZ.1.

Policy GTR.4 **Strategic locations need to be identified within the BMR that are suitable for the development of visitor accommodation.**

The Master Plan for the Development of Tourism in Karnataka[10] identified the need for an additional 10 three and five star hotels and stated that the Government is proposing to acquire 200 acres of land for the provision of tourism infrastructure in Bangalore. Not all such developments need to be in the city centre. Quality visitor

10 *Prepared by the Department of Tourism – August 1537*

accommodation at priority growth centres will be important to provide the hospitality services and operational bases for business leaders and captains of industry. This will be of equal importance during the early stages of development start-up as well as the later consolidation phases of development.

Policy GTR.5 **High value business 'add-on' travel requires good infrastructure, hospitality services, visitor attractions and accommodation within the excursion catchment area of the metropolitan environs.**

Bangalore been the gateway and business centre of the region, generates considerable business 'add-on' tourism trade which depends upon well developed in-bound travel agencies, good physical infrastructure and quality visitor attractions within the metropolis' immediate hinterland. Furthermore, with population growth and increases in net disposable discretionary incomes and Bangalore's salubrious climate, resident and domestic visitors will make greater and greater demands for recreation, weekend retreat and short-stay vacation facilities Therefore, planning should take account of these potentials and promote their development in locations in the BMR where resource and environmental conditions do not conflict with their operational needs and are compatible with the Structure Plan's strategic intent.

Policy GTR.6 **A long-term policy commitment should be made for the incremental development of the proposed Regional Forest Park (cross ref. IZ1.L1.)**

In respect of ***Policy GTR.5***, within the proposed Regional Forest Park it is foreseen that areas will be designated for the development and operation of commercial recreational facilities. These would need to be developed in accordance with strict environmental management codes and operational development covenants for licensees. It is important that the proposal for the creation of the Regional Forest Park is conceived holistically and not in a piecemeal fashion. The overall scheme should take account for more than the individual financial viability of the licensed operations. In aggregate, these revenue generating activities should guarantee a stream of income to support the operational and maintenance viability of the concept whilst in no way jeopardising the long-term environmental and ecological sustainability of the area.

AREA PLANNING POLICIES

AREA PLANNING POLICIES

GENERAL POLICIES

Land Resource Management

Policy GA.L1 **SAPDA's shall be formed for all Area Planning Zone**

Within the framework of the policy guidelines for the APZ's and IZ's the Special Area Planning and Development Authorities (SAPDA's), recommended to be formed for each of the APZ's, shall be required to detail out the plans in their jurisdiction for approval by the BMRDA. Action development plans are to be then prepared by the concerned UDA's, PA's, urban and rural local bodies or other authorised development agencies with BMRDA ensuring integrated development. For IZ's, approval for action would be directly through the BMRDA.

Industrial Economy

A general industrial economic policy guideline is applicable to the overall territory of the BMR and one for all APZ's, namely:-

Policy GA.E1 **Priorities for the location of industries should be adopted by all concerned agencies and co-ordinated through the BMRDA.**

As a first priority industrial development shall be direct to the designated 'Growth Centres' within Area Planning Zones 1 and 2. As a second priority, industrial growth shall be accommodated in those Satellite Towns designated for 'Controlled Growth' in APZ's 3-5. More limited, SME type developments, can also be accommodated in satellite towns designated for 'Controlled Growth'. Otherwise, industrial development should not be permitted within the BMR and on no account within the Green Belt.

To achieve the strategic objectives of decentralised concentration of growth from the BDA to the BMR, industrial land supply should be focused in a number of key strategic locations. Furthermore, the high level of congestion and atmospheric pollution in the BMA makes it advisable to limit further industrial development in this area.

Policy GA.E2 **Criteria for the release of land in APZ's should be adopted.**

As it becomes necessary to release land for the development of larger industrial sites or estates within the APZ's, such land should be selected according to specific criteria.

Within the framework of the Draft BMR Structure Plan the APZ's provide the broad spatial framework within which local industrial location policies need to be formulated. To this end, the selection of land should be subject to the following general criteria:

- *the competitive need to attract investment into the region;*
- *the nature of demand that the industry or industries are intended to meet;*
- *proximity and ease of access to major roads and railways;*
- *ease of site development;*
- *comparative infrastructure costs;*
- *the nature of the likely environmental impacts.*

Transport

Policy GAT1 **Integrated Transport and Land Use Policy approaches need to adopted**

Residential layouts and related social and community infrastructure will be located within easy and convenient access to work centers in the area planning zones.

BMR has been delineated into 5 area planning zones (APZ) and 6 interstitial zones (IZ). Considering the committed and planned developments in the APZs, about 30 percent of BMR's population would reside in settlements outside the BMA. Since most of the new work centres and industrial layouts will be located in these APZs, the planning strategy for the settlement of dependent population will have to minimise travel distances between the place of residence, work, school and daily shopping.

Failure to do so would encourage commuting to the BMA and will induce greater intensity of travel on the BMR's radial transport corridors.

Zone	Population (lakhs)		Growth (%)
	1996	2011	
BMA	51.00	76.00	25.0 (49%)
IZ 1 + APZ 1	8.26	13.58	5.32 (64%)
IZ 2 + IZ 3	2.11	3.25	1.14 (54%)
APZ 2	1.57	3.13	1.56 (99%)
IZ 4 + APZ 3	4.22	6.68	2.46 (58%)
IZ 5 + APZ 4 + IZ 6	2.06	3.00	0.94 (46%)
APZ 5	2.40	3.72	1.32 (55%)
Total BMR	**71.62**	**109.36**	**37.74(53%)**

WESTERN SEGMENT

In addition to its normal growth, this segment is targeted to attract in an additional 3.44 lakh persons by 2011 AD. The recommendations below reflect the policy of 'decentralised concentration' and modified trends'. (ref. Part 1, 1.9).

2.8 AREA PLANNING ZONE 1 (APZ-1): BIDADI

This zone includes the bifurcated version of the urbanisable block, the designated Toyota factory site and the Ramanagaram–Channapatna Urban Development Authority area. The Bangalore-Mandya-Mysore SH (under consideration for up-gradation as NH); the single-track Bangalore–Mysore BG rail (under consideration for a double track and electrification); and the proposed Bangalore-Mysore expressway (as a self-financing BOT project through toll and / or area development projects along or near the expressway) bind the zone.

In this zone, there have been extensive and sporadic sub-divisions of land for housing and other urban activities, all the way from the BDA green belt up-to Bidadi. These sub-divisions are largely approved or regularised by the BMRDA; but most of these are in the bifurcated area of the urbanisable block and within which it is now recommended that one township related to the B-M expressway be developed. This township could be in lieu of a township proposed in the green belt and which would now not be possible to spot zone. The southern peripheral road (SPR) and the urbanisable block project with the B-M expressway township incorporated, would restructure development in this area. It is recommended that this SPR be taken up for a high priority feasibility study – a component of the Companion Report for APZ1 Action Plan. A second township related to the expressway project can also be constructed between Ramanagaram and Channapatna, not because it is required but to fulfil a State Government commitment.

Land Resource Management Policies

Policy PZ1-L1 Priority Areas for Urban Expansion

The potential areas for future urban expansion have been identified by co-ordinating the findings on Physical Opportunities and Constraints, and the infrastructure potential. The areas with potential for future urban expansion are:

The Bifurcated Urbanisable Block located South of the green belt p to Bidadi and along Mysore SH via Mandya and along the proposed B-M expressway and all the land in between. This comprises of good developable land interspersed with plantations and cropped lands. This area is likely to develop fast as it has close links with Bangalore and good access facilities. The proposed BMR intermediate ring road passes through this area and an interstate bus terminal can also be located here along with a truck terminal and warehousing facilities within the Ramanagaram and Channapatna Development Authority area.

Beyond Ramanagaram town, to the east of the Bangalore – Mysore road, and where a large wasteland area is available for urban development. The proposed satellite town ring road passes through this area.

Both these areas provide potential land for future growth as the land is relatively level with good transport links to existing developments. It is recommended that development should be permitted to locate in both preferred areas within development controls guidelines. These areas have to be developed in such a manner that the large forest department lands and undulating landscapes are enhanced in value or at least, maintained and preserved. Water is to be provided mainly from the Cauvery and sewage disposal is to be improved with opportunities explored for recycling.

Therefore it is recommended that there should be no further townships permitted in Bangalore district related to the expressway project. It is also recommended that the expressway merges with the Bangalore-Mysore SH soon after Channapatna on the way to Mysore and that the SH be upgraded to a NH with all related NH level facilities en-route including a by-pass at Mandya and grade separators as required on the route.

Once the URP Act is in force, a Special Area Planning and Development Authority (SAPDA) under the umbrella of the BMRDA is to be set-up for this zone with powers to levy development charges. This authority has to co-ordinate all the area development projects in the zone, irrespective of whether this is via the Ramanagaram and Channapatna Development Authority, the proposed Bidadi Development Authority or directly through SAPDA.

Industrial Economy

Policy PZ1.E1 **The proposed Bidadi urban envelope should be geared to take on a significant quantum of industrial development. About 400 ha of industrial area may be earmarked here to provide employment to about 50,000 persons.**

Some land has already been committed near Bidadi for the Toyota factory and its ancillaries, etc. The implications of existing commitments should be taken note of before designating further areas for industrial development.

Policy PZ1.E2 **The Ramanagaram-Channapatna belt should be pro-actively marketed for industrial development, with concurrent development of appropriate industrial and support infrastructure. About 150 ha of industrial area may be designated here.**

Policy PZ1.E3 **Industrial development in Kanakapura should be strictly limited and contained in view of its proximity to forest regions and open lands. About 50 ha of industrial area may be provided for to meet local needs.**

The policies GE.19 to GE.21 have attempted to set out broad parameters for prioritisation of industrial development in different areas within APZ.1 based on various factors

Transport

Policy PZ1.T1 **A specific series of transport and related land use policy interventions will be required to support the strategic intent of the Structure Plan in APZ.1., namely:**

1. ***Preparation of a comprehensive land use-transport development plan***
2. ***Facilitation for the early completion of the BMA-SPR by the private consortium (Policy T7a)***

3. ***Development of the BMR-IRR by upgrading of the existing road alignment from Anekal to Bidadi via Harohalli (cross ref. Policy T7c)***

4. ***Development of the BMR STRR by upgrading of the Kanakapura-Ramanagara-Magadi SH to an arterial road standard (cross ref. Policy T7d)***

5. ***Development of an integrated bus and rail terminal at Bidadi (cross ref. Policy T11b)***

6. ***Development of a truck terminal at Bidadi along the BMR-IRR (cross ref. Policy T13c)***

Developments around Bidadi, Ramanagara, Channapatna and Kanakapura in this South western zone of the BMR is expected to increase the transport demand by at least 65 percent over the next decade. The proposed four-lane toll expressway to Mysore is expected to handle about 10 percent of the newly generated traffic. The existing SH 17 will have to handle 80 percent of the traffic while the rail system handles the remaining 10 percent. Consequently, many transport infrastructure projects and programs will be required in this zone.

Infrastructure

Water Supply

Policy PZ1.WS1 **The on-going BWSSB project of water supply augmentation has to be taken up on a priority basis to increase the level of service in this sector.**

Policy PZ1.WS2 **Employ Rain water harvesting technique to conserve water**

This area is in the South western part of Bangalore. Since this falls in the basin of the perennial Cauvery river. ***drinking water needs can be relatively easily met.***

Ramanagaram and Channapatna are other neighbouring towns that fall in the purview of this identified Area Planning Zone. There are source development, re-habitation and system extension works in progress under the ADB funding for the Karnataka Urban Infrastructure Development Project (KUIDP). These areas are thus well catered for in the short and medium term.

There is bound to be additional demand in this sector generated for water in view of the ***proposed power project*** (100 MW Combined Cycle Power Plant of KPCL) at ***Bidadi***. However, with the on-going Cauvery Water Supply Project - Stage IV (Phase-1) of BWSSB, water needs for this sector should readily be met.

With the perennial water source nearby, future water demands in the APZ can fairly readily be met. However, for effective long-term planning it is essential to conserve water by adopting rainwater harvesting techniques.

Ground Water

Policy PZ1.GW1 **In order to realise effective ground water management and to encourage ground-water conservation, bore-well drilling licenses and fees and/or cess on groundwater should be introduced.**

The groundwater potential of the Kanakapura sector is categorised by Department of Mines and Geology as a **grey** area (i.e. with the level of exploitation of the order of 65% to 85% of capacity) and the neighbouring districts of Ramanagaram and Channapatna fall in **grey** and **dark** (over 85% exploitation) areas respectively. This in general indicates that any future ground water exploitation should be effectively monitored and controlled. Furthermore, the re-charge of the ground water in this sector is fairly good in view of the dependable rainfall this region receives from the South West Monsoon. With proper management, groundwater in this sector can therefore be used for: ***a) potable purposes; b) agricultural needs; and c) for industrial use.***

Environmental Sanitation

Policy PZ1.ES1 **New Sewerage systems and a Sewage treatment plants are to be implemented to meet the growing demands and prevent environmental pollution.**

This area, like others within the BMR, is ***partially*** sewered. There is ***an immediate need*** for both extended sewerage systems and new sewage treatment facilities to facilitate wastewater disposal and ***prevent environmental pollution***. Provision of a complete sewerage system and a ***sewage treatment plant*** is necessary to protect water resources and the environment. Policy with respect to sewage treatment reflects the need to a) provide appropriate energy efficient treatment methods; and b) maximise the opportunities for re-cycling the sewage for non-potable purposes. ***Implementation of a sewage re-cycling plant*** in the longer term will assist in meeting future water supply needs.

Agro-economy

Fortunately the level of groundwater exploitation in these areas is not critical except in Channapatna. Ground water irrigation is the most important source in the area and its exploitation needs to monitored and regulated in future.

Micro level studies need to be undertaken to determine the precise status of ground water so that the exploitation can be suitably regulated consistent with the potential. Moreover, water conservation technologies like drip and sprinkler irrigation should be popularised

Policy PZ1.Ag1 **A separate institution need to be constituted with suitable powers and sources of funds to over see the management of post period of the water shed development programmes.**

Water shed development.. which involves soil conservation measures like bunding, terracing, soil improvements, construction of field channels, farm ponds and composting will preserve the natural resources of the region.

Policy PZ1.Ag2 **An agency to provide training to the farmers on modern technologies, provide information on global and domestic developments. Supply information of market intelligence and information. Undertake feasibility studies on behalf of the farmers/ development departments.**

The agro-climatic conditions of the region are well suited for the plantation and horticultural crops. Horticulture has witnessed substantial increase in recent years. This activity can be supported by providing good quality planting material, inputs and extension services. The state has formulated an agricultural policy to boost commercial agriculture to support this endeavour there is a need to establish cold storage, pre-cooling units, refrigerated vehicles. There is a proposal to establish a mega agricultural produce-marketing yard on Mysore road. This will greatly help in the marketing of agricultural /horticultural produce of the region.

Sericulture is an important activity in this region, particularly Bidadi, Ramanagaram and Channapatna. There is big cocoon market at Ramanagaram. However the quality of silk produced in the area does not compare with international standards of demand. Hence it is unsuitable for manufacture of export quality fabrics. The research and development of high quality silk cocoons suited for the area would help to further strengthen the industry. This will also help to strengthen the forward linkages associated with reeling, twisting, weaving, dyeing, etc.

Sheep, goat, and piggeries have good scope in the area. This area is known for its sheep and goat species. There is big demand for meat and meat products in Bangalore and its surroundings. Piggeries can be promoted since sugarcane is an important crop and jaggery waste can be used as feed.

Policy PZ1.Ag3 A policy to promote Hi-tech floriculture units in the region needs to be launched.

Hi- tech floriculture units are popular in Bangalore region. Kanakapura has one unit of 4 ha. Green house. Surprisingly more units have not come up in the region despite the availability of water and infrastructure facilities. There is scope to establish flori-tech unit in Bidadi, Kanakapura and Ramanagaram.

Policy PZ1.Ag4 Establishment of agro-industrial estates to process agricultural/horticultural products produced in the region

The feasibility of establishing agro-industrial estates to process agri and horticultural produce produced in the region need to be explored. Though these units could come up in the adjacent SKR region, it could process the products produced in this region.

An integrated system should be attempted to recycle the resources particularly water and waste products, so that the various sectors are not in conflict with each other.

Policy PZ1.Ag5 Declaration of horticulture and agricultural zones where conversion of land for non-agricultural purposes shall be discouraged by imposing high conversion fee.

Acquisition by Government Development Authorities and Co-operative Societies for non-agricultural purposes should to discontinue.

Separate agriculture and horticulture growth centres shall be identified and declared exclusively for agricultural and horticultural activities.

These areas shall receive priority attention with regard to government support in planning and providing technical assistance. This will help in preserving the greenery in the surroundings of BMA, and help to restore the almost defunct green belt.

The present practice of mandatory acquisition by the Industrial Boards, Co-operative Societies and other Government Agencies at low prices is taking place. This has led to the sale of lands by the farmers in anticipating acquisition by the Government and Co-operatives. This affects the investment on development of agricultural lands by the farmers, as the compensation paid for such acquisition is far less than the market rate.

Policy PZ1.Ag6 **Areas unsuitable for agriculture shall be permitted for non-agricultural activities after ensuring that no unacceptable environmental or ecological impacts will result from the land conversion and development**

Non-agricultural activities should be restricted for housing, recreational spots, community parks, social forestry and light agri-based industries.

Policy PZ1.Ag7 **Seasonal rivers in the region should be maintained to conserve the water and regulatory instruments should be enforced to prevent pollution due to industrial effluents**

Catchment areas for rivers should be preserved and conversion to industrial and other uses should be prevented. Presently, the KIADB, which is levelling an expanse of land in Bidadi, which is a catchment of the Vrishabavathi river, is likely to affect the flow of water to the Byarmangala reservoir. Such interventions should be avoided.

Policy PZ1.Ag8 **Entry corridors through the BMR should have right-of way reservations wide enough to provide, where relevant, for the creation of environmental 'buffer-zones' and for the provision of community recreational areas.**

Along major radials and ring roads, wherever possible, right-of-ways reservations should allow for the creation of easily accessible recreational pockets and for the planting of avenues of trees using species, which are hardy, slow growing and suited for the agro-climatic conditions of the region. These plantations should then be placed under the control of the Forest Department.

Policy PZ1.Ag9 **Where government lands under the control of the Revenue Department are designated for the establishment of recreational uses they shall be transferred to the Social Forestry wing of the Zilla Panchayat.**

The revenue lands are highly prone to encroachment by vested interests. These lands which form the catchment of rivers and tanks and pastures could be transferred to the Social Forestry Department of the Zilla Panchayat for its operation and maintenance.

Policy PZ1.Ag10 **Large tracts of land in the Western region are under forests. These need to be developed intensively to increase the forest cover and serve as a recreational facility.**

The forests in the region are located close to Bangalore city where there is scope for development for the preservation of the ecology and also serve as a recreational facility. The possibility of securing funds for developing this forest area from industrial houses located in the BMA/BMA thorough a cess may be explored.

2.9 AREA PLANNING ZONE 2 (APZ-2): NELAMANGALA AND MAGADI

Nelamangala town environs are identified as one of the two proposed major growth centres within the BMR. The strategy foresees the promotion of an urbanisable block as a sister settlement to the existing town. Having a strategically excellent location offering multi-mode transport access, the urbanisable block lands are ideally suited for area extensive employment generating land uses and pockets of related cluster village type settlements. Furthermore, these characteristics makes them suitable to act as reception areas for the decanting of activities deemed unsuitable for the BDA and City centre. Whereas, the development perspective for the existing town of Nelamangala is viewed as having an administrative, commercial, retail, small to medium scale enterprises, service sector and community orientation.

To achieve this strategic intent will require careful orchestration of forward planning for the advanced provision of infrastructure under the auspices of a Special Area Planning and Development Authority (SAPDA). A priority activity of this authority, or even the BMRDA in advance of the formation of the authority, will be to undertake feasibility studies to ascertain the carrying capacity of the area via a vis the complete "water cycle". As part of the approach to promoting the scheme it is conceived that it should be designed and marketed as a model township that will incorporate leading-edge technology incorporating integrated heat and power, energy and water, waste bio-re-cycling environmental management systems. This will project a high-profile "green and environmentally friendly", low cost operating marketing image with which to attract substantial inward investments and private sector participation.

In this zone, inter and intra urban transport interchanges assume importance with the satellite town of Nelamangala in focus. The Bangalore-Pune-Mumbai BG railway line as recently upgraded is catering to rapidly increasing freight and passenger traffic along with NH4 which is also nearing saturation with its current road section. An Electric Multiple Unit (EMU) suburban service is also proposed between and Tumkur. Four-laning of the highway and electrification of the Bangalore-Pune BG track is going to put pressure in and around Nelamangala town for uses like organised bus and truck terminals, warehousing, inland container depots (ICD's) and also for a

railway marshalling yard with facilities for stabling and rake formations. This is more so, as the Bangalore-Kunigal-Hassan BG railway line is sanctioned and the BG connection to Mangalore is nearing completion. Along with NH 48 this line would facilitate the rapidly growing transportation of goods and people as Mangalore emerges as the second largest national port on the West coast after Mumbai for a complete range of exports-imports.

Land Resource Management Policies

Policy PZ2-L1 Priority Areas for Urban Expansion

This zone has adequate developable land with good road and rail corridor access, to locate a new township, transport nagar, ICD and warehousing activities. The careful development of this zone would largely contribute to a workable interface of inter and intra urban traffic with pressure through non-destined traffic in the core of Bangalore reducing to manageable dimensions. The zone has substantial amount of plantations, and single cropped lands but also a fair amount of wastelands and where the balance of the urbanisable block (earlier proposed in APZ 1) could advantageously be located close to manufacturing units / estates, the distributive trade and allied activities. It would also provide housing close to employment in a peri-urban environment.

The potential areas for future urban expansion have been identified by co-ordinating the findings on Physical Opportunities and Constraints, and the infrastructure potential.

The areas with potential for future urban expansion are

1 The area to the north of Nelamangala town between the railway line to Tumkur, the BMR intermediate ring road to the West and the BMA green belt to the east, may be more appropriate for residential, institutional and small scale/non-polluting industrial uses. The residential area is in effect the proposed part of the urbanisable block which has to be shifted from Bidadi so as to more evenly distribute residential opportunities in appropriate locations of the BMR.

2 The area to the north-west of Nelamangala town between the new proposed railway line to Hassan, the existing NH-4 and BMR intermediate ring road which is ideal for an inter-state bus terminal, transport nagar. ICD and warehousing activities.

3 The area to the north of proposed Bangalore–Hassan railway line, NH-4 to Tumkur and the railway line to Tumkur to the east which is suitable for railway marshalling yard, stabling and rake formation. This is a development to be undertaken by Indian Railway.

Infrastructure improvements should be implemented in these areas to achieve this concentration and to direct development. (refer transport sector section).

In this zone, there have been some sub-divisions approved and regularised by the BMRDA and these require being incorporated in the overall plan for APZ 2 by a Special Area Planning and Development Authority (SAPDA) to be created with powers to levy development charges and to report to BMRDA. It would orchestrate the plans by the Nelamangala Planning and Development Authority, and other major projects like the urbanisable block, and activities related with manufacture and distribution. The transport nagar would relieve the current traffic congestion in central Bangalore as well as along the NH. The Cauvery river would be the main source for water augmentation. Sewage disposal is to be improved with opportunities explored for recycling.

Industrial Economy

Policy PZ2.E1 **Additional provision for industries should not be made in Peenya to avoid adding to the traffic congestion there. However, with the establishment of the truck terminal, some of the congestion along this route would be reduced providing considerable scope for better utilisation of already allotted land.**

Some of the allotted land in Peenya remains unutilised. Ensuring its utilisation would be advisable in the interest of better deployment of available facilities.

Policy PZ2.E2 **The Nelamangala growth centre should provide for substantial industrial area supported with efficient road and rail transport links with Bangalore. About 400 ha of industrial land may be developed here.**

Transport

Policy PZ2.T1 To support the significant level of development planned at Nelamangala, a series of transport infrastructure and related land use interventions will need to be implemented:

1. *Development of the BMR-IRR to an arterial road standard by upgrading existing roads and constructing new roads where ever existing roads are not available (Policy T7c)*
2. *Development of the BMR-STRR to an arterial road standard by upgrading the existing SH from Dobbaspet to Doddaballapur (Policy T7d)*
3. *Development of a road freight station in the vicinity of the NH4 and NH 48 intersection (Policy T13a)*
4. *Development of an integrated bus and rail terminal (PolicyT11c)*

Nelamangala satellite town and the proposed urbanisable block constitute the major developments in the north West zone of the BMR. Population is expected to nearly double over the next decade. Apart from being on the junction of two major National Highways it is likely to be a major rail junction as and when the new rail line to Hassan is built. This zone will become a busy transport node in the BMR. The transport projects proposed in this zone aim to provide the basic infrastructure for the anticipated demands.

Infrastructure

Water Supply

Policy PZ2.WS1

In order to support the induced decentralised concentration of growth to this area, the water supply has to be substantially increased.

This area is in the north-western part of the BMR. Nelamangala is strategically placed on the NH4 en-route to Bombay, and easily accessed by proposed International Airport. While it is intended to induce growth into this area, Nelamangala currently has a water supply of only about 36 lpcd, supplied by means of a bore well system utilising both electrically driven and manual pumps. ***This present level of service is inadequate.*** Schemes to develop additional sources are required either by tapping the Cauvery river supply, or from bore wells, directing water to a common sump for onward pumping to overhead tanks and thence distribution.

Ground Water

Policy PZ2.GW1 **Further exploitation of ground water is to be carefully monitored and planned, to mitigate against possible contamination and over-exploitation**

The existing water demands in this area are met from ground water supplies. The Department of Mines and Geology designate Nelamangala as a **grey** (ground water exploitation is in the range of 65% to 85%) area. This means that further exploitation has to be undertaken in a carefully controlled manner to ensure sustainability of the resource.

Environmental Sanitation

Policy PZ2.ES1 **In order to protect public health, the environment and future development potentials in the area, localities with partial and inadequate sewage disposal facilities have to be better served.**

Policy PZ2.ES2 **In order to meet the future water supply demands resulting from growth, it is necessary to investigate and implement sewage re-cycling options**

Existing sanitary conditions are inadequate and require improvement in this area. This will lessen the threat of environmental pollution and enhance public health and hygiene. To ***realise the strategic intent of inducing growth into this area,*** it will be necessary to meet the future demand for wastewater treatment and water resources *by* ***implementing sewage treatment and re-cycling projects with potential for industrial re-use of effluent.***

Agro-economy

Corridors of this sector are highly industrialised and developed for commercial activities. The agricultural activities are confined to the interstitial zones of the BMR. The ground water exploitation in the region is not yet excessive and there is scope for agricultural and horticultural activities and which are not well developed. The main crops growth in this region are cereals like ragi and maize, pulses and oilseeds. The horticultural crops are vegetables mangoes and coconuts. Sericulture is an important activity in the region.

The lands close to the highways are not well developed because of the imminent conversion to industrial uses. The farmers are holding these lands only for speculation purposes.

Policy PZ2.Ag.1 **Agricultural extension services should be strengthened in the interstitial zones of the BMR to not only enhance productivity but to also strengthen linkages to regional consumer markets.**

Sheep and goat rearing also have good scope as this belt is known for its sheep and goat species. There is an increasing demand for meat and meat products in Bangalore city and its metropolitan area.

Policy PZ2.Ag.2 **The marketing of poultry products needs to be streamlined to provide stable and remunerative prices for products and supply feed at reasonable prices.**

An institution to co-ordinate the agro-business aspects of the poultry industry need to be created to safeguard the interests of the consumers and producers.

2.10 INTERSTITIAL ZONES (IZ'S)

Land Resource Management Policies

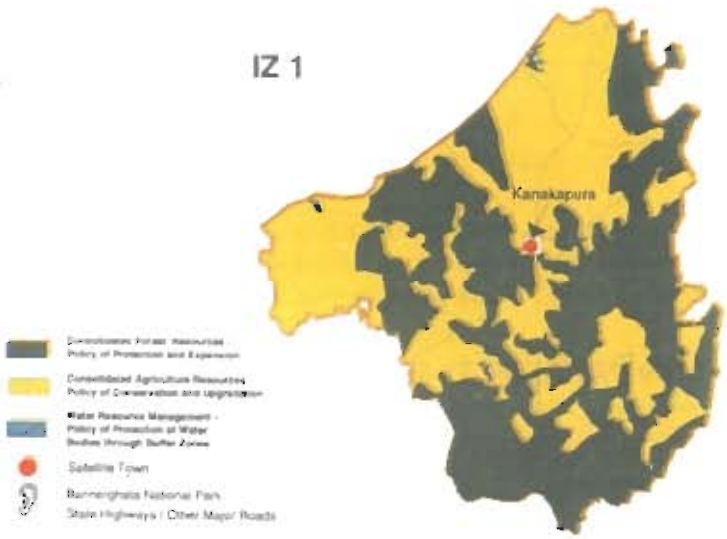
Apart from two area planning zones (APZ's), the western segment of the BMR (surrounding the BMA) comprises of three interstitial zones. A summary profile description, supporting illustrations and policies for these are presented below:

Interstitial Zone 1 (IZ.1)

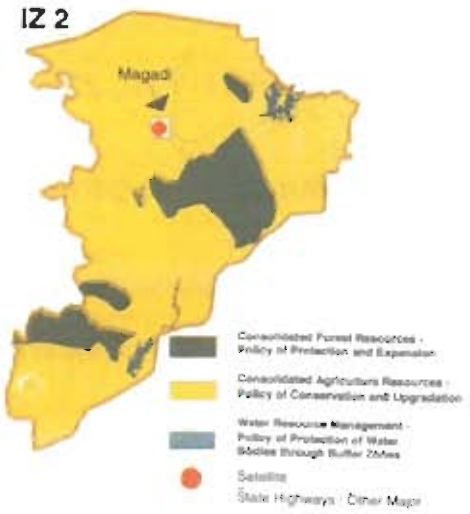
This large interstitial zone South of the BMA with the Kanakapura satellite town at the hub is predominantly forest department land that is bordered by steep and hilly land to the east. The large area around Kanakapura town between the Arkavati and Suvarnamukhi rivers comprises predominantly good agricultural plantation lands, interspersed with single and some double crop lands.

Policy IZ1.L1 **A long-term spatial policy should be adopted to conserve and develop forest and marginal forest resources for the creation of a major Regional Forest Park**

It is proposed that a regional forest park should be established that spans a wide arc as an extension of the Bannerghatta National Park, swinging South of Kanakapura and terminating in APZ1 within the Channapatna, Ramanagaram and Bidadi corridor. The concept is foreseen as a *'necklace'* of forest pocket areas that are linked through a network of countryside *landscape* routes.



Special areas within the Regional Forest Park should be developed under licensed operations as passive and active recreational pursuit areas, weekend retreats, executive outward-bound centres, etc., for the generation of revenues to sustain the extensive forest.



Interstitial Zone 2 (IZ.2)

The undulating land around Magadi satellite town and West of the BMA is predominantly degraded/scrub wastelands covered with few areas suitable for agriculture

Policy IZ2.L1 The large area under wasteland in this zone can be put to more productive use by upgrading to forest cover, agriculture and social forestry.

Interstitial Zone 3 (IZ3)

The land north-west of the BMA is predominantly in agriculture use. It is an area of mixed farming and some plantations. A belt is degraded and which can be upgraded for agriculture or social forestry.

Policy IZ3.L1 **Agriculture produce can be increased in this zone and waste land brought into more productive use.**

A belt is degraded and which can be upgraded for agriculture or social forestry. Also, sheep and goat rearing and poultry and farm products can be increased.

For all three Interstitial Zones it should be policy, as far as practicable, to prohibit urban development. In support of this philosophy, a set of three ubiquitous police are set out below.

Policy IZ/GL1: Forest areas should be protected and enriched with qualitative genetic improvements. Areas under degraded/scrubs should be upgraded and extended wherever possible.

Policy IZ/GL2: Certain agricultural land (double crop or plantations) should be conserved for its high productivity. Single Crop areas should be enhanced and enriched with qualitative improvements.

Policy IZ/GL3: With reference to delineated settlement boundaries (Gram Thana – red-line limits) it should be policy that:

i). until separate plans are approved for each village, uses be permitted only within the existing village limits (Gram Thana) that accord with development guidelines which seek to upgrade existing socio-economic conditions;

ii). outside the village limits (Gram Thana), only uses be permitted that accord with the structure plan policies and/or other detailed development plans otherwise, no change of use should be permitted.

Policy IZ/GL4: **Sub-division of land should not be less than the minimum permitted for agricultural holdings or one hectare whichever is more. Farm houses and where permitted should not have a built up area exceeding 200m^2.**

Industrial Economy

Policy IZ2.E1 **About 100 ha of industrial land may be provided for here. Industries based on local resources and which are complementary to the local economy should receive priority.**

The principal disadvantage of Magadi is that it is not located on any of the major transport corridors. Being an interstitial zone, industries which are non-polluting and which are not in conflict with the local economy and land use pattern may be permitted here, based on a case by case evaluation.

Transport

Policy IZ2.T1 **Development of the BMR-STRR by upgrading the existing SH from Ramanagara to Dobspet via Magadi (Policy T7d)**

The West BMR zone primarily consists of the Magadi satellite town wherein the population is expected to increase by 54 percent over the next decade. Transport demand can also be expected to increase by this rate. Since road based transport system is the only mode of transport within this zone; the construction of the BMR-STRR assumes importance and should be implemented early.

Agro-economy

IZ.1 Kanakapura (Bannerghatta National Park)

Policy IZ1.Ag.1 Agro-based policies are needed for the realisation of the Regional Forest Park concept.

The north-eastern boundary of this interstitial zone is contiguous with APZ.5 Anekal which has also a substantial area of forest cover. Reciprocal polices in this zone are proposed to ensure continuity of the. Bannerghatta National Park and for the establishment of a deep environmental buffer zone between it and the Hosur corridor. It is proposed that the forest cover in this *border zone* should be further consolidated and enhanced through intensive planting. Furthermore, measures should be taken by the Forest Dept to curb the illegal felling of trees and encroachment of forestlands. Quarrying in the forest area must be prohibited both to conserve the forest and maintain environmental conditions that are conducive to recreational pursuits.

EASTERN SEGMENT

In addition to its trend growth pattern, this segment is targeted to attract a relatively modest addition of 1.48 lakh persons by 2011 AD. The segment is deficient in groundwater resources and there are only limited areas suitable for residential urban growth and international airport related activities. The recommendations below accordingly reflect the strategic development themes of 'containment' and 'modified trends'.

2.11 AREA PLANNING ZONE 3 (APZ-3) : DEVANHALLI - DODDABALLAPUR

This large area which encompasses most of two taluks and which includes the CMC of Doddaballapur and the TMC's of Devanahalli and Vijayapura, has been under stress these past two years due to the International Airport recommended for location in this area. As a result, land speculation has been rampant in and around the selected site and the BMRDA has approved or regularised substantial sub-division and change of land use.

A Bangalore International Airport Area Planning Authority (BIAAPA) as created earlier is in effect the core of APZ 3 around the airport. The extended area of the BIAAPA is largely for environmental controls. This is necessary, as the total area is in a dry ground water belt, with very little water available through tanks and supply earmarked from the Cauvery being expensive to process. APZ 3 has therefore to be a heavily constrained and conditioned development zone despite the fact that an international airport is a heavy activity generator. This problem gets partly mitigated by the fact that the present airport is being upgraded through substantial investments and in the fullness of time, Bangalore would have two airports with activities round them finely tuned at this stage itself to the extent possible. The corridor from the International Airport is the 'processional way' into the city, therefore, it must be managed as a very high quality corridor that suitably reflects the importance of the State capital "First Impressions Count" philosophy.

Land Resource Management Policies

Policy PZ3-L1 Priority Areas for Urban Expansion

The potential areas for future urban expansion have been identified by co-ordinating the findings on Physical Opportunities and Constraints, and the infrastructure potential. The areas with potential for future urban expansion are:

1 The area in and around Devanahalli satellite town and Export Promotion Zone (EPZ). Here, it is foreseen that other compatible and environmentally friendly industries **with low water consumption requirements**, a bus and a truck terminal and warehousing facilities could be suitably located.

2 There are large tracts of wasteland in the area north West of the proposed Bangalore International Airport site, adjoining NH-7 and the railway line to the West. It is foreseen that this area would be suitable for low water consuming recreational activities and associated low density development.

3 The designated Bangalore International Airport Area – only for operational use.

Some wastelands along the NH have been identified which can be judiciously made use of for future urban development avoiding excessive encroachment on productive agricultural areas. The portion of NH-7 from the airport to the city is slated for quick unhindered movements as a processional way. The railway that loops from Bangalore to Kolar via this area already has a broad-gauge track for most of the way. It should be doubled and electrified from the airport to the city to provide a rapid mass-transit shuttle service. The requirements of flight control, along the approach 'cones' would ensure that substantial areas are maintained as low rise, low density development. For the majority of the area outside the core International Airport site and City Corridor link, the area should be designated as a special environmental planning area where single crop agriculture and plantations should be given priority along, low water consuming recreation and farmhouse (minimum site area one hectare) developments.

It is recommended that the extended area of BIAAPA be transferred to a Special Area Planning and Development Authority (SAPDA).

The original smaller BIAAPA delineated area, including the corridor should be designated as the International Airport Core Area Planning Zone (IAC-APZ). If events indicate confidence for the implementation of the proposed International Airport, then priority should be given.

The SAPDA's major role would be to ensure effective environmental controls. This authority should ensure that the vast single crop areas and the modest plantation lands are not disturbed. Settlement expansion, would be permitted incrementally around Doddaballapur and Vijayapura towns, apart from major expansion in and around Devanahalli and which is near the airport. As the Cauvery is to be the main source of water its supply would be limited, restricting the development potential of the zone.

Industrial Economy

Policy PZ3.E1 **A total of 300 ha of additional industrial area is proposed for APZ.3 as a whole. However, further industrial development at Doddaballapur should be planned keeping in view the carrying capacity of the transport corridors and the local infrastructure. Housing and other social amenities should be upgraded on priority to reduce day-time commuter traffic from Bangalore.**

Doddaballapur already has a fairly extensive industrial area. A significant proportion of industrial workers employed at Doddaballapur commute from Bangalore and its outskirts.

Policy PZ3.E2 **The region in close proximity to the proposed airport near Devanahalli should be primarily earmarked for airport related use including employee housing, airfreight complex, flight kitchens, hotels and other amenities for air passengers, export oriented industries employing air transport, etc. Pressure to locate unrelated industries and services merely because it is convenient to be located close to the airport should be avoided.**

Industrial and commercial development related to the airport should receive over-riding priority in the region close to the airport. This will ensure optimal utilisation of the resources earmarked and also reduce speculative cornering of land.

Transport

Policy PZ3.T1 **A number of transport network upgrading interventions are required to facilitate effective land use development within the designated Bangalore International Airport Area Planning Authority (BIAAPA) and related satellite, namely:-**

1. *Development of the BMA-NPR as an arterial road by upgrading existing roads along the proposed alignment. It is important that the start and take-off points of the BMA-NPR coincide with the corresponding points of the BMA-SPR (Policy T7b)*
2. *Development of the BMR-IRR as an arterial road by upgrading existing roads along the proposed alignment (Policy T7c)*
3. *Four-laning of the Bangalore - Devanahalli section of NH 7 (Policy T10b)*
4. *Development of the BMR-STRR as an arterial road by upgrading the existing SH (Policy T7d)*
5. *Development of rail transit system from Bangalore to Devanahalli (Policy T14)*
6. *Development of bus and truck terminal within the BIAAPA (Policy T13d)*

Developments in Doddaballapur satellite town, Devanahalli satellite town and the BIAAPA are expected to induce a 58 percent growth in population over the next decade in this zone of the BMR. In anticipation of an equal rate of growth in transport demand which would have a fairly wide spread regional interaction, the important transport infrastructure projects required to satisfactorily meet this demand is listed above.

Infrastructure

Water Supply

Policy PZ3.WS1 **Policy initiatives need to be taken to augment the existing water supply.**

Policy PZ3.WS2 **Policy initiatives need to be taken to promote the introduction of rainwater harvesting techniques to enhance surface water conservation and reuse in the area.**

This area lies in the north-eastern part of the BMR. The present water supply is by means of a ***system of bore wells fitted with pumps***. This sector receives ***highly unreliable and scanty rainfall*** from the north east monsoon, and furthermore there is ***no perennial source of water*** in the vicinity.

The system of bore wells is generally linked to a common sump from which water is further supplied by pumping through pipes to the end users. The KUWS&DB are maintaining this piped water supply scheme. Devanahalli enjoys water availability of about 90 lpcd supply at present from bore wells, while Doddaballapur receives a supply of 45 lpcd. Even for the current population, these supply levels are inadequate in respect of national per capita supply standards. In future there is the possibility of water being supplied from the Cauvery Water Supply Scheme Stage-IV (Phase-1) from the reservoir at Yelahanka. However, at present this is for the sole purpose of supplying the proposed International Airport at Devanahalli. Other developments. (and the airport if the supply project is not complete by the time the new International Airport becomes operational), will have to primarily depend on inadequate resources from a) ground water and b) water tanks.

The proposed airport is likely to stimulate considerable development within the surrounding areas, in turn generating significant additional water demands. ***Given that existing supply standards are inadequate, and alternative sources limited, the time frame within which the proposed Cauvery Water Supply Scheme is completed may determine and limit the scale and nature of development that shall be permitted in the area. It may therefore become necessary to cap any future growth in this area.***

Ground Water

Policy PZ3.GW1 **No further exploitation of ground water in this area should be allowed. No water intensive industries should be established.**

Policy PZ3.GW2 **In order to realise an effective ground water management strategy and to conserve the groundwater, bore well drilling licence fees or a groundwater cess should be introduced.**

The Department of Mines and Geology has determined that Devanahalli and its surrounding areas are designated as a **dark** area for groundwater (over 85% exploitation). This means ***no*** further ground water exploitation is advisable. As it stands, the extent of extraction by industries such as electronic, silk, tobacco, etc. which have ***their own bore well systems*** to meet water requirements are unknown and the actual volumes extracted cannot be properly ***not monitored or controlled***. ***Any future ground water exploitation in this area, and existing extractions, should therefore be carefully monitored and controlled.***

Environmental Sanitation

Policy PZ3.ES1 **Policy initiatives need to be taken to activate the provision of a new sewerage system to serve the area**

Policy PZ3.ES2 **Initiatives need to be taken to speed up the installation of a new sewage treatment plant at Yelahanka and for the completion of the plant at Hebbal.**

There is ***no planned sewerage system*** in this area. Sewage from the Satellite Township at Yelahanka and the adjoining areas is discharged into the nearby ***Hebbal tank***. At present there are two wastewater management projects that are in the process of implementation in the sector. They are **a)** ***Full commissioning of the sewage treatment plant near Hebbal, and b) commissioning of a new sewage treatment plant near Yelahanka Satellite Township.*** These two projects, when fully implemented, will satisfy sewerage treatment needs in the short and medium term. However, at present there is no sewerage system in the Doddaballapur-Devanahalli sector. It is planned to use the re-cycled sewage from the proposed Hebbal treatment plant to serve the water needs for ***non-potable purposes*** a) at the proposed International Airport at Devanahalli; and b) for the ***developments*** that are likely to be generated along the airport to Bangalore City corridor. ***These projects are necessary to cater to the sewerage and sewage treatment demands of this***

area to a) meet the increased wastewater treatment demands; b) meet the sewage re-cycling requirements; and c) prevent major environmental pollution.

Agro-economy

Constitutes the dark and grey areas of ground water exploitation, hence further exploitation is bleak.

Horticultural crops like mango, grape, vegetables are the major crops of the region. In the dry lands ragi and eucalyptus are grown.

Policy PZ3.Ag1 **Declaration of horticulture and agricultural zones where conversion of land for non-agricultural purposes shall be discouraged by imposing high conversion fee.**

Acquisition by Government Development Authorities and Co-operative Societies for non-agricultural purposes should to discontinue.

Horticultural crops have good potential for both the domestic and export markets due to the proposed international airport in Devanahalli.

There is possibility of the wholesale shift of agricultural land for non-agricultural purposes after the airport materialises. To prevent such a shift, the comparative advantage the area will enjoy in horticultural exports could be further exploited through proper policy and infrastructure intervention.

Policy PZ3.Ag2 **Establishment of agro-industrial estates to process agricultural/horticultural products produced in the region to derive the benefits of comparative advantage in the production of horticultural products of the region.**

The feasibility of establishing agro-industrial estates to process agri and horticultural produce produced in the region need to be explored. Though these units could come up in the adjacent SKR region, it could process the products produced in this region.

Policy PZ3.Ag3 **The incorporation of Integrated systems to recycle the water and by-products should be an integral part of any agro-industrial estate development policy**

Integrated recycling systems, particularly water and waste products, should be an integral part of the philosophy for the development of agro-based industrial parks and these should ensure that the various bi-products of the agro sectors do not conflict with one another in any environmentally harmful way.

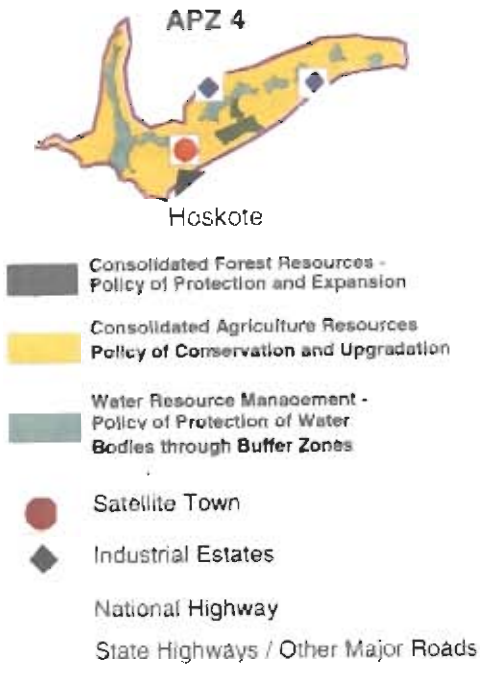
A number of Flori-tech units have come up in the region particularly Dodaballapura covering a green house area of 27.2 ha. They have good export potential. but at present are facing teething problems. Suitable advisory services should be provided with the aim of improving their operational efficiency with a view to 'turning them around' into viable export oriented units.

Policy PZ3.Ag4 **Horticulture has a major latent potential in this sub-region. Realise this potential a policy to supply critical production and operational inputs needs to be co-ordinated with the establishment of horticulture estates.**

The agro-climatic conditions of the region are well suited for the plantation and horticultural crops. Horticulture has witnessed substantial increase in recent years. This activity needs to be supported through the provision of specific inputs and extension services. The state has in fact formulated an agricultural policy to boost commercial agriculture to support this type of endeavour. There is now a need to consolidate this initiative by providing financial and technical assistance for the supply of cold storage, pre-cooling units, refrigerated vehicles to facilitate produce storage, processing and market distribution

2.12 AREA PLANNING ZONE 4 (APZ-4) : HOSAKOTE

This is the smallest of the five identified APZ's. It centres round the satellite town of Hosakote and extends in linear form to the border of Kolar district along NH-4. Hosakote largely acts as a dormitory to Bangalore though an industrial estate some 15 kms to its north offers some employment to the residents of Hosakote. The zone until recently had a high water table as is evident from the large number of hand pumps. These are now in disuse and groundwater is accessed via bore-wells. There are a large numbers of seasonal water tanks.



Land Resource Management Policies

Policy PZ4-L1 Priority Areas for Urban Expansion

This zone has several seasonal water tanks which should be protected from encroachments, maintained and developed for ecological balance to provide water for drinking, civic purposes, agriculture, irrigation, and industrial use. Also, developments have to be discouraged in aquifer recharge areas and along watercourses that regulate the movement of surface water and ground water. This zone requires a comprehensive water management plan and community / local authorities should be actively involve in preparing and implementing the plan.

Despite deterioration in water supply, a Volvo factory has recently started production and a KIADC industrial estate along NH-4 – some 12 kms from the Kolar district boundary. Some unauthorised uses in the form of eateries, etc have started springing up in this area. The developments require being controlled. These industrial nodes are likely to benefit the residents of both Hosakote and Kolar and this requires a more efficient public transport on this route.

It is recommended that a SAPDA be created for APZ 4 for the controlled growth of Hosakote, for control of ribbon development, for conservation of agricultural land and for improvement of water tanks. Also, a bus terminal, a truck terminal and warehousing facilities are required in this zone. Water is mainly through rainwater harvesting and groundwater sources.

Industrial Economy

Policy PZ4.E1 **Further development in this zone has to be planned keeping in view the capacity of the transport corridors and the feasibility of meeting the water supply requirements. Consequently, only 150 ha of additional industrial area is proposed for development in this zone.**

The Eastern Segment is disadvantageously placed with regard to water supply. The access road to Whitefield has limited carrying capacity. Further, the Whitefield – Hosakote region has a substantial base of existing industries and also ongoing projects and commitments such as the Information Technology Park, Volvo plant & ancillaries, Export Promotion Zone and Exhibition Centre.

Transport

Policy PZ4.T1 **A number of transport network upgrading interventions will be required in this zone to facilitate effective transport and land use development, namely:-**

1. ***Four-laning of the Bangalore - Hosakote section of NH 4 (Policy T10c)***
2. ***Development of the BMR-IRR by upgrading the existing SH linking Devanahalli with Anekal via Whitefield and Sarjapur to an arterial road standard (Policy T7c)***
3. ***Development of the BMR-STRR as an arterial road by upgrading the existing roads along the proposed alignment east of Hosakote town (Policy T7d)***
4. ***Development of a truck terminal at Kondasapura (Policy T13e)***
5. ***Development of a bus terminal near the intersection of the BMR-IRR with the NH 4 (Policy T11e)***

Hosakote satellite town and the Whitefield industrial suburb constitute the main development areas in this zone of the BMR. With anticipated increase in work centres and employment, population is expected to increase by 46 percent. Most of this traffic is likely to be served by road transport system. As a result, the transport

infrastructure development plan for this zone primarily focuses on improving the road transport system.

Infrastructure

Water Supply

Policy PZ4.WS1 **Policy interventions need to be taken to implement the augmentation of the existing water supply**

Policy PZ4.WS2 **Policy initiatives need to be taken to promote the introduction of rainwater harvesting techniques to enhance surface water conservation and reuse in the area**

This area lies in the north-eastern region of the BMR, which is water-starved. The present water supply to Hosakote is by means of bore wells with power pumps currently providing a level of service of about 80 lpcd. There are no perennial water sources nearby, and the ground water condition falls under the **dark** category (where the ground water exploitation exceeds 85% of the total potential). The water demand is further enhanced as there has been and continues to be an enormous pressure from the industries in the area, including the International Technology Park (ITP) in the Whitefield area. In view of this situation it is ***necessary to contain the water demand*** in this planning zone.

Ground Water

Policy PZ4.GW1 **No further exploitation of ground water in this region should be allowed. No water intensive industries should be allowed to set up in this region.**

Policy PZ.4.GW2 **In order to realise effective ground water management and to conserve the remaining resources, a bore license fee or groundwater cess should be introduced**

In view of the Department of Mines and Geology classification of Hosakote taluk as a **dark** water resource zone, no further exploitation of ground water should be permitted. However, the absence of any perennial source of water in the area means that any increase in demand will exert further pressures for additional groundwater

extraction. The way forward must be to introduce a policy of improved utilisation through the introduction of combined management, levies and re-cycling measures.

Environmental Sanitation

Policy PZ4.ES1 Policy initiatives need to be taken to promote the implementation of a new sewage system for the area.

Policy PZ4.ES2 Establish a plant for the re-cycling of wastewater

A new sewage treatment plant is necessary to meet the increased demands of this area and to accommodate future increased growth while avoiding environmental pollution. Furthermore, in view of the new industries including the ITP that are likely to become established in the area, ***additional steps should be taken in the direction of setting up wastewater re-cycling facilities***. This re-cycling plant would then be able to supply water to these industries for non-potable purposes such as i) Industrial water; ii) gardening and iii) air conditioning and make-up water requirements. This process not only achieves the ***conservation of precious*** water resources but also ***reduces the overall demand*** for potable water.

Agro-economy

The agriculture lands of Hosakote have suffered for three reasons:

i). depletion of groundwater - water table down to 400-500 feet,

ii). erratic and irregular power supply leading to burning out of pump motors, and

iii). scarcity of labour, due to the urban demand for the same.

This has led to large-scale conversion of agricultural lands to eucalyptus plantations that as a species make heavy demands on groundwater. Furthermore, since the demand for eucalyptus seedlings is growing rapidly the future looks grim for any effective recovery of the groundwater without radical agricultural practice and water management reforms.

Water shed development, which involves soil conservation measures like bunding, terracing, soil improvements, construction of field channels, farm ponds and composting should in the first instance be promoted to start the process of reforms with the aim of preserving the natural resources of the region.

Policy PZ4.Ag1 **The entry corridors shall be widened and provision for social and community Entry corridors through the BMR should have right-of way reservations wide enough to provide, where relevant, for the creation of environmental 'buffer-zones' and for the provision of community recreational areas.**

Along major radials and ring roads, wherever possible, right-of-ways reservations should allow for the creation of easily accessible recreational pockets and for the planting of avenues of trees using species, which are hardy, slow growing and suited for the agro-climatic conditions of the region. These plantations should then be placed under the control of the Forest Department.

Policy PZ4.Ag2 **Government lands under the control of the Revenue Department which form important water catchment zones should be transferred to the Forest Department for the maintenance of aquifer re-charge areas and where appropriate be put to use for recreational purposes.**

The revenue lands are highly prone to encroachment by vested interests. These lands which form the catchment of rivers and tanks and pastures could be transferred to the Forest Department to establish recreational parks.

2.13 AREA PLANNING ZONE 5 (APZ –5) : ANEKAL

This zone is dominated by the four large industrial areas of Electronic city, Bommasandra, Attibele and Jigani and the sparsely populated agricultural plantation areas. There has been rapid growth along NH-7.

Though the zone is centred around the modest sized satellite town of Anekal, the economic activity generated by the industrial estates and substantial ribbon development along the NH-7 (the gateway to Bangalore from Tamil Nadu), makes it crucial to regulate future growth.

Recently, the entire stretch of national highway from the Bangalore CDP green belt to the Tamil Nadu border and known as Hosur road has been widened as a 6 lane carriageway to international standards with 2 lane marginal access roads on either side for the entire 20 km stretch. The engineering upgrading of this road has introduced regular and controlled access points. Before this improvement ribbon-cum area generated uncontrolled access and egress and severely hampered the effective capacity of the route right-of-way, causing major congestion, increased travel times and environmental pollution.

As a negative bi-product of the earlier ribbon development, utility and access networks to area sub-divisions will need rationalising and should incorporate proper check post facilities, bus and truck terminals and warehousing facilities. Most importantly, it is recommended that the Bangalore-Hosur Corridor is given high priority to carry out an integrated transport and land-use policy planning study to determine the 'limits to growth'. In this respect, the area is classified as a dark-water zone and therefore 'water resources' will constitute a major constraining factor.

Within the context of the Structure Plan's strategic intent, a major component is the need to promote private sector participation for the completion of the south-western loop of the outer periphery ring road. It is foreseen that this will be done by packaging this section of the ring road with area development opportunities within the two urbanisable blocks (Bidadi and Nelamangala).

In promoting the implementation of this section of the ring road it will be imperative that strict environmental controls and performance standards form a part of the agreement. These should ensure that, as far as possible, the extensive plantations, single crop areas and forested areas – including those of the Bannerghata National Park - are not only preserved but enhanced in value. Thus, conservation strategies for APZ 5 must go hand-in-hand with area and infrastructure development priorities.

Land Resource Management Policies

Policy PZ5-L1 Priority Areas for Urban Expansion

In accordance with the *Containment* Strategic development theme advocated for this area, a policy to limit additional urban development is prescribed within this APZ.

Within this perspective, it is recommended that as a first priority an integrated transport and land use capacity threshold study be undertaken to determine the 'limits to growth' within the Bangalore-Hosur Corridor.

A small pocket of land that is considered strategically suitable land for urban development lying between the Electronic city, Bommasandra and near to Jigani industrial area. Their proximity to major workplaces and Bangalore renders the areas suitable for residential development.

A Hosur road action plan is a priority for a SAPDA to be created for APZ 5 and where through urban design guidelines this stretch is properly developed through a combination of area and ribbon growth. The Cauvery is to be the main source of water.

Industrial Economy

Policy PZ5.E1 **Further industrial development along the Hosur corridor leading to Attibele should be discontinued. Development of housing and social infrastructure for the workers of this industrial belt should be encouraged to reduce commuting and consequent congestion on this transport corridor.**

There is a serious mismatch between industrial development and housing along the Hosur corridor. Refer the section on population and employment targets. A Second Electronics City has been planned along the Hosur Road, which would add to the mismatch.

Policy PZ5.E2 **An objective study should be undertaken as regards the impact of industrial development at Hosur on Bangalore. Based on the outcome, it may be necessary to impress upon Tamil Nadu to contain further industrial development around Hosur and also take effective steps in providing necessary housing and other support services so that the impact on Bangalore is minimised.**

Tamil Nadu has major plans for further industrialisation at Hosur, including development of floriculture and sericulture industrial areas. Such developments would neutralise some of the efforts made by Karnataka for the planned development of Bangalore, especially along the Eastern Segment, which is already over-developed.

Policy PZ5.E3 **Further industrial development along the Bannerghatta – Anekal Road and Sarjapur Road has to be planned keeping in view the carrying capacities of these transport corridors and also the availability of water supply.**

For this policy to be effective it needs to be cast as a inter-state policy between Karnataka and Tamil Nadu to ensure that transport and land use development objectives are harmonised.

If no cognisance is taken of the inter-state issue, Tamil Nadu may plan to replicate industrial development along the lines of Hosur beyond Sarjapur (at say Bagalur) or Anekal. This will exacerbate the .

Transport

Policy PZ5.T1 **Transport development programs for this zone include:**

1. **Development of a hierarchical road network linking Hosur Road NH 7 and Bannerghatta-Anekal SH based on a land-use transport study.**

2. **Development of the BMA-NPR as an arterial road by upgrading existing roads along the proposed alignment (Policy T7b).**

3. **Development of the BMR-IRR as an arterial road by upgrading the existing SH linking Whitefield with Anekal via Sarjapur (Policy T7c).**

4. ***Development of a bus terminal in the vicinity of the BMA-SPR and BMA-NPR (Policy T11a)***

5. ***Development of a truck terminal near Attibele on Hosur Road (Policy T13b)***

Industrial layouts and work centres along Hosur Road (NH 7), along the Bangalore-Bannerghatta-Anekal road and the satellite town of Anekal constitute the main development areas in the south-east BMR zone. This zone is entirely within the Bangalore Urban District. Ongoing industrial and work centre developments in this zone are expected to induce a population growth of 55 percent in the next decade. Though this sector is served by road and rail transport systems, very little commuter traffic is expected to be handled by the rail transport system due to the circuitous rail route.

The road system will therefore continue to handle most of the traffic. Recently the NH 7 to Hosur has been upgraded by providing a divided four-lane carriageway with service roads on either side. In addition to this, there are other important transports infrastructure developments required to meet the anticipated transport demands in this zone.

Infrastructure

Water Supply

Policy PZ5.WS1 Augment the existing water supply from the proposed Cauvery river water supply scheme.

Policy PZ5.WS2 Employ rainwater harvesting techniques as a means for conservation of water resources in the region.

This area lies in the Southeast part of the BMR. Potable water is currently supplied through a system of bore wells using submersible pumps. Anekal has a supply level averaging 50 lpcd from this system.

There is ***every possibility*** that water needs in this area can be met from the proposed ***Cauvery River Water Supply Scheme Stage IV (Phase-2).*** Proposed for implementation through private sector participation, ***it is intended to supply water for the extended peripheral areas of the BMA.*** The activities of land developers in this area who are proposing considerable residential developments will generate ***an enormous additional future demand for water.*** In addition, the industrial area at Jigani near Bannerghatta requires water both for industrial and potable requirements. Together these developments ***exert a considerable increased future demand for water in this sector.***

Any ***delay*** in the implementation of the proposed Cauvery River Water Supply Stage-IV (Phase-2) scheme could place a heavy burden on existing supplies and end users and thereby ***jeopardise these proposed developments.***

Ground Water

Policy PZ5.GW1 No further exploitation of ground water in this region should be allowed; nor should water intensive industries be allowed to establish.

Policy PZ5.GW2 In order to realise effective ground water management and to conserve the resource, bore well drilling license fees or a groundwater cess should be introduced

The Departments of Mines and Geology places Anekal in the **dark** area. This implies that ***no further exploitation*** of ground water is advisable. However, the region has a potential for ground water exploitation provided rain water harvesting techniques are implemented to optimise groundwater recharge. The yield from bore wells has been diminishing over recent times and hence ***effective ground water management is required.***

Environmental Sanitation

Policy PZ5.ES1 New Sewage Treatment Plant is required to meet the increased demand resulting from growth and also to prevent further environmental pollution.

The nearest sewage treatment plant for this area is at Koramangala and Challaghatta (K&C) Valley. Improvements to this treatment plant, including incorporation of measures to facilitate the re-cycling of sewage effluent at the same location are under consideration. There exists good scope for reuse of recycled wastewater in industrial areas near Anekal and Sarjapur for non-potable purposes.

Agro-economy

The major crops of the sector are traditional flowers, vegetables, mulberry and dry-land crops are ragi and pulses. Traditionally, Anekal and Sarjapura towns are important silk weaving centres.

In general ground water in the sector is designated as a dark zone and hence for further exploitation of groundwater should not be permitted until micro level studies have been undertaken to determine the precise status of ground . The results should then be used as benchmarks against which to determine what development should be permitted, to monitor future water balance changes.

Priority should be given to the utilisation of water resource to realise the zone's high potential for horticultural production and to take advantage of the well-developed infrastructure and access to markets of Tamil Nadu and Kerala.

Policies should seek to promote and popularise the use of water conservation technologies like drip and sprinkler irrigation and the trend towards converting dry lands into eucalyptus plantations should be strongly discouraged.

Policy PZ5.Ag1 **Establishment of agro-industrial estates to process agricultural/horticultural products produced in the region**

The feasibility of establishing agro-industrial estates to process agri and horticultural produce produced in the region need to be explored. Though these units could come up in the adjacent SKR region, it could process the products produced in this region.

Policy PZ5.Ag2 **An integrated system to recycle the water and by-products should be developed.**

An integrated system should be attempted to recycle the resources particularly water and waste products, so that the various sectors are not in conflict with each other.

Policy PZ5.Ag3 **Areas should be identified and declared specifically as horticulture and agricultural zones where conversion of land for non-agricultural purposes shall be mitigated against by imposing disincentives in the form of high conversion fees.**

and

Acquisition by Government Development Authorities and Co-operative Societies for non-agricultural purposes should discontinue.

Separate agriculture and horticulture growth centres should be identified and declared exclusively for agricultural and horticultural activities.

These areas should receive priority attention with regard to government support in planning and providing technical assistance. This will not only have direct economic benefits, but will also indirectly help in establishing an *'environmental greening'* programme for the BMR and could be particularly instrumental in helping to restore the almost defunct green belt.

The present practice of mandatory acquisition by the Industrial Boards, Co-operative Societies and other Government Agencies at low prices has led to the sale of lands by the farmers in anticipation of acquisition. This affects the investment on development of agricultural lands by the farmers, as the compensation paid for such acquisition is far less than the market rate.

Policy PZ5.Ag4 **The areas not suited for agriculture shall be permitted for non-agricultural activities by considering the environmental and ecological aspects during devpelopment.**

Promotion of Hi-tech floriculture units in the region.

2.14 INTERSTITIAL ZONES (IZ'S)

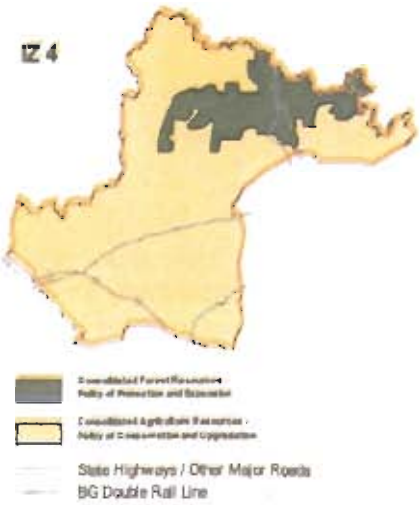
Apart from the three area planning zones (APZ's), the eastern segment of the BMR comprises of three interstitial zones (IZ's) . In these areas a general policy stance to prevent urban development is advocated. A summary profile description, supporting illustrations and policies for these are presented below:-

Interstitial Zone 4 (IZ-4)

This interstitial zone comprises of substantial forest lands, a lot of which is degraded. It borders hilly lands to the north. The zone also has large areas in single crop agriculture use and several plantations. There are large wasteland areas suited for social forestry.

Policy IZ4-L1: **Agriculture produce can be increased in this zone and waste land brought into more productive use.**

With proper water management, the produce of agriculture, horticulture and sericulture can be increased. Also, sheep and goat rearing and poultry and farm products can be increased. Degraded lands can be upgraded for social forestry and even agriculture.



Interstitial Zone 5 (IZ-5)

This area predominantly comprises good agricultural plantations, interspersed with single crop agriculture lands. There are several pockets of forest areas in this Bore-wells provide water for rural level in this zone.

Policy IZ5-L1: **Agriculture produce can be increased in this zone.**

With proper water management, the produce of horticulture and agriculture can be increased in this zone.

Interstitial Zone 6 (IZ-6)

The area comprises predominantly of plantation lands and pockets of single crop areas. Bore-wells provide water for rural level uses in this zone.

Policy IZ6-L1: **Agriculture produce can be increased in this zone.**

With proper water management, the produce of horticulture and agriculture can be increased in this zone

Land Resource Management Policies

To compliment this 'No Go Urban Development' philosophy, a set of complimentary policy directives should be adopted for the Interstitial Zones of the BMR's Eastern Segment, namely:-

Policy IZ/GL1: **Forest areas should be protected and enriched with qualitative genetic improvements. Areas under degraded/scrubs should be upgraded and extended wherever possible.**

Policy IZ/GL2 **Certain agricultural land (double crop or plantations) should be conserved for its high productivity. Single Crop areas should be enhanced and enriched with qualitative improvements.**

Policy IZ/GL3 **With reference to delineated settlement boundaries (Gram Thana - red-line limits) it should be policy that:-**

i). until separate plans are approved for each village, uses be permitted only within the existing village limits (Gram Thana) that accord with development guidelines which seek to upgrade existing socio-economic conditions;

ii). outside the village limits (Gram Thana), only uses be permitted that accord with the structure plan policies and/or other detailed development plans otherwise, no change of use should be permitted.

Policy IZ/GL4 Sub-division of land should not be less than the minimum permitted for agricultural holdings or one hectare whichever is more. Farm houses and where permitted should not have a built up area exceeding 200m^2.

Figure: 2.15-1 R Structure Plan – Key Diagram

Policy Matrix

General Policies

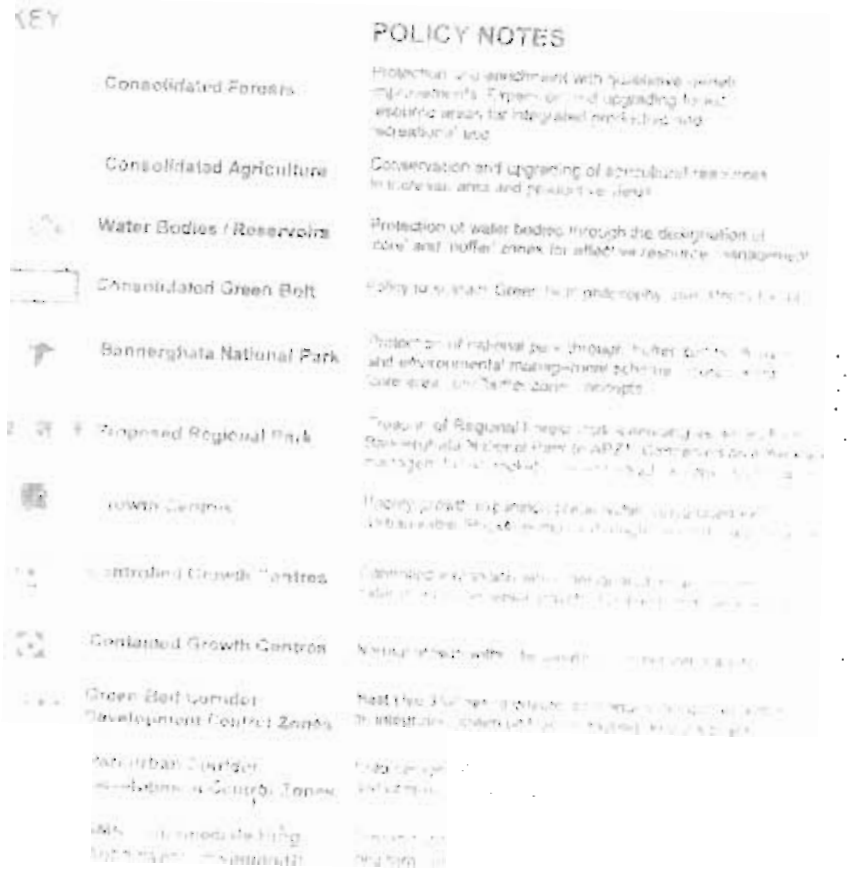
BMR
T8+G.T9+G.T10a,b,c,d

AREA POLICIES

EASTERN SEGMENT					
APZ's			IZ's		
Z3	PZ4	PZ5	IZ4	IZ5	IZ6
L1			IZ/GL1 - GL4		
	L1	L1	L1	L1	L1
A.E1 + GA.E2					
+ E2	E1	E1 – E3			
A.T1					
	T1	T1			
S1 WS2	WS1+ WS2	WS1 +WS2			
W1+ W2	GW1+ GW2	GW1+ GW2			
S1+ S2	ES1+ ES2	ES1			
1 - 4	Ag1+ Ag2	Ag1– Ag4			

Western and Eastern segment.

Figure: 2.15-1 BMR Structure Plan



PART THREE

THE WAY FORWARD – IMPLEMENTATION MODALITIES

Context

In India, with an emerging ratio of 30: 70: Urban: rural, for several decades the scenario would be one of an **URBAN – RURAL CONTINUUM.** In this process, the third tier of elected representatives as now emerging would constitute the main action level for development within spatial frameworks and which incorporates conservation where necessary.

Accordingly, the integrated organisational interface for economic growth within a spatial frame is emerging as follows :-

Central Government	⟷	National policy statements;
State Government	⟷	State strategy plans;
District Planning Committees	⟷	District Spatial or Structure Plans
Metropolitan Planning Committees	⟷	Metropolitan Structure Plans;
Local Government	⟷	Detailed Development Plans
Ward and Local level Committees	⟷	Locally specific action Plans

In this scenario, the state organisational framework has to therefore recognise three integrated systems i.e.,

- ***Local level (Panchayats and municipalities);***
- ***Regional level (districts and metropolitan areas);***
- ***State level (mega regions of group of districts).***

Simply stated, a state perspective plan (20-25 year period) is to be prepared to serve as a mandatory guide to regional level actions through statutory district and metropolitan spatial plans (structure plans) and which are required to facilitate the appropriate use of land.

A plan is meaningful only if it can be implemented. In a complex entity like a megacity and its influence zone, a series of programmes and projects with different time frames and financial implications have to take place sequentially. Therefore, implementation involves planned integrated growth through an orchestration of programmes and projects of and by all actors providing the built environment – irrespective of whether these are governmental line agencies or private developers. It is evident that in Bangalore, as in other megacities of India, co-ordinated growth has been lacking.

This is due to not only several government line agencies operating under different implementation priorities but also due to several private developers pre-empting development processes.

Prior to 1950, urban development plans (master plans) were for municipal boundaries by declaring them as local planning areas under State Town Planning Acts (eg. Mumbai). In 1957, the Delhi Development Authority was created for development authorities controlling planned development of all megacities, metros and most large cities of India for jurisdictions well beyond municipal boundaries. Today, the 74th amendment to the constitution requires that planned urban development be through the third tier and where public participation in the built environment is possible at the level of wards, action areas and projects. Therefore though DPC's and MPC's would guide development and SAPDA's and UDA's would have important development roles, urban local government are to increasingly ensure equable environments and through the participation of people to the extent possible. The amendments entail a reversal of an increasingly centralised process through key participatory issues now mandated to the third tier, through assured resources, no supercession of elected bodies and with at least one third representation to women.

Of all local bodies, municipal corporations have a major role to play in planned development. This is more so of megacities and metros – of which the BCC is an important part. Latterly, ESCAP has selected Bangalore City Corporation as part of an Asian effort for quality upgrading in terms of global and national level activities and related infrastructure and shelter. Quite clearly this is not possible without the BCC availing of a larger MPA and Metro region to assist in location and relocation of activities that make the inner city less congested and more liveable.

Urban land should be used to its maximum permissible intensity. It should not be allowed to develop beyond the prescribed intensity. At the same time it should be taxed for being unused and even under-utilised. This should apply to all ownerships - government and private. Misuse of built space - after plans are sanctioned should also be heavily penalised, but only after mixed compatible uses are permitted. CUMBAC also have recommendations more or less on these lines. This is a good principle provided development is within the planning framework. This is particularly important on the urban fringe (green belts and otherwise agriculture lands) where uncoordinated development often occurs.

Private And Public Sector Roles

The private sector and the community have an important role to play in the urban process; and intrinsic equation is now emerging between a growing and more responsive private sector and a more visible and empowered third tier.

The private sector primarily comprises of individuals, families, trusts, institutions and firms / companies, who own or seek land or space built on land. Real estate agents can assist the private sector getting access to land and / or built space whereas real estate developers of land and of built space ensure that the market needs are catered to through governmental facilitation. If land is scarce and / or governmental regulatory processes are negative, unauthorised developments occur especially in high land value situations as in Bangalore and other large urban settlements. Rural BMR as in the rest of India has no such problem of built space except for continual fragmentation of holdings and conflicts between original landowners and the once tillers and share croppers or emerging landowners.

In urban BMR, built space is largely with the private sector - either in the form of ownership or rentals - for work and living or in mixed proportion with the public sector for education, other services and recreation. Also about two-thirds of all lands is with the private sector and lately government acquisitions are also now for development by the private sector (e.g.: urbanisable blocks and other area development projects). The principle of providing **built space at the right time, right place and right quantity** calls for a finely tuned partnership between the providers of space (the private sector) and the facilitators / controllers of space (the public sector) . For this **the ground rules have to be few, clear and transparent**. Basically, development has to be on the basis of a spatial development plan.

The Ministry of Urban Development under their publication 'Urban Development Plan Formulation and Implementation Guidelines' (UDPFI-1996) had suggested, areas where interfacing roles could be played by the private and public sectors in ongoing urban development processes. This applies aptly to the BMR and SKR and is as indicated below:-

Public Sector Role	Private Sector Role
1. Basic Role - Promotion of development - Protection of community interests	1. Basic Role - Detailed & specialised planning, and Development with a reasonable balance between the client's and community's interests.
2. Professional Planning Role - Settlement planning policies and guidelines - Regional planning & Inter-regional co-ordination - Preparation of : - Perspective plans : (20-25 yrs) - Development plans (every 5 yrs) - Monitoring & review - Promotion of private sector's professional planning role	Professional Planning Role - Detailed area planning (Plans of projects and schemes) - Specialised inputs as expert consultants pertaining to the following public sector planning efforts ; - Transport system - Urban design - Urban services - Fiscal resource planning - Project formulation and estimation Legal support
3 Development Roles - Assembly of land for trunk services and major public and semi-public uses and EWS/LIG housing - Development of settlement level and off-site infrastructure - Urban renewal programme - Land distribution to users	3. Development Roles - Assembly of land for development through outright purchase at market prices or land pooling - Land development - Developed land distribution - Building & distribution, sale of built-up spaces - Urban renewal through co-operative action

Public Sector Role	Private Sector Role
4. Non Legal Roles - Advice to and persuasion of people to follow development plans - Intra-public sector co-ordination and co-operation - Public and private sectors co-ordination and co-operation Introduction of incentives and inducements to inculcate development by private sector with community interest	4. Non Legal Roles - Introduction of awareness about planning and development efforts among the people - Persuasion of people to support public sector development / renewal programmes by social groups - Participation in settlement planning process with dedication when called for
5. Management Roles - Office administration / management - Capital improvement - Management and maintenance of settlement level and off-site infrastructure, urban spaces and built-up spaces.	5. Management Roles - Development management - Capital improvement - Management and maintenance of on-site urban spaces and infrastructures
6. Education, Training & Research - Education, training and research by institutions - In-service training by other organisations - Research by research institutions	6. Training - Organisation of professional training programme - Inputs in education, training and research programmes
7. Legal Roles - Zoning regulations - Sub-division regulations - Legal controls pertaining to private sector participation in planning and development process (including informal sector) - Plan sanction and other related roles	-- Nil --

This report has taken into consideration these interfacing roles and the increasing importance of the private sector providing the built environment.

3.1 LAND MANAGEMENT MEASURES AND INSTRUMENTS

Context

It is becoming abundantly clear that spatial developrnent in the State is to be through stake-holder participation and which revolves round a large base of third tier elected representatives both urban and rural. This calls for a major overhaul of practices and processes not only in the recording of land cover and land holdings but also on the use of land and its management. This is to be through a comprehensive integrated spatial development process for all levels of planning and through an update.

Local Self Government (LSG)

In Karnataka, LSG legislation has changed to facilitate third tier participation to achieve 3 basic inter-related objectives, namely: -

- **greater grass root economy ;**
- **larger private participation in planned change of land ;**
- **more effective environment protection and controls.**

The basic legal instruments in Karnataka at the LSG level with implications on land are the **Karnataka Municipal Corporations Act, 1976** (KMC Act) and rules thereunder (with updates); **The Karnataka Municipalities Act, 1964 (KM Act) (as amended by Act No.24 of 1995)**; and **the Karnataka Panchayat Raj Act, 1993 (KPR Act).** These acts have been amended to tie up with the 73rd and 74th constitutional amendments so as to enable local bodies to become institutions of Self-Government with the status of a third tier.

Under the constitutional amendments, District Planning Committees (DPC's) are to prepare District Development Plans for L.S.G. layers as follows: -

Grama Panchayats for illages to cater to the 73rd Amendment

The Chief Executive Officer of the Zilla Panchayat co-ordinates plan budgets at the District Level. He is the Secretary to the District Planning Committee.

Of the 56 GP's in Karnataka with population less than 3000, none are in the SKR. However, of the 749 GP's with population more than 7000, 211 are in the SKR. (55 in Bangalore – U+R, 14 in Mandya, 32 in Tumkur and 89 in Mysore). Of these 2 GP's in Tumkur, 4 in Mysore and 1 in Mandya have a population of over 10,000 each.

Under the KARNATAKA PANCHAYAT RAJ ACT 1993, the District Deputy Commissioner can group villages for population between 3000 and 7,000 for planned sustainable growth and village upgrading through empowered GRAMA PANCHAYATS (GP's). For population less than 3000 of if more than 7000, permission of Government is required.

The state of Karnataka has
5,640 GRAMA PANCHAYATS operating within
175 TALUKS
each with
TALUK PANCHAYATS
operating within
28 DISTRICTS (with single district for Bangalore)
each with
ZILLA PANCHAYATS

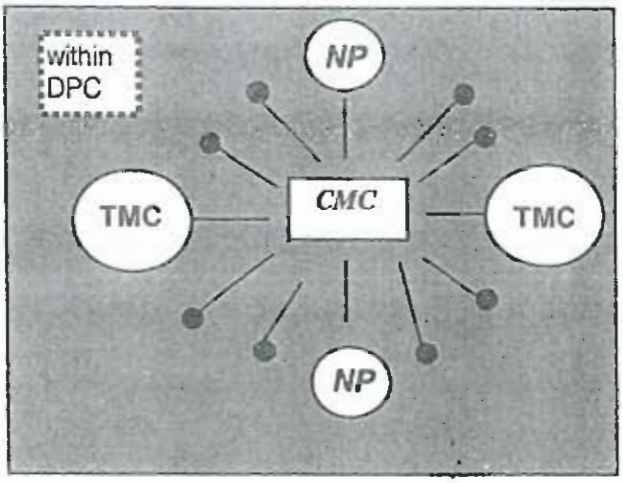
Urban areas – to cater to the 74th Amendment

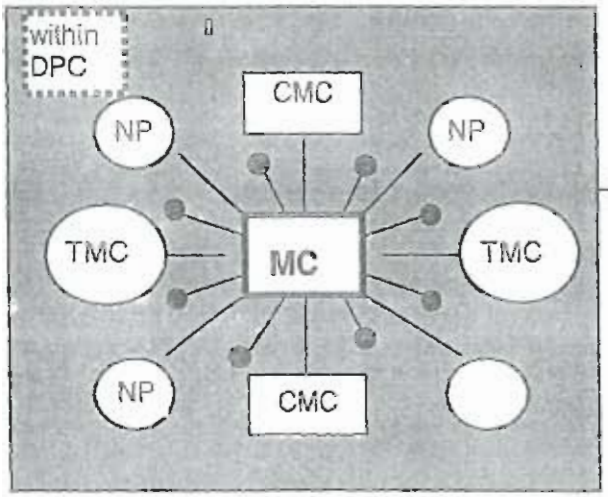
Under the KARNATAKA URBAN MUNICIPALITIES ACT 1995, urban areas comprise of :-

i NAGAR PANCHAYATS (87 No)
pop: 10,000 to 20,000 - NP'S

ii. TOWN MUNICIPALITIES (82 No)
pop: 20,000 to 50,000 - TMC's

iii. CITY MUNICIPALITES. (39 No)
pop: 50,000 to 3,00,000 - CMC's





Under the KARNATAKA MUNICIPAL CORPORATIONS ACT-1977 (as updated for 74th amendment), large urban areas comprise of

a. MUNICIPAL CORPORATIONS (With Ward Committees)
ith pop: 3,00,000 to 1.00 million
- M.C's (5 No's)

b. MUNICIPAL CORPORATIONS WITH METROPOLITAN PLANNING COMMITTEEES (MPC's) and Ward Committees } outside } jurisdiction } of DPC's
M.C. (1 No)

Access to Land

The legal instruments for control on access to land and its regulated usage and protection (as applicable) basically vests with the state government. The federal government (where involved) works mainly through the state government.

Development of land by the state government is sectoral; often therefore there is no advance co-ordination with the spatial planning reference points. Though this calls for flexibility in planning processes, it also requires better spatial interface with sectoral departments.

For rural lands the **Karnataka Land Revenue Act 1964** and its settlements register and the **Karnataka Land Reforms (Amendments) Act 1974**, are the main regulatory instruments. (In 1961-62, land revenue comprised of 18 percent of all state revenue. By 1981 – 82 this dropped to less than one percent. Therefore, today, it is a non-revenue for all purposes).

Lack of clear titles in the State is a major hurdle in development and control processes. It is recommended that a systematic recording of all land parcels through a pilot project comprising of two districts in the State be taken up (Mysore and Bangalore could be the districts). This could be with World Bank aid as in Thailand.

The Land Acquisition Act 1894 is the main act to get access to land. This central act is operated by the state along with supplementary state Acts notably the Karnataka Industrial Area Development Act and which is the most successful of the State acts in this respect as higher compensations are given and which costs are passed on to beneficiaries of industrial lands. However, large scale acquisition is no longer affordable due to higher compensations. For infrastructure and social commitments by Government therefore, access to land is often through land exchanges (serviced land) and other incentives. Land pooling or land reconstitution (as in many states – notably peri-urban areas of cities in Gujarat and Maharashtra) has also emerged as a supplementary method of access to Land.

The Urban Land (Ceiling & Regulation) Act, 1976 applies in the SKR to only Bangalore UA and Mysore UA. The Act though expropriatory in nature allows vacant land to come cheaply for public purposes. It however causes hardship and delays in all development processes. The federal cabinet has recently approved that this Act be scrapped.

Spatial Planning

This is achieved through urban and regional planning Acts and the main instruments in the State are: -

- The **Karnataka Town & Country Planning Act, 1961** - as in force from 15th January 1965 (KTCP Act). For planned development, the three supplementary Acts are: -
  - The Bangalore Development Authority Act, 1976 (BDA Act);
  - The Bangalore Metropolitan Region Development Authority Act, 1986
  - (BMRDA Act) and
  - The Karnataka Urban Development Authorities Act, 1987 (KUDA Act).

  The KTCP Act primarily caters to Outline and Comprehensive Development Plans in urban areas. **The state is required to formulate (or promulgate) a legal – state level perspective plan, district level and metropolitan level**

structure plans and development plans for settlements declared as planning areas and plans for special planning and development areas besides action area plans.

In April '98, the consultancy advised the clients that the Model Urban and Regional Planning and Development Law – 1996 as prepared by the Government of India (approved by the federal department of Law) be brought in place, with necessary refinements. The act to be called the Karnataka Urban and Regional Planning Act – 1998 – (KURP Act), could cater to the following:-

- Constitution of a high-powered State Urban and Regional Planning Board (SURPB) ;
- The SURPB is to formulate a State perspective plan for a 25 year period – to be reviewed at least once in 10 years ;
- Metropolitan Planning Committees are to be constituted (MPC's) and which are to prepare metropolitan area development plans (for 5-year programmes) and metropolitan area annual plans;
- District Planning Committees are to be constituted (DPC's) and which are to prepare district development plans (for 5-year programmes) and district annual plans ;

  Urban LSG units to be Local Planning Authorities to prepare development plans and annual plans ;
- Special area planning and development authorities to be created and which could cut across LSG boundaries or be for two or more LSG units ;
- Powers to be stipulated control development and use of land, to prepare development schemes or land pooling schemes and for private and joint sector participation in development ;
- Powers to be spelt out for simplification of procedures for acquisition, assembling and disposal of land.

If this Act comes in force, the KUDA Act 1987, can be scrapped and the BMRDA Act 1986 can be reorganised to absorb the BDA – giving the state thereby only 2 Acts for more efficient accountability. The updated BMRDA Act can be extended to all metropolitan areas. (as and when urban areas achieve populations of one million or more on census date).

THE OTHER RELATED STATE ACTS OF IMPORTANCE TO THE BMR ARE: -

2 **The Karnataka Housing Board Act 1962** – Under this Act, the KHB which functions under the Department of Housing, GoK, has powers to acquire land, service it, provide plots for sale or build flats for sale on the basis of no profit no loss but through cross subsidy for different income groups. However, as overhead costs increase, more units are being provided to higher income groups

on either outright sale or hire purchase. The percentage of lower income groups who can afford KHB units or plots even at subsidised interest rates are reducing. Therefore, latterly built units are not a main thrust but serviced land is favoured. Most sites are in peri-urban areas and programmes are getting similar to that of UDA's by increasing the supply of serviced land.

3 **The Karnataka Slum Areas (Improvement and Clearance) Act 1973** – has been one of the first Acts of its kind in India where in-situ improvement has been given equal or more weightage than clearance and rehabilitation. The act empowers the KSCB to prevent the proliferation of slums, to improve existing identified slums with services like potable water, sanitation, drainage, paving and lighting and also to demolish slums provided alternative locations are found. However, as budgets are limited, in-situ upgrading is the main trust and only a few site and services schemes have been provided. Most identified slums in the SKR are within the BCC.

4 **The Karnataka Industrial Area Development Act 1966** brought in place the Karnataka Industrial Area Development Board with powers to establish industrial areas in potential growth centres identified by Government to secure the orderly planned development of industries. The Board has powers to acquire land, have it developed on the basis of a layout and then allot plots or built space for industries and other facilities. They also offer incentives in costs, taxation and services like electricity. Initially several estates were established outside the framework of ODP's and CDP's but latterly there has been better coordination. Land Acquisition under the KIAD Act is quicker than any other act in the State as negotiated compensations are about the highest and these costs are readily absorbed by the beneficiareis of industrial plots. Several sites are being developed within the BMR.

5 **The Karnataka Urban Water Supply and Drainage Board Act 1973** was set up to provide for the establishment of a Water Supply and Drainage Board and the regulation and development of drinking water and drainage facilities in the urban areas of the State. The Act supplements the **Bangalore Water Supply and Sewerage Act, 1964**. The Boards under both these Acts function under the State Department of Urban Development so as to liasee with the development plan of urban areas of the State and with urban local bodies. The Boards approve schemes for water supply and drainage of urban local bodies and finance these through loans and advances. They also prepare and execute schemes especially where two or more local bodies are involved. The BWSS Act applies to the CDP area of the BMR whereas the KUWSD Act applies to the rest of the BMR.

Development Control

This is a crucial component of the process to provide and regulate the use of land and built space through building permits as the main end product. It comprises of actions of greatest concern to the providers and users of land and built space – the majority of

whom are in the private sector mainly individuals. Transparency in understanding and applying these controls in therefore crucial. Unfortunately, the track record in urban India points towards ambiguity in interpretation and application and the involved scrutiny by several rules oriented agencies. This causes considerable delay in clearances. The private sector cannot afford delays as developments by large groups are subject to borrowing of finance at high interest rates whereas individuals invest a large proportion of their savings in land. Urban LSG bears the brunt of stakeholder dissatisfaction though they invariably announce that they have a single window clearance system. The problems however commence after submissions at the single window. LUCID GROUND RULES would help in alleviating the situation.

Development control has to be an exercise in partnership and a not a conflict between "we" (Government Departments) and "they" (Developers of the built environment). The principle agents of action in this partnership are:-

- The investor / developer – whether an individual or corporate owner / developer of land (private or government) ;
- The professional – town planner, architect, engineer or surveyor acting on behalf of his client ;
- Government infrastructural agencies ;
- Government conservation agencies ;
- Government development control agencies.

They are required to operate within the given framework and urban structure, both of which necessarily vary from city to city.

For settlements in the SKR, the governmental development control agencies, including those for infrastructure and conservation comprise mainly of the following:

- **The Local Government** :for building by-laws concerning health (ventilation, ablution facilities, minimum size of liveable rooms, etc.,), stability of buildings and fire protection. For high rise buildings (above 4 storeys) the state level fire department is consulted as also the Karnataka State Electricity Board and the Karnataka Water Supply and Sewerage board (BWSSB for the BMA area).

- **The Development Authority:** (BDA, MUDA other UDA's PA's as the case may be) for determining land use zones for specifying uses disallowed in each use zone and for stipulating simple zoning regulation on each plot. (basically maximum floor area ratios, minimum parking standards, maximum plot coverage per floor, minimum set backs and maximum heights) and for indicating acceptable sub-division of land or plot bifurcation.

- **The Competent Authority** under the Urban Land UA with in the SKR.(Ceiling and Regulation) Act 1976. This applies only to Bangalore UA and Mysore UA within the SKR (From recent media reports it appears that the central government is processing the scrapping of this act).

Also references are required to the District Deputy Commissioner in case of temporary / permanent theaters and petrol pumps, to the Inspector of Factories for Industrial Buildings, to the Controller of Explosives for buildings proposed for storage or sale of combustible material, to the Karnataka Slum clearance and Improvement Board in notified slum areas, and to the Railways where buildings abut a railway margin. For Bangalore, in certain areas, high rise buildings may require clearance from the National Airports Authority of India. Also in certain central areas of Bangalore of heritage value, clearance from the Bangalore Urban Art Commission would be necessary. Lately, environment protection has also emerged in development control, through the **Wild Life Protection Act 1972; the Forest Conservation Act, 1980 ; Water (Prevention and Control of Pollution) Act, 1974; the Air (Prevention and Control of Pollution) Act 1981;** and **the Environment (Protection) Act, 1986.** Basically, projects over a certain area (perhaps 5 hectares initially) would be subject to **Environment Impact Assessments (EIA's) and clearance**. Certain orders like the **Tree Preservation** order also prevails in large urban settlements of the BMR/SKR.

In development areas, the UDA's act as LSG for by-laws. Similarly in non-development areas (as in older parts of Bangalore), LSG can be delegated powers for land use control including zoning and sub-division. The single window process starts only when the applicant has a registered ownership to the land for which he / she applies followed by an up-to-date property tax payment. There are thus a series of points where building permits can be delayed. Simplification is possible at all levels.

Zoning and Sub-divisions versus Bylaws

It has to be understood that whereas **zoning and sub-division is a planning process, building bye-laws is a municipal function.** A simplified format is required in the area of zoning regulations – the prime regulator of an equable built environment, so that the developer and regulator work in tandem. Zoning regulations should ideally comprise of :-

- Land Use Plan (indicating the different land use Zones) (A structure plan has been proposed in lieu of ODP's / CDP's
- Permissible built space on net plots or areas in terms of floor area ratios, coverage per floor, height of structures, greenery and parking in terms of equivalent car space.
- A matrix of uses permitted, disallowed or allowed conditionally or through appeal to the Authority in each land use Zone.

It is imperative that ground rules be simplified to the maximum extent possible and fees against violations be enhanced as deterrents to misuse. Even the subject of court stay orders need to be re-examined because they are far too liberally given, often thwarting action in favour of the overall neighbourhood and city urban form.

Key Development Control Components

Floor Area Ratio:

This is a very crucial but contentious component of development control. In Bangalore and other main urban centres of the SKR, the FAR mainly vary between 1.00 and 2.00. A disadvantage being noticed today in the application of FAR 's in the SKR is that it is not calculated on the basis of plinth areas (total building bulk) but with access (horizontal and vertical), balconies, mezzanines, lofts, covered parking spaces, building servicing areas, fire refuge areas and the like exempted from calculations. In effect an FAR of 2.00 gives a total building bulk of between 3.00 to 3.50, depending on the ingenuity of the architect whose skill is not tested on design but in organising FAR exempted spaces. These are often clandestinely put to use later and are therefore not counted in zonewise services and plotwise parking requirements. The multiplier impact of this in Bangalore alone could be alarming. It would therefore be best to allow an easily measurable higher FAR (say from 1.00 to 1.33 or from 2.00 to 2.50) but on the basis of total building bulk and no exemptions – except for easily monitored basement and stilt level idle parking and building maintenance services.

The basic principle of providing built space is that the plot being developed should take care of services and traffic it generates or pay the city for taking care of it. Traffic should not be such that it leads to on-street parking (resident, working or visiting force). If unavoidable the emanating pooled parking should be paid for by the plot developer including multi-storied garages – where necessary or possible.

Fire control:

Stipulations should be rigid and mainly related to control by mobile fire tenders(eg. buildings of 8 storeys and above to be in areas where snorkels reach the top-most floor) as inbuilt fire devices like sprinkles etc., are expensive and difficult to control . From the Mumbai experience, it has been found that the advantage of concentrating high rise structures in key areas (central Business Districts, high income housing zones) is that fire stations could be better organised rather than having expensive high rise snorkels in all fire stations of the city. Firemen could also be trained to save lives and extinguish / control fire specifically in high-rise situations as separate from normal training. They could also frequently monitor misuse.

Plot Coverage:

Informal discussions with leading architects in Bangalore indicate that they favour easily understood FAR controls but they require flexibility on plot coverage. Some of them even favour zone-wise control (by way of skyline control) but a large number of them feel that height control constricts design. Plot coverages generally vary from 20 to 40 percent for industrial zones, 30 to 40 percent for commercial and institutional zones and

from 30 to 50 percent for residential zones with higher coverages for smaller plots. The consensus is that provided services are catered to (including access to ambulances and fire tenders in very large plots / layouts) coverages should not be a definite development control issue as sensitive architects are conscious of blending hard and soft surfaces at ground level, providing for idle car parking and also of catering to plot greenery at other floor levels. Easily and strictly monitored FAR is the key and not necessarily coverages and building set-back lines. On height, ward-wise controls would be accepted provided it is justified through urban form or just transparent urban design guidelines with the help of professional and citizen forums. The stress is gradually but surely changing to transparent ward plans, action area plans, layout plans, town-planning schemes and the like approved after grassroot debate but based on flexible city and city region structure plans.

Heritage Buildings and Zones:

Like elsewhere in India, this is the most neglected aspect of planned change, despite the fact that not many nations can match India in its variety of flora and fauna and its manmade artefacts in terms of sites, remains, ruins and structures of archaeological, historical, architectural and cultural value. Protection is taken care of by departments dealing with natural and manmade preservation. Conservation, is not in their mandate. This aspect incorporates protection and facilitates gradual change apart from encouraging new uses for heritage value buildings and areas. Unfortunately, today it is in nobody's mandate. It has to be strongly focused through the KTCP Act as is now being done in Maharashtra, where the Act has been updated to incorporate the equivalent of 'Heritage Economic Zones' and not just Town Planning Schemes and where Development Plans list sites, remains, ruins and structures of archaeological, historical, architectural and cultural value. Mumbai does have such a statutory list (incorporating precincts). Pune, Hyderabad and Delhi have a draft list each and it is recommended that Bangalore and Mysore and other major urban centres of the SKR follow suit. Discussions and informal surveys as part of this consultancy has revealed that the Bangalore Urban Arts Commission has not been effective on such aspects. A statutory list has to be short and supported with prescriptions that does not reduce the economic value of a heritage area or building – especially as the alternative of compulsory purchase is not possible. However, if full prescribed FAR cannot be availed of due to heritage conservation then the practice of TDR (Transfer of Development Rights) as in Mumbai is recommended. In this, unutilised FAR can be used or sold for use in other specified areas of the city and within prescribed limits.

Completion Certificates: In Bangalore, a recommendation has been made by CUMBAC that registered architects be allowed to issue completion certificates for their own projects. This was tried out in Delhi in the mid 80's but no architect came forward due to ambiguous development control regulations. The ensuing penalty for faulty self approvals was the withdrawal of the professional license. It is therefore necessary to greatly simplify development control rules and procedures and also to drastically enhance penalties where developers and owners try and provide more space than what they are allowed or if they otherwise misuse space outside the range permitted. In most cases, architects are

pressurised by clients for this sort of action and this does not suit leading architects and those with strong design abilities and awareness of city aesthetics.

3.2 JURISDICTIONS, ORGANISATIONAL, ADMINISTRATIVE AND PROCESS INNOVATIONS

The Context

It has to be underlined that for the SKR the District Plans (7 Districts of the SKR) are to be formulated within the framework of the SKR Regional Concept Plan. The region is not a statutory unit but is proposed to be co-terminus with the state divisional administrative boundary (proposed to be reorganised into 5 divisions instead of 4 as at present). The plan can be given a legal basis by declaring it a Planning Area (initially under the KTCP Act '61). The SKR Concept Plan is basically a guidance plan and can serve as a model for the other 4 proposed regions of the State.

The structure plan for Bangalore District has perforce to be different from the structure plans for the other 6 districts of the SKR as it is the only district that engulfs a statutory Metropolitan area. This structure plan therefore has 2 components (i) for 9 taluks surrounding the BMA and for which processing has to be through the BDPC and (ii) for the BMA for which processing has to be through the MPC. Also, the BMA has to comprise of wards with ward committees and not taluks and taluk committees as in the Districts.

The BMA has 9 of the 68 urban local bodies of the SKR (1 CC, 7 CMC's and 1 TMC) whereas Bangalore District (outside BMR) has 10 urban local bodies (3 CMC's, 6 TMC's and 1 NP). The Municipal Corporation (the BCC) is required to function through Ward Committees. For Bangalore it is recommended that not only the BCC but also the other 9 urban local bodies in the BMA have ward committees. It is further recommended that the jurisdiction of all or most of the 9 urban local bodies be extended so as to absorb all the Grama Panchayats within the present conurbation area of Bangalore (area as defined in the approved CDP of Bangalore). Thereby Grama Panchayats would only exist in the green belt and in the remainder of Bangalore District.

The overall plan and the plan for via the BDPC have to be done through the BMRDA Act by the BMRDA and for more effective co-ordination it is recommended that the plan for the BMA via the BMC be also done through the BMRDA Act by a BDA type unit or the BDA itself within the BMRDA. This unit would be required to revise and simplify the present statutory CDP for the present BMA area. The total integrated plans for the BMR would thereby comprise of :- (i) the overall BMRDA structure plan (ii) a specific district structure plan with specified special planning areas for planned development through Special Area Planning and Development Authorities (SAPDA's) and Interstatial Zones (IZ's) instead of each of the nine taluks of Bangalore District. (iii) specific Metropolitan planning area Structure Plan (iv) area plans for the BCC CMC's, TMC's, NP's and

selected GP's in Bangalore District (v) plans for each ward of the MPA (by the BCC in its area and by other urban local bodies in the conurbation of the BMA).

Recommended Jurisdictions [Bangalore District Planning Committee (BDPC) and a Bangalore Metropolitan Planning Committee (BMPC)]

In relation to emerging and proposed legislative changes the jurisdiction of the BDPC (single district for Bangalore) and a BMA are proposed. These have not yet been constituted. They have to come in place expeditiously so as to support the much needed orchestrated growth of the BMA and the BMR as central components of the SKR. Below, the proposed jurisdiction and recommended actions are set out in broadsheet format for easy assimilation as a series of figures:

Figure: 3.2-1 The BMA Within the BMR

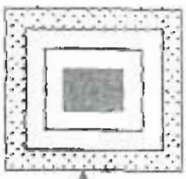
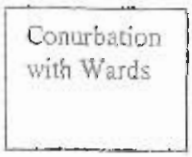
Existing Scenario	Existing Jurisdiction	Proposed Jurisdiction	Recommended Actions
1. Bangalore City Corporation (BCC) had a population of 24.76 lakhs in 1991. This 241 sq. kms area and which is divided into wards is the hub of the BMR.	241 sq.kms BCC	No change	A view has emerged that the jurisdiction of the BCC should not increase; Instead, the BCC should consolidate infrastructure upgrading, ward level planning and development control in their area.
2 a) The BCC is within a census enumerated Bangalore urban agglomeration (BUA). In addition to the BCC, this area of 357 sq.km has 7 CMC's, 1 TMC and a number of outgrowths. The BUA population was enumerated at 41.30 lakhs in 1991.(b) The B.U.A. is within an area of 565 sq.kms (inclusive of areas spot zoned) called the Bangalore Conurbation in the approved CDP for Bangalore Metropolitan Area (BMA). The 208 sq. kms round the BUA is divided into grama panchayats – earmarked for being urbanised in the CDP.c) The conurbation has a green belt all round of 714 sq.kms in the approved CDP of the BMA. This area is divided into grama grama panchayats and which are not to be urbanised. The conurbation (565 sq.kms) and the green belt (714 sq.kms) together comprise the BMA of 1,279 sq.km. and which has been declared a local planning area for statutory planned development by the Bangalore Development Authority (BDA) under the BDA Act 1976.	357 sq.kms BUA 565 sq.kms Bangalore Conurbation  Green Belt 1279 sq.kms BMA (including 714 sq.kms green belt)	No change (boundary can expand only with the census exercise for 2001 AD)  Conurbation with Wards BMPC area Conurbation + Green Belt	It is recommended that the Bangalore Metropolitan Planning Committee (BMPC) be constituted with a jurisdiction co-terminus with the BMA area comprising of:- i. a BCC + out growths – 241sq.kms with ward committees ii. 7 CMC's and 1 TMC +outgrowths – 116 sq.kms in the BUA with ward committees. iii. All grama panchayats in the conurbation (to be urbanised) – 208 sq.kms with all grama panchayats merged with the adjoining CMC's and TMC's and which are then to have ward committees and iv) The green belt divided into grama panchayats – 714 sq.kms with all grama panchayats retained and developed in consonance with the green belt policy by the BMPC.

Fig 3.2-1 contd.

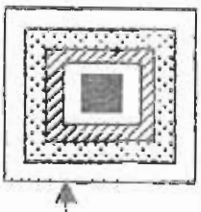
Existing Scenario	Existing Jurisdiction	Proposed Jurisdiction	Recommended Actions
3. a) The BMA (1279 sq.kms) is within a Bangalore urban district (BUD) of 2190 sq.kms and which had 48.39 lakh people in 1991 (41.30 lakh urban and 7.09 lakh rural). Part of the BMA is also in Hosakote taluk. This area of 911 sq.kms is divided into grama panchayats. b) Bangalore revenue district of 8005 sq.kms was bifurcated in 1986 so as to give 5815 sq.kms of Bangalore rural district (BRD) and 2190 sq.kms of BUD. In 1991, this area had a population of 65.12 lakhs (44.74 lakh urban and 20.38 lakhs rural).	 2190 sq.kms BUD (911 sq.kms of BUD outside BMA) BUD+BRD 8005 sq.kms	 911 sq.kms merged with adjoining taluks Eliminate BUD Eliminate BUD+BRD replace with one Bangalore District – BD BMR BMR-8005 sq.kms incorporating a BMA of 1279 sq.kms.	It is recommended that the pre 1986 scenario of just one revenue district of 8005 sq.kms for Bangalore be restored. For the BMA portion of this district, a BMPC be constituted with ward committees in the conurbation area and GP's in the green belt. For the rest of the district a Bangalore District Planning Committee (BDPC) be constituted comprising of nine taluks as follows :- i) a marginally reduced Hosakote taluk with one TMC (with portion of existing green belt going to the BMPC); ii) an enlarged Devanahalli taluk with two TMC's; iii) an enlarged Doddaballapur taluk with one CMC; iv) an enlarged Nelamangala taluk with one Town Panchayat v) an enlarged Magadi taluk with one TMC; vi) an enlarged Ramanagaram taluk with one CMC; vii) Channapatna taluk with no change and with one CMC; viii) Kanakapura taluk with no change and with one TMC and ix) a reduced Anekal taluk with one TMC. Apart from ten urban areas (one in each taluk but two in Devanahalli taluk), the taluks are divided into grama panchayats with grama thana's (village settlements) at the core.

Fig 3.2-1 Contd.

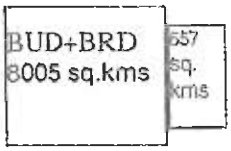
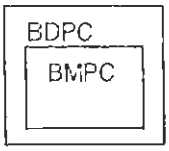
Existing Scenario	Existing Jurisdiction	Proposed Jurisdiction	Recommended Actions
4. The Bangalore Metropolitan Region Development Authority (BMRDA) as constituted under the BMRDA Act, 1986, has jurisdiction over 8662 sq.kms of territory (8005 sq.kms of Bangalore District and 657 sq.kms of the entire Malur Taluk of Kolar District). A structure plan has to be prepared, by the BMRDA for this area incorporating or adjusting the CDP for the BMA.	 8662 sq.kms BMRDA	 Eliminate Malur taluk from BMRDA BMRDA (8005 sq.kms)=BDPC(6726 sq.kms) + BMPC (1279 sq.kms)	It is recommended that the jurisdiction of the BMRDA be restricted to Bangalore District by removing Malur taluk from its mandate. This would enable Malur Taluk to function directly under the Kolar DPC. Thereby the BMRDA would have to deal directly with a BDPC and its taluk planning committees and a BMPC with its ward committees (and GP's in the green belt). The BDA could thereby function as a wing of the BMRDA .

Figure: 3.2-2 The BMR Within the SKR

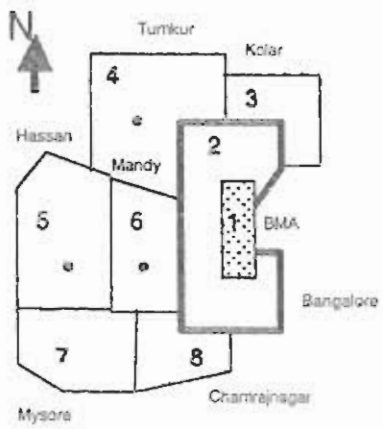
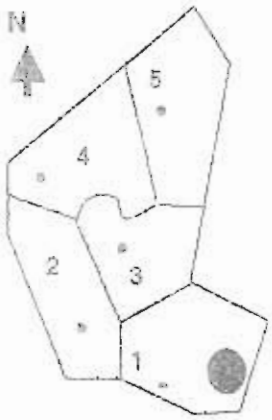
Emerging Scenario	Proposed Jurisdiction	Recommended Actions
a) If a single District comes in place for Bangalore, the districts that now constitute the entity called the Bangalore Sub-Region and now more correctly referred to as the SOUTHERN KARNATAKA REGION are Bangalore, Kolar, Tumkur, Hassan, Mandya, Mysore and Chamrajnagar. This contiguous area encompassing 50,555 sq.kms had a population of 174.14 lakhs in 1991. (68.53 lakhs urban and 105.61 lakhs rural). A regional concept plan for this area would not be statutory in nature; it would instead act as a guide to statutory District Structure Plans. However, Bangalore would have a District Plan round a Metropolitan area plan requiring a special plan through a BMRDA. b) The five proposed regions constitute the State (1,91,791 sq.kms and with a population of 449.77 lakhs in 1991). The State perspective plan for a 20 – year time frame would **Have to be prepared by the State Government with the help of the State Planning Department and the Directorate of Town Planning**	 1. BMPC – BDA } BMRDA 2. BDPC SKR 3. KDPC Coord 4. TDPC Com 5. HDPC  State Capital ● Bangalore 1 SKR • Mysore 2. WKR • Mangalore 3. CKR • Hubli-Dharwad 4. NWKR • Belgaum 5. NEKR • Gulbarga	**It is recommended that i) the state be divided into regions comprising of districts and that these be coterminus with revenue divisions. ii) the regions/divisions be increased to five (instead of four) with headquarters at Mysore (South), Mangalore (West), Hubli-Dharwad (Central), Belgaum (North-West) and Gulbarga (North-East); iii) Bangalore (within the SKR) should be for only state capital functions and not for divisional functions.** The concept plan for the SKR could be co-ordinated by the Divisional Commissioner SKR at Mysore. For this, the regions have to be first constituted and the co-terminus revenue divisions brought in place. Until then coordination could be by the BMRDA in addition to its other responsibilities.

Figure: 3.2-3 Organisation for Integrated Development

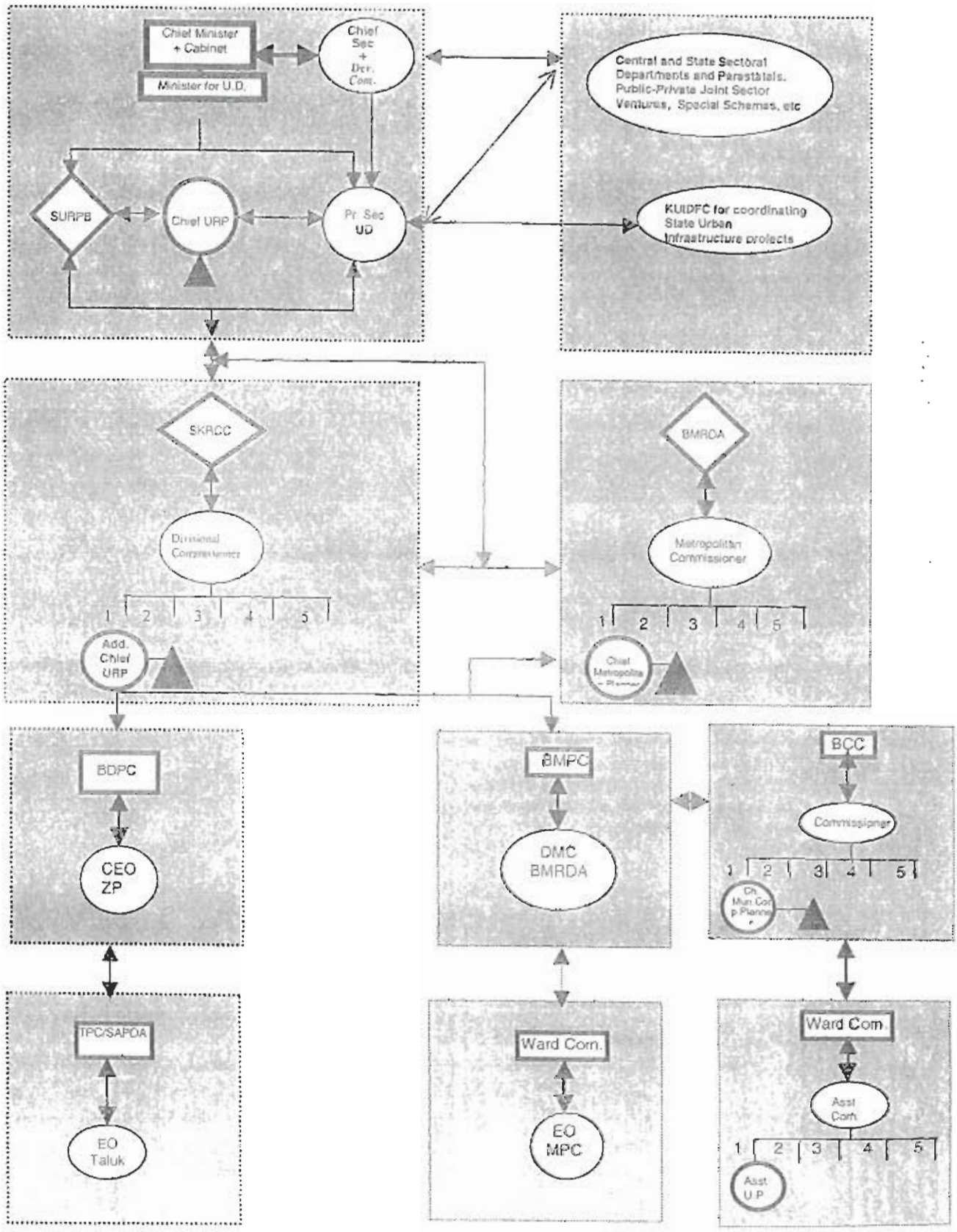
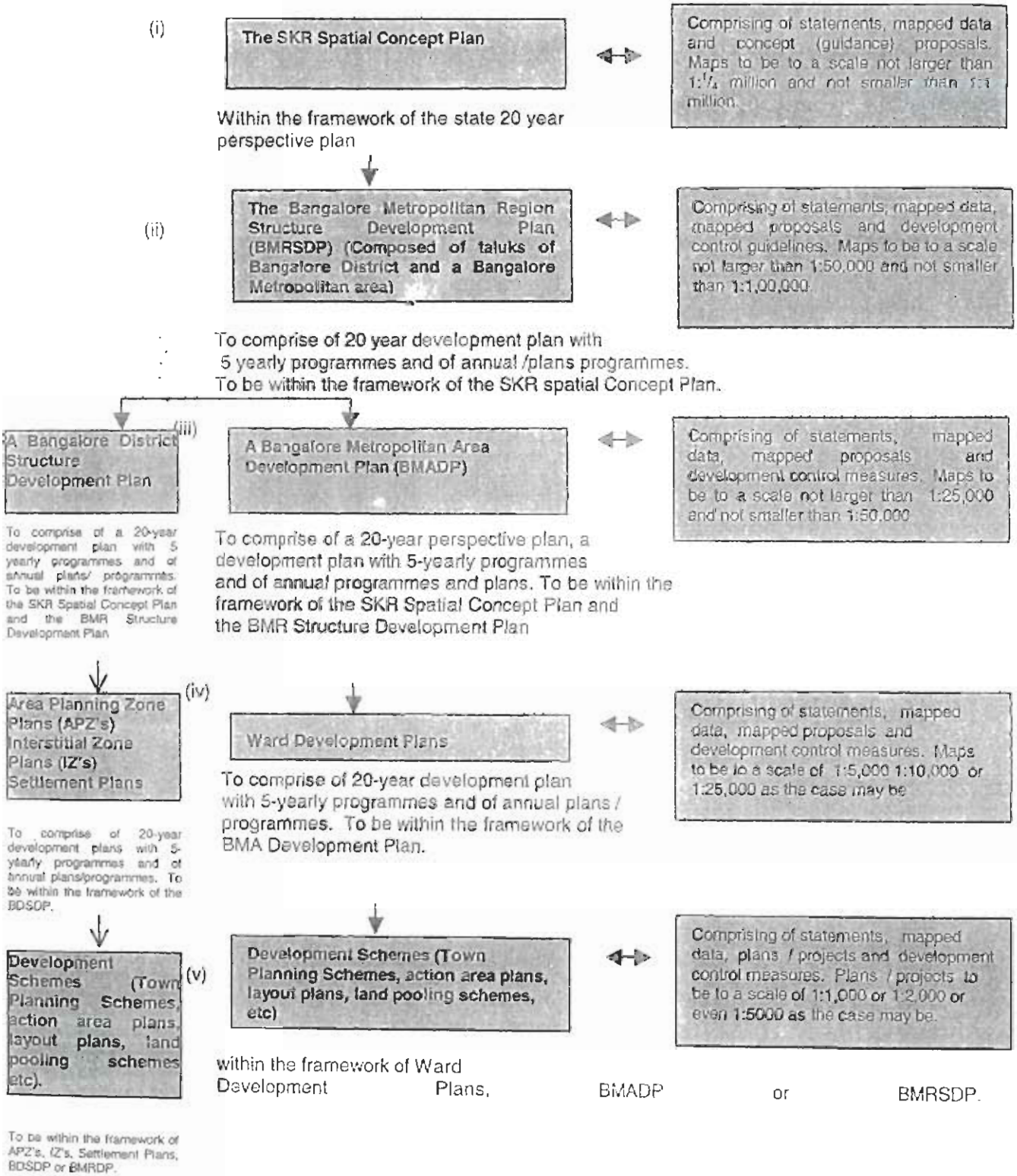


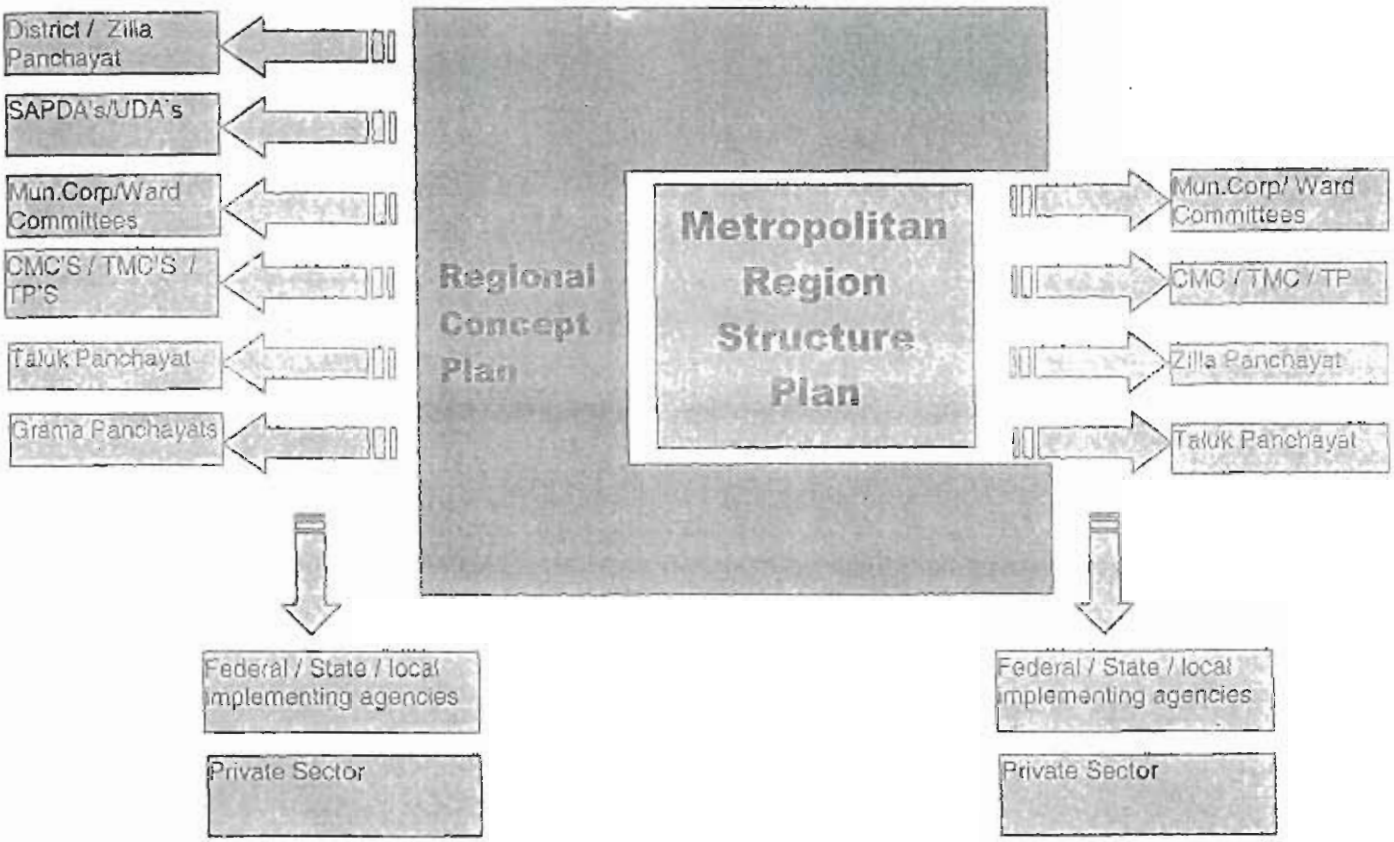
Figure: 3.2-4 Plan Making Process in the BMR & BMA



3.3 PLAN IMPLEMENTATION

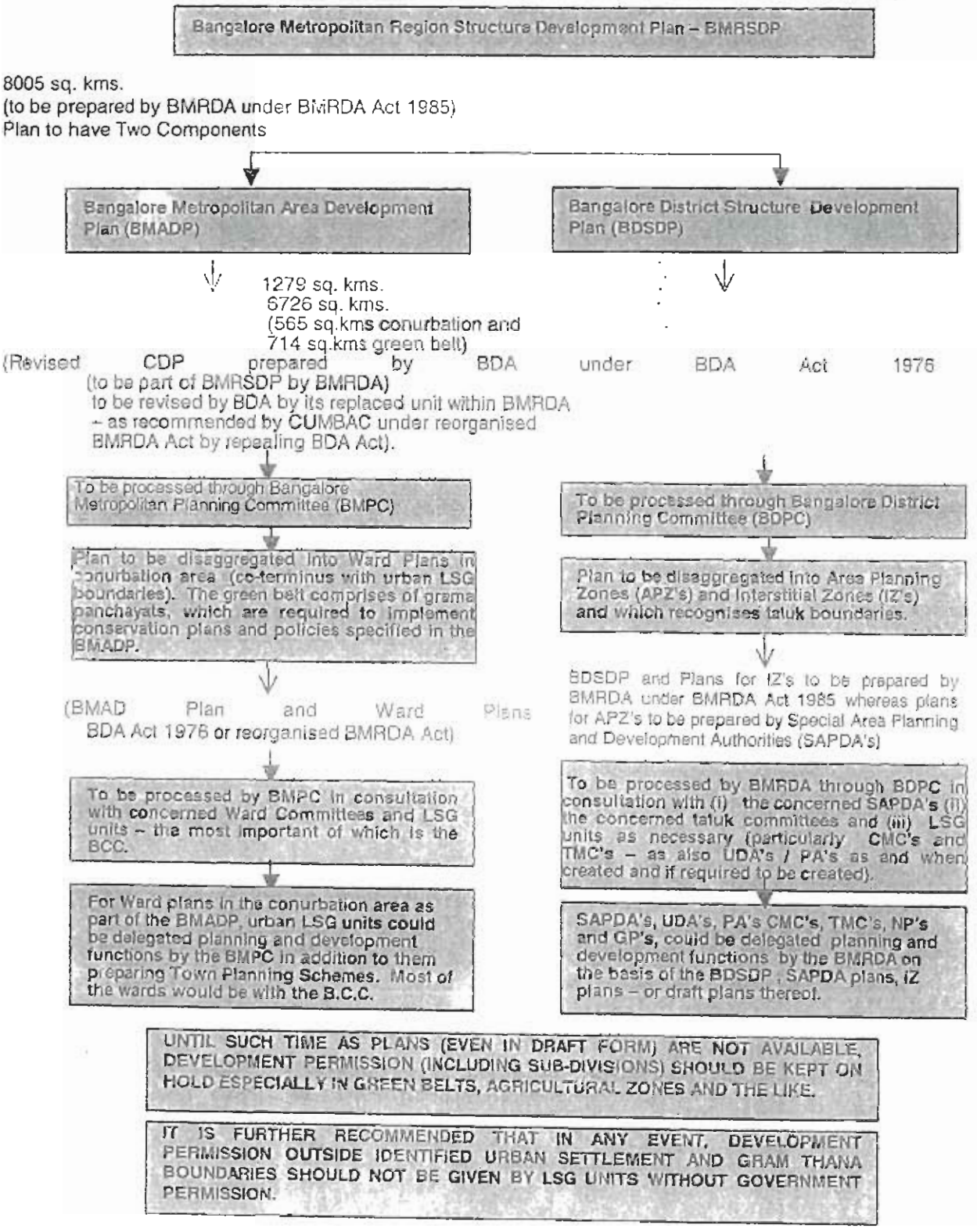
Before starting implementation of any of the programme or project detailed out in a plan it is important to disseminate information on the project proposals and identify the potential implementing agencies and resources both financial and human. The figure below gives a tentative list of implementing agencies at the regional and the metropolitan level.

Plan Implementing Agencies at the Regional and The Metropolitan Level



Apart from this it is also essential to identify and evolve coordination procedures, incase the agent of implementation is more than one. This is specifically true in the Indian Context where there are a multitude of agencies, each working independently.
Results for sustainable built environments are therefore better achieved through a few agents of action with clear and transparent mandates rather than a large number of them. Also, public participation is not necessarily as effective at the megacity level but is important at the neighbourhood and action plan levels and where elected representatives, citizen concern groups, non governmental organisations (NGO's) and community based organisations (CBO's) can effectively inculcate the participatory process by all stakeholders.

Figure: 3.3-1 Summary Recommendation Implementing Spatial & Economic Development Planning in the BMR & BDA (Bangalore District)



Monitoring and Evaluation

It is construed that plan implementation should be followed by plan monitoring and evaluation. In many respects this might be viewed as one of the most important parts of the entire planning process; as it is through this process that the level of success for a particular plan may be judged. The various tasks that are being implemented should be monitored against objective achievement and against the benchmark targets set out in the vision in the beginning of the plan preparation process.

A range of evaluation criteria will be adopted depending on the case by case circumstances of the plan. For the formulation of the BMR Structure Plan, the following were used: -

- Whether the project/programme is judged as likely to be effective in meeting the goals and objectives?
- Is the process of implementation hampered due to lack of adequate human resources?
- Is there a commitment from the senior decision-makers, NGO's and community groups and other identified stakeholders and most importantly is there political support. ?
- Does the plan fall in line with the plans prepared at the other levels, like the state perspective plan and the district development plans?
- To what degree does implementation entail re-organisation of the existing institutional set-up?
- Is there maximum utilisation of existing and committed infrastructure?
- Does it require networking with other organisations?
- Can it be carried with existing staff capacities or is an upgradation of the same required?

The monitoring and evaluation is not a separate step from the implementation process. The two have to be parallel and ongoing. It is during these steps that the plan makers may feel the need to go back to the previous steps or even back to step one and restart the entire process.

3.4 THE CONSULTATIVE AND PARTICIPATORY APPROACH IN THE BMR

Using the Participatory Approach

The report entitled "Participation in the Process of Strategic Planning - Opportunities and Constraints" recommends participatory processes in plan making and its implementation as a pre requisite for successful economic development. At the onset of this exercise a preliminary round of discussions was held with grassroot organisations, NGO's, academics and professionals from various disciplines. The concerns raised by these organisations and groups were used as a direct input while arriving at the "vision" (which forms the basis for the SKR and the BMR development Strategy) for the region.

The Karnataka Town and Country Planning Act 1961, though providing for the involvement of the public in the planning process, restricts participation to feedback and objections to be given in writing. No forum is provided for a dialogue or a discussion at the very inception or conceptualisation of a scheme. The scope of participation needs to be stressed as the same could diffuse potential opposition to plans, schemes and projects. Public bodies, community groups and organisations and individuals need to be well informed at every level. It not only activates and builds teams that can contribute constructively to the projects, programmes and policies, but also the local ownership of development programmes is assured. Effective organisations and teams are created and sustainable systems and procedures for implementation are institutionalised. Hence the need for the smooth and long term viability of any plan and programmes justifies participatory plan making processes as Bankable Programmes and projects.

The preferred development strategy for the BMR will form the basis of the BMR Structure Plan. Before embarking on the plan preparation process the process of participation calls for information dissemination and eliciting response on the contents of the strategy for the various stakeholders in the BMR.

Participatory mechanisms

It is proposed that this should be institutionalised at different levels and that the identified stakeholders are involved at different stages from the beginning of the plan making process. The stages foreseen are:

- **Plan intent** i.e. a brief statement of the intended contents of the structure plan establishing the technical background and key issues to be tackled by the plan.

- **Survey on the problems and issues** that need to be accorded priority i.e. inviting suggestions from the public bodies, community groups and organisations and individuals.

- **Outline strategies** based on the response from the surveys. A broad set of policies needs to be set out reflecting the main themes emerging from the survey.

- **Preferred Strategy** of the various outlined strategies, which would form the basis of a draft structure plan.

    - **Draft Structure/District Plan** to be outlined based on the feedback from the various stakeholder groups. The draft structure plan will spell out sector wise development policies and the possible impact of these policies.

    - **Statutory Structure/District Plan** i.e. extensive publication of the draft plan, giving the public ample opportunities to comment on the proposals, whereby the same will be incorporated in the draft to modify it suitably as per the needs

A participatory process will have to be followed to give the draft structure plan the status of a final statutory structure plan document. The same can be packaged as a Bankable programme for the BMR. The emerging process is explained below.

Figure: 3.4-1 The Emerging Plan Making Process

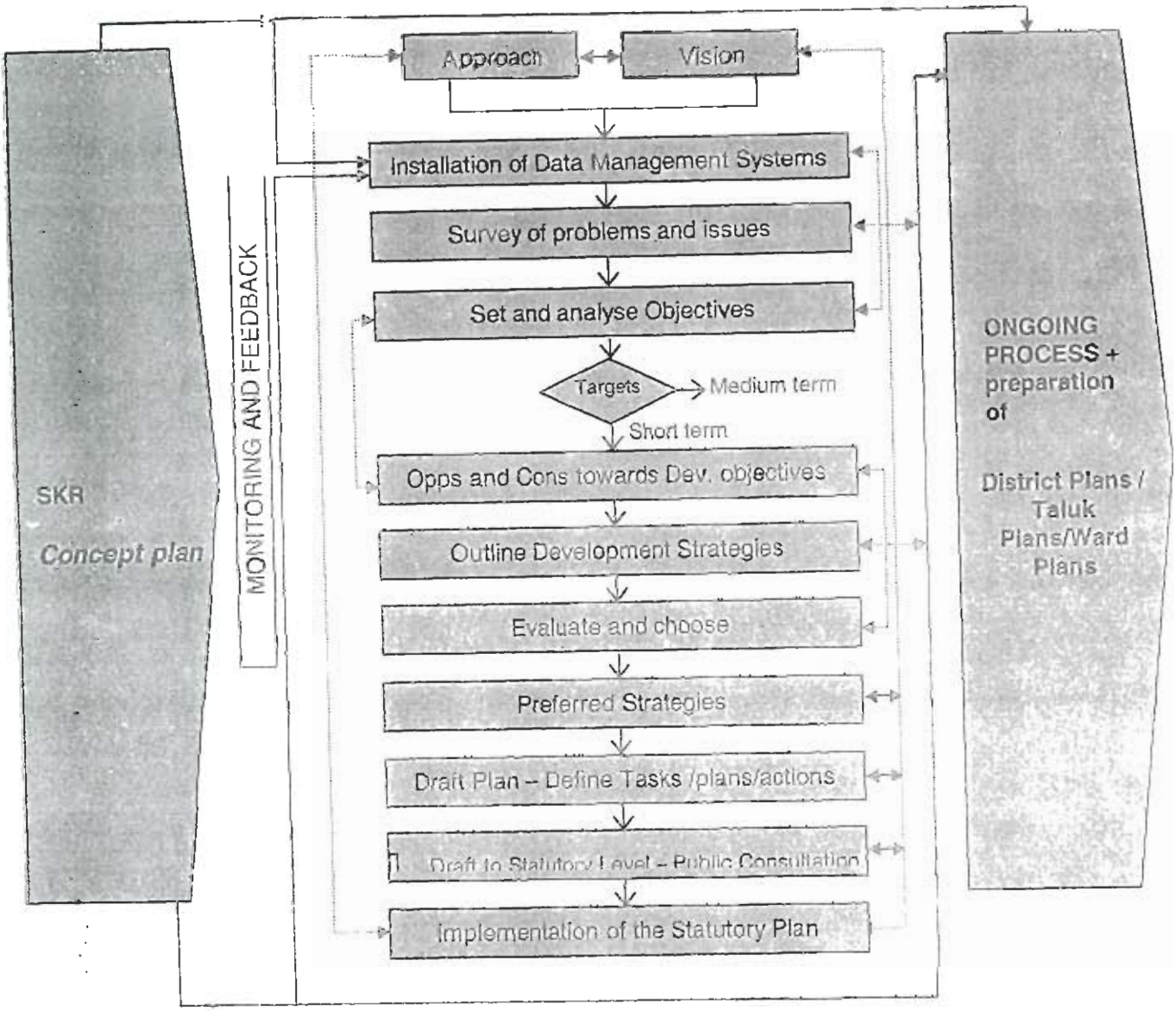
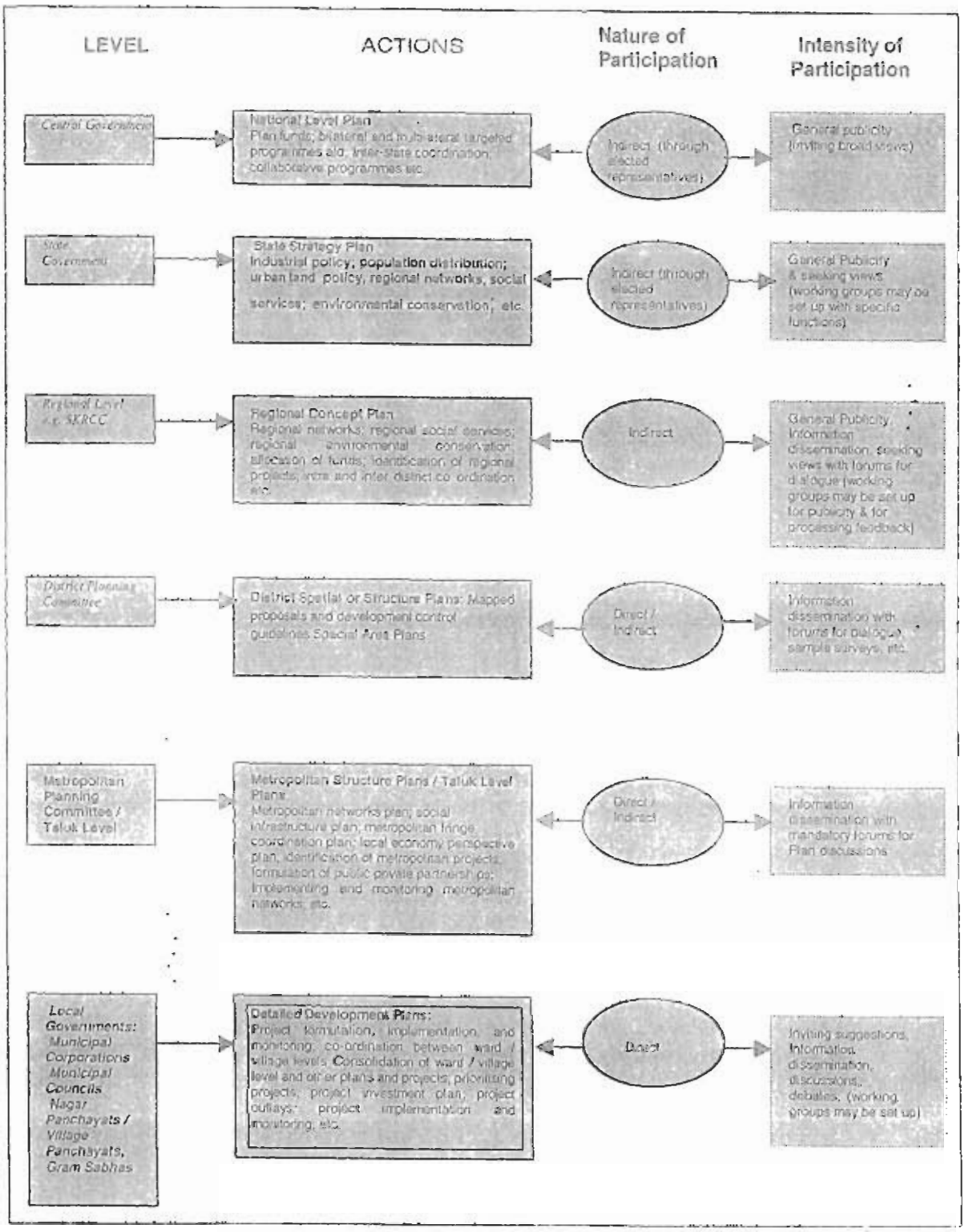


Figure: 3.4-2 Levels and Nature of Participation



Purpose of Participation

Participation in planning serves several purposes:

- To inform and educate public and key stakeholders regarding the plans and plan making process.
- To provide forums / opportunities for specialists, professional organisations and / or the public to provide inputs, suggestions in the plan - making process.
- To generate viable alternatives consensus and generate
- To thus elicit popular support for Plan.

The legal and regulatory framework, for genuine consultation and community participation, reflecting local needs and priorities in the development planning, remain weak. Conventional forums for popular dialogue with policy makers are few and very inadequate. New entry points for a meaningful discussion must be created, enabling use of local knowledge and wisdom in projects.

At the same time it must be recognised that the issue of implementing participatory strategies is politically sensitive and the rhetoric of intent is still far ahead of the design for action to promote participation.

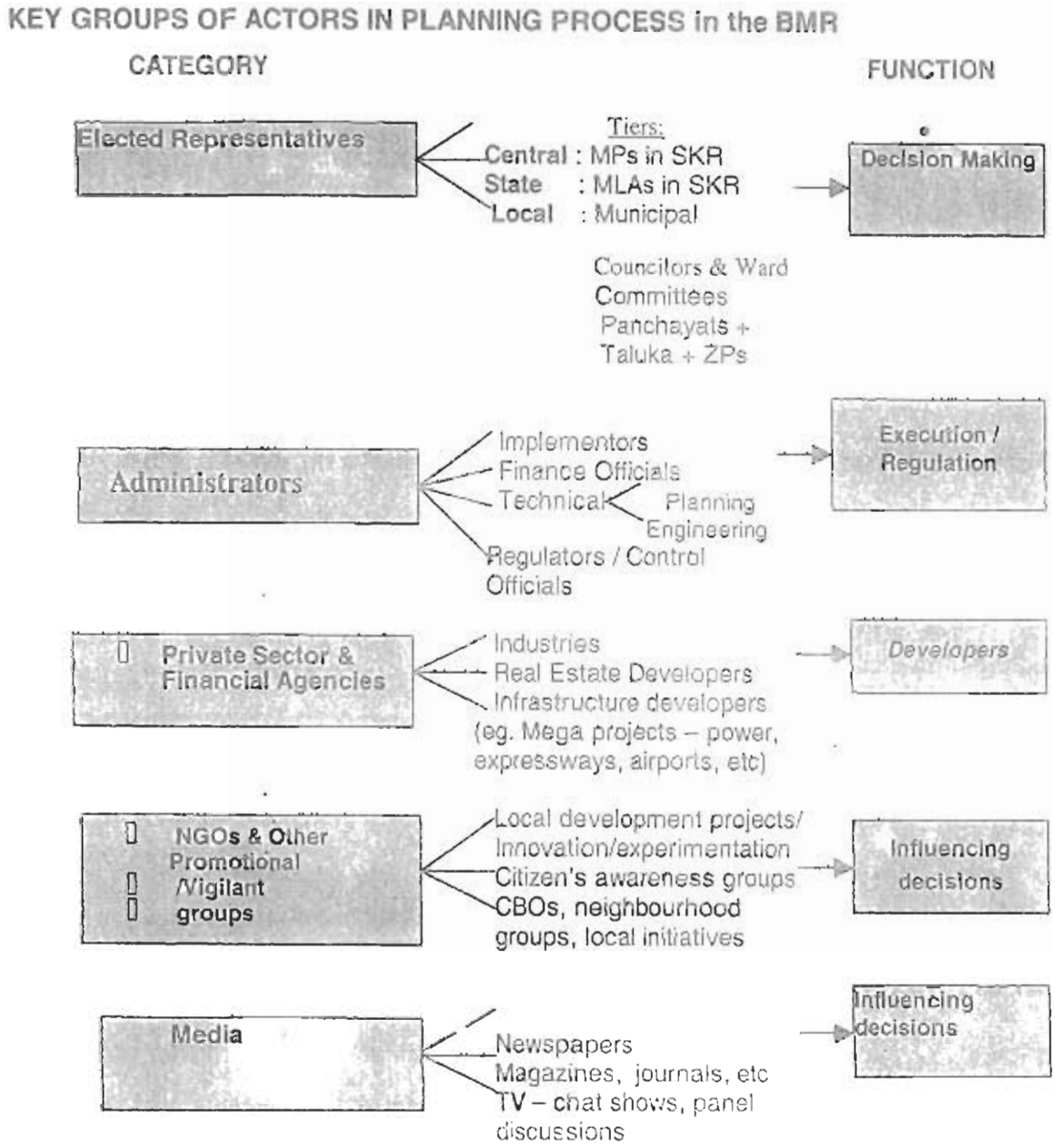
Recommended Measures for Effective Participation-

In order to make the process more participatory the following rules and regulations may be framed in keeping with and further to the UDPFI guidelines in the process of formulation of the BMR structure plan (even if this is not a plan specified in the Act)

- The notice and a report be given in **at least three** local newspapers
- The **period of providing feedback**, suggestions, etc., be extended to a maximum of **120 days**, which provides sufficient time for the various stakeholders to respond and make meaningful suggestions.
- During the above period, a **permanent exhibition** of plans and proposals be held at a public place and a senior officer should be available to respond to queries and to clarify points at the exhibition.
- Opportunities be provided to meet Ministers / Bureaucrats responsible for final decision-making through workshops or special meetings organised for the purpose.
- Pamphlets and easy to read Plan highlights be distributed in every urban ward, taluk and panchayat.

Key Groups of Actors in the Planning Process

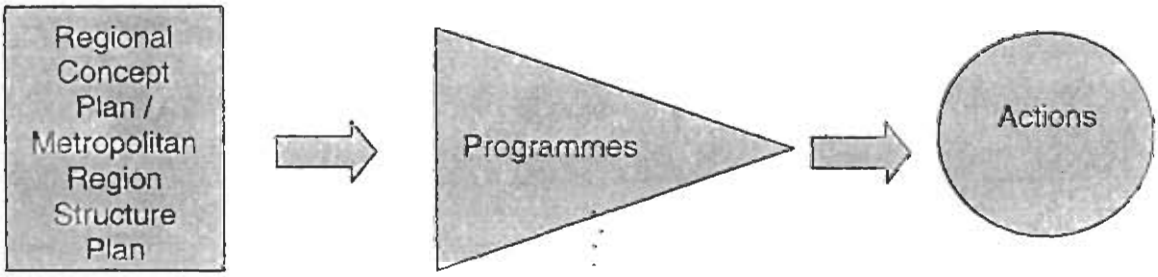
To distinguish between the levels of popular participation, it is also important to identify the actors in the planning process and the decision-makers. A perspective of this is displayed below:-



Capacity Building

"Capacity is defined as the ability to perform appropriate tasks and fulfill roles effectively, efficiently and sustainably." Capacity building is required at different levels, right from the plan formulation stage to the plan implementation stage. This is shown in Fig

Levels of capacity Building



Capacity building is required not only to create resources but also to monitor and maintain these resources. The skills and subject areas in which capacity is required has to be determined locally; however certain broad areas have been identified hereunder which have emerged as a result of the two most recent changes i.e. Decentralisation and Participation. These are:

- Developing partnerships and working with elected representatives of the governments and officials, civic society groups and business communities. A thorough understanding of political processes is recommended, as it is these, which facilitate the development of vision and the articulation of needs and action.
- Participatory planning and decision making tools
- Effective, accountable and transparent methods of working.

Capacity Building Strategy

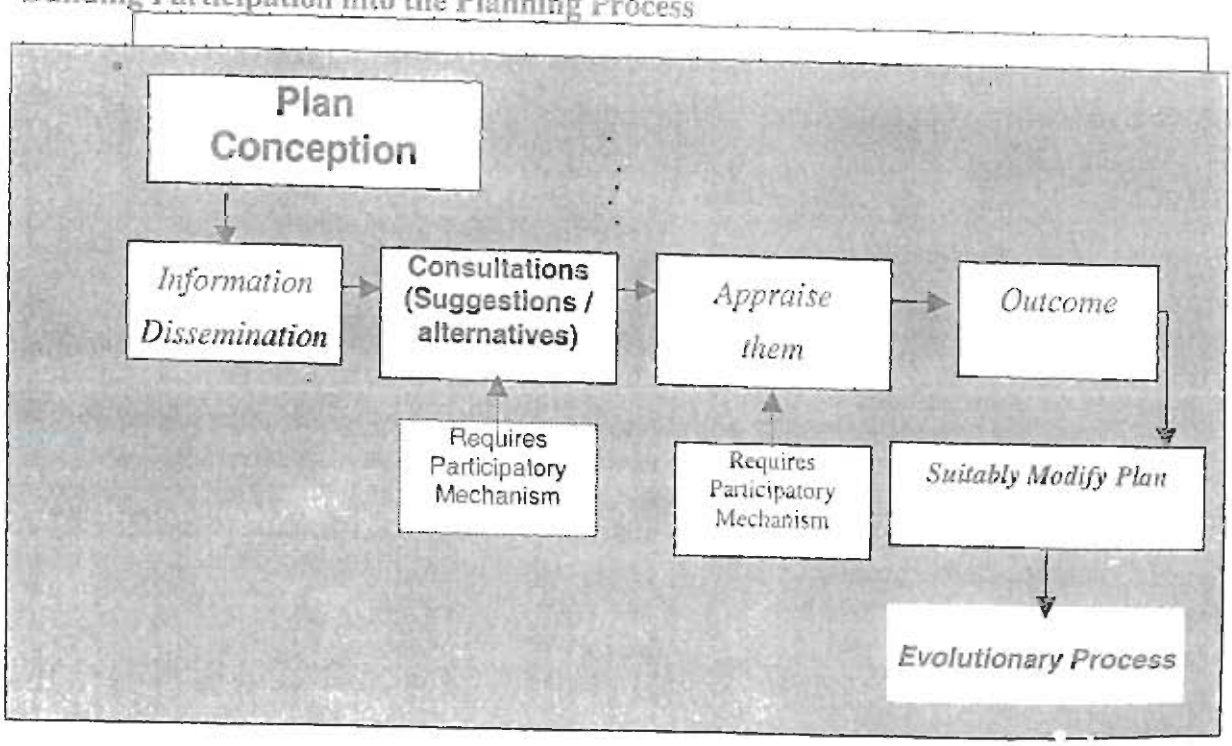
- The capacity building strategies should from the start be totally integrated with the overall plan making, implementation and management processes
- Capacity building strategies should be so defined that they clearly define the role and the commitment of various stakeholders involved.
- Capacity building needs to be defined locally.
- Development of capacities should be such that they facilitate the various stakeholders to work together on a common platform, effectively and efficiently.

- The capacity building strategy should be such that it integrates Human Resource development, Institutional/ organisational and legal change/improvement.
- Capacity building strategy should be flexible and responsive to change.
- The strategy should enable the linking of the training needs to industry and other technical requirements.
- The strategy should be so designed that it gives a high priority to monitoring, evaluation, impact assessment, research and information dissemination (as effective tools for participation).
- **Publicity** be targeted at specific audiences (industry / business interest groups, NGOs, CBOs, professionals). **Press conferences** be held and public broadcasting of the consultation process be designed and undertaken
- The suggestions that emerge must be compiled and fed back into the Draft Plan, which must be modified appropriately.

Unless, this consultative approach and participatory practices are codified they are typically viewed as being optional.

Prior to plan finalisation, **making information dissemination and public consultations mandatory**, by imposing statutory obligations on key functionaries will go a long way in facilitating participatory processes in planning. Figure below demonstrates the process of building participation into the planning process

Building Participation into the Planning Process



Focal Agencies

These are:-

- The State Directorate of Urban and Regional Planning incorporating the Secretariat for the State Urban and Regional Planning Board (SURPB)
- The Regional Co-ordination Committees
- The District Planning Committees
- The Metropolitan Planning Committee
- The Bangalore Metropolitan Region Development Authority
- The Bangalore Municipal Corporation
- The City Municipal Councils
- The Town Municipal Council
- The Special Area Planning and Development Authorities
- Urban Development Authorities

Technical Support

As a result of the recent decentralisation policies, the urban and the rural local governments are faced with newer responsibilities, while the state and the central governments have to perform a different role, thereby calling for a change in the context. This is shown in the figure below.

Changes in Context

Centralised Funding	⇒	Decentralised Funding
Government	⇒	NGO / CBO / and other
AD HOC	⇒	Policy and Strategy
Impact	⇒	Impact conscious

With this change in functions and responsibilities, the governments suddenly find themselves ill equipped as far as discharging these responsibilities are concerned. Hence capacity building becomes of key importance in this changed environment. In addition to all this the governments are required to work in partnership with the other actors of urban development i.e. the private sector, the community based organisations

and the Non Governmental Organisations. Thus there has been a change in the target group as shown in the figure below

Changes in Target Groups

Professionals / State / Central Govt	⇨	Wide Range of Stakeholders
Technical People	⇨	Managers also
Supply Based	⇨	Needs / user driven

Human Resource Development

In-house seminars ;

refresher courses of one, two, four and even six weeks duration ;

short-term secondments at specialised institutions ;

facilities for distance learning leading to recognised qualifications ;

facilities for full-time secondment to institutions offering recognised qualifications ;

building up an effective library of largely professional magazines and books with focus on updating skills ;

participation in professional seminars and visits to replicable programmes and projects

encouragement in publishing and disseminating replicable programmes and projects ;

updating skills for lucidly explaining proposals to stakeholders – the key actors of the participatory process.

Several specialisations are encompassed in the above skills, notably regional planning, urban planning, economic planning, environmental planning, infrastructure planning, traffic and transportation planning, land management and housing, settlement and finance management, and at the project level – urban design, architecture, landscape architecture, conservation, building engineering management and programme and budget formulation.

The above entail a large number of posts of spatial planners to be created in a phased manner. For these incumbents and other support staff proper capacity building and skill reorientation towards regional and urban economic development planning is required.

3.5 PRIORITY PROGRAMMES AND PROJECTS

The form of development envisaged by the Preferred Strategy for the Draft BMR Structure Plan is to be promoted through:

- institutional and policy innovations,
- reciprocal institutional strengthening and capacity building to establish sustainable land use planning and management capabilities,
- development initiatives designed to encourage growth in areas where this is consistent with the strategy and discourage it where it is not; and
- infrastructure investment measures to support growth.

These developments are to be concentrated (particularly during the initial years of strategy implementation) in the identified Area Planning Zones (APZ's 1 to 5) within the BMR, and which incorporates the strategic corridors connecting Bangalore, Mysore and Hassan.

The programmes and projects constituting the implementation of the Draft Structure Plan are designed to:-

- ***continue the 'process' of plan formulation, preparation and implementation management,*** through the preparation of a series of Area Plans for zones and corridors identified as critical for the management of development in Bangalore, and as a vehicle for capacity building, institutional strengthening and for the encouragement of public and private sector partnerships;

- ***harness and restructure the future growth of Bangalore' Metropolitan Region*** through policy innovations, institutional reforms and continuation of the 'planning process' and implementation of innovatory land use control and development instruments and measures applied to model priority action area and corridors mentioned above.

The projects which constitute the implementation of the Draft Structure Plan are designed to:-

- ***improve key intra and inter-urban linkages,*** particularly between the APZ's within the BMA between Bangalore and the two identified growth centres of Mysore and Hassan through direct project initiatives, and indirectly through lobbying to secure policy innovation;

- ***improve other intra-urban infrastructure*** particularly in certain of the APZ's (for example, environmental infrastructure, such as water supply and liquid and solid waste management, and economic infrastructure, such as urban roads, and truck depots)

Given below is a summary of the programmes and projects that are recommended in order to implement the Preferred Strategy and associated Draft BMR Structure Plan. Further details of the programmes and projects are given the *"Companion Report on Programmes and Projects"*. Details of existing and planned programmes and projects that support the SKR Concept Plan and BMR Structure Plan can be found in the Report on *"Physical Infrastructure Development - Opportunities and Constraints"* October 1997.

It must be stressed that full details of the programmes and projects, constituting a feasibility report, is beyond the scope of this project, one aim of which was to identify programmes and projects for further exploration. Only brief description are given in this report. An option embodying further exploration is for such programmes and projects to be the subject of a "follow-on", Project Preparation Technical Assistance (PPTA) which could be made a part of the proposed Action Plan Zone planning exercise.

It should be further noted that the programmes and projects discussed below are those proposed for only the initial stages of the implementation of the preferred strategy and associated Draft Structure Plan. The programmes focus on the ***processes*** that are required to implement the strategy and plan, namely institutional innovations and reforms, capacity strengthening measures related to plan formulation, implementation and management. The projects concentrate on critical areas of deficiency and on measures intended to assist in the redirection of growth towards the identified growth areas and in the manner suggested under the Draft Structure Plan.

Table 3.1 BMR PROGRAMMES

Programme Title	Description
Plan Preparation, Capacity Building & Institutional Strengthening	
Completing the Structure Plan Preparation Process	It is proposed that a programme to complete the Structure Planning 'Process' be the subject of a TA in continuation of the on-going initiative. The Structure Plan for Bangalore District has perforce to be different from the structure plans of the other 27 districts of the State as it is the only district that engulfs a Statutory Metropolitan Area. Therefore, the Structure Plan has 2 components i). for 9 taluks surrounding the BMA and for which processing has to be through the BDPC and ii). for the BMA, processing will be through the MPC. Also, the BMA has to comprise of wards with ward committees and not taluks and taluk committees as in the Districts.
Revising and Up-dating the CDP and recasting as a Metropolitan Structure Plan.	In the light of the Draft BMR Structure Plan and the emerging institutional organisational restructuring prospects, the opportunity exists to carry out the CDP up-dating and recasting of the MSP within the context of this future vision. In general, the overall plan preparation process on behalf of the Bangalore District Planning Committee (BDPC) has, according to the BMRDA Act, to be done by the BMRDA.. In addition, for more effective co-ordination the plan for the BMA should also follow the same route. Currently the statutory CDP is prepared by the BDA's planning unit. In future this could mean the transfer of this unit to the BMRDA and in parallel augmenting and strengthening its capabilities and capacities.
BMRDA Plan preparation and land use management capacity building and institutional strengthening	In total the plans necessary under the GoI's guidelines would comprise of: i). the overall BMRDA Structure Plan, ii). specific district structure plan + plans for the APZ's and IZ's of Bangalore District, iii). specific Metropolitan Area Structure Plan, iv) plans for each ward of the metropolitan area v). area plans for the CMC's, TMC's, NP's and identified GP's in Bangalore District. It is proposed that in continuation of this on-going ADB project initiative, that a PPTA is prepared for Plan Preparation and Implementation Management Capacity Building and Institutional Restructuring and Strengthening and that the continuation of the Structure Planning Process, plus APZ's and IZ's are the vehicles around which the programme would be organised.
Upgrading of the Land Use Management and Resource Data and Geographic Information System	Maps for the APZ's as identified in the BMR Structure Plan need to be generated at 1:10000 scale with layer database information on the following topics: land use / land cover, road, rail, contour, power, water-supply trunk infrastructure, etc. For the structure plan preparation of the BMR, a GIS based Planning Data System could be developed as a pilot at BMRDA GIS Centre.

Project Title	Description
Plan Preparation	
Special Area or Corri (Action) Plans	For each of the principal Area Planning Zones (APZ's) of Bangalore the Strategy has considered their particular characteristics, identified critical issues and determined the strategic policy actions that would be appropriate. Each was fundamental to the evaluation of the strategic development variants and as such it is recommended that they are systematically designated as Special Area Planning and Development Authorities (SAPDA's) and that priority action area plans are undertaken as mechanisms and instruments to guide and control development towards the achievement of prescribed objectives. The APZ's identified in the BMR are APZ1 (Bidadi); APZ2 (Nelamangala); APZ3 (Devanahalli and Doddaballapur); APZ4 (Hosakote) and APZ5 (Anekal). APZ1 and APZ2 are priority zones.
Special Area Plan for Nelamangala	The Strategy identifies Nelamangala as an important transport node located at the confluence of the Mangalore-Hassan-Bangalore-Chennai and Bangalore-Mumbai corridors. Together with a second urbanisable block it is conceived as a 'twin town' growth pole drawing development away from Tumkur and acting in conjunction with Bidadi urbanisable block to 'push and pull' the development of the south-western arc of the peripheral ring road. As such it is recommended that Nelamangala and the 'new' urbanisable block are redesignated from the Nelamangala Planning Authority to a Special Area Planning and Development Authority and that it is the subject of a Special Area Plan.
Special Area Plan for Bidadi	This zone includes the bifurcated version of the urbanisable block, the designated Toyota factory site and the Ramanagaram-Channapatna Urban Development Authority area. The Bangalore-Mandya-Mysore SH (under consideration of upgradation as NH); the single-track Bangalore-Mysore BG rail (under consideration for a double track and electrification); and the proposed Bangalore-Mysore expressway (as a self-financing BOT project through toll and / or area development projects along or near the expressway) bind the zone. The southern peripheral road (SPR) and the urbanisable block project with the B-M expressway township incorporated, would restructure development in this area. The SPR can be taken up for a high priority feasibility study. A second township related to the expressway project can also be constructed between Ramanagaram and Channapatna so as to fulfil a State Government commitment.
'Special Area' Mapping and Demonstration Technical Cadestra	It is recommended that a comprehensive mapping project is undertaken for one or more of the special areas. This could be for APZ1 (Bidadi) and APZ2 (Nelamangala) or even APZ3 (Devanahalli – Doddaballapur). The scale for the Database should be 1:10000 Survey of India will produce maps at 1:10000 scale from existing ph material. Change detection would be carried out using IRS-1C sate imagery. Areas of difference would be surveyed.

Table 3.2 BMR PROJECTS (Details are elaborated in the Companion Volume)

Project Title	Description
Roads and Transport Infrastructure	
Southern Peripheral Road	This proposed new road of 76 km would provide a circumfirential route facilitating traffic by-passing Bangalore to the south and would function as a distributor for traffic in southern Bangalore. It would skirt the southern edge of the city outside the green belt. This project is under consideration for funding through private sector initiative on a BOT basis.
Northern Peripheral Road	This proposed new road would provide a circumfirential route of 42 km facilitating: • traffic by-passing Bangalore to the north • traffic accessing the proposed airport at Devanahalli • distribution of intra-city traffic in northern Bangalore. It would skirt the northern edge of the city outside the green belt, and has potential for private sector funding on a BOT or BOO basis.
Intermediate Ring Road	This ring road would connect the proposed urbanisable blocks at Bidadi and Nelamangala, the area of the proposed new airport at Devanahalli and other areas outside the green belt. The project comprises the widening and improvement of 126 km of existing road -initially to a divided 4 lane road.
Satellite Towns Ring Road	This ring road would improve the connections between a number of satellite towns around the BMA. The project comprises the widening and improvement of 266 km of existing road - initially to a divided 4 lane road.
Upgrading of Bangalore - Tumkur Railway line	This project would upgrade the line from a single to a double track, and provide electrification which would increase the capacity of the railway line for both passenger and freight traffic.
Upgrading of Bangalore - Devanahalli Railway line	This project would provide electrification with the objective of facilitating the introduction of commuter services and providing a rapid link to the airport.
Development of 8 Terminals: • Hosur Road • Bidadi • Nelamangala • BIAAPA Area • Hosakote Road	These projects provide decentralised bus terminal facilities for the combined operation of private and state bus services in the BMR. The projects would facilitate rationalisation of bus routes with improved coverage and levels of service. The facilities would be suitable for development by a private company or through a private-public sector joint initiative. Benefits would include the reduction of numbers of buses terminating in the city centre, and a reduction in traffic with the introduction of Park and Ride services.
Development of Truck Terminals and Warehousing facilities: • Hosur Road • Bidadi • BIAAPA Area • Hosakote Road	These projects provide decentralised truck terminals and associated trans-shipment , warehousing and related facilities and services. The projects would reduce street parking of trucks within the BMA and release road space for use by other traffic. The facilities would be suitable for development by a private company or road transporter's association or through a private-public sector joint initiative.

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು

ವಿಷಯ: ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ವ್ಯಾಪ್ತಿಗೆ ತಯಾರಿಸಿರುವ ಕರಡು "ರಚನಾ ನಕ್ಷೆಗೆ" ಅಂತಿಮ ಅನುಮೋದನೆ ನೀಡುವ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ: 1. ಸರ್ಕಾರಿ ಆದೇಶ ಸಂಖ್ಯೆ: ನಅಇ 51 ಬಿಎಂಆರ್ 2002 ದಿನಾಂಕ: 2-6-2004.

2. ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿಪ್ರಾಧಿಕಾರ, ಆಯುಕ್ತರವರ ಆರೆ ಸರ್ಕಾರಿ ಪತ್ರ ಸಂಖ್ಯೆ:ಬಿಎಂಆರ್ ಡಿಎ/ಟಿಪಿ/ಬಿಎಂಆರ್/ಎಸ್‌ಕೆಆರ್/ಜಿಹೆಚ್‌ಕೆ/003/99-2002 ದಿನಾಂಕ: 4-1-2004 ಮತ್ತು ದಿನಾಂಕ: 30-12-2004

3. ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಇವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ದಿನಾಂಕ: 2-3-2005 ರಂದು ನಡೆದ ಸಭೆಯ ನಡವಳಿಗಳು.

ಪ್ರಸ್ತಾವನೆ:-

ಮೇಲೆ (1)ರಲ್ಲಿ ಓದಲಾದ ದಿನಾಂಕ 2-6-2004ರ ಆದೇಶದಲ್ಲಿ ಸರ್ಕಾರವು ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ದಿನಾಂಕ: 29-7-1999 ರಂದು ನಡೆದ ಶನ್ನ ಪ್ರಾಧಿಕಾರದ 10ನೇ ಸಭೆಯಲ್ಲಿ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶದ ಸಮತೋಲನವಾದ ಯೋಜಿತ ಬೆಳವಣಿಗೆಗಾಗಿ ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ಸಿದ್ಧಪಡಿಸಿರುವ ಕರಡು ರಚನಾ ನಕ್ಷೆಯನ್ನು ಈ ಕೆಳಕಂಡ ಮಾರ್ಪಾಡುಗಳೊಂದಿಗೆ ಅಳವಡಿಸಲು ಸರ್ಕಾರವು ತಾತ್ಕಾಲಿಕವಾಗಿ ಮಂಜೂರಾತಿ ನೀಡಿದೆ.

ಅ) ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ತಯಾರಿಸಿರುವ ರಚನಾ ನಕ್ಷೆಯಲ್ಲಿ ಬರುವ ಇಂಟರ್‌ಸ್ಟ್ರೀಷಿಯಲ್ ವಲದಲ್ಲಿ ಅನುಮತಿಸಬಹುದಾದ ಉಪಯೋಗಗಳು:-

ವ್ಯವಸಾಯ, ತೋಟಗಾರಿಕೆ ಮತ್ತು ಕೋಳಿಸಾಕಾಣಿಕೆ, ಹಾಲು ಶೈತ್ಯಾಗಾರಗಳು, ತೋಟಗಳು, ನರ್ಸರಿಗಳು, ಫಾರ್ಮ್ ಹೌಸ್ ಮತ್ತು ತತ್ಸಂಬಂಧ ಕಟ್ಟಡ (ಪ್ಲಿಂತ್ ಏರಿಯ 200 ಚ.ಮೀ. ಮೀರದಂತೆ) ಜಮೀನಿನ ವಿಸ್ತೀರ್ಣ 1.2 ಹೆಕ್ಟೇರಿಗೆ ಕಡಿಮೆ ಇರಬಾರದು. ಇಟ್ಟಿಗೆ ಗೂಡುಗಳು, ಗಣಿಗಾರಿಕೆ ಹಾಗೂ ಜೇಡಿಮಣ್ಣು ಮತ್ತು ಕಲ್ಲುಗಳನ್ನು ತೆಗೆಯುವುದು (ಗರಿಷ್ಠ 3 ಅಡಿ ಆಳಕ್ಕೆ ಮಿತಿಗೊಳಿಸಿದೆ), ಹೆದ್ದಾರಿ ಸೌಲಭ್ಯಗಳಾದ ಪೆಟ್ರೋಲ್ ಬಂಕ್, ವೇಬ್ರಿಡ್ಜ್‌ಗಳು ಮತ್ತು ಚೆಕ್‌ಪೋಸ್ಟ್‌ಗಳು.

ಆ) ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ತಯಾರಿಸಿರುವ ರಚನಾ ನಕ್ಷೆಯಲ್ಲಿ ಬರುವ ಇಂಟರ್‌ಸ್ಟ್ರೀಷಿಯಲ್ ವಲಯದಲ್ಲಿ ವಿಶೇಷ ಸಂದರ್ಭಗಳಲ್ಲಿ ಅನುಮತಿಸಬಹುದಾದ ಉಪಯೋಗಗಳು:-

ಪೂಜಾ ಸ್ಥಳಗಳು, ಪ್ರಾರ್ಥನಾ ಮಂದಿರಗಳು, ಶಾಲೆಗಳು, ಆಸ್ಪತ್ರೆಗಳು, ಉದ್ಯಾನ ಪನ ಹಾಗೂ ತೆರದ ಸ್ಥಳಗಳು, ತೋಟಗಾರಿಕೆ ಉತ್ಪನ್ನಗಳನ್ನು ಸಂಗ್ರಹಿಸುವಿಕೆ ಹಾಗೂ ಮಾರಾಟ ಮಾಡುವಿಕೆ (ಬೆಳೆದ/ತಯಾರಿಸಿದ ಸ್ಥಳಕ್ಕೆ ಸೀಮಿತಗೊಂಡಂತೆ) ವ್ಯವಸಾಯ ಮತ್ತು ಉತ್ಪನ್ನಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಮೆಷಿನ್‌ಗಳ ರಿಪೇರಿ ಮತ್ತು ಸರ್ವೀಸಿಂಗ್, ಗ್ರಾಮಠಾಣದಿಂದ ಗರಿಷ್ಠ 200 ಮೀಟರ್‌ಗೆ ಮಿತಿಗೊಳಿಸಿದಂತೆ ಸ್ವಾಭಾವಿಕ ಬೆಳವಣಿಗೆಗಳಿಗಾಗಿ ವಸತಿ ಬೆಳವಣಿಗೆಗಳು (ರಚನಾ ನಕ್ಷೆಗೆ ಅನುಮೋದನೆ ನೀಡಿದ ದಿನಾಂಕದಿಂದ) ಇರುವ ಗ್ರಾಮಠಾಣದಿಂದ ಗರಿಷ್ಠ 200 ಮೀಟರ್‌ಗೆ ಮಿತಿಗೊಳಿಸಿದ್ದು, ಈ ಕಟ್ಟಡಗಳ ನೆಲ ಮಹಡಿ ಮತ್ತು ಮೊದಲನೆ ಮಹಡಿಗೆ ಮಿತಿಗೊಳಿಸಲ್ಪಟ್ಟಿದೆ.

ಈ ಮೇಲಿನ ಮಾರ್ಪಾಡುಗಳನ್ನು ರಚನಾ ನಕ್ಷೆಯಲಿ ಅಳವಡಿಸುವ ಮೊದಲು, ಸಾರ್ವಜನಿಕರಿಂದ ಸಲಹೆ ಮತ್ತು ಆಕ್ಷೇಪಣೆಗಳು ಏನಾದರೂ ಇದ್ದಲ್ಲಿ ಸಲ್ಲಿಸಲು 30 ದಿನಗಳ ಅವಕಾಶ ನೀಡಿ ಅಂತಿಮ ಕರಡು ರಚನಾ ನಕ್ಷೆಯನ್ನು ಅನುಮೋದನೆಗಾಗಿ ಸರ್ಕಾರಕ್ಕೆ ಸಲ್ಲಿಸಲು, ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ತಿಳಿಸಲಾಗಿತ್ತು.

ಮೇಲೆ (2)ರಲ್ಲಿ ಓದಲಾದ ದಿನಾಂಕ: 4-10-2004ರ ಮತ್ತು 30-12-2004ರ ಪತ್ರಗಳಲ್ಲಿ ಮಹಾನಗರ ಆಯುಕ್ತರು, ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ, ಇವರು ಉಲ್ಲೇಖ -1ರ ಸರ್ಕಾರದ ಆದೇಶದನ್ವಯ, ಕರಡು ರಚನಾ ನಕ್ಷೆಯಲ್ಲಿ ಸೇರಿಸಬೇಕಾಗಿರುವ ಅಂಶಗಳನ್ನು ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಪ್ರಕಟಿಸಿ ಸಾರ್ವಜನಿಕರಿಂದ/ಸಂಸ್ಥೆಗಳಿಂದ

ಆಕ್ಷೇಪಣೆಗಳು/ಸಲಹೆಗಳನ್ನು ಕೋರಲಾಗಿತ್ತೆಂದು ತಿಳಿಸಿ, ಈ ಬಗ್ಗೆ ನಿಗದಿತ ಸಮಯದಲ್ಲಿ ಯಾವುದೇ ಆಕ್ಷೇಪಣೆಗಳನ್ನು ಸ್ವೀಕರಿಸಿಲ್ಲದಿರುವುದರಿಂದ ಉದ್ದೇಶಿತ ಮಾರ್ಪಾಡುಗಳನ್ನು ರಚನಾ ವಲಯ ನಿಯಮಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳಲು ಅವಕಾಶಮಾಡಿ ರಚನಾ ನಕ್ಷೆಗೆ ಅಂತಿಮ ಅನುಮೋದನೆ ನೀಡಲು ಸರ್ಕಾರವನ್ನು ಕೋರಿರುತ್ತಾರೆ.

ಮೇಲೆ (3) ರಲ್ಲಿ ಓದಲಾದ ದಿನಾಂಕ: 2-3-2005ರಂದು ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ ಇವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ತಯಾರಿಸಿರುವ ಕರಡು ರಚನಾ ನಕ್ಷೆಯನ್ನು ಅಂತಿಮಗೊಳಿಸುವ ಸಂಬಂಧ ನಡೆದ ಸಭೆಯಲ್ಲಿ, ಇತ್ತೀಚಿನ IT ಮತ್ತು BT ಪರಿಕಲ್ಪನೆ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ಹಾಗೂ ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ಉದ್ದೇಶಿಸಿದ ಹೈಟೆಕ್ ಸಿಟಿ ಯೋಜನೆಯಿಂದಾಗಿ ಸರ್ಜಾಪುರ ತಾಲ್ಲೂಕು ಪ್ರದೇಶವು ಸಾಕಷ್ಟು ಅಭಿವೃದ್ಧಿಗಳಿಂದ ಕೂಡಿದ್ದು IZ-6 ವಲಯದ ಈ ಪ್ರದೇಶವನ್ನು APZ-5ರ ವಲಯದ ವ್ಯಾಪ್ತಿಗೆ ತರಲು ಹಾಗೂ ಹೊಸಕೋಟೆ ತಾಲ್ಲೂಕಿನ ಪ್ರದೇಶವನ್ನು IZ-6 ವಲಯದಲ್ಲಿಯೇ ಮುಂದುವರಿಸಲು ತೀರ್ಮಾನಿಸಲಾಯಿತು.

ಕರಡು ರಚನಾ ನಕ್ಷೆಗೆ ಯಾವುದೇ ಆಕ್ಷೇಪಣೆಗಳು/ಸಲಹೆಗಳು ನಿಗದಿತ ಸಮಯದಲ್ಲಿ ಸಾರ್ವಜನಿಕರಿಂದ/ ಸಂಸ್ಥೆಗಳಿಂದ ಸ್ವೀಕರಿಸಿಲ್ಲವಾಗಿರುವುದರಿಂದ ಸರ್ಕಾರವು ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಪಶಾಇ 51 ಬಿವಿಂಅರ್ 2002 ಬೆಂಗಳೂರು ದಿನಾಂಕ: 21-9-2005

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಕಾರಣಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶದ ಯೋಜಿತ ಬೆಳವಣಿಗೆಗಾಗಿ ನಗರಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ಸಿದ್ಧಪಡಿಸಿರುವ ರಚನಾ ನಕ್ಷೆಯಲ್ಲಿ ಈ ಕೆಳಕಂಡ ಅಂಶಗಳನ್ನು ಅಳವಡಿಸಿ ಜಾರಿಗೊಳಿಸಲು ಸರ್ಕಾರವು ಮಂಜೂರಾತಿ ನೀಡಿದೆ.

ಅ) ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ತಯಾರಿಸಿರುವ ರಚನಾ ನಕ್ಷೆಯಲ್ಲಿ ಬರುವ ಇಂಟರ್ ಸ್ಟೇಷಿಯಲ್ ವಲಯದಲ್ಲಿ ಅನುಮತಿಸಬಹುದಾದ ಉಪಯೋಗಗಳು:-

ವ್ಯವಸಾಯ, ತೋಟಗಾರಿಕೆ ಮತ್ತು ಕೋಳಿಸಾಕಾಣಿಕೆ, ಹಾಲು ಡೈರಿತ್ಯಾಗಾರಗಳು, ತೋಟಗಳು, ನರ್ಸರಿಗಳು, ಫಾರ್ಮ್ ಪೌಸ್ ಮತ್ತು ತತ್ಸಂಬಂಧ ಕಟ್ಟಡ (ಫ್ಲಿಂತ್ ಏರಿಯಾ 200 ಚ.ಮೀ.ಮೀರದಂತೆ) ಜಮೀನಿನ ವಿಸ್ತೀರ್ಣ 1.2 ಹೆಕ್ಟೆರಿಗೆ ಕಡಿಮೆ ಇರಬಾರದು. ಇಟ್ಟಿಗೆ ಗೂಡುಗಳು, ಗಣಿಗಾರಿಕೆ ಹಾಗೂ ಜೇಡಿಮಣ್ಣು ಮತ್ತು ಕಲ್ಲುಗಳನ್ನು ತೆಗೆಯುವುದು (ಗರಿಷ್ಠ 3 ಆಡಿ ಆಳಕ್ಕೆ ಮಿತಿಗೊಳಿಸಿದೆ), ಹೆದ್ದಾರಿ ಸೌಲಭ್ಯಗಳಾದ ಪೆಟ್ರೋಲ್ ಬಂಕ್, ಬೆಬ್ರಿಡ್ಜ್‌ಗಳು ಮತ್ತು ಟೆಕ್‌ಪೋಸ್ಟ್‌ಗಳು.

ಆ) ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ತಯಾರಿಸಿರುವ ರಚನಾ ನಕ್ಷೆಯಲ್ಲಿ ಬರುವ ಇಂಟರ್ ಸ್ಟೇಷಿಯಲ್ ವಲಯದಲ್ಲಿ ವಿಶೇಷ ಸಂದರ್ಭಗಳಲ್ಲಿ ಅನುಮತಿಸಬಹುದಾದ ಉಪಯೋಗಗಳು:-

ಪೂಜಾಸ್ಥಳಗಳು, ಪ್ರಾರ್ಥನಾ ಮಂದಿರಗಳು, ಶಾಲೆಗಳು, ಆಸ್ಪತ್ರೆಗಳು, ಉದ್ಯಾನವನ ಹಾಗೂ ತೆರೆದ ಸ್ಥಳಗಳು, ತೋಟಗಾರಿಕೆ ಉತ್ಪನ್ನಗಳನ್ನು ಸಂಗ್ರಹಿಸುವಿಕೆ ಹಾಗೂ ಮಾರಾಟ ಮಾಡುವಿಕೆ (ಬೆಳೆದ/ತಯಾರಿಸಿದ ಸ್ಥಳಕ್ಕೇ ಮಿತಗೊಂಡಂತೆ). ವ್ಯವಸಾಯ ಮತ್ತು ಉತ್ಪನ್ನಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಮೆಷಿನ್ನುಗಳ ರಿಪೇರಿ ಮತ್ತು ಸರ್ವೀಸಿಂಗ್, ಗ್ರಾಮಠಾಣದಿಂದ ಗರಿಷ್ಠ 200 ಮೀಟರ್‌ಗೆ ಮಿತಿಗೊಳಿಸಿದಂತೆ ಸ್ಥಾನಿಕ ಬೆಳವಣಿಗೆಗಾಗಿ ವಸತಿ ಬೆಳವಣಿಗೆಗಳು (ರಚನಾ ನಕ್ಷೆಗೆ ಅನುಮೋದನೆ ನೀಡಿದ ದಿನಾಂಕದಿಂದ) ಇರುವ ಗ್ರಾಮಠಾಣದಿಂದ ಗರಿಷ್ಠ 200 ಮೀಟರ್‌ಗೆ ಮಿತಿಗೊಳಿಸಿದ್ದು ಈ ಕಟ್ಟಡಗಳ ನೆಲ ಮಹಡಿ ಮತ್ತು ಮೊದಲನೆ ಮಹಡಿಗೆ ಮಿತಿಗೊಳಿಸಲ್ಪಟ್ಟಿದೆ.

ನಗರದ ಯೋಜನಾತ್ಮಕ ಬೆಳವಣಿಗೆ ಮತ್ತು ಆಡಳಿತಾತ್ಮಕ ಹಿತದೃಷ್ಟಿಯಿಂದ IZ-6ರಲ್ಲಿನ ಸರ್ಜಾಪುರ ಹೋಬಳಿಗೆ ಸೀಮಿತಗೊಂಡಂತೆ ಬರುವ ಪ್ರದೇಶವನ್ನು APZ-5ಕ್ಕೆ ಒಳಪಡಿಸಿ ಮತ್ತು ಹೊಸಕೋಟೆ ತಾಲ್ಲೂಕಿಗೆ ಸೇರಿದ IZ-6 ಪ್ರದೇಶವನ್ನು ಹಾಗೆಯೇ ಉಳಿಸಿಕೊಳ್ಳಲು ಸರ್ಕಾರ ಆದೇಶಿಸಿದೆ.

ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಎಲ್ಲಾ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರಾಧಿಕಾರಗಳು ಈ ಅಂತಿಮವಾಗಿ ಅನುಮೋದಿತ ರಚನಾ ನಕ್ಷೆಯ ಆಧಾರದ ಮೇಲೆ ತಮ್ಮ ತಮ್ಮ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರದೇಶಕ್ಕೆ ಸ್ಥೂಲಾಭಿವೃದ್ಧಿ ಯೋಜನೆ/ವ್ಯಾಪಕಾಭಿವೃದ್ಧಿ ಯೋಜನೆ/ಪರಿಷ್ಕೃತ ವ್ಯಾಪಕಾಬಿವೃದ್ಧಿ ಯೋಜನೆಗಳನ್ನು ಕ್ರರಿತವಾಗಿ ಸಿದ್ಧಪಡಿಸಲು ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಬಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ನೆರವಿನೊಂದಿಗೆ ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಪರವಾಗಿ

-ಸಹಿ/-
(ವಿ.ಆರ್/ ಇಲಕಲ್)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ
ನಗರಾಬಿವೃದ್ಧಿ ಇಲಾಖೆ

PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA

Subject: Final approval to the Draft Structure Plan prepared for the jurisdiction of the Bangalore Metropolitan Region Development Authority.

Read:
1. Government Order No. UDD 51 BMR 2002 dated 2-6-2004.
2. D.O. Letters No. BMRDA/TP/BMR/SKR/GHK/003/99-2002 dated 4-1-2004 and dated 30-12-2004 of the Metropolitan Commissioner, Bangalore Metropolitan Region Development Authority.
3. Proceedings of the Meeting held on 2-3-2005 under the chairmanship of Principal Secretary to Government, Urban Development Department.

Preamble:
Government had, vide the Order dated 2-6-2004 cited at (1) above, accorded provisional approval to the Draft Structure Plan prepared by the Bangalore Metropolitan Region Development Authority in its 10th Meeting held on 29-7-1999 for the balanced planned development of the Bangalore Metropolitan Region, with the following modifications:

Uses that could be permitted in the Interstitial Zones falling under the Structure Plan prepared for the jurisdiction of the Bangalore Metropolitan Region Development Authority:-
Agriculture, horticulture, poultry farming, cold storages for milk, horticultural plantations, nurseries, farm houses and related buildings (Plinth Area not exceeding 200 square metres) with plot size not less than 1.20 hectares, brick kilns, mining, excavation of top soil and quarying of stones (subject to a maximum depth of 3 feet), facilities related to highways such as petrol bunks, weighbridges and check posts.

Uses that could be permitted in the Interstitial Zones falling under the Structure Plan prepared for the jurisdiction of the Bangalore Metropolitan Region Development Authority under special circumstances:-
Places of worship, prayer halls, schools, hospitals, parks and open spaces, collection and sale of horticultural produce (limited to the places of cultivation/ production), repair and service of machinery relating to agricultural production, residential developments limited to 200 metres from the gram thana (as defined on the date of approval of the Structure Plan) for the natural growth of the gram thana and such buildings in the limit of 200 metres from the existing gram thana should be limited to ground floor and first floor.

The Bangalore Metropolitan Region Development Authority was informed to invite suggestions and objections, if any, from the general public giving 30 days time before incorporating the above changes in the Structure Plan to submit the final Draft Structure Plan to the Government for approval.

Metropolitan Commissioner, Bangalore Metropolitan Region Development Authority has in his letters dated 4-1-2004 and dated 30-12-2004 cited (2) above, informed that suggestions and objections were invited from the general public/ institutions by publishing in the Gazette of Karnataka and no objections were received in this respect during the prescribed period and, therefore, the intended modifications may be incorporated in the zoning regulations and has requested the Government for according final approval to the Structure Plan points to be incorporated in the Draft Structure Plan.

In the Meeting held on 2-3-2005 under the chairmansip of Principal Secretary to Government, Urban Development Department to finalise the Draft Structure Plan prepared for the Bangalore Metropolitan Region Development Authority. it was decided, in the context of the recent IT and

BT perspective and the High Tech City Plan mooted by the Bangalore Development Authority and the consequent large scale development prospect of Sarjapur taluk area, that this area should be brought from IZ-6 zone to APZ-5 zone and that the area of Hosakote taluk should continue to be in IZ-6 zone.

In the absence of any suggestions/ objections received from the general public/ institutions to the Draft Structure Plan during the prescribed period, Government now orders as follows.

Government Order No. UDD 51 BMR 2002, Bangalore dated 21-9-2005

In the background of the reasons explained in the Preamble, Government hereby approves the Structure Plan prepared for a planned development of the Bangalore Metropolitan Region, after incorporating the following conditions.

Uses that could be permitted in the Interstitial Zones falling under the Structure Plan prepared for the jurisdiction of the Bangalore Metropolitan Region Development Authority:-
Agriculture, horticulture, poultry, cold storages for milk, plantations, nurseries, farm houses and related buildings (Plinth Area not exceeding 200 square metres) with plot size not less than 1.20 hectares, brick kilns, mining, excavation of top soil and quarying of stones (subject to a maximum depth of 3 feet), facilities related to highways such as petrol bunks, weighbridges and check posts.

Uses that could be permitted in the Interstitial Zones falling under the Structure Plan prepared for the jurisdiction of the Bangalore Metropolitan Region Development Authority under special circumstances:-
Places of worship, temples of prayers, schools, hospitals, parks and open spaces, collection and sale of horticultural produce (limited to the places of cultivation/ production), repair and service of machinery relating to agricultural production, natural growth of residential areas limited to 200 metres from the gram thana (from the date of approval of the Structure Plan), such buildings in the limit of 200 metres from the existing gram thana should be limited to ground floor and first floor.

For a planned development of the city and for administrative reasons, the area of IZ-6 that falls under the Sarjapur Hobli should be included in APZ-5, while the part of IZ-6 that falls under the Hosakote taluk should continue to remain in the same zone (IZ-6).

All the Local Planning Authorities coming in the jurisdiction of the Bangalore Metropolitan Region Development Authority should take action to prepare the Outline Development Plans/ Comprehensive Development Plans for their respective planning areas based upon this finally approved Structure Plan with the help of the Bangalore Metropolitan Region Development Authority.

BY ORDER AND IN THE NAME OF THE GOVERNOR OF KARNATAKA

-sd-
(V.R. Ilkal)
Under Secretary to Government
Urban Development Department

ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಸಚಿವಾಲಯ

ಅಧಿಸೂಚನೆ

ಸಂಖ್ಯೆ ಸಂವ್ಯಶಾಇ 10 ಶಾಸನ 2004, ಬೆಂಗಳೂರು, ದಿನಾಂಕ 23ನೇ ಮಾರ್ಚ್, 2005

ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ (ತಿದ್ದುಪಡಿ) ವಿಧೇಯಕ, 2005ಕ್ಕೆ 2005ರ ಮಾರ್ಚ್ ಮಾಹೆಯ 23ನೇ ದಿನಾಂಕದಂದು ರಾಜ್ಯಪಾಲರ ಒಪ್ಪಿಗೆ ದೊರೆತಿದ್ದು, ಸಾರ್ವಜನಿಕ ತಿಳುವಳಿಕೆಗಾಗಿ ಇದನ್ನು 2005ರ ಕರ್ನಾಟಕ ಅಧಿನಿಯಮ ಸಂಖ್ಯೆ 08 ಎಂದಾಗಿ ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರದಲ್ಲಿ ಪ್ರಕಟಿಸಬೇಕೆಂದು ಆದೇಶಿಸಲಾಗಿದೆ.

2005 ರ ಕರ್ನಾಟಕ ಅಧಿನಿಯಮ ಸಂಖ್ಯೆ 08

(2005 ರ ಮಾರ್ಚ್ ಇಪ್ಪತ್ತೊಮ್ಮರನೇ ದಿನಾಂಕದಂದು ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರದ ವಿಶೇಷ ಸಂಚಿಕೆಯಲ್ಲಿ ಮೊದಲು ಪ್ರಕಟವಾಗಿದೆ)

ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ (ತಿದ್ದುಪಡಿ) ಅಧಿನಿಯಮ, 2005

(2005ರ ಮಾರ್ಚ್ ಇಪ್ಪತ್ತೊಮ್ಮರನೇ ದಿನಾಂಕದಂದು ರಾಜ್ಯಪಾಲರ ಅನುಮೋದನೆಯನ್ನು ಪಡೆಯಲಾಗಿದೆ)

ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಅಧಿನಿಯಮ, 1985ನ್ನು ಮತ್ತಷ್ಟು ತಿದ್ದುಪಡಿ ಮಾಡಲು ಒಂದು ನಿಯಮ:

ಈ ಕ್ಷಣ ಇನ್ನು ಮುಂದೆ ಕಂಡುಬರುವ ಉದ್ದೇಶಗಳಿಗಾಗಿ ಬೆಂಗಳೂರು ಪ್ರದೇಶ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಅಧಿನಿಯಮ, 1985ನ್ನು(1985 ರ ಕರ್ನಾಟಕ ಅಧಿನಿಯಮ 38) ಮತ್ತಷ್ಟು ತಿದ್ದುಪಡಿ ಮಾಡುವುದು ಯುಕ್ತವಾಗಿರುವುದರಿಂದ :

ಇದು ಭಾರತ ಗಣರಾಜ್ಯದ ಐವತ್ತಾರನೇ ವರ್ಷದಲ್ಲಿ ಕರ್ನಾಟಕ ರಾಜ್ಯ ವಿಧಾನ ಮಂಡಲದಿಂದ ಈ ಮುಂದಿನಂತೆ ಅಧಿನಿಯಮಿತವಾಗಿದೆ, ಎಂದರೆ :

1. ಸಂಕ್ಷಿಪ್ತ ಹೆಸರು ಮತ್ತು ಪ್ರಾರಂಭ : (1) ಈ ಅಧಿನಿಯಮವನ್ನು ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ (ತಿದ್ದುಪಡಿ) ಅಧಿನಿಯಮ, 2005 ಎಂದು ಕರೆಯತಕ್ಕದ್ದು.

(2) ಇದು ಈ ಕೂಡಲೇ ಜಾರಿಗೆ ಬರತಕ್ಕದ್ದು.

2. 2ನೇ ಪ್ರಕರಣದ ತಿದ್ದುಪಡಿ : ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಅಧಿನಿಯಮ, 1985 ರ 2ನೇ ಪ್ರಕರಣ (ಸಿ) ಖಂಡದಲ್ಲಿ ಜೋಳಾರ ಜಿಲ್ಲೆಯ ಮಾಲೂರು ತಾಲ್ಲೂಕು ಎಂಬಲ್ಲಿಗಳಿಗೆ ಬೆಂಗಳೂರು ಗ್ರಾಮಾಂತರ ಜಿಲ್ಲೆ ಎಂಬಲ್ಲಿಗಳನ್ನು ಪ್ರತಿಯೋಜಿಸತಕ್ಕದ್ದು.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ

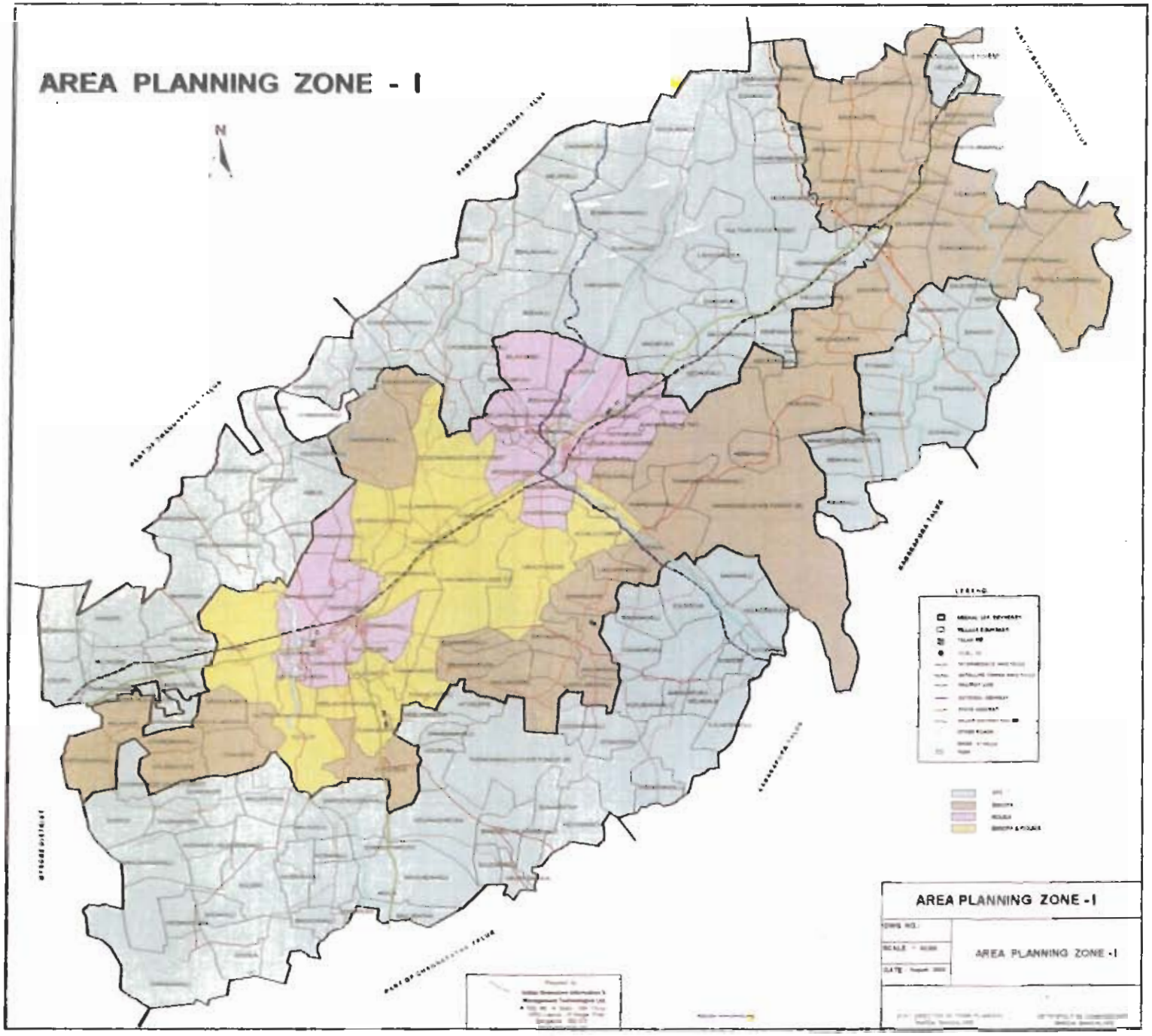
ಆ. ದಕ್ಷಿಣಾಮೂರ್ತಿ
ಸರ್ಕಾರದ ಕಾರ್ಯದರ್ಶಿ
ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಇಲಾಖೆ

BASIC FACTS ABOUT LOCAL PLANNING AREAS IN B.M.R

Sl. No.	Name of LPA	Govt Notification of LPA	Taluks covered	Number of Villages	Area in Hectares (As Per Census)
1	Anekal (APZ – 5)	03-03-2006	Anekal (Part)	170	38,216.49
2	BIAAPA (APZ – 3)	14-05-1997 (Revised)	Devanahalli, Doddaballapur (Part) B'lore North (Part)	347	79,500.00
3	Hosakote (APZ – 4, IZ – 5, IZ – 6)	03-03-2006	Hoskote, Bangalore East (Part)	316	60,397.37
4	Kanakapura (IZ – 1, Part)	12-07-1999	Kanakapura (Part), Bangalore South (Part)	87	41,278.35
5	Magadi (IZ – 2 Part)	20-03-1997	Magadi (Part) Bangalore South (Part)	162	48,700.00
6	Nelamangala (APZ – 2, IZ – 2, Part & IZ – 3, Part)	27-01-1997	Nelamangala, Magadi (Part), Bangalore North (Part)	345	85,795.97

Area Planning Zone – 1

1	RCUDA (APZ – 1, Part)	13-07-1999	Ramanagar (Part) Channapatna (Part)	-	-
2	BMICAPA (APZ – 1, Part)	13-07-1999	Bangalore South (Part) Ramanagar, (Part) and Channapatna (Part)	109	45,789.24
3	BMRDA (APZ – 1, Part)	- N.A -	Ramanagar (Part) Channapatna (Part)		


AREA PLANNING ZONE - I
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AREA PLANNING ZONE -I

LIST OF VILLAGES IN AREA PLANNING ZONE - 1

CHANNAPATNA TALUK (PART) AND RAMANAGARAM TALUK (PART), BANGALORE RURAL DISTRICT

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
1	2921000702252100	Abbur	624.54	753.40	KASABA (CHANNAPATNA)	1880
2	2921000702255300	Agrahara Valagerehalli	409.15	408.36	VEERUPAKSHIPURA	201
3	2921000702255800	Akkur	307.37	306.50	VEERUPAKSHIPURA	2440
4	2921000702249100	Anigere	510.76	348.14	MALUR	1443
5	2921000702255200	Ankushanahalli	474.95	450.80	VEERUPAKSHIPURA	2440
6	2921000702254800	Attiguppe	238.99	208.04	KASABA (CHANNAPATNA)	1583
7	2921000702255500	Avverahalli	330.57	256.81	VEERUPAKSHIPURA	1062
8	2921000702257100	Ballapatna	236.97	209.10	VEERUPAKSHIPURA	1286
9	2921000702257400	Banagahalli	195.15	209.33	VEERUPAKSHIPURA	341
10	2921000702256300	Banduru Valagerehalli	301.94	349.32	VEERUPAKSHIPURA	
11	2921000702251200	Chakkalur	415.84	399.48	MALUR	317
12	2921000702251500	Chikkenahalli	464.78	448.59	KASABA (CHANNAPATNA)	2892
13	2921000702247000	Dasavara	420.36	496.55	MALUR	1304
14	2921000702249000	Devarahalli	230.74	245.82	MALUR	
15	2921000702249400	Dhabanagunda	127.93	107.15	MALUR	2821
16	2921000702255100	Doddanahalli	182.11	209.97	KASABA (CHANNAPATNA)	905
17	2921000702256400	Dyavapatna	393.86	316.05	VEERUPAKSHIPURA	696
18	2921000702257800	Garakahalli	1172.15	1206.41	VEERUPAKSHIPURA	1834
19	2921000702255700	Hosahalli	144.35	192.86	VEERUPAKSHIPURA	1715
20	2921000702250200	Kadukothanahalli Plantation	250.35	59.43	MALUR	550
21	2921000702254600	Kodipura	243.85	250.12	KASABA (CHANNAPATNA)	509
22	2921000702249300	Koluru	280.22	370.81	MALUR	801
23	2921000702250800	Koomagere State Forest	239.56	242.62	MALUR	257
24	2921000702257700	Krishnapura	224.47	225.86	VEERUPAKSHIPURA	711
25	2921000702250700	Kukkur	464.58	483.23	MALUR	1580
26	2921000702255600	Malagalu	229.63	265.58	VEERUPAKSHIPURA	3647
27	2921000702251300	Malurpatna	540.22	597.74	MALUR	365
28	2921000702257000	Mangadahalli	972.78	723.59	VEERUPAKSHIPURA	1801
29	2921000702248900	Mankunda	717.06	507.59	MALUR	1069
30	2921000702250300	Mathikere	117.71	136.16	MALUR	
31	2921000702251600	Mogenahalli	450.20	481.50	KASABA (CHANNAPATNA)	181
32	2921000702249500	Mudigere	474.66	468.27	MALUR	1578
33	2921000702250400	Mudigere Plantation	22.06	67.57	MALUR	859

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
34	2921000702251700	Mylanayakanahalli	708.72	702.27	KASABA (CHANNAPATNA)	1707
35	2921000702255900	Nagapura	53.15	131.84	VEERUPAKSHIPURA	1112
36	2921000702254500	Neelasandra	235.99	228.18	KASABA (CHANNAPATNA)	503
37	2921000702251900	Patlu	269.95	298.54	KASABA (CHANNAPATNA)	1210
38	2921000702257600	Sadahalli	212.15	217.52	VEERUPAKSHIPURA	2828
39	2921000702254700	Sanabanahalli	119.32	130.35	KASABA (CHANNAPATNA)	2321
40	2921000702254200	Santhemogenahalli	492.19	423.83	KASABA (CHANNAPATNA)	2
41	2921000702249200	Seebanahalli	465.96	373.70	MALUR	1383
42	2921000702249600	Settihalli	246.37	246.98	MALUR	2619
43	2921000702257500	Sogala	837.37	849.53	VEERUPAKSHIPURA	901
44	2921000702256000	Somanathapura	85.24	39.24	VEERUPAKSHIPURA	1214
45	2921000702256900	Soudahalli	159.41	217.52	VEERUPAKSHIPURA	1593
46	2921000702255400	Sulleri	1333.55	1150.29	VEERUPAKSHIPURA	1487
47	2921000702251800	Thore Hosur	217.74	40.32	KASABA (CHANNAPATNA)	306
48	2921000702251100	Thubinakere	239.18	199.10	MALUR	1344
49		Vidyasandra	498.16		VEERUPAKSHIPURA	477
50	2921000702256100	Virupakshipura	890.66	821.43	VEERUPAKSHIPURA	388
51	2921000702256800	Virupasandra	133.62	127.30	VEERUPAKSHIPURA	408
52	2921000702252200	Yelehosahalli	174.32	199.23	KASABA (CHANNAPATNA)	
	Total		**19782.91**	**18399.92**		

RAMANAGARAM TALUK, BANGALORE RURAL DISTRICT

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
W	2921000602242300	Abbanakuppe	377.58	368.52	BIDADI	1882
54	2921000602246000	Ammanapura	127.22	126.85	KAILANCHA	506
55	2921000602245000	Ankanahalli	359.24	355.28	KAILANCHA	4485
56	2921000602243800	Annahalli	418.13	310.99	KAILANCHA	1386
57	2921000602235200	Anumanahalli	277.72	283.82	KUTAGAL	702
58	2921000602235700	Arehalli	892.71	917.20	KUTAGAL	1435
59	2921000602241300	Baleveeranahalli	107.59	102.10	BIDADI	1190
60	2921000602242400	Bannigiri	488.46	487.45	BIDADI	
61	2921000602243600	Bennahalli	338.28	295.19	KAILANCHA	782
62	2921000602240100	Bidadi	206.68	173.74	BIDADI	113
63	2921000602236000	Bommachanahalli	909.30	893.98	KASABA (RAMANAGARA)	632
64	2921000602239500	Borehalli	134.65	132.91	BIDADI	2271
65	2921000602242100	Byramangala	625.67	547.56	BIDADI	
66	2921000602235600	Chowdeshwarihalli	735.17	140.27	KUTAGAL	814

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
67	2921000602237900	Dharapura	140.55	151.97	KASABA (RAMANAGARA)	3405
68	2921000602238300	Ganakallu	194.89	204.15	BIDADI	628
69	2921000602242000	Gopahalli	612.69	882.08	BIDADI	1850
70	2921000602235900	Hagalahalli	1060.46	1037.39	KASABA (RAMANAGARA)	1239
71	2921000602236300	Harisandra	1525.42	1580.77	KASABA (RAMANAGARA)	283
72	2921000602238900	Hejjala	361.24	332.56	BIDADI	1044
73	2921000602245600	Hosadoddi	386.40	419.57	KAILANCHA	386
74	2921000602246300	Hulikeregunnur	1010.20	1002.42	KAILANCHA	1002
75	2921000602239800	Hulthar State Forest	1348.53	1335.82	BIDADI	1
76	2921000602234500	Ibbalakahalli	483.00	479.93	KUTAGAL	985
77	2921000602242200	Ittamadu	465.18	504.71	BIDADI	2966
78	2921000602241700	Ivagilu	74.69	71.89	BIDADI	347
79	2921000602246200	K.G.Hosahalli	383.44	307.59	KAILANCHA	1310
80	2921000602239600	Kakaramanahalli	240.34	222.92	BIDADI	1097
81	2921000602239900	Kallugopahalli	253.95	257.78	BIDADI	1465
82	2921000602245400	Kavanapura	381.51	394.39	KAILANCHA	1480
83	2921000602238400	Kempadyapanahalli	203.74	236.45	BIDADI	3670
84	2921000602238100	Kempanahalli	208.64	202.46	KASABA (RAMANAGARA)	1365
85	2921000602240000	Kenchanakuppe	471.97	413.28	BIDADI	2074
86	2921000602236600	Keshavapura	96.49	102.55	KASABA (RAMANAGARA)	520
87	2921000602237700	Kethohalli	562.74	587.67	KASABA (RAMANAGARA)	2787
88	2921000602246500	Kotahalli	188.12	137.78	KAILANCHA	1542
89	2921000602245900	Kurubarahalli	293.55	295.48	KAILANCHA	1659
90	2921000602235000	Kutagal	735.00	753.60	KUTAGAL	923
91	2921000602235300	Kyasapura	457.33	376.46	KUTAGAL	3136
92	2921000602244900	Kylancha	506.53	453.74	KAILANCHA	2195
93	2921000602236200	Lakkasandra	112.73	177.74	KASABA (RAMANAGARA)	1589
94	2921000602234300	Lakshmipura	732.35	763.56	KUTAGAL	6267
95	2921000602237800	Madapura	404.44	393.66	KASABA (RAMANAGARA)	2984
96	2921000602243500	Manchegowdanapalya	132.89	358.97	KAILANCHA	2479
97	2921000602238000	Mayaganahalli	480.93	475.12	KASABA (RAMANAGARA)	37
98	2921000602234400	Melehalli	745.88	706.07	KUTAGAL	1479
99	2921000602239700	Muddapura Karenahalli	626.64	605.23	BIDADI	1663
100	2921000602243900	Nagohalli	377.62	447.59	KAILANCHA	473
101	2921000602246100	Nelamala	183.74	187.02	KAILANCHA	1638
102	2921000602241900	Ramanahalli	423.18	367.76	BIDADI	20
103	2921000602235100	Shanubhoganahalli	521.34	497.33	KUTAGAL	720

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
104	2921000602246400	Subkere	144.32	140.36	KAILANCHA	1759
105	2921000602236100	Sugganahalli	1088.20	917.84	KASABA (RAMANAGARA)	3082
106	2921000602245800	Thenginakallu	295.30	252.49	KAILANCHA	1281
107	2921000602245700	Thenginakallu State Forest	2316.98	2579.92	KAILANCHA	149
108	2921000602234600	Yerehalli	520.25	545.04	KUTAGAL	1073
109	2921000602241200	Yerepalya	93.42	92.35	BIDADI	543
	Total		**27845.19**	**27389.32**		
	Grand Total		**47628.11**	**45789.24**		

(SOURCE : CENSUS OF INDIA, BANGALORE RURAL & URBAN DISTRICTS)

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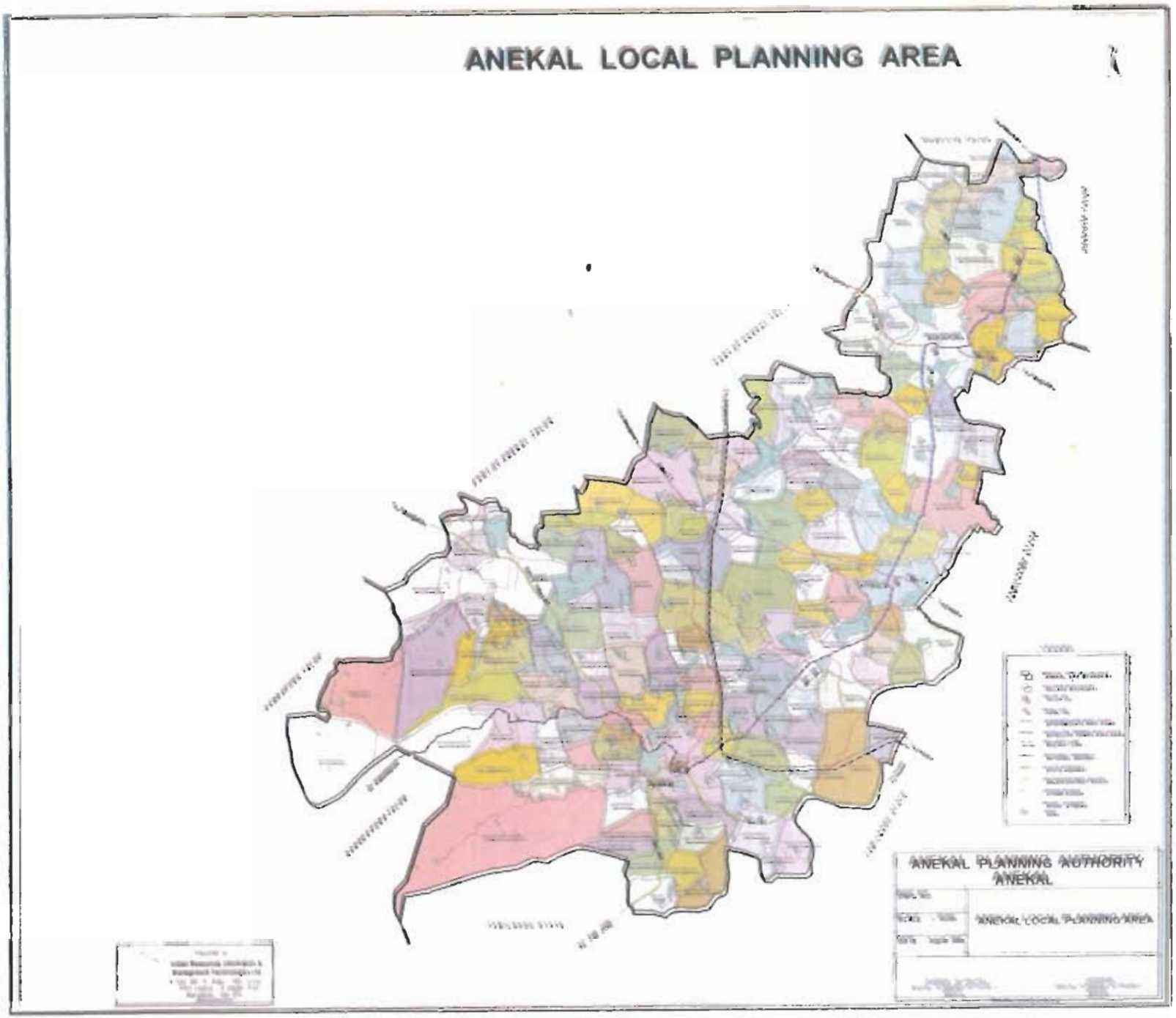
List as on 10-8-2006

ANEKAL LOCAL PLANNING AREA



LIST OF VILLAGES IN ANEKAL LOCAL PLANNING AREA (APZ - 5)

ANEKAL TALUK (Part), BANGALORE URBAN DISTRICT						
SL No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
1	2920000302095100	A Medihalli	136.9968		KASABA(ANEKAL)	498
2	2920000302087100	Adigarakallahalli	271.3284	282.70	SARJAPURA	2066
3	2920000302091300	Adigondanahalli	161.9079	176.61	ATTIBELE	1219
4	2920000302094200	Adur	132.2347	151.57	KASABA(ANEKAL)	636
5	2920000302095000	Agasa Thimmanahalli	131.9989	130.80	KASABA(ANEKAL)	17
6	2920000302084200	Ali Bommasandra	119.1200	102.96	SARJAPURA	575
7	2920000302078400	Amani Bidarakere (B)	17.3700	17.15	JIGANI	25
8	2920000302096700	Amani Doddakere (B)	16.0261	35.74	KASABA(ANEKAL)	24
9	2920000302090000	Andapura	100.6239	380.26	ATTIBELE	155
10	2920000302096900	ANEKAL - Rural	808.0881	910.65	ANEKAL - TMC	349
11	2920000342019000	ANEKAL - TMC	19.1820	19.18	ANEKAL - TMC	33157
12	2920000302099000	Aravantigepura	60.2756	64.49	KASABA(ANEKAL)	281
13	2920000302092600	Arehalli	140.9053	141.45	ATTIBELE	665
14	2920000302093000	Arenur	152.3718	156.29	ATTIBELE	612
15	2920000302093400	Attibele	438.1252	433.70	ATTIBELE	10559
16	2920000302096500	Avadadenahalli	150.5527	150.36	KASABA(ANEKAL)	513
17	2920000302094600	Bagganadoddi	576.9393	156.02	KASABA(ANEKAL)	474
18	2920000302090900	Balagaranahalli	134.1360	140.50	ATTIBELE	2262
19	2920000302093500	Ballur	400.3074	437.30	ATTIBELE	3580
20	2920000302088500	Banahali	96.9196	120.36	SARJAPURA	1109
21	2920000302090600	Banahalli	109.9899	89.14	ATTIBELE	2071
22	2920000302080600	Bande Nalla Sandra	163.6155	168.56	JIGANI	645
23	2920000302091200	Bendiganahalli	116.2605	123.11	ATTIBELE	274
24	2920000302099100	Bestammanahalli	191.3498	185.57	KASABA(ANEKAL)	716
25	2920000302092500	Bhaktipura	138.3258	142.60	ATTIBELE	378
26	2920000302099300	Bidaragere	270.4435	274.90	KASABA(ANEKAL)	900
27	2920000302093100	Bidaraguppe	581.1886	587.47	ATTIBELE	2850
28	2920000302097300	Bidarakadahalli (B)	152.3898	124.74	KASABA(ANEKAL)	
29	2920000302086300	Bikkanahalli	266.0791	277.01	SARJAPURA	874

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
30		Bilchikkanahalli		49.09	SARJAPURA	
31	2920000302087200	Billapura	140.7800	142.96	SARJAPURA	848
32	2920000302081000	Bommandahalli	245.3062	232.83	JIGANI	662
33	2920000342018000	Bommasandra	474.2003	465.59	ATTIBELE	7614
34	2920000302078600	Bukkasagara	584.9817	606.94	JIGANI	1258
35	2920000302087300	Buragunte	127.8081	125.14	SARJAPURA	361
36	2920000302095800	Byagadadenahalli	112.2893	138.20	KASABA(ANEKAL)	511
37	2920000302087000	Byalahalli	76.7406	91.98	SARJAPURA	67
38	2920000302085700	Chambenahalli	181.5212	241.40	SARJAPURA	953
39	2920000302090300	Chandapura	232.8724	225.57	ATTIBELE	1721
40	2920000302099500	Channena Agrahara	139.1165	129.55	KASABA(ANEKAL)	258
41	2920000302098900	Chikka Hagade	126.7865	162.76	KASABA(ANEKAL)	650
42	2920000302094900	Chikka Hosahalli	281.9674	260.42	KASABA(ANEKAL)	1187
43	2920000302087700	Chikkadasarahalli	127.8932	120.37	SARJAPURA	412
44	2920000302086100	Chikkadunnasandra	167.1033	166.93	SARJAPURA	20
45	2920000302093200	Chikkanahalli	105.9598	118.76	ATTIBELE	280
46	2920000302094400	Chikkanahalli	88.9128	94.46	KASABA(ANEKAL)	285
47	2920000302098200	Chikkanahatti (B)	71.1629	43.42	KASABA(ANEKAL)	11
48	2920000302084500	Chikkathimmasandra	114.3472	110.15	SARJAPURA	278
49	2920000302097000	Chudenahalli	60.0275	48.66	KASABA(ANEKAL)	558
50	2920000302092400	Dasanapura	166.0331	147.43	ATTIBELE	1129
51	2920000302088400	Deshapande Guttahalli	117.6862	104.08	SARJAPURA	45
52	2920000302095600	Dodda Hagade	193.0019	170.11	KASABA(ANEKAL)	770
53	2920000302089000	Doddathimmasandra	198.9227	207.04	SARJAPURA	699
54	2920000302081300	Dyavasandra	102.5363	92.43	JIGANI	295
55	2920000302098300	Geratiganabele	252.2832	277.77	KASABA(ANEKAL)	1049
56	2920000302079200	Giddenahalli	131.2923	138.11	JIGANI	318
57	2920000302092800	Giddenahalli (B)	64.8774	63.19	ATTIBELE	
58	2920000302087800	Gonighattapura	228.7637	225.15	SARJAPURA	689
59	2920000302084600	Gopasandra	177.1039	174.99	SARJAPURA	552
60	2920000302095200	Gowrenahalli	99.7194	96.89	KASABA(ANEKAL)	1635
61	2920000302091400	Guddahatti	150.2997	150.35	ATTIBELE	1333

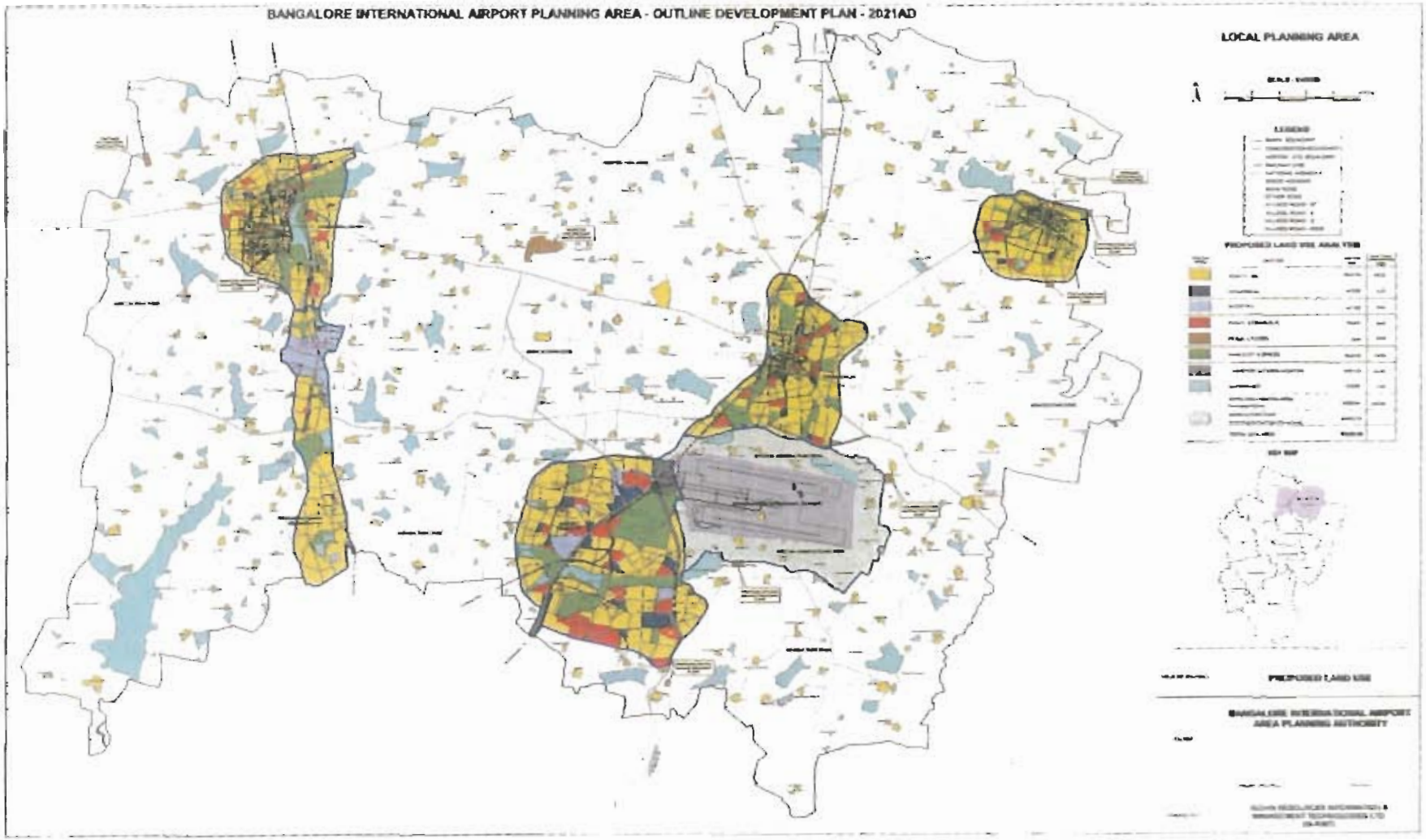
Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
62	2920000302089300	Gudighattanahalli (B)	188.5490	211.49	SARJAPURA	10
63	2920000302098100	Gudnahalli	291.0008	257.97	KASABA(ANEKAL)	657
64	2920000302098700	Haldenahalli	150.3820	142.16	KASABA(ANEKAL)	1031
65	2920000302092200	Halehalli	268.7112	282..21	ATTIBELE	808
66	2920000302086500	Handenahalli	247.4462	250.34	SARJAPURA	1485
67	2920000302080700	Haragadde	385.5099	403.24	JIGANI	3493
68	2920000302078500	Harapanahalli	210.0558	213.85	JIGANI	929
69	2920000302096800	Hasaruvani (B)	106.3729	77.01	KASABA(ANEKAL)	35
70	2920000302090200	Heelalige	267.9388	104.51	ATTIBELE	1440
71	2920000302081900	Hennagara	119.4940	134.04	JIGANI	1761
72	2920000302081700	Hinnakki	302.2401	243.06	JIGANI	1078
73	2920000302098000	Hompalaghatta	225.7608	151.94	KASABA(ANEKAL)	536
74	2920000302095300	Honnakalasapura	124.6083	143.00	KASABA(ANEKAL)	364
75	2920000302082000	Hosahalli	99.7697	99.68	JIGANI	638
76	2920000302079800	I.Bingipura	47.1477	59.64	JIGANI	19
77	2920000302090700	Iggalur	381.4663	248.25	ATTIBELE	1524
78	2920000302093300	Indlabele	321.6597	333.23	ATTIBELE	890
79	2920000302094500	Indlawadi	390.0881	404.50	KASABA(ANEKAL)	1730
80	2920000302094700	Indlawadipura	395.8037	391.96	KASABA(ANEKAL)	569
81	2920000302091700	Itchangur	173.7691	177.44	ATTIBELE	1754
82	2920000302087500	Ittangur	186.6293	181.07	SARJAPURA	685
83	2920000302088000	Janthagondanahalli	125.6946	140.22	SARJAPURA	628
84	2920000302092900	Jigala	332.9698	349.08	ATTIBELE	1245
85	2920000302079500	Jigani	961.1591	761.15	JIGANI	7871
86	2920000302082100	Kachanaikanahalli	203.3588	212.21	JIGANI	2231
87	2920000302086000	Kadagrahara	96.5379	98.53	SARJAPURA	395
88	2920000302079100	Kadajakkanahalli	375.5474	418.69	JIGANI	669
89	2920000302097400	Kalanaikanahalli	193.3968	170.47	KASABA(ANEKAL)	239
90	2920000302078700	Kalbalu	220.9047	230.91	JIGANI	815
91	2920000302088800	Kamanahalli	101.5688	231.60	SARJAPURA	506
92	2920000302091900	Kamblipura	70.2408	63.58	ATTIBELE	594
93	2920000302089800	Kammasandra	248.2177	243.73	ATTIBELE	2549

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
94	2920000302096600	Kammasandra Agrahara	172.9922	186.32	KASABA(ANEKAL)	408
95	2920000302099200	Karpur	192.7654	206.62	KASABA(ANEKAL)	1172
96	2920000302098800	Kaval Hosahalli	100.6524	95.28	KASABA(ANEKAL)	1238
97	2920000302095500	Kempavaderahalli	62.1122	64.07	KASABA(ANEKAL)	201
98	2920000302090500	Kittaganahalli	123.2238	125.61	ATTIBELE	2220
99	2920000302092300	Kodlipura	163.7879	162.89	ATTIBELE	659
100	2920000302080900	Konasandra	101.3314	105.77	JIGANI	581
101	2920000302079600	Koppa	37.0213	276.23	JIGANI	1100
102	2920000302086600	Kotiganahalli	135.9149	77.04	SARJAPURA	254
103	2920000302091600	Krishnasagara	111.0384	96.38	ATTIBELE	98
104	2920000302088700	Kugur	301.8748	300.51	SARJAPURA	1137
105	2920000302093900	Kumbaranahalli	150.2778	151.47	KASABA(ANEKAL)	602
106	2920000302095700	Kunmadivala	114.7362	93.15	KASABA(ANEKAL)	326
107	2920000302098600	Kurubarahatti	94.5142	82.74	KASABA(ANEKAL)	4
108	2920000302088900	Kuthaganahalli	329.8583	353.07	SARJAPURA	1048
109	2920000302080500	Kyalasanahalli	198.2957	211.38	JIGANI	1151
110	2920000302091100	Laxmi Sagara	204.1663	239.79	ATTIBELE	627
111	2920000302093700	Lingapura	271.7897	284.29	KASABA(ANEKAL)	746
112	2920000302092100	M.Medihalli	132.3992	123.91	ATTIBELE	553
113	2920000302088300	Madappanahalli	202.7754	105.41	SARJAPURA	377
114	2920000302096100	Madivala	540.1320	750.30	KASABA(ANEKAL)	2169
115	2920000302089200	Mahal Chowdadenahalli	213.6149	158.01	SARJAPURA	557
116	2920000302078800	Mahanthalingapura	784.0611	756.29	JIGANI	2317
117	2920000302092700	Manchanahalli	238.0135	244.24	ATTIBELE	1148
118	2920000302093600	Maranaikanahalli	144.4879	144.21	KASABA(ANEKAL)	761
119	2920000302095900	Marasur	656.4024	649.41	KASABA(ANEKAL)	1709
120	2920000302096300	Marasur Agrahara	250.1175	75.41	KASABA(ANEKAL)	126
121	2920000302089500	Mattanahalli	205.9813	219.99	SARJAPURA	643
122	2920000302092000	Mayasandra	482.1001	483.84	ATTIBELE	3284
123	2920000302097600	Menasiganahalli	307.7255	289.93	KASABA(ANEKAL)	810
124	2920000302088600	Mugalur	310.6785	318.24	SARJAPURA	1239
125	2920000302098500	Muthagatti	204.4900	210.23	KASABA(ANEKAL)	1970

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
126	2920000302084100	Muthanallur	272.1558	288.38	SARJAPURA	1784
127	2920000302084300	Muthanallur Amanikere (B)	184.1386	236.98	SARJAPURA	
128	2920000302091800	Muthasandra	102.3516	108.97	ATTIBELE	309
129	2920000302088100	Nagen Agrahara	40.2509	41.32	SARJAPURA	18
130	2920000302084000	Narayanaghatta	209.3986	204.60	SARJAPURA	822
131	2920000302091000	Neralur	436.6932	424.34	ATTIBELE	2115
132	2920000302087900	Neriga	396.2318	398.45	SARJAPURA	1264
133	2920000302081200	Nosenur	180.4800	189.57	JIGANI	1037
134	2920000302081100	Nosenur Gollahalli	133.8350	130.08	JIGANI	400
135	2920000302089400	Panditana Agrahara	159.7127	210.23	SARJAPURA	507
136	2920000302097200	Patnagere Gollahalli	164.2549	159.94	KASABA(ANEKAL)	201
137	2920000302099400	Rachamanahalli	227.6859	247.02	KASABA(ANEKAL)	939
138	2920000302078900	Ragihalli	758.3903	753.86	JIGANI	1590
139	2920000302081500	Rajapura	468.8913	466.49	JIGANI	730
140	2920000302082200	Ramakrishnapura	114.6293	120.76	ATTIBELE	170
141	2920000302090100	Ramasagara	234.7769	260.06	ATTIBELE	1465
142	2920000302086800	S.Medihalli	426.4916	433.68	SARJAPURA	584
143	2920000302084400	Samanahalli	128.4985	137.32	SARJAPURA	549
144	2920000302099600	Samandur	758.6475	750.25	KASABA(ANEKAL)	2206
145	2920000302087400	Sarjapura	733.5907	747.02	SARJAPURA	8620
146	2920000302088200	Seeganaikanahalli	51.0196	54.80	SARJAPURA	70
147	2920000302081400	Seethanaikana Halli	78.9125	76.96	JIGANI	520
148	2920000302079000	Shivanahalli	961.2009	851.46	JIGANI	1529
149	2920000302095400	Sidihosakote	173.6555	211.79	KASABA(ANEKAL)	1471
150	2920000302097800	Singasandra	164.8476	188.27	KASABA(ANEKAL)	392
151	2920000302086400	Sollepura	140.6827	153.98	SARJAPURA	588
152	2920000302097500	Solur	256.9829	210.94	KASABA(ANEKAL)	493
153	2920000302085900	Sompura	203.6411	198.91	SARJAPURA	679
154	2920000302094100	Sonnanayakanapura	170.9432	176.58	KASABA(ANEKAL)	1046
155	2920000302093800	Soppahalli	280.6406	228.03	KASABA(ANEKAL)	450
156	2920000302098400	Submangala	172.5821	174.15	KASABA(ANEKAL)	676
157	2920000302097100	Sunnara	201.2443	203.76	KASABA(ANEKAL)	846

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
158	2920000302094000	Suragajakkanahalli	215.4323	226.34	KASABA(ANEKAL)	912
159	2920000302097900	Telagarahalli	111.6869	106.10	KASABA(ANEKAL)	626
160	2920000302094800	Thammanaikanahalli	2120.6089	506.57	KASABA(ANEKAL)	2271
161	2920000302096400	Thattanahalli	260.9998	259.92	KASABA(ANEKAL)	881
162	2920000302094300	Thimmasandra	96.3852	90.34	KASABA(ANEKAL)	158
163	2920000302089100	Thindlu	279.0138	267.34	SARJAPURA	1008
164	2920000302090800	Thirumagondanahalli	130.5903	145.84	ATTIBELE	1240
165	2920000302079400	Vaderamanchanahalli	93.9310	83.47	JIGANI	717
166	2920000302097700	Vanakanahalli	173.2330	179.79	KASABA(ANEKAL)	1283
167	2920000302087600	Volagerekallahalli	260.6562	300.12	SARJAPURA	1081
168	2920000302091500	Yadavanahalli	292.1576	308.92	ATTIBELE	2031
169	2920000302085800	Yamare	266.0833	270.56	SARJAPURA	1223
170	2920000302080200	Yarandahalli	232.3787	237.73	JIGANI	2025
	Total		40271.30	38216.49		

(SOURCE : CENSUS OF INDIA, BANGALORE RURAL & URBAN DISTRICTS)


BANGALORE INTERNATIONAL AIRPORT PLANNING AREA - OUTLINE DEVELOPMENT PLAN - 2021AD
LOCAL PLANNING AREA
LEGEND
PROPOSED LAND USE
PROPOSED LAND USE

LIST OF VILLAGES IN BANGALORE INTERNATIONAL AIRPORT AREA PLANNING AUTHORITY LOCAL PLANNING AREA (APZ-3)

SL NO	TALUK	VILLAGE	AREA IN HECTARES
1	DODDABALLAPUR	MUTTUR	19.14
2		GANGOKHARAPURA	226.25
3		PALANJOGIHALLI	353.98
4		PINDAKURA THIMMANAHALLI	153.98
5		MUTHASANDRA	170.31
6		SHIVAPURA AMANIKERE	466.11
7		SHIVAPURA	879.09
8		SIDDANAYAKANAHALLI	7.83
9		RAGUNATHAPURA	614.07
10		THAMMASETTIHALLI	214.91
11		OBADENAHALLI	407.70
12		AREHALLI GUDDADAHALLI	878.43
13		THIPPAPURA	543.78
14		ALAHALLI	555.92
15		KARIYENAHALLI	53.08
16		SRINIVASAPURA	149.88
17		KURUBARAHALLI	237.54
18		AMANI PALAKERE	310.26
19		MADAGONDAHALLI	384.23
20		HASANGHATTA	282.05
21		KANTANAKUNTE	385.69
22		VADDARAHALLI	813.37
23		MEDIHALLI	358.79
24		MALLATHAHALLI	737.76
25		THOGARIGHATTA	512.55
26		THIMMASANDRA	1058.40
27		SONNAPPANAHALLI	531.77
28		GOVINDAPURA	94.28
29		NAGADENAHALLI	405.33
30		ADINARAYANNA HOSAHALLI	543.23
31		KOLIPURA	179.99
32		BASETTIHALLI	304.79
33		VEERAPURA	622.39
34		CHIKKATUMKUR	528.23
35		ARALAMALLIGE	1862.73
36		NAGASANDRA	278.67
37		KAKKEHALLI	83.51
38		KODIGEHALLI	420.67
39		TALAVAGARA	656.87
39		DARGAJOGIHALLI	55.65
40		HONNAGHATTA	656.87
41		RAJAGHATTA AMANIKERE	276.22
42		RAJAGHATTA	1113.99
43		DASAGONDAHALLI	290.82
44		LINGANAHALLI	1341.51
45		KONAGHATTA	1795.44
46	DODDABALLAPUR	VARADANAHALLI	418.62

47		YELLUPURA	295.07
48		KASUVANAHALLI	220.42
49		BISWANAHALLI	282.27
50		KUNTANAHALLI [KG]	184.95
51		BACHAHALLI	390.46
52		MAJARAHOSAHALLI	496.47
53		EKASIPURA	624.51
54		GOLAHALLI	798.45
55		KUNTANAHALLI	1101.69
56		JAKKASANDRA	290.87
57		MENSI	536.63
58		KESTHUR	1000.70
59		GALIPUJE	467.97
60		KOOLUR	1352.82
61		KOLUR PLANTATION	99.96
62		GEJJIGADAHALLI	909.97
63		BYRASANDRA	762.39
64		DODDATUMKUR	1159.86
65		GOWDAHALLI	580.10
66		KARIM SONNENAHALLI	995.19
67	DEVANAHALLI	SOUTHEGOWDANAHALLI	137.01
68		BOODIHAL	586.85
69		RAYASANDRA	795.19
70		GANGAMUTHANAHALLI	581.66
71		ANNESWARA	1048.89
72		ARASINKUNTE	782.15
73		DODDASANNE	870.92
74		BYCHAPURA	302.44
75		PRASANNAHALLI	95.89
76		HOSATHOTA	15.61
77		UPPARAHALLI	64.99
78		SANNE AMANIKERE	801.93
79		CHIKKASANNE	412.44
80		BANDARAMANAHALLI	201.31
81		BOOVANAHALLI	268.29
82		UDAYAGIRI	331.70
83		YERTHAGENAHALLI	611.30
84		AKKALENAHALLI MALLENAHALLI	598.28
85		KANNAMANGALA	617.40
86		PUJANAHALLI	262.41
87		SADAHALLI	976.64
88		JOGAHALLI	110.33
89		KEMPATHIMMANAHALLI	430.64
90		DODDAPPANAHALLI	241.99
91		PALYA	236.48
92		THIMMEGOWDANAHOSAHALLI	353.28
93		KEMPALINGAPURA	141.80
94		UGANAHVADI	727.00
95		CHIKKACHIMANAHALLI	163.76
96		MULLI AMANIKERE	105.77
97	DEVANAHALLI	BOMMAWARA	1148.62
98		AKKUPET	618.61
99		DODIMANCHENAHALLI	103.34
100		KASBA PLANTATION	100.95
101		SETTARAHALLI	783.68
102		LAKSHMIPURA	379.42

103		GUNDLAHALLI	138.67
104		BIDALUR	1336.94
105		SAVAKANAHALLI	865.96
106		ANIGATTA	242.78
107		DEVASTHANADA AMANIKERE	170.50
108		NEELERI	257.55
109		MALIGENAHALLI	324.09
110		DEVANAHALLI	115.03
111		VADEREHALLI	111.00
112		KODAGURKI	1041.58
113		YEMBARAHALLI	361.39
114		DASARAHALLI	578.50
115		AVATHI	1525.42
116		BYRAPPANAHALLI	262.24
117		GOBBARAKUNTE	280.76
118		ATTIBELE	187.30
119		GULLOBANAHALLI	190.29
120		ABACHIKKANAHALLI	228.65
121		LALAGONDANAHALLI	227.93
122		GUTTAHALLI	284.96
123		KURUBARAKUNTE	673.94
124		BINNAMANGALA	400.56
125		GOKARE	931.49
126		DHARMAPURA	621.97
127		GAJJAGUPPE	270.61
128		MANDIBELE	560.76
129		GADDADANAGENAHALLI	286.37
130		THIMMENAHALLI	138.32
131		CHIKKA THATTAMANGALA	708.35
132		DODDA THATTAMANGALA	1111.03
133		GUDUVANAHALLI	555.75
134		KONDENAHALLI	524.41
135		DINDIGANAHALLI	737.69
136		BYRAPURA	274.00
137		KORAMANGALA	1404.39
138		GULLAHALLI	596.18
139		HAROHALLI	675.03
140		THIMMAHALLI	348.34
141		BIJJAWARA	388.16
142		GURURAYANA HOSUR	77.04
143		IRRIGENAHALLI	312.38
144		VENKATAGIRI KOTE	363.53
145		THATAMACHANAHALLI AMANIKERE	933.14
146		HOSAHUDYA	366.47
147		DODDASAGARAHALLI	709.36
148	DEVANAHALLI	HURLAGURKI	840.76
149		BINGIPURA	116.29
150		MUDDUGURKI	499.11
151		HOSAHALLI	683.47
152		GONUR	519.61
153		GOLLAHALLI	379.10
154		NARAYANAPURA	487.85
155		SAMBARAGIDDADA KAVALU	1296.40
156		CHIKKENAHALLI	289.76
157		HOLERAHALLI	409.80
158		DODDAMUDDENAHALLI	177.86

158		GUDLA MUDDENAHALLI	358.05
159		CHIKKANAHALLI	677.37
160		PURA	188.02
161		CHANDENAHALLI	171.62
162		KOMMASANDRA	438.20
163		PALYAGARA RANGANATHAPURA	1320.02
164		CHINNAPPANAYAKANAHOSUR	266.19
165		HARALUR NAGENAHALLI	171.27
166		SETTAHALLI	126.14
167		VENKATENAHALLI	129.97
168		VIJAYAPURA AMANIKERE	127.62
169		YELUVAHALLI	189.05
170		CHANNARAYAPATNA	796.35
171		MARADIANE	123.28
172		BEDIGANAHALLI	330.39
173		HIRIGANAHALLI	132.74
174		IBASAPURA	732.82
175		GUMMANAHALLI	60.32
176		KONAGINABELE	450.65
177		DODDAKURUBARAHALLI	338.56
178		PALYA	447.84
179		NAGANAYAKANAHALLI	356.52
180		VARADENAHALLI	420.30
181		PAPANAHALLI	469.05
182		CHEEMACHANAHALLI	627.01
183		MUDDENAHALLI	308.06
184		NALLAPPANAHALLI	254.36
185		MALLEPURA	296.72
186		NALLUR	623.01
187		NALLUR AMANIDERE	53.03
188		BALEPURA	436.05
189		KACHIPURA	136.27
190		BIDALAPURA	186.93
191		BIDALAPURA AMANIKERE	251.40
192		DEVANAYAKANAHALLI	386.33
193		MALLENAHALLI	283.16
194		SOMATHANAHALLI	1133.85
195		GANGAVARA CHOWDAPPANAHALLI	1054.96
196		HANDRAHALLI	1412.10
197	DEVANAHALLI	BUDIGERE	950.31
198		BUDIGERE AMANIKERE	840.71
200		KOTNATHEVARU	377.14
201		KONDENAHALLI	224.08
202		KAGGALAHALLI	335.35
203		BHATRAMARENAHALLI	535.08
204		KAVADEDASARAHALLI	274.24
205		JANNAHALLI	899.01
206		REDDIHALLI	204.66
207		BALADI MANNAHALLI	431.02
207		BETTAKOTE	638.99
208		BETTAKOTE AMANIDERE	575.39
209		HOSAHALLI	484.56
210		CHANNAHALLI	428.96
211		AGALAKOTE	266.39
212		SROTHRIYATHELLOHALLI	213.88
213		HARALUR	455.15

214		POLANAHALLI	829.43
215		BAMMANAHALLI	325.52
216		THELLOHALLI AGARAHARA	310.55
217		THAMMENAHALLI	243.79
218		KOMMASANDRA	181.59
219		YELEYUR	629.60
220		CHIKKARAMANAHALLI	151.78
221		MATTABARALU	338.86
222		GOKERE BACHENAHALLI	265.72
223		KUNDANA	1017.37
224		DEVAGANAHALLI	371.86
225		ARASANAHALLI	513.04
226		NARAGANAHALLI	485.65
227		SINGRAHALLI	587.44
228		ILATHORE	732.45
229		CHOWDENAHALLI	182.14
230		NAGAMANGALA	487.03
231		HEGGANAHALLI	600.75
232		INDRASANAHALLI	372.75
233		DODDACHAMANAHALLI	631.33
234		LINGADERRAGOLLAHALLI	489.83
235		DEVARAHALLI	316.65
236		THINDLU	928.25
237		KEMENAHALLI	681.50
238		BETTENAHALLI	1124.42
239		MARAGONDANAHALLI	508.50
240		CHKKANNANAHOSAHALLI	326.04
241		JALIGE	555.03
242		ARADESHAHALLI	1031.67
243		JUTTANAHALLI	412.22
244		PANDITHAPURA	209.60
245		BANNIMANGALA AMANIKERRE	598.51
246		SUNNAGATTA	421.83
		SULAKANTE	375.02
		BANNIGALA	247.49
247	DEVANAHALLI	BACHAHALLI	175.07
248		ALURDODDANAHALLI	1469.90
249		VENKATAPURA	220.97
250		CHINNAKEMPANAHALLI	394.21
251		VISHWANATHAPURA	1063.66
252		VAJARAHALLI	116.07
253		MANGONDANAHALLI	508.50
254		CHIKKOBANAHALLI	219.16
255		BEERESANDRA	698.05
		BYRADENAHALI	366.11
256		DODDAGOLLAHALLI	422.32
257		ARAVANAHALLI	518.65
258		RAMANATHAPURA	643.12
259		RABBANAHALLI	495.04
260		MEESAGANAHALLI	766.05
261		THYLAGERE	977.01
262		KARAHALLI	1437.12
263		YERRAPPANAHALLI	151.49
264		MUDDIGANAHALLI	229.41
265		KEMPATHIMMANAHALLI	336.83
266		KARAHALLI AMANIKERE	481.70

267		KOTTIGETHIMMANAHALLI	187.79
268		SONNENAHALLI	315.22
269		MUDDANAYAKANAHALLI	578.52
270		MAYASANDRA	425.90
271		KOIRA	903.25
272		CHIKKAGOLLAHALLI	372.08
273		SHANAPPANAHALLI	193.45
274		BYADARAHALLI	1062.92
275		SOLUR	951.02
275	BANGALORE NORTH	HESARAGHATTA	1556.99
276		GUDDADAHALLI	469.05
277		DASANAHALLI	881.67
278		HESARAGHATTA GRASS FARM	2938.86
279		BYATHA	1286.97
280		SEERESANDRA	375.49
281		KAMAKSHIPURA	270.93
282		SONNEHALLI	1602.26
283		CHALLAHALLI	655.29
284		HANIYUR	642.79
285		CHANNASANDRA	179.74
286		BYRAPURA	125.03
287		ARAKERE	1154.35
288		KADATHANAMALE	778.42
289		MARASANDRA AMANIKERE	320.46
290		SURADENPURA	674.80
291		ADDE VISHWANATHAPURA	1530.66
292		SRIRAMANAHALLI	466.04
293		CHOKKANAHALLI	477.95
294		BUDUMANAHALLI	400.93
295	BANGALORE NORTH	KAKOLU	1426.25
296		SHANUBHAGANAHALLI	454.18
297		SEETHAKEMPANAHALLI	404.34
298		KOLUVARAYANAHALLI	300.18
299		DIBBUR	505.34
300		ITHAGALAPURA	536.95
301		LINGANAHALLI	420.34
302		MATHKUR	741.52
303		CHIKKAJALA	621.67
304		DODDAJALA AMANIKERE	287.11
305		SETTIGERE	585.81
306		MUTTUGADA HALLI	236.97
307		BEGUR	459.40
308		CHIKKANAHALLI	231.93
309		MYLANAHALLI	696.14
310		HUNACHUR	994.20
311		DAMMANUR	173.44
312		SINGAHALLI	944.43
313		PALYA	573.78
314		BANDIKODEGENAHALLI AMMANIKERE	262.51
315		AREBINNAMANGALA	648.97
316		BANDI KODIGE HALLI	902.09
317		BOILAHALLI	352.67
318		MESSIGANAHALLI	462.98
319		GOLLAHALLI	226.35
320		MAHADEVAKODIGEHALLI	1417.68
321		HUVINAYAKANAHALLI	633.36

322		MANCHAPPANAHOSAHALLI	1202.59
323		CHALLANAKUNTE	509.02
324		MARASANDRA	1010.53
325		MARALAKUNTE	926.45
326		BAYYANAHALLI	366.03
327		BAGALUR	2263.98
328		HOSAHALLI	932.97
329		HUTTANAHALLI	848.69
340		MARANAYAKANA HALLI	327.42
341		KADIGENAHALLI	475.65
342		BILAMARAHALLI	231.12
343		KUDRAGERE	740.38
344		GOWDENAHALLI	349.33
345		THARABANALLI	439.61
346		PAPANAHALLI	227.04
347		CHANNAHALLI	201.50
348		DODDAJALA	754.39
349		MEENAKUNTE	437.86
350		NAVARATHNA AGRAHARA	920.84
TOTAL			**98,500 Ha**

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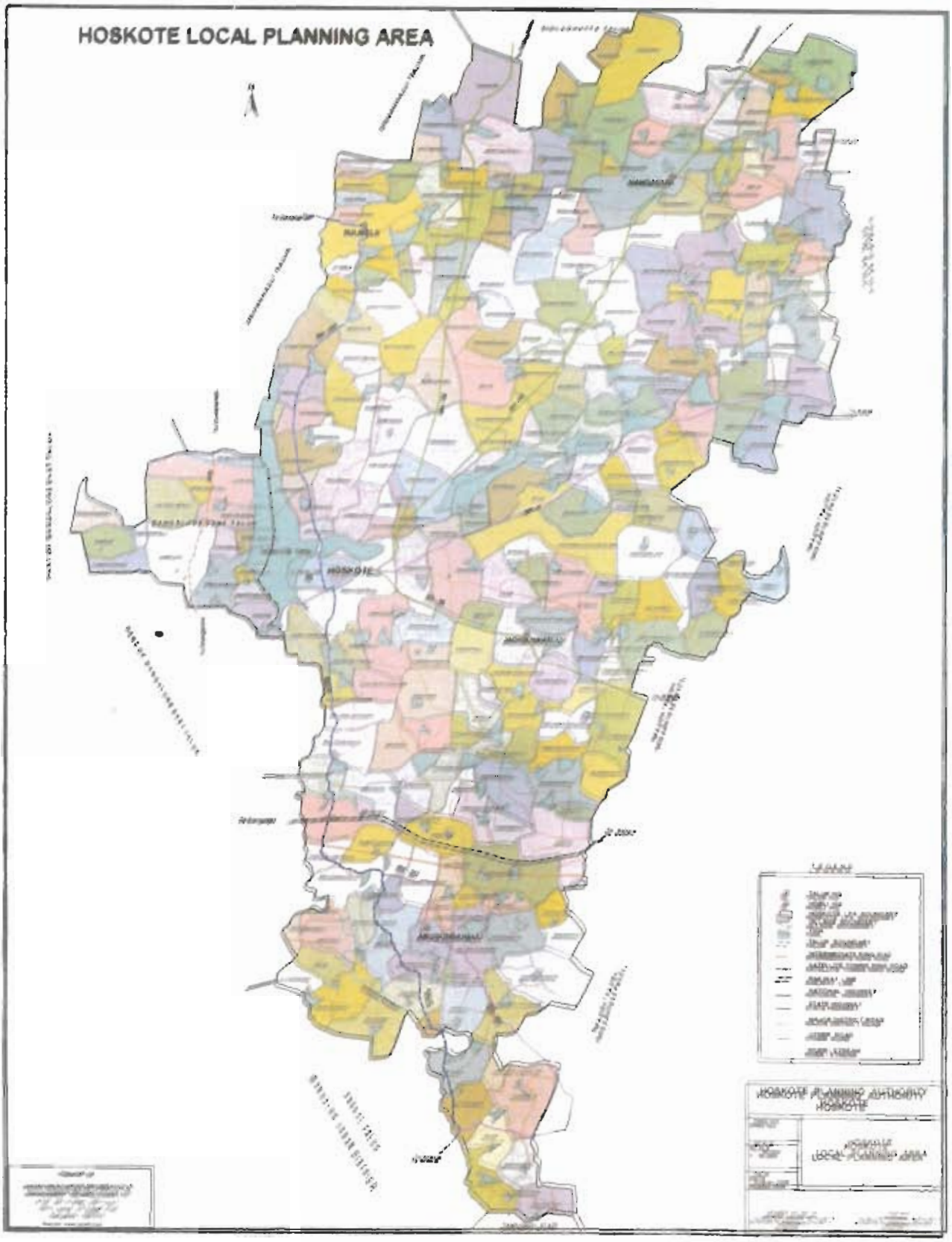

HOSKOTE LOCAL PLANNING AREA
HOSKOTE

LIST OF VILLAGES IN HOSKOTE LOCAL PLANNING AREA (APZ-4, 1Z-5 AND IZ-6)

HOSKOTE TALUK , BANGALORE RURAL DISTRICT

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
1	2921000402188400	Agasarahalli	127.03	127.03	NANDAGUDI	213
2	2921000402183900	Agrahara Vaddahalli	91.07	91.07	NANDAGUDI	239
3	2921000402202100	Ajjagondahalli		72.28	ANUGONDAHALLI	340
4	2921000402191400	Alagondahalli	223.57	223.57	JADEGENAHALLI	410
5	2921000402197000	Alappanahalli	133.91	133.91	KASABA (HOSKOTE)	1032
6	2921000402191900	Ambalipura	73.15	73.15	JADEGENAHALLI	87
7	2921000402177300	Ankonahalli	55.59	55.59	SULIBELE	303
8		Ankonahalli	42.90	42.90	JADEGENAHALLI	2
9	2921000402201600	Anugondahalli	176.45	176.45	ANUGONDAHALLI	878
10	2921000402175600	Anupahalli	120.87	120.87	SULIBELE	878
11	2921000402200000	Appajipura	55.95	55.95	KASABA (HOSKOTE)	55
12	2921000402191700	Appasandra	202.69	202.69	JADEGENAHALLI	555
13	2921000402191600	Appasandra Plantation	232.30	232.30	JADEGENAHALLI	
14		Aralagere Amanikere(B)	15.65	15.65	SULIBELE	
15		Aralemakanahalli	73.1 0	73.10		
16		Aralemakanahalli Dist.Plantation	86.39	86.39		
17		Aralemakanahalli Plantation	74.5 0	74.50		
18	2921000402177400	Arasanahalli	66.14	66.14	SULIBELE	695
19	2921000402182800	Arehalli	130.58	130.58	NANDAGUDI	539
20	2921000402203600	Arehalli	281.79	281.79	ANUGONDAHALLI	773
21	2921000402179600	Attibele	253.88	253.88	SULIBELE	1542
22	2921000402192100	Attivatta	129.54	129.54	JADEGENAHALLI	991
23	2921000402190600	Attur	147.37	147.37	JADEGENAHALLI	268
24	2921000402181700	Bagalur	158.33	158.33	SULIBELE	193
25	2921000402204000	Bagur	220.75	220.75	ANUGONDAHALLI	892
26	2921000402176300	Balenahalli	135.00	135.00	SULIBELE	243
27	2921000402183300	Banahalli	54.48	54.48	NANDAGUDI	779
28	2921000402196100	Banahalli	84.4 0	84.40	JADEGENAHALLI	
29	2921000402188900	Banamakanahalli	111.74	111.74	NANDAGUDI	321

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
30	2921000402203300	Banarahalli	158.12	158.12	ANUGONDAHALLI	194
31	2921000402185700	Bandahalli	159.72	159.72	NANDAGUDI	363
32		Basabathanahalli	53.51	53.51		
33	2921000402177100	Bathiganahalli	155.1 0	155.10	SULIBELE	35
34	2921000402178500	Bavapura	236.74	236.74	SULIBELE	534
35	2921000402188200	Beerahalli	151.92	151.92	NANDAGUDI	497
36	2921000402181500	Begur	362.99	362.99	SULIBELE	1339
37	2921000402193100	Belamangala	49.73	49.73	JADEGENAHALLI	381
38	2921000402202500	Bellikere	338.81	338.81	ANUGONDAHALLI	947
39	2921000402176600	Bendiganahalli	253.59	253.59	SULIBELE	626
40	2921000402179200	Bettahalli	183.9 0	183.90	SULIBELE	633
41		Bhakthagondanahalli	93.4 0	93.40		
42	2921000402199700	Bhaktharahalli		93.40	KASABA (HOSKOTE)	1004
43	2921000402187300	Bheemapura	258.29	258.29	NANDAGUDI	783
44	2921000402181900	Bhemakkanahalli	189.45	189.45	SULIBELE	594
45	2921000402178700	Bhuvanahalli	295.92	295.92	SULIBELE	555
46	2921000402187200		189.24	189.24	NANDAGUDI	637
47	2921000402195100	Bisanahalli	158.56	158.56	JADEGENAHALLI	921
48	2921000402200700	Bodanahosahalli	200.89	200.89	ANUGONDAHALLI	1269
49	2921000402196500	Bommanabande	182.04	182.04	JADEGENAHALLI	545
50	2921000402202600	Bylahalli	226.93	226.93	ANUGONDAHALLI	471
51	2921000402185300	Bylanarasapura	133.8 0	133.80	NANDAGUDI	3863
52	2921000402202900	Byrahalli	31.2 0	31.20	ANUGONDAHALLI	
53	2921000402193700	Chandrapura	67.16	67.16	JADEGENAHALLI	
54	2921000402190400	Channapura	70.33	70.33	JADEGENAHALLI	97
55	2921000402200400	Cheemandahalli	116.97	116.97	KASABA (HOSKOTE)	524
56	2921000402176100	Cheemasandra	138.78	138.78	SULIBELE	565
57		Chikka Amanikere	212.21	212.21	KASABA (HOSKOTE)	60
58	2921000402200300	Chikkagattiganabbe	171.55	171.55	KASABA (HOSKOTE)	729
59	2921000402198000	Chikkahulliur	182.79	182.79	KASABA (HOSKOTE)	932
60	2921000402181200	Chikkakoliga	167.97	167.97	SULIBELE	197
61		Chikkakurabarahalli	54.28	54.28	SULIBELE	8
62	2921000402187400	Chikkanahalli	74.19	74.19	NANDAGUDI	626

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
63	2921000402189700	Chikkanallala	195.18	195.18	JADEGENAHALLI	483
64	2921000402198500	Chikkanallurahalli	106.76	106.76	KASABA (HOSKOTE)	437
65	2921000402176700	Chikkaralagere	129.75	129.75	SULIBELE	325
66	2921000402192700	Chikkathaggali	90.99	90.99	JADEGENAHALLI	320
67	2921000402182600	Chikkondahalli	196.08	196.08	NANDAGUDI	864
68	2921000402189600	Chinnandahalli	200.27	200.27	JADEGENAHALLI	363
69	2921000402187000	Chinnathimmanagolla Halli	142.14	142.14	NANDAGUDI	664
70	2921000402198100	Chokkahalli	502.73	502.73	KASABA (HOSKOTE)	1182
71	2921000402185000	Chokkasandra	390.48	390.48	NANDAGUDI	593
72	2921000402198200	Cholappanahalli	152.14	152.14	KASABA (HOSKOTE)	607
73		Chowdasandra	11.08	11.08		
74	2921000402186500	D.Settihalli	100.34	100.34	NANDAGUDI	461
75	2921000402189800	Dabbagunte	40.13	40.13	JADEGENAHALLI	252
76	2921000402182700	Dalasagere	417.13	417.13	NANDAGUDI	1154
77		Dandupalya	297.54	297.54	KASABA (HOSKOTE)	
78	2921000402198700	Dasarahalli	66.58	66.58	KASABA (HOSKOTE)	1539
79		Dasarathimmanahalli	36.81	36.18		
80	2921000402200900	Devalapura	146.68	146.68	ANUGONDAHALLI	446
81	2921000402201000	Devanagondi	629.33	629.33	ANUGONDAHALLI	1721
82	2921000402201400	Devanagondi Hosahalli	155.41	155.41	ANUGONDAHALLI	824
83	2921000402196600	Devara Gollahalli	79.93	79.93	JADEGENAHALLI	45
84	2921000402194900	Devasettihalli	164.98	164.98	JADEGENAHALLI	534
85	2921000402176200	Dimbahalli	145.28	145.28	SULIBELE	
86	2921000402199400	Dodda Amanikere	787.6 0	787.60	KASABA (HOSKOTE)	59
87	2921000402195600	Doddadasarahalli	228.19	228.19	JADEGENAHALLI	458
88	2921000402191300	Doddadenahalli	132.29	132.29	JADEGENAHALLI	630
89	2921000402200800	Doddadunnasandra	238.11	238.11	ANUGONDAHALLI	1677
90	2921000402184700	Doddaganahalli	136.6 0	136.60	NANDAGUDI	194
91	2921000402199600	Doddagattiganabbe	129.01	129.01	KASABA (HOSKOTE)	369
92		Doddaharadi Plantation	496.91	496.91		
93	2921000402197900	Doddahullur	236.51	236.51	KASABA (HOSKOTE)	1278
94	2921000402181300	Doddakoliga	113.64	113.64	SULIBELE	378
95	2921000402190900	Doddanallala	411.38	411.38	JADEGENAHALLI	806

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
96	2921000402190800	Doddanallala Plantation	615.92	615.92	JADEGENAHALLI	
97	2921000402189200	Doddanallurahalli	319.01	319.01	JADEGENAHALLI	1084
98	2921000402178000	Doddaralagere	211.69	211.69	SULIBELE	764
99	2921000402192600	Doddathaggali	175.46	175.46	JADEGENAHALLI	398
100	2921000402186600	Doddenahalli	130.78	130.78	NANDAGUDI	520
101	2921000402176500	Dyavasandra	99.16	99.16	SULIBELE	249
102	2921000402180800	Ekarajapura	367.46	367.46	SULIBELE	401
103	2921000402176000	Esthur	140.14	140.14	SULIBELE	673
104	2921000402175800	Esthur Amanikere	32.76	32.76	SULIBELE	
105	2921000402204500	Ganagalur	188.0 0	188.00	KASABA (HOSKOTE)	1028
106	2921000402199200	Ganagalur	421.29	421.29	ANUGONDAHALLI	473
107	2921000402189000	Gangapura	184.48	184.48	NANDAGUDI	896
108	2921000402183400	Geddalahaliipura	223.7 0	223.70	NANDAGUDI	248
109	2921000402187800	Gerahalli	57.24	57.24	NANDAGUDI	54
110	2921000402183700	Giddanahalli	111.6 0	111.60	NANDAGUDI	321
111	2921000402179300	Giddappanahalli	164.64	164.64	SULIBELE	1324
112		Goddaramanahalli	51.85	51.85		
113	2921000402193000	Gonakanahalli	184.61	184.61	JADEGENAHALLI	828
114	2921000402188000	Goravihalli	77.94	77.94	NANDAGUDI	
115	2921000402190500	Gottipura	226.41	226.41	JADEGENAHALLI	615
116	2921000402194500	Govindapura	183.18	183.18	JADEGENAHALLI	810
117		Guddadachannenahalli	50.18	50.18		
118	2921000402191000	Guguttahalli	157.71	157.71	JADEGENAHALLI	353
119	2921000402178900	Gullahalli	518.91	518.91	SULIBELE	1030
120	2921000402202300	Gullakaipura		115.23	ANUGONDAHALLI	8
121	2921000402186000	Gullenahalli	86.27	86.27	NANDAGUDI	16
122	2921000402185500	Gundrahalli	64.2 0	91.99	NANDAGUDI	179
123	2921000402181800	Gundrahalli	91.99	64.20	SULIBELE	72
124	2921000402204100	Gundur	236.61	236.61	ANUGONDAHALLI	679
125	2921000402198800	Halasahalli	85.04	85.04	KASABA (HOSKOTE)	666
126	2921000402189900	Halasakaipura	54.21	54.21	JADEGENAHALLI	244
127	2921000402203100	Handenahalli	256.11	256.11	ANUGONDAHALLI	872
128	2921000402176400	Haniyur	109.74	109.74	SULIBELE	

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
129	2921000402193300	Haralur	129.90	129.90	JADEGENAHALLI	692
130	2921000402201900	Harohalli		238.19	ANUGONDAHALLI	1047
131	2921000402180200	Hasigala	237.67	237.67	SULIBELE	1178
132	2921000402185400	Hedakanahalli	157.95	157.95	NANDAGUDI	598
133	2921000402201700	Hemmandahalli	107.09	107.09	ANUGONDAHALLI	156
134	2921000402188300	Hethakki	112.81	112.81	NANDAGUDI	736
135	2921000402182400	Hindiganala	457.57	457.57	NANDAGUDI	2407
136	2921000402196300	Honachanahalli	157.84	157.84	JADEGENAHALLI	571
137	2921000402178600	Hosadimbahalli	75.02	75.02	SULIBELE	91
138		Hosahalli	165.58	165.58		
139	2921000402182200	Hosahardi	14.74	14.74	NANDAGUDI	
140	2921000402182300	Hosavenkatapura	83.9 0	83.90	NANDAGUDI	93
141		Hoskote(rural)	417.41	417.41	KASABA (HOSKOTE)	
142	2921000442106000	Hoskote TMC		285.66	HOSAKOTE - TMC	36323
143		Hullur Amanikeri	343.37	343.37		
144	2921000402185800	Huluvanahalli	164.95	164.95	NANDAGUDI	224
145	2921000402195400	Hunasehalli	117.9 0	117.10	JADEGENAHALLI	509
146		Immanahalli	42.74	42.74		
147	2921000402191800	Injanahalli	152.91	42.74	JADEGENAHALLI	498
148	2921000402182000	Ittasandra	387.74	387.74	NANDAGUDI	1281
149	2921000402193200	Jadigenahalli	419.15	419.15	JADEGENAHALLI	1877
150	2921000402192400	Jadigenahalli Plantation	194.4 0	194.40	JADEGENAHALLI	
151	2921000402194800	Jinnagara	376.10	376.10	JADEGENAHALLI	665
152	2921000402186400	K.Sathyawara	343.05	343.05	NANDAGUDI	741
153	2921000402184100	K.Settihalli	195.62	195.62	NANDAGUDI	228
154	2921000402195200	Kacharakanahalli	180.81	180.81	JADEGENAHALLI	437
155	2921000402177600	Kadaranapura	49.25	49.25	SULIBELE	259
156	2921000402187700	Kalappanahalli	235.09	235.09	NANDAGUDI	698
157	2921000402203500	Kalkunte Agrahara	352.67	352.67	ANUGONDAHALLI	1528
158	2921000402197400	Kallahalli	364.22	364.22	KASABA (HOSKOTE)	761
159	2921000402196400	Kamarasanahalli	196.9 0	292.82	JADEGENAHALLI	597
160	2921000402180700	Kamblipura	427.21	427.21	SULIBELE	1125
161	2921000402180100	Kammasandra	292.82	292.82	SULIBELE	1301

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
162	2921000402195300	Kanekallu	190.72	190.72	JADEGENAHALLI	410
163	2921000402199100	Kannurahalli *	494.78	494.78	KASABA (HOSKOTE)	1561
164	2921000402184200	Karahalli	75.44	75.44	NANDAGUDI	378
165	2921000402186200	Karapanahalli	323.01	323.01	NANDAGUDI	684
166	2921000402193900	Karibeeranahosahalli	181.56	181.56	JADEGENAHALLI	532
167	2921000402176800	Kasipuradakambada Beedu	57.69	57.69	SULIBELE	3
168	2921000402194200	Kattigenahalli	393.1 0	393.10	JADEGENAHALLI	2616
169	2921000402186900	Kembaliganahalli	387.99	387.99	NANDAGUDI	1647
170	2921000402180600	Kempapura	117.92	117.92	SULIBELE	272
171	2921000402196200	Khajihosahalli	181.69	181.69	JADEGENAHALLI	957
172	2921000402195000	Kodihalli	336.72	336.72	JADEGENAHALLI	736
173	2921000402179400	Kodipura	64.86	64.86	SULIBELE	4
174		Kolalachannenahalli	36.7 0	36.70		
175	2921000402199000	Kolathur *	491.62	491.62	KASABA (HOSKOTE)	1299
176	2921000402185200	Kondrahalli	296.43	296.43	NANDAGUDI	1057
177	2921000402199900	Koralur		299.96	KASABA (HOSKOTE)	1263
178	2921000402184500	Korati	326.46	326.46	NANDAGUDI	1502
179	2921000402202200	Kotur	158.89	158.89	ANUGONDAHALLI	704
180	2921000402197300	Kumbalahalli	100.87	100.87	KASABA (HOSKOTE)	2973
181	2921000402194400	Kurubara Gollahalli	114.82	114.80	JADEGENAHALLI	35
182	2921000402197500	Kurubarahalli	273.52	273.52	KASABA (HOSKOTE)	1405
183	2921000402196700	Lakkondahalli	430.24	430.24	KASABA (HOSKOTE)	1579
184	2921000402201100	Lingadeeramallasandra	114.39	114.39	ANUGONDAHALLI	271
185	2921000402188100	Lingapura	89.83	89.83	NANDAGUDI	363
186	2921000402180000	M.Sathyawara	221.33	221.33	SULIBELE	772
187	2921000402195500	Makanahalli	195.48	195.48	JADEGENAHALLI	1465
188	2921000402198300	Malimakanapura	139.94	139.94	KASABA (HOSKOTE)	650
189	2921000402199800	Mallasandra		229.97	KASABA (HOSKOTE)	1706
190	2921000402187100	Malliyappanahalli	84.76	84.76	NANDAGUDI	519
191	2921000402187600	Manchappanahalli	174.15	174.15	NANDAGUDI	613
192		Maragondanahalli	109.73	109.73		
193	2921000402204400	Maramgere	173.00.	173.00	ANUGONDAHALLI	544
194	2921000402188500	Marasandahalli	182.25	182.25	NANDAGUDI	508

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
195	2921000402176900	Mattabarlu	61.53	61.53	SULIBELE	
196	2921000402192300	Mattanahalli	123.48	123.48	JADEGENAHALLI	
197	2921000402201300	Medihalli	75.41	75.41	ANUGONDAHALLI	464
198	2921000402203000	Medimallasandra	268.49	268.49	ANUGONDAHALLI	2446
199	2921000402184000	Medur	212.45	212.45	NANDAGUDI	109
200	2921000402185100	Mothakadahalli	342.04	342.04	NANDAGUDI	751
201	2921000402184900	Muddenahalli	103.79	103.79	NANDAGUDI	300
202	2921000402189400	Mugabala	486.81	486.81	JADEGENAHALLI	1612
203	2921000402190100	Mugabala Hosahalli	146.08	146.08	JADEGENAHALLI	304
204	2921000402186300	Mumynahosahalli	102.06	102.07	NANDAGUDI	114
205	2921000402181400	Mutgadahalli	162.52	62.52	ANUGONDAHALLI	419
206	2921000402203700	Muthakadahalli	76.09	76.09	SULIBELE	321
207	2921000402180900	Muthasandra	236.13	236.13	SULIBELE	516
208	2921000402202400	Muthasandra	356.23	356.23	ANUGONDAHALLI	1564
209	2921000402202700	Muthkur	344.6 0	344.60	ANUGONDAHALLI	1769
210	2921000402190200	Mylapura	127.22	127.22	JADEGENAHALLI	539
211	2921000402184800	N.Hosahalli	264.59	264.49	NANDAGUDI	1462
212	2921000402200100	Naduvathi	283.68	283.68	KASABA (HOSKOTE)	1818
213	2921000402201800	Naganayakanakote	173.92	173.92	ANUGONDAHALLI	679
214	2921000402181100	Nagarenahalli	111.7 0	111.70	SULIBELE	336
215	2921000402189300	Nakkanahalli	86.02	86.02	JADEGENAHALLI	321
216	2921000402177200	Nallaganahalli	56.33	56.33	SULIBELE	186
217	2921000402183600	Nandagudi	858.51	858.51	NANDAGUDI	3185
218	2921000402183000	Nelavagilu	270.91	270.99	NANDAGUDI	1574
219	2921000402190700	Nidagatta	284.84	284.84	JADEGENAHALLI	1221
220	2921000402201500	Obalapura	103.72	103.72	ANUGONDAHALLI	361
221	2921000402185900	Oblahalli	166.39	166.39	NANDAGUDI	674
222	2921000402192500	Orohalli	193.25	193.25	JADEGENAHALLI	532
223	2921000402195700	Paramanahalli	296.45	296.45	JADEGENAHALLI	550
224	2921000402199300	Pethanahalli	173.15	173.15	KASABA (HOSKOTE)	502
225	2921000402198600	Pillagumpe	76.58	76.58	KASABA (HOSKOTE)	702
226	2921000402189500	Poojaramanahalli	66.35	66.35	JADEGENAHALLI	373
227	2921000402200200	Poojena Agrahara	193.24	193.24	KASABA (HOSKOTE)	1118

Sl. No.	CODE_(CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
228		Pulamunche	62.54	62.54		
229	2921000402175900	Ralkunte	131.49	131.49	SULIBELE	429
230	2921000402183500	Ramagovindapura	59.98	59.98	NANDAGUDI	328
231	2921000402177500	Ramapura	57.17	57.17	SULIBELE	133
232	2921000402203400	S.Narayanakere	512.84	512.84	ANUGONDAHALLI	1521
233	2921000402179900	Sadappanahalli	238.33	238.33	SULIBELE	549
234	2921000402200600	Samethanahalli	463.87	463.87	ANUGONDAHALLI	2425
235	2921000402183100	Sarakanur	78.38	78.38	NANDAGUDI	250
236	2921000402183800	Sarakar Vaddahalli	113.82	113.82	NANDAGUDI	271
237	2921000402199500	Sarakariguttahalli	84.74	84.74	KASABA (HOSKOTE)	969
238	2921000402178100	Sashimakanahalli	85.33	85.33	SULIBELE	164
239	2921000402185600	Sathigenahalli	53.2 0	53.20	NANDAGUDI	84
240	2921000402196900	Shankanipura	114.93	114.93	KASABA (HOSKOTE)	896
241	2921000402177000	Shanthanapura	122.69	122.69	SULIBELE	9
242	2921000402180400	Shivadenahalli	49.56	49.56	SULIBELE	217
243	2921000402186100	Shivanapura	268.82	268.82	NANDAGUDI	2335
244	2921000402204300	Shivanapura	102.55	27.78	ANUGONDAHALLI	299
245		Shivapura	27.78	27.78		
246	2921000402183200	Siddanahalli	55.35	154.61	NANDAGUDI	741
247	2921000402177800	Siddanahalli	154.61	53.35	SULIBELE	415
248	2921000402204200	Siddanapura	104.95	104.95	ANUGONDAHALLI	396
249	2921000402186800	Siddapura	98.58	98.58	NANDAGUDI	216
250	2921000402192200	Solur	231.87	231.87	JADEGENAHALLI	716
251	2921000402201200	Somalapura	123.5 0	123.50	ANUGONDAHALLI	217
252	2921000402197600	Sompura	118.31	118.31	KASABA (HOSKOTE)	484
253	2921000402197700	Sonnadenahalli	65.38	65.38	KASABA (HOSKOTE)	450
254	2921000402180500	Sonnahallipura	259.7 0	259.70	SULIBELE	989
255	2921000402181600	Sonnebychanahalli	45.46	45.46	SULIBELE	192
256	2921000402184400	Sonnekempanahalli	27.33	27.33	NANDAGUDI	
257	2921000402178400	Srinivasapura	128.17	128.57	SULIBELE	
258	2921000402177700	Sulibele	574.5 0	574.50	SULIBELE	8205
259	2921000402192800	Thaggali Hosahalli	47.85	47.85	JADEGENAHALLI	643
260	2921000402177900	Thammarasanahalli	177.96	177.96	SULIBELE	473

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
261	2921000402178300	Thammarayasandra Agrahara	160.76	160.76	SULIBELE	546
262	2921000402182500	Tharabahalli	142.11	142.11	NANDAGUDI	807
263	2921000402195800	Tharabahalli	164.73	164.73	JADEGENAHALLI	752
264	2921000402203800	Thathnur	301.51	301.51	ANUGONDAHALLI	864
265	2921000402204600	Thathnur Plantation	68.23	68.23	ANUGONDAHALLI	
266	2921000402187900	Thavarekere	336.86	336.86	NANDAGUDI	2059
267	2921000402192000	Thavatahalli	229.9 0	229.90	JADEGENAHALLI	661
268	2921000402175200	Theneyur	534.45	534.45	SULIBELE	565
269	2921000402202000	Thimmadahalli		51.85	ANUGONDAHALLI	141
270	2921000402175100	Thimmappanahalli	200.88	200.88	SULIBELE	501
271	2921000402191100	Thimmapura	81.92	81.92	JADEGENAHALLI	27
272	2921000402180300	Thimmasandra	105.79	105.79	SULIBELE	555
273		Thimmasandra	68.32	68.32		
274	2921000402196000	Thindlu	269.04	269.04	JADEGENAHALLI	477
275		Thindlu Plantation	101.5 0	101.50		
276	2921000402192900	Thiratahalli	132.57	132.57	JADEGENAHALLI	
277	2921000402200500	Thirumalasettihalli		129.99	ANUGONDAHALLI	785
278	2921000402203900	Thiruvaranga	283.29	283.29	ANUGONDAHALLI	735
279	2921000402191200	Ummalu	151.03	151.03	JADEGENAHALLI	849
280	2921000402197100	Upparahalli	83.1 0	83.10	KASABA (HOSKOTE)	822
281	2921000402196800	Vabasandra	113.34	113.34	KASABA (HOSKOTE)	642
282	2921000402193800	Vadigehalli	164.26	164.26	JADEGENAHALLI	120
283	2921000402194600	Vagata	344.41	344.41	JADEGENAHALLI	1021
284	2921000402194700	Vagata Agrahara	143.77	143.77	JADEGENAHALLI	736
285	2921000402179500	Valagerepura	73.97	73.97	SULIBELE	449
286	2921000402190300	Valagerepura	57.35	57.35	JADEGENAHALLI	461
287	2921000402179100	Vanamanahalli	116.41	116.41	SULIBELE	
288		Varadapura	13.93	13.93	KASABA (HOSKOTE)	247
289	2921000402190000	Veerapura	57.56	57.56	JADEGENAHALLI	
290		Venkatapura	65.02	65.02		
291		Venkateshapura	98.29	98.29		
292		Vijayapura	20.51	20.51		
293	2921000402202800	Yedagondahalli	184.60	184.60	ANUGONDAHALLI	572

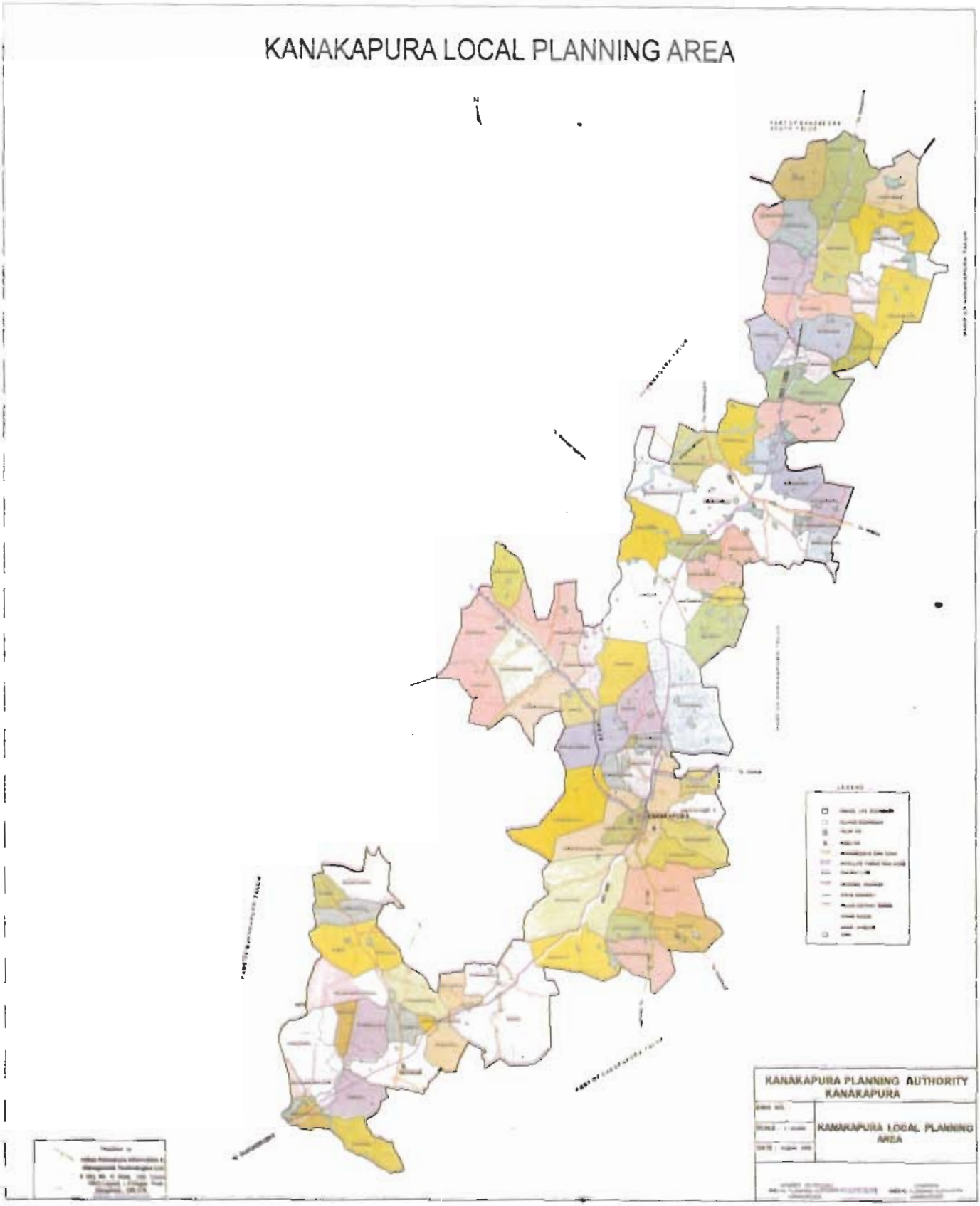
Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
294	2921000402187500	Yelachahalli	311.50	311.50	NANDAGUDI	1183
295	2921000402191500	Yelachamrnanahalli	87.36	87.36	JADEGENAHALLI	186
296	2921000402197800	Yelachanayakanapura	78.49	78.49	KASABA (HOSKOTE)	50
297	2921000402179700	Yenagunte	267.17	267.17	SULIBELE	1279
298	2921000402184300	Yeshvanthapura	70.92	70.92	NANDAGUDI	437
299	2921000402182900	Yethinavadeyarapura	28.42	28.42	NANDAGUDI	303
300	2921000402179800	Yethinavadeyarapura	85.30	85.30	SULIBELE	120
	Total		**47645.71**	**54388.86**		

BANGALORE EAST TALUK, BANGALORE URBAN DISTRICT

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (As per notification)	AREA IN ha (CENSUS 1991)	HOBLI	POPULATION (2001)
301	2920000202069700	Bendiganahalli	199.35	199.35	BIDARAHALLI	225
302	2920000202069900	Bommenahalli	768.33	768.28	BIDARAHALLI	1103
303	2920000202066500	Chikkasandra	373.01	373.01	BIDARAHALLI	13
304	2920000202066600	Gundur	470.36	470.36	BIDARAHALLI	1199
305	2920000202069300	Hancharahalli	532.14	532.14	BIDARAHALLI	992
306	2920000202070000	Huskur	394.16	394.16	BIDARAHALLI	1144
307	2920000202069100	Jothipura	406.06	406.06	BIDARAHALLI	979
308	2920000202068700	Kammasandra	326.31	326.31	BIDARAHALLI	245
309	2920000202068900	Kattugollahalli	768.25	768.25	BIDARAHALLI	841
310		Kodigehalli	259.31	259.31	BIDARAHALLI	101
311	2920000202069800	Lagumenahalli	79.39	79.39	BIDARAHALLI	250
312	2920000202069600	Mandur	701.38	701.38	BIDARAHALLI	1455
313	2920000202069400	Raghuvanahalli	272.01	272.01	BIDARAHALLI	141
314		Shringaripura		178.04		
315	2920000202069200	Thirumenahalli	179.11	179.11	BIDARAHALLI	452
316	2920000202068800	Vanajanahalli (B)	101.35	101.35	BIDARAHALLI	
	Total		**5830.52**	**6008.51**		
	Grand Total		**53476.23**	**60397.37**		

(SOURCE : CENSUS OF INDIA, BANGALORE RURAL & URBAN DISTRICTS)

KANAKAPURA LOCAL PLANNING AREA



KANAKAPURA PLANNING AUTHORITY
KANAKAPURA

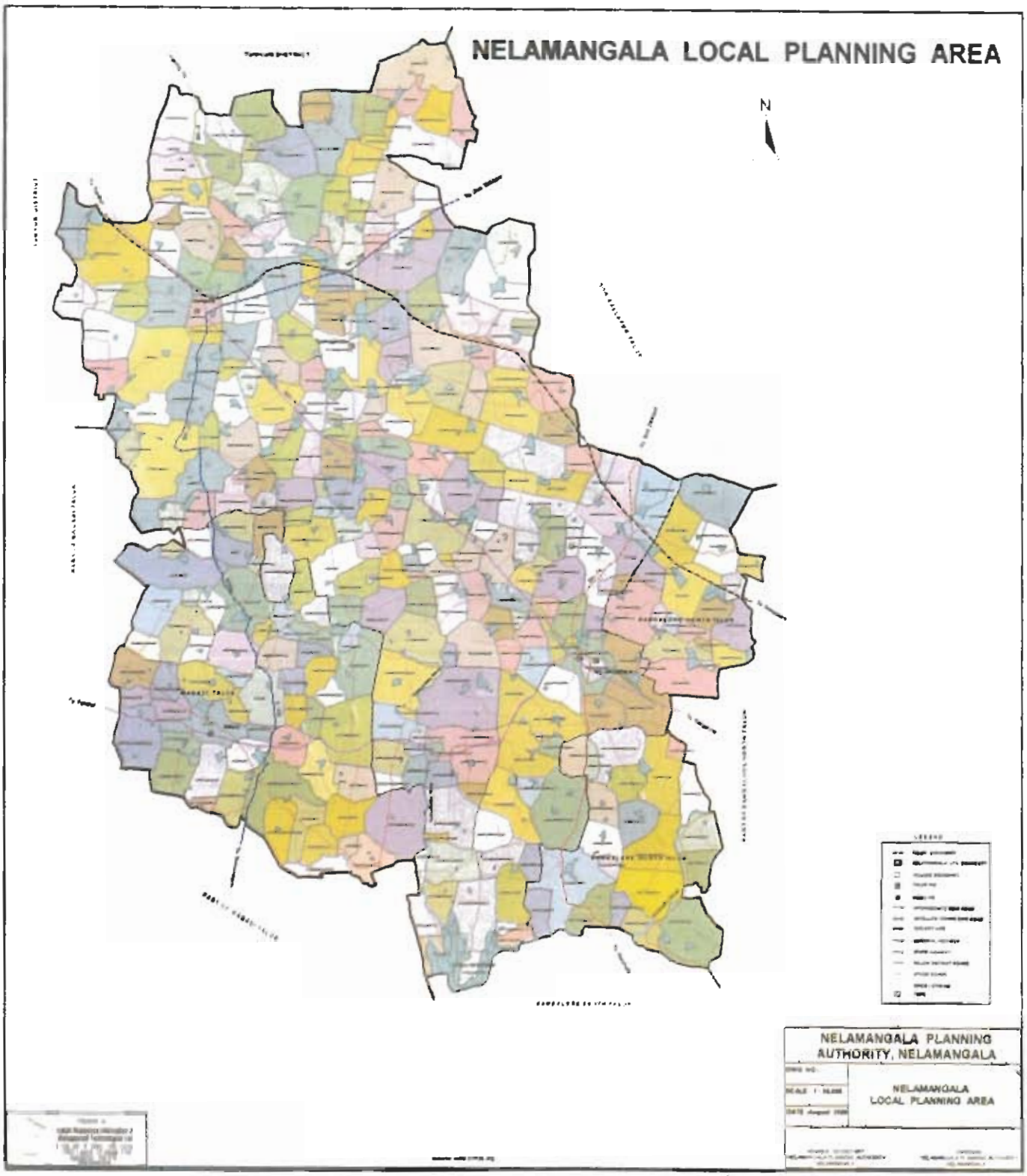
KANAKAPURA LOCAL PLANNING AREA

LIST OF VILLAGES IN KANAKAPURA LOCAL PLANNING AREA (PART OF IZ-1)

KANAKAPURA TALUK, BANGALORE RURAL DISTRICT

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
1	2921000802277700	Achalu	3955.16	1600.75	SATHNUR	2411
2	2921000802271500	Agrahara	341.11	138.11	KASABA(KANAKAPURA)	411
3	2921000802270800	Allimaranahalli	993	401.87	KASABA(KANAKAPURA)	2069
4	2921000802274700	Alur	221.8	215.24	SATHNUR	346
5	2921000802269700	Anajawadi	1299.08	525.99	KASABA(KANAKAPURA)	2075
6	2921000802276800	Anamanahalli	1282.22	519.05	SATHNUR	553
7	2921000802272600	Aralalu	1637.03	662.52	KASABA(KANAKAPURA)	1657
8	2921000802271600	Aralalusandra	1437.08	581.63	KASABA(KANAKAPURA)	1331
9	2921000802272000	Aranakuppe	440.29	178.36	KASABA(KANAKAPURA)	852
10	2921000802263800	Bandiganahalli	662.14	268.07	HAROHALLI	1956
11	2921000802264300	Bannikuppe	1484.12	600.70	HAROHALLI	1651
12	2921000802272100	Baradanahalli	657.35	266.24	KASABA(KANAKAPURA)	1058
13	2921000802273500	Bekuppe	1187.2	480.26	KASABA(KANAKAPURA)	2192
14	2921000802262500	Bettahalli Kaval	181.6213	246.50	HAROHALLI	383
15	2921000802264700	Bheemasandra	387.13	156.78	HAROHALLI	257
16	2921000802276200	Bommanahalli	466.04	188.63	SATHNUR	1127
17	2921000802265000	Cheeluru	2570.21	1040.29	DODDAMARALWADI	2739
18	2921000802272500	Cheeranakuppe	394.36	172.80	KASABA(KANAKAPURA)	1543
19	2921000802265300	Chikkadevarahalli	260.23	105.56	DODDAMARALWADI	299
20	2921000802269800	Chikkamuduwadi	1463.14	566.99	KASABA(KANAKAPURA)	3344
21	2921000802273400	Chokasandra	517.26	209.49	KASABA(KANAKAPURA)	1119
22	2921000802264600	Chulakanakere Kaval	107.04	43.34	HAROHALLI	145
23	2921000802276700	Dalimba	574..28	232.58	SATHNUR	1479
24	2921000802277800	Deshohalli	584.19	243.02	SATHNUR	
25	2921000802264400	Devarakaggalahalli	602.36	243.99	HAROHALLI	515
26	2921000802263700	Doddamuduwadi	1571.14	651.13	HAROHALLI	1291
27	2921000802264800	Dyavasandra	341.6589	331.23	HAROHALLI	517

CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
2921000802262100	Gabbadi	1563.24	632.79	HAROHALLI	1520
2921000802262000	Gabbadi Kaval	142.01	90.42	HAROHALLI	25
2921000802271000	Ganalu	743.63	300.82	KASABA(KANAKAPURA)	1936
2921000802277000	Halasinamaradahalli	218.09	88.32	SATHNUR	307
2921000802273100	Hanumanahalli	1467.15	593.85	KASABA(KANAKAPURA)	238
2921000802263100	Harohalli	3667	1674.77	HAROHALLI	11338
2921000802277300	Honniganahalli	1593.27	644.96	SATHNUR	994
2921000802275800	Hosahalli	1354.14	123.58	SATHNUR	123
2921000802261900	Hosakote	1030.23	405.70	HAROHALLI	651
2921000802263200	Hulugondanahalli	1217.27	552.09	HAROHALLI	1847
2921000802265100	Jakkasandra	838.37	339.51	DODDAMARALWADI	1938
2921000802275700	Kabbal	543.06	549.99	SATHNUR	2011
2921000802278100	Kadahalli	3505.38	419.67	SATHNUR	368
2921000802262200	Kaggalahalli	403.37	357.51	HAROHALLI	1130
2921000802271900	Kallahalli *	265.93	266.36	KASABA(KANAKAPURA)	1627
2921000802275600	Kambasagara	322	325.68	SATHNUR	1048
2921000802272800	Kanakapura (Rural) *	1012.2504	1215.98	KASABA(KANAKAPURA)	1850
2921000842110000	Kanakapura (TMC) *		227.97	Kanakapura (TMC) *	47060
2921000802276600	Kanchavanahalli	772	312.43	SATHNUR	2181
2921000802265200	Keeranagere	840.14	340.09	DODDAMARALWADI	629
2921000802277400	Kemmale	893.16	361.56	SATHNUR	1093
2921000802264500	Maralagere	504.37	204.34	HAROHALLI	218
2921000802263000	Marasandra	636	257.66	HAROHALLI	671
2921000802261700	Medamaranahalli	711.2	315.37	HAROHALLI	1283
2921000802277200	Mudalaswamikuppe	193.23	123.96	SATHNUR	12
2921000802261800	Mudenahalli	938.22	379.83	HAROHALLI	1183
2921000802276900	Naripura	158.9966	107.89	SATHNUR	13
2921000802271100	Ramapura	499.4808	534.39	KASABA(KANAKAPURA)	1166
2921000802271300	Rayasandra	2910.23	1177.91	KASABA(KANAKAPURA)	1645
2921000802277100	Sasalapura	2078.2	841.17	SATHNUR	1660
2921000802277500	Sathanur	1449.12	586.52	SATHNUR	5285


NELAMANGALA LOCAL PLANNING AREA
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NELAMANGALA PLANNING AUTHORITY, NELAMANGALA
NELAMANGALA LOCAL PLANNING AREA

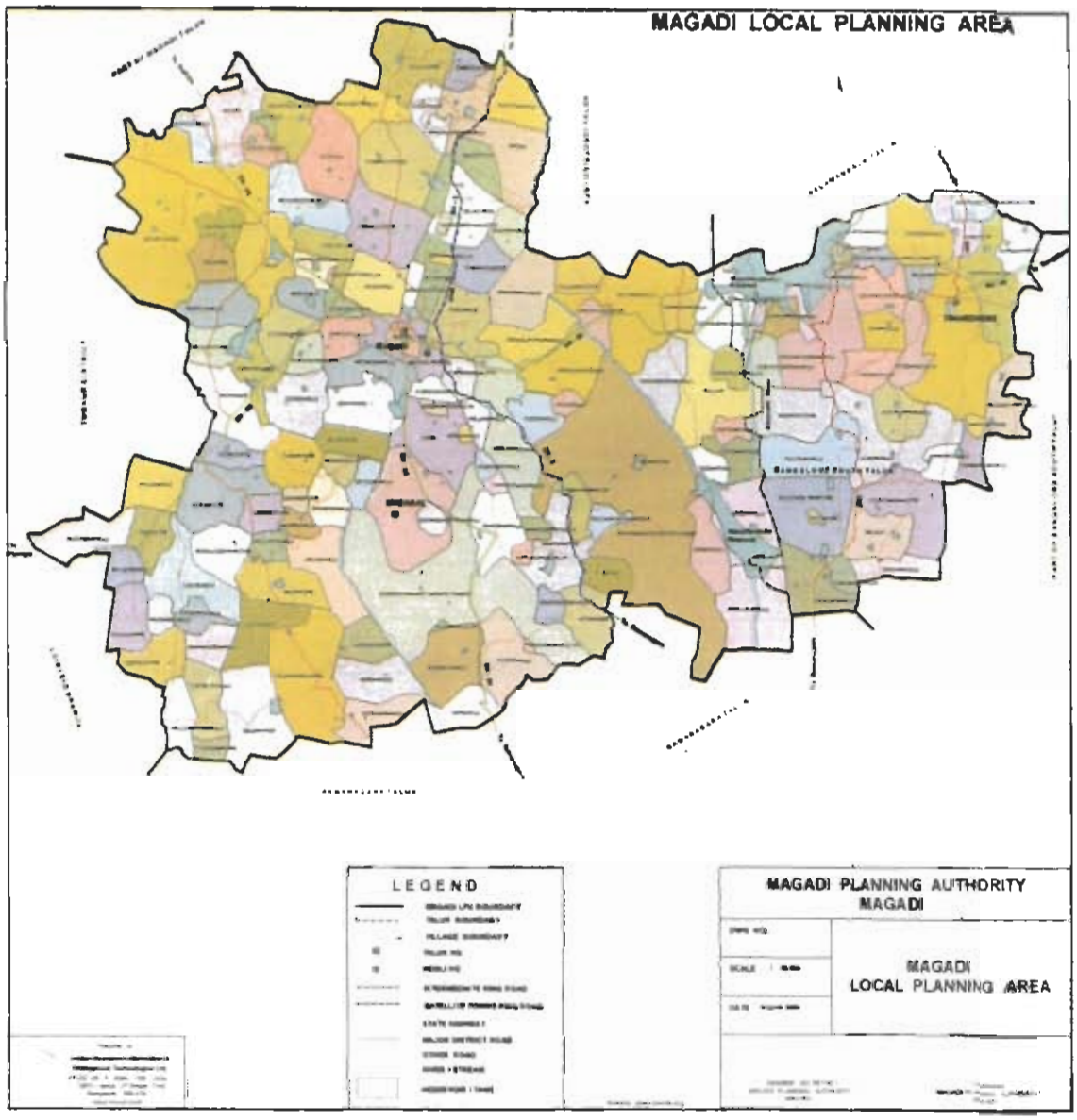
Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
59	2921000802273300	Seegekote	1529.35	618.92	KASABA(KANAKAPURA)	1349
60	2921000802272700	Shivanahalli	3438.1	1391.36	KASABA(KANAKAPURA)	2970
61	2921000802263600	Singasandra	893.29	361.69	HAROHALLI	1019
62	2921000802265400	T.Hosahalli	524.8887	554.58	DODDAMARALWADI	1338
63	2921000802274900	Tailuru Forest	3437.6	3478.09	SATHNUR	353
64	2921000802271800	Thammasandra	672.93	674.03	KASABA(KANAKAPURA)	2061
65	2921000802276300	Thotahalli	721.17	291.96	SATHNUR	1453
66	2921000802271700	Tigalarahalli	181	73.25	KASABA(KANAKAPURA)	735
67	2921000802273600	Tigalarahosahalli	1189.36	481.55	KASABA(KANAKAPURA)	1780
68	2921000802271200	Tungani	396.8248	403.61	KASABA(KANAKAPURA)	1798
69	2921000802269900	Vadedoddi	432.0447	409.53	KASABA(KANAKAPURA)	1246
70	2921000802262300	Vaderahalli	384.84	389.61	HAROHALLI	1103
71	2921000802272200	Virupasandra	892.34	361.34	KASABA(KANAKAPURA)	1754
72	2921000802262400	Yadamadu	271.7593	307.28	HAROHALLI	750
73	2921000802277600	Yadugowdanahalli	53.0465	84.43	SATHNUR	
	Total		72533.25	35105.44		

BANGALORE SOUTH TALUK, BANGALORE URBAN DISTRICT

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS 1991)	HOBLI	POPULATION (2001)
74	2920000202063700	Alakabelalur	173.2	70.22	UTTARAHALLI	17
75	2920000202063400	Chudahalli K.	960.21	389.16	UTTARAHALLI	998
76	2920000202063600	Gulakamale	1141.01	484.93	UTTARAHALLI	1835
77	2920000202063000	Kaggalipura	1058.05	939.18	UTTARAHALLI	6907
78	2920000202063200	Naganayakanahalli	408.21	167.77	UTTARAHALLI	576
79	2920000202063300	Nelaguli	836.28	374.51	UTTARAHALLI	956
80	2920000202063900	Nettigere	1160.31	472.19	UTTARAHALLI	1340
81	2920000202064000	Ravugodlu	911.02	388.80	UTTARAHALLI	983
82	2920000202063800	Somanahalli	1333.31	539.78	UTTARAHALLI	3455
83	2920000202064100	Sunkadakatte	627.24	253.99	UTTARAHALLI	125
84	2920000202063500	Tharalu	735.14	600.81	UTTARAHALLI	1259

Sl. No.	CODE (CENSUS 2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
85	2920000202064200	Thattaguppe	945.23	382.67	UTTARAHALLI	2028
86	2920000202063100	Uttari	443.4736	495.51	UTTARAHALLI	1038
87	2920000202064300	Vaddara Palya	1555.17	613.29	UTTARAHALLI	1537
	Total		**12287.85**	**6172.81**		
	Grand Total		**84821.10**	**41278.25**		

(SOURCE : CENSUS OF INDIA, BANGALORE RURAL & URBAN DISTRICTS)


MAGADI LOCAL PLANNING AREA
LEGEND
MAGADI PLANNING AUTHORITY
MAGADI
MAGADI
LOCAL PLANNING AREA

LIST OF VILLAGES IN MAGADI LOCAL PLANNING AREA (PART OF IZ-2)

MAGADI TALUK, BANGALORE RURAL DISTRICT

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
1	2921000502227000	Adakamaranahalli	324.3102	340.47	KASABA(MAGADI)	751
2	2921000502225400	Agalakote	509.5948	471.65	KASABA(MAGADI)	1401
3	2921000502231300	Ajjanahalli	451.7929	457.11	MADABAL	1552
4	2921000502223500	Aladakattepalya	11.966	10.81	KASABA(MAGADI)	
5	2921000502229600	Alalakuppe	279.2615	263.82	MADABAL	749
6	2921000502231400	Annekaranahalli	118.1566	122.52	MADABAL	249
7	2921000502231500	Attingere	306.1225	368.03	MADABAL	991
8	2921000502233000	Awerahalli @	481.6576	542.70	MADABAL	115
9	2921000502226900	Bachenahalli	785.3183	833.73	KASABA(MAGADI)	1139
10	2921000502225800	Balekatte	213.8318	254.90	KASABA(MAGADI)	62
11	2921000502228800	Balenahalli	95.4888	107.66	MADABAL	591
12	2921000502222600	Basavapatna	139.991	161.13	KASABA(MAGADI)	470
13	2921000502228200	Basavenahalli	55.6721	63.47	MADABAL	111
14	2921000502230600	Belagavadi	625.6535	544.00	MADABAL	850
15	2921000502224200	Belagumba	368.4477	371.89	KASABA(MAGADI)	1208
16	2921000502223900	Bettadasipalya	25.6099	41.71	KASABA(MAGADI)	215
17	2921000502224300	Byadarahalli	162.6167	183.91	KASABA(MAGADI)	233
18	2921000502221500	Byalakere	519.2794	545.80	KASABA(MAGADI)	1181
19	2921000502223800	Bychapura *	211.9938	242.84	KASABA(MAGADI)	1133
20	2921000502229800	Chakrabavi	485.1468	449.21	MADABAL	1225
21	2921000502223400	Chandurayanahalli	122.9185	141.88	KASABA(MAGADI)	506
22	2921000502228700	Channapura	71.3486	84.78	MADABAL	
23	2921000502232900	Chikkamaskal	191.2892	231.23	MADABAL	286
24	2921000502233100	Dabbaguli	313.705	274.61	MADABAL	564
25	2921000502225500	Dandigepura	170.2591	178.20	KASABA(MAGADI)	655
26	2921000502232800	Doddamaskal	90.5258	106.78	MADABAL	202

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
27	2921000502225200	Donakuppe	184.3026	219.83	KASABA(MAGADI)	921
28	2921000502222100	Dubbagottige	611.3159	505.05	KASABA(MAGADI)	1043
29	2921000502229900	Gattipura	368.5279	436.88	MADABAL	1040
30	2921000502230700	Gejjagaraguppe	867.0514	825.08	MADABAL	1109
31	2921000502231100	Gerahalli	258.4956	276.87	MADABAL	528
32	2921000502231200	Goddalahalli	452.7357	397.41	MADABAL	670
33	2921000502226700	Gollarapalya	185.883	213.32	KASABA(MAGADI)	295
34	2921000502232300	Guddahalli	210.1813	241.04	MADABAL	653
35	2921000502222000	Gudepalya	124.3736	127.12	KASABA(MAGADI)	194
36	2921000502226100	Gummasandra	94.5171	116.47	KASABA(MAGADI)	981
37	2921000502225300	Halasabele	298.9968	378.74	KASABA(MAGADI)	918
38	2921000502223000	Halashettihalli	234.223	253.57	KASABA(MAGADI)	702
39	2921000502221200	Halasinganahalli	270.5011	285.27	KASABA(MAGADI)	430
40	2921000502228900	Haluvenahalli	116.4806	113.95	MADABAL	433
41	2921000502231900	Hanchikuppe	411.1764	409.39	MADABAL	1645
42	2921000502223200	Harohalli	174.6317	182.49	KASABA(MAGADI)	548
43	2921000502221800	Harthi	742.0299	801.09	KASABA(MAGADI)	1126
44	2921000502229000	Heligehalli	424.3656	451.50	MADABAL	1134
45	2921000502221100	Honge Kaval	151.1038	92.73	KASABA(MAGADI)	
46	2921000502223600	Hosahalli *	330.7316	210.27	KASABA(MAGADI)	654
47	2921000502221300	Hujagal	492.1243	399.92	KASABA(MAGADI)	586
48	2921000502229300	Hulikatte	227.1943	249.90	MADABAL	354
49	2921000502223100	Juttanahalli	276.7314	299.87	KASABA(MAGADI)	318
50	2921000502220900	Kalari	450.3143	474.85	KASABA(MAGADI)	759
51	2921000502222700	Kalari Kaval	1857.4035	1491.65	KASABA(MAGADI)	2163
52	2921000502230300	Kalludevanahalli	231.7777	225.34	MADABAL	721
53	2921000502227300	Kallur	557.8448	595.11	KASABA(MAGADI)	887
54	2921000502222500	Kalya	485.3063	588.30	KASABA(MAGADI)	1477
55	2921000502231700	Kalyanadevramatha	100.7906	111.22	MADABAL	376
56	2921000502221900	Kanchugaranahalli	81.3678	86.10	KASABA(MAGADI)	157

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
57	2921000502223700	Karagadahalli	74.1137	90.38	KASABA(MAGADI)	194
58	2921000502228100	Karlahalli	23.3125	29.49	MADABAL	50
59	2921000502232200	Karlamangala	648.1798	580.07	MADABAL	1236
60	2921000502225000	Kempasagara	243.5193	265.15	KASABA(MAGADI)	634
61	2921000502221000	Kodipalya	47.2585	38.10	KASABA(MAGADI)	217
62	2921000502225700	Kondahalli	381.7472	348.33	KASABA(MAGADI)	692
63	2921000502230100	Koramangala	134.4377	142.67	MADABAL	366
64	2921000502231000	Kotagarahalli	277.4444	268.99	MADABAL	519
65	2921000502230800	Lakkasandra	203.5708	209.52	MADABAL	52
66	2921000502227700	Madabal	757.943	687.73	MADABAL	2086
67	2921000502224700	Magadi (Rural) *	284.5843	239.35	MAGADI - TMC	18
68	2921000542107000	Magadi TMC	97.1537		MAGADI - TMC	25031
69	2921000502229500	Mallenahalli	157.7797	141.66	MADABAL	71
70	2921000502227500	Managallu	103.1652	115.54	MADABAL	794
71	2921000502233200	Manchanabele	647.6896	546.32	MADABAL	1027
72	2921000502226500	Maralagondala	413.283	459.32	KASABA(MAGADI)	789
73	2921000502229200	Maraludevanapura	295.5897	334.70	MADABAL	399
74	2921000502231600	Matha	178.4945	178.76	MADABAL	640
75	2921000502229100	Mathikere	372.3214	327.57	MADABAL	1274
76	2921000502222300	Mayanaikanahalli	381.9212	375.89	KASABA(MAGADI)	971
77	2921000502226200	Melanahalli	100.9595	106.18	KASABA(MAGADI)	187
78	2921000502228400	Nagamangala	354.3055	390.28	MADABAL	1061
79	2921000502221400	Nagasettihalli	262.0039	320.61	KASABA(MAGADI)	500
80	2921000502224000	Nasarumavinakatte	28.5355	35.55	KASABA(MAGADI)	
81	2921000502231800	Nayakanapalya	166.6169	92.94	MADABAL	623
82	2921000502232600	Nelapatna	15.1466	11.34	MADABAL	111
83	2921000502230900	Neralavadi	355.2941	334.31	MADABAL	915
84	2921000502226000	Nethenahalli	295.7766	338.33	KASABA(MAGADI)	1831
85	2921000502224400	Panakanakallu	445.9176	513.72	KASABA(MAGADI)	305
86	2921000502232100	Papasastripalya	66.4183	74.12	MADABAL	12

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
87	2921000502232400	Polohalli	71.1124	77.78	MADABAL	247
88	2921000502227900	Pura (Gattipura)	496.9185	480.58	MADABAL	790
89	2921000502232000	Rangacharipalya	48.9533	62.07	MADABAL	7
90	2921000502221600	Rangenahalli	143.466	156.58	KASABA(MAGADI)	214
91	2921000502230500	S.Bydarahalli	271.761	192.10	MADABAL	495
92	2921000502230000	Sadamaranahalli	182.9386	250.09	MADABAL	225
93	2921000502228600	Sannenahalli	211.0152	145.72	MADABAL	222
94	2921000502225100	Sathanur	456.8027	431.92	KASABA(MAGADI)	1469
95	2921000502232500	Savanadurga State Forest	2828.4446	2759.82	MADABAL	67
96	2921000502230200	Seegekuppe	279.4287	297.22	MADABAL	733
97	2921000502227600	Settarahalli	127.4181	104.40	MADABAL	
98	2921000502227800	Shambhudevanahalli	85.7825	92.17	MADABAL	133
99	2921000502227200	Shanubhoganahalli	238.1589	318.43	KASABA(MAGADI)	721
100	2921000502221700	Sidaganahalli	315.5481	312.66	KASABA(MAGADI)	1108
101	2921000502228500	Siddedevarabetta State Forest	1961.6481	1797.49	MADABAL	
102	2921000502227400	Singadasanahalli	126.7843	155.31	KASABA(MAGADI)	69
103	2921000502224100	Singripalya	310.7566	182.41	KASABA(MAGADI)	183
104	2921000502226300	Somakkanamutta	134.6112	115.09	KASABA(MAGADI)	22
105	2921000502222900	Sripathihalli	336.2159	352.49	KASABA(MAGADI)	1019
106	2921000502228000	Subbasastripalya	40.6445	51.00	MADABAL	155
107	2921000502230400	T.Channapura	83.0896	82.85	MADABAL	
108	2921000502226800	Thagachaguppe	133.346	166.78	KASABA(MAGADI)	553
109	2921000502222200	Thaggikuppe	534.7761	555.51	KASABA(MAGADI)	1223
110	2921000502224800	Thatavalu	196.3348	186.46	KASABA(MAGADI)	1015
111	2921000502224500	Thimmasandra	268.0212	258.68	KASABA(MAGADI)	375
112	2921000502224600	Thirumale *	434.7512	396.23	KASABA(MAGADI)	209
113	2921000502228300	Thyagadarepalya	44.4765	37.96	MADABAL	179
114	2921000502225600	Tubinakere	294.064	289.52	KASABA(MAGADI)	729
115	2921000502225900	Udavigere	379.726	372.69	KASABA(MAGADI)	1316
116	2921000502222800	Upparthi	193.9062	234.98	KASABA(MAGADI)	327

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
117	2921000502227100	Varadenahalli	149.0509	185.40	KASABA(MAGADI)	354
118	2921000502220800	Varadohalli	133.9229	160.95	KASABA(MAGADI)	361
119	2921000502229400	Varthenahalli	370.7768	402.50	MADABAL	366
120	2921000502232700	Veerapura @	120.5657	193.41	MADABAL	110
121	2921000502226400	Vengalappanahalli	352.3016	313.94	KASABA(MAGADI)	266
122	2921000502224900	Viswanathapura	141.0668	146.53	KASABA(MAGADI)	345
123	2921000502222400	Vitalapura	220.991	165.03	KASABA(MAGADI)	226
124	2921000502223300	Voddarapalya *	91.8705	116.36	KASABA(MAGADI)	110
125	2921000502229700	Yalagadahalli	102.0363	113.53	MADABAL	
	Total		**39132.40**	**38766.73**		
BANGALORE SOUTH TALUK, BANGALORE URBAN DISTRICT						
126	2920000202054800	Ajjanahalli	646.5942	589.94	TAVAREKERE	1612
127	2920000202055600	Byalalu	337.3468	300.65	TAVAREKERE	950
128	2920000202053200	Bychaguppe	105.1415	120.60	TAVAREKERE	566
129	2920000202055200	Chikkanahalli	376.1249	454.01	TAVAREKERE	1116
130	2920000202054000	Cholanaikanahalli	673.3616	634.45	TAVAREKERE	1474
131	2920000202055700	Chunchanakuppe	538.8149	512.63	TAVAREKERE	1620
132		Devamachahalli	259.3485	228.47	TAVAREKERE	528
133	2920000202053300	Devamachehalli Narayanapura	104.2568	106.18	TAVAREKERE	43
134	2920000202054700	Doddamaranahalli	262.7552	249.38	TAVAREKERE	653
135	2920000202055500	Donnenahalli	207.8012	262.38	TAVAREKERE	438
136	2920000202054100	Ganakallu	176.059	132.64	TAVAREKERE	339
137	2920000202055800	Ganapathihalli	142.1564	114.39	TAVAREKERE	957
138	2920000202053600	Gangappanahalli	147.9771	200.23	TAVAREKERE	207
139	2920000202052600	Gangenahalli	401.2742	361.05	TAVAREKERE	672
140	2920000202052900	Honniganahatti	232.0073	216.09	TAVAREKERE	1400
141	2920000202054900	Huluvenahalli	489.027	500.31	TAVAREKERE	789
142	2920000202052500	Jogerahalli	165.748	138.33	TAVAREKERE	410
143	2920000202055900	Karigiripura (B)	41.7861	34.94	TAVAREKERE	
144	2920000202053800	Kempagondanahalli	177.1999	210.83	TAVAREKERE	652

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
145		Kudlu			TAVAREKERE	
146	2920000202053100	Kurubarahalli	517.446	500.57	TAVAREKERE	955
147	2920000202055400	Kurubarapalya	103.571	98.04	TAVAREKERE	156
148	2920000202053900	Madapatna	413.5014	363.42	TAVAREKERE	888
149	2920000202053500	Marenahalli	71.0382	138.92	TAVAREKERE	187
150	2920000202056000	Muddaiahnapalya	292.9668	284.85	TAVAREKERE	400
151	2920000202052400	Naganahalli	63.9966	195.66	TAVAREKERE	369
152	2920000202052700	Narasimhapura (B)	120.3036	78.30	TAVAREKERE	
153	2920000202054200	Peddanapalya	243.4294	216.82	TAVAREKERE	302
154	2920000202056100	Punagumaranahalli	152.5441	162.32	TAVAREKERE	290
155	2920000202054600	Puradapalya	226.7418	206.40	TAVAREKERE	185
156	2920000202055000	Sulivara	641.755	682.34	TAVAREKERE	1386
157	2920000202055100	Sulivara Ramapura (B)	20.4977	22.13	TAVAREKERE	12
158	2920000202052300	Tavakadahalli(B)	497.8473	127.13	TAVAREKERE	
159	2920000202054300	Tavarekere	961.4353	955.56	TAVAREKERE	4639
160	2920000202053700	Thippagondanahalli	274.9537	196.17	TAVAREKERE	595
161	2920000202055300	Vadahalli	98.673	114.67	TAVAREKERE	36
162	2920000202052800	Varthur	191.6455	223.14	TAVAREKERE	921
	Total		**10377.13**	**9933.94**		
	Grand Total		**49509.54**	**48700.67**		

(SOURCE : CENSUS OF INDIA, BANGALORE RURAL & URBAN DISTRICTS)

LIST OF VILLAGES IN NELAMANGALA LOCAL PLANNING AREA (APZ - 2)

NELAMANGALA TALUK, BANGALORE RURAL DISTRICT

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
1	2921000102108100	Adihosahalli	100.2807	112.26	THYMAGONDULU	430
2	2921000102102300	Agalakuppa	397.1633	392.92	SOMPURA	1142
3	2921000102118500	Agasarahalli	71.4014	75.41	KASABA(NELAMANGALA)	195
4	2921000102116400	Ahobalapalya	46.1478	39.38	KASABA(NELAMANGALA)	
5	2921000102106700	Aladahalli	55.1552	36.03	SOMPURA	61
6	2921000102112000	Alunaikanahalli	72.8804	95.19	THYMAGONDULU	287
7	2921000102107000	Ananthapura	24.5552	30.20	THYMAGONDULU	
8	2921000102116800	Ananthapura	59.8743	27.51	KASABA(NELAMANGALA)	218
9	2921000102108000	Appagondanahalli	116.2284	126.19	THYMAGONDULU	526
10	2921000102118900	Aralasandra	156.7842	163.41	KASABA(NELAMANGALA)	228
11	2921000102118600	Araledibba	100.4537	113.45	KASABA(NELAMANGALA)	735
12	2921000102117400	Arasinakunte	493.512	539.96	KASABA(NELAMANGALA)	4744
13	2921000102112700	Arebommanahalli	293.8954	302.24	THYMAGONDULU	609
14	2921000102115600	Arjunabettahalli	220.4187	218.54	KASABA(NELAMANGALA)	406
15	2921000102122800	Avalakuppe	184.5774	176.77	KASABA(NELAMANGALA)	503
16	2921000102105000	Avverahalli	244.8449	245.12	SOMPURA	296
17	2921000102121200	Balaguruvanapalya	31.7021	25.55	KASABA(NELAMANGALA)	35
18	2921000102108900	Ballagere	453.0223	442.47	THYMAGONDULU	810
19	2921000102123400	Banasavadi	297.8411	297.20	KASABA(NELAMANGALA)	495
20	2921000102100700	Baragoor	564.6159	370.51	SOMPURA	768
21	2921000102115100	Bardi	510.2728	452.00	KASABA(NELAMANGALA)	1279
22	2921000102104400	Bargenahalli	300.2814	292.47	SOMPURA	1022
23	2921000102117900	Basavanahalli	220.6273	229.11	KASABA(NELAMANGALA)	3417
24	2921000102105600	Basavapatna	182.4039	197.86	SOMPURA	282
25	2921000102100300	Benchanahalli	378.0685	351.32	SOMPURA	964
26	2921000102100200	Bennegere	59.8139	105.80	SOMPURA	176
27	2921000102101600	Bettadahosahalli	102.5697	116.00	SOMPURA	112
28	2921000102115300	Bettahalli	196.5878	198.40	KASABA(NELAMANGALA)	614
29	2921000102103700	Bharathipura	100.236	98.73	SOMPURA	446
30	2921000102122200	Bhattarahalli	81.0571	113.60	KASABA(NELAMANGALA)	236

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
31	2921000102120600	Bhavikere	231.2133	247.08	KASABA(NELAMANGALA)	596
32	2921000102121300	Bhoosandra	240.9404	221.59	KASABA(NELAMANGALA)	382
33	2921000102111600	Bidalur	188.6571	180.61	THYMAGONDULU	677
34	2921000102122500	Bidanapalya	68.5681	49.46	KASABA(NELAMANGALA)	167
35	2921000102104900	Billanakote	356.2845	374.53	SOMPURA	1329
36	2921000102102100	Biragondanahalli	107.7224	108.74	SOMPURA	223
37	2921000102109600	Biragundanahalli	254.8482	249.82	THYMAGONDULU	356
38	2921000102115400	Bolamaranahalli	162.2788	169.94	KASABA(NELAMANGALA)	450
39	2921000102123600	Bolamaranahalli	200.011	169.96	KASABA(NELAMANGALA)	318
40	2921000102119400	Bommanahalli	183.1408	188.75	KASABA(NELAMANGALA)	798
41	2921000102118200	Budihal	296.4479	243.37	KASABA(NELAMANGALA)	892
42	2921000102101400	Bugadihalli	228.4427	216.13	SOMPURA	629
43	2921000102113600	Byadarahalli	196.8926	211.92	THYMAGONDULU	495
44	2921000102119600	Byadarahalli	144.3592	180.67	KASABA(NELAMANGALA)	672
45	2921000102114800	Byranahalli	310.8019	234.92	KASABA(NELAMANGALA)	780
46	2921000102110500	Byranaikanahalli	303.871	298.58	THYMAGONDULU	758
47	2921000102120000	Byrasandra	437.6359	447.14	KASABA(NELAMANGALA)	919
48	2921000102115500	Byrasettihalli	500.5438	461.48	KASABA(NELAMANGALA)	967
49	2921000102103900	Chandanahosahalli	104.5416	103.56	SOMPURA	192
50	2921000102102600	Channohalli	74.3226	83.35	SOMPURA	236
51	2921000102110600	Chikkanahalli	230.5975	256.10	THYMAGONDULU	998
52	2921000102100900	Chikkanapalya	54.0967	53.43	SOMPURA	38
53	2921000102100500	Chikkannanahalli	169.9262	133.25	SOMPURA	120
54	2921000102113800	Chikkannanne	12.5276	36.66	THYMAGONDULU	
55	2921000102120100	Chikmaranahalli	474.5079	460.78	KASABA(NELAMANGALA)	1091
56	2921000102122600	Chowdasandra	335.7329	356.68	KASABA(NELAMANGALA)	604
57	2921000102106300	Dasanapura	82.6152	76.42	SOMPURA	
58	2921000102101200	Dasenahalli	404.3806	395.13	SOMPURA	750
59	2921000102116700	Deganahalli	132.9373	135.12	KASABA(NELAMANGALA)	472
60	2921000102101900	Devarahosahalli	283.6408	316.43	SOMPURA	1290
61	2921000102110000	Doddabele	439.1966	475.09	THYMAGONDULU	1581
62	2921000102109300	Doddachannohalli	87.1472	95.13	THYMAGONDULU	348
63	2921000102121100	Doddakarenahalli	244.7662	291.41	KASABA(NELAMANGALA)	481
64	2921000102113900	Dodderi	278.4415	260.57	THYMAGONDULU	807

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
65	2921000102118000	Gangadharanapalya	77.1788	65.10	KASABA(NELAMANGALA)	325
66	2921000102105400	Gangenapura	123.6081	140.47	SOMPURA	723
67	2921000102105800	Gantehosahalli	189.2036	172.37	SOMPURA	319
68	2921000102106600	Geddalahalli	58.1378	71.50	SOMPURA	133
69	2921000102119200	Geddalahalli	85.4366	93.25	KASABA(NELAMANGALA)	506
70	2921000102119700	Ghandragulupura	137.7429	100.78	KASABA(NELAMANGALA)	174
71	2921000102101000	Giriyanapalya	56.3325	54.81	SOMPURA	167
72	2921000102115700	Gollahalli	269.97	271.20	KASABA(NELAMANGALA)	1234
73	2921000102107700	Goraghatta	424.4862	553.26	THYMAGONDULU	939
74	2921000102123000	Goravanahalli	237.4225	293.85	KASABA(NELAMANGALA)	104
75	2921000102123700	Gorinabele	389.3033	376.54	KASABA(NELAMANGALA)	909
76	2921000102105100	Gottikere	111.3392	122.94	SOMPURA	481
77	2921000102114000	Govenahalli	170.7216	166.38	THYMAGONDULU	897
78	2921000102102800	Govindapura	69.5172	20.58	SOMPURA	338
79	2921000102113200	Govindapura	15.9973	60.19	THYMAGONDULU	355
80	2921000102105300	Gowrapura	88.6311	123.43	SOMPURA	277
81	2921000102110800	Guddegowdana Channohalli	172.4341	169.68	THYMAGONDULU	315
82	2921000102110100	Gulapura	129.0907	137.05	THYMAGONDULU	685
83	2921000102111100	Gundenahalli	201.9128	208.53	THYMAGONDULU	483
84	2921000102106800	Gundenahalli	25.5516	19.13	SOMPURA	195
85	2921000102105900	Guruvanahalli	22.1308	22.57	SOMPURA	146
86	2921000102123800	H.Kempalinganahalli	116.6608	181.60	KASABA(NELAMANGALA)	413
87	2921000102120200	Hajipalya	62.2988	54.36	KASABA(NELAMANGALA)	72
88	2921000102099700	Halenahalli	271.5806	284.36	SOMPURA	805
89	2921000102101800	Halenijagal	761.5402	773.39	SOMPURA	1091
90	2921000102112900	Halkur	307.4843	264.69	THYMAGONDULU	268
91	2921000102109700	Hallurampura	91.1488	89.08	THYMAGONDULU	
92	2921000102121000	Hanchipura	405.8177	408.26	KASABA(NELAMANGALA)	958
93	2921000102121500	Hanumanapalya	37.8301	28.24	KASABA(NELAMANGALA)	73
94	2921000102106900	Hanumanthapura	165.5821	170.52	SOMPURA	588
95	2921000102111900	Harvesandra	108.9876	104.14	THYMAGONDULU	152
96	2921000102110700	Hasurahalli	389.6442	418.00	THYMAGONDULU	857
97	2921000102101300	Heggunda	520.159	490.72	SOMPURA	2050

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98	2921000102113000	Honnarayanahalli	168.7741	164.26	THYMAGONDULU	442
99	2921000102122100	Honnasandra	446.3332	451.53	KASABA(NELAMANGALA)	606
100	2921000102104500	Honnenahalli	251.0084	248.75	SOMPURA	1170
101	2921000102104800	Hosahalli	221.2967	236.85	SOMPURA	581
102	2921000102122900	Hosahalli	234.3297	248.62	KASABA(NELAMANGALA)	116
103	2921000102100600	Hulleharve	248.4402	225.20	SOMPURA	313
104	2921000102119300	Huralihalli	193.899	212.58	KASABA(NELAMANGALA)	454
105	2921000102115800	Hydalu	196.8905	248.20	KASABA(NELAMANGALA)	761
106	2921000102102700	Imchanahalli	138.6614	89.00	SOMPURA	344
107	2921000102123500	Iregenahalli	126.0243	117.89	KASABA(NELAMANGALA)	
108	2921000102110900	Isuvanahalli	343.0157	329.88	THYMAGONDULU	1219
109	2921000102099800	Jajoor	103.8174	102.70	SOMPURA	278
110	2921000102114200	Jakkanahalli	403.3583	465.90	THYMAGONDULU	915
111	2921000102107800	Jakkasandra	199.4844	185.43	THYMAGONDULU	11
112	2921000102117700	Jakkasandra	249.1777	249.23	KASABA(NELAMANGALA)	1566
113	2921000102115900	K.G. Srinivasapura	49.0725	73.87	KASABA(NELAMANGALA)	198
114	2921000102120500	K.Kempalinganahalli	185.4161	112.68	KASABA(NELAMANGALA)	632
115	2921000102116500	Kachanahalli	353.084	318.49	KASABA(NELAMANGALA)	956
116	2921000102122000	Kadukarenahalli	89.1722	140.72	KASABA(NELAMANGALA)	84
117	2921000102111800	Kalalghatta	281.7519	287.82	THYMAGONDULU	890
118	2921000102102200	Kallunaikanahalli	206.8988	186.15	SOMPURA	216
119	2921000102102000	Kamalapura	225.0882	219.96	SOMPURA	629
120	2921000102105700	Kambal	513.692	485.55	SOMPURA	1278
121	2921000102108400	Kannohalli	77.4314	69.34	THYMAGONDULU	178
122	2921000102116900	Kanugondanahalli	307.6504	296.49	KASABA(NELAMANGALA)	2414
123	2921000102123300	Kanuvanahalli	133.5264	151.91	KASABA(NELAMANGALA)	191
124	2921000102109900	Karehalli	281.058	268.59	THYMAGONDULU	666
125	2921000102112400	Karenahalli	44.2088	47.47	THYMAGONDULU	51
126	2921000102102900	Karimanne	204.522	215.06	SOMPURA	445
127	2921000102107500	Karimaranahalli	236.936	235.14	THYMAGONDULU	349
128	2921000102106100	Kasaragatta	164.729	169.56	SOMPURA	541
129	2921000102112600	Kempapura Agrahara	82.9621	86.05	THYMAGONDULU	476
130	2921000102119100	Kempohalli	180.0412	208.95	KASABA(NELAMANGALA)	731
131	2921000102119900	Kenchanahalli	212.6277	213.06	KASABA(NELAMANGALA)	332

S.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
32	2921000102109000	Kenchanapura	412.0163	444.34	THYMAGONDULU	345
133	2921000102104000	Kengal	690.0509	675.64	SOMPURA	1209
134	2921000102104700	Kengalkempohalli	122.2503	123.86	SOMPURA	521
135	2921000102106500	Kerekattiganoor	242.2611	239.52	SOMPURA	849
136	2921000102120900	Kodappanahalli	75.366	71.57	KASABA(NELAMANGALA)	388
137	2921000102112800	Kodigebommanahalli	323.1668	322.57	THYMAGONDULU	513
138	2921000102108800	Kodigehalli	367.1927	312.89	THYMAGONDULU	957
139	2921000102111700	Kodihalli	99.8213	102.11	THYMAGONDULU	769
140	2921000102111500	Kodipalya	56.9066	68.52	THYMAGONDULU	192
141	2921000102118800	Koneripura	32.2361	27.13	KASABA(NELAMANGALA)	
142	2921000102117100	Koolipura	108.2835	101.02	KASABA(NELAMANGALA)	450
143	2921000102121800	Koratagere	133.768	115.76	KASABA(NELAMANGALA)	140
144	2921000102122700	Kothanahalli	210.2117	207.32	KASABA(NELAMANGALA)	203
145	2921000102114300	Krishnarajapalya	32.9656	12.33	THYMAGONDULU	53
146	2921000102117000	Krishnarajapalya	40.8612	22.47	KASABA(NELAMANGALA)	
147	2921000102107900	Krishnarajapura	76.5809	88.97	THYMAGONDULU	43
148	2921000102122400	Krishnarajapura	26.1263	20.65	KASABA(NELAMANGALA)	6
149		Krishnarajapura	33.9652	39.81	KASABA(NELAMANGALA)	60
150	2921000102112300	Kuluvanahalli	226.4344	218.00	THYMAGONDULU	908
151	2921000102101100	Kuntbommanahalli	222.1317	234.09	SOMPURA	444
152	2921000102100000	Kuruvel Thimmanahalli	195.9258	159.75	SOMPURA	174
153	2921000102104300	Kuthagatta	213.2972	158.56	SOMPURA	636
154	2921000102110400	Lakkappanahalli	136.6981	135.56	THYMAGONDULU	300
155	2921000102113400	Lakkasandra	134.0739	132.44	THYMAGONDULU	357
156	2921000102112100	Lakkenahalli	95.6276	114.83	THYMAGONDULU	541
157	2921000102103300	Lakkuru	332.7659	322.13	SOMPURA	2109
158	2921000102109500	Lakshmanapura	112.055	121.73	THYMAGONDULU	69
159	2921000102121900	Lingenahalli	123.7913	128.51	KASABA(NELAMANGALA)	137
160	2921000102106000	Machenahalli	285.1005	307.49	SOMPURA	746
161	2921000102116300	Machonaikanahalli	179.2017	212.99	KASABA(NELAMANGALA)	470
162	2921000102100800	Modaga	177.9051	220.98	SOMPURA	36
163	2921000102119000	Madalakote	284.253	305.67	KASABA(NELAMANGALA)	1101
164	2921000102108200	Maddenahalli	81.1298	93.03	THYMAGONDULU	230
165	2921000102103200	Maddenahalli	143.2445	135.59	SOMPURA	337

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166	2921000102121400	Mahadevapura	197.9962	250.62	KASABA(NELAMANGALA)	971
167	2921000102112200	Mahimapura	186.3335	202.20	THYMAGONDULU	324
168	2921000102108500	Makanakuppe	163.5648	127.39	THYMAGONDULU	488
169	2921000102099900	Makenahalli	369.3847	458.76	SOMPURA	672
170	2921000102117500	Mallapura	251.9601	210.32	KASABA(NELAMANGALA)	640
171	2921000102120700	Mallarabanavadi	370.3283	401.03	KASABA(NELAMANGALA)	1098
172	2921000102114600	Malonagathihalli	121.1743	132.39	KASABA(NELAMANGALA)	200
173	2921000102122300	Manchenahalli	236.1281	243.11	KASABA(NELAMANGALA)	907
174	2921000102115000	Mandigere	125.4041	127.75	KASABA(NELAMANGALA)	390
175	2921000102108300	Manne	367.6068	454.31	THYMAGONDULU	1543
176	2921000102107200	Mannerampura	76.6969	75.65	THYMAGONDULU	119
177	2921000102123900	Mantanakurchi	650.0469	555.07	KASABA(NELAMANGALA)	962
178	2921000102106200	Maragondanahalli	85.3841	77.32	SOMPURA	266
179	2921000102100400	Maralakunte	433.6673	429.20	SOMPURA	1334
180	2921000102114700	Marohalli	35.4848	109.84	KASABA(NELAMANGALA)	107
181	2921000102109200	Mavinakommenahalli	219.5139	233.50	THYMAGONDULU	154
182	2921000102107600	Mavinakunte	210.1252	268.44	THYMAGONDULU	327
183	2921000102106400	Melekattiganoor	217.8813	224.52	SOMPURA	430
184	2921000102114100	Minnapura	206.608	216.79	THYMAGONDULU	588
185	2921000102108600	Muddalinganahalli	127.7023	124.11	THYMAGONDULU	586
186	2921000102116500	Mylanahalli	92.8369	104.45	KASABA(NELAMANGALA)	
187	2921000102116000	Mylanahalli	360.037	292.07	KASABA(NELAMANGALA)	1043
188	2921000102111000	Narasapura	86.6338	88.77	THYMAGONDULU	579
189	2921000102116100	Narasimanapalya	113.1028	65.43	KASABA(NELAMANGALA)	133
190	2921000102123200	Narasimhapalya	40.1587	65.42	KASABA(NELAMANGALA)	81
191	2921000102101500	Narasipura	230.9292	278.39	SOMPURA	758
192	2921000102105500	Narayanapura	113.7928	138.24	SOMPURA	501
193	2921000102116200	Narayanaraopalya	4.1884	53.39	KASABA(NELAMANGALA)	21
194	2921000102117600	Nelamangala (Rural) *	267.043	106.07	KASABA(NELAMANGALA)	
195	2921000142101000	Nelamangala TMC	110.9952	110.99	NELAMANGALA - TMC	25287
196	2921000102103100	Nidavanda	430.4899	450.22	SOMPURA	1361
197	2921000102102400	Nijagal	253.8056	189.59	SOMPURA	521
198	2921000102102500	Nijagal Kempohalli	295.151	192.28	SOMPURA	261
199	2921000102110200	Nimbenahalli	68.7841	72.55	THYMAGONDULU	264

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200	2921000102108700	Obalapura	664.1578	627.29	THYMAGONDULU	1382
201	2921000102120400	Obanaikanahalli	119.9409	105.34	KASABA(NELAMANGALA)	316
202	2921000102113300	Pallarahalli	95.6009	98.01	THYMAGONDULU	155
203	2921000102103600	Pemmanahalli	209.2423	188.22	SOMPURA	481
204	2921000102101700	Ramanahalli	68.7254	83.07	SOMPURA	28
205	2921000102105200	Shivagange	707.0469	623.72	SOMPURA	1389
206	2921000102107100	Sirganahalli	172.9784	187.77	THYMAGONDULU	80
207	2921000102121600	Sitaram Bhattarapalya	52.1874	36.59	KASABA(NELAMANGALA)	106
208	2921000102123100	Soladevanahalli	529.3343	527.47	KASABA(NELAMANGALA)	705
209	2921000102107400	Somasagara	348.6812	327.09	THYMAGONDULU	293
210	2921000102103400	Sompura	171.0508	185.04	SOMPURA	2903
211	2921000102104600	Srinivasapura	72.1241	72.19	SOMPURA	373
212	2921000102120300	Srinivasapura	803.9833	751.90	KASABA(NELAMANGALA)	1665
213	2921000102104200	Sripathihalli	209.423	231.24	SOMPURA	481
214	2921000102112500	Sulkunte	199.5144	183.60	THYMAGONDULU	899
215	2921000102114500	T.Begur	437.858	417.97	KASABA(NELAMANGALA)	2268
216	2921000102109100	Tadasigatta	326.491	292.94	THYMAGONDULU	1073
217	2921000102109400	Tavarekere	209.0555	212.27	THYMAGONDULU	593
218	2921000102113500	Thalekere	155.3383	138.67	THYMAGONDULU	476
219	2921000102103000	Thattekere	146.5482	189.74	SOMPURA	309
220	2921000102103500	Thimmanaikanahalli	83.1803	71.58	SOMPURA	314
221	2921000102113100	Thimmasandra	222.3147	241.42	THYMAGONDULU	479
222	2921000102113700	Thippagundanahalli	102.0453	108.71	THYMAGONDULU	342
223	2921000102109800	Thippasettihalli	47.6294	62.87	THYMAGONDULU	654
224	2921000102111300	Thyamagondlu	278.7276	348.20	THYMAGONDULU	8186
225	2921000102111200	Thyamagondlu Amanikere	328.1357	275.39	THYMAGONDULU	63
226	2921000102118700	Tirumalapura	60.1756	63.39	KASABA(NELAMANGALA)	316
227	2921000102118300	Tonachinakuppe	149.2424	155.72	KASABA(NELAMANGALA)	716
228	2921000102111400	Totanahalli	151.0712	151.75	THYMAGONDULU	432
229	2921000102115200	Tyagadahalli	160.7885	145.16	KASABA(NELAMANGALA)	408
230	2921000102110300	Vadakunte	348.4763	367.70	THYMAGONDULU	795
231	2921000102120800	Vaddarapalya	10.8872	12.28	KASABA(NELAMANGALA)	47
232	2921000102117200	Vajarahalli	184.0698	190.62	KASABA(NELAMANGALA)	2280
233	2921000102114400	Varadanaikanahalli	197.5617	209.37	THYMAGONDULU	507

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
234	2921000102104100	Veerasagara	413.3717	397.29	SOMPURA	499
235	2921000102107300	Venkatapura	105.9905	116.97	THYMAGONDULU	39
236	2921000102118100	Virananjipura	97.918	103.58	KASABA(NELAMANGALA)	189
237	2921000102119500	Viraraghuvanapalya	42.8176	46.06	KASABA(NELAMANGALA)	442
238	2921000102117800	Visveswarapura	142.2206	162.62	KASABA(NELAMANGALA)	2358
239	2921000102103800	Yedehalli	218.1689	224.45	SOMPURA	524
240	2921000102119800	Yelachagere	345.7528	335.77	KASABA(NELAMANGALA)	921
241	2921000102100100	Yelekyathanahalli	358.8428	314.87	SOMPURA	442
242	2921000102121700	Yentiganahalli	283.2002	272.94	KASABA(NELAMANGALA)	858
243	2921000102114900	Yeramanchanahalli	144.1729	139.16	KASABA(NELAMANGALA)	523
	Total		**50913.22**	**50775.26**		

MAGADI TALUK, BANGALORE RURAL DISTRICT

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
244	2921000502212400	Aladakatte	99.3029	100.37	KUDUR	141
245	2921000502214200	Alur	200.5607	224.50	SOLUR	523
246	2921000502217200	Arasinakunte	260.5257	277.18	SOLUR	828
247	2921000502214600	Banavadi	491.8158	479.10	SOLUR	1355
248	2921000502219400	Basavenahalli	631.8389	660.28	SOLUR	1122
249	2921000502218200	Beeravara	225.8276	233.24	SOLUR	681
250	2921000502216300	Bittasandra	194.1172	164.88	SOLUR	729
251	2921000502218800	Byadarahalli	54.9521	77.54	SOLUR	77
252	2921000502216200	Byrapura	98.9465	99.08	SOLUR	
253	2921000502214700	Byrasandra	58.0121	44.06	SOLUR	90
254	2921000502217000	Channohalli	121.6912	135.06	SOLUR	348
255	2921000502218400	Chikkasoluru	293.0172	304.15	SOLUR	693
256	2921000502215900	Chikkenahalli	100.7564	110.60	SOLUR	192
257	2921000502216100	Gangenapura	116.8578	106.79	SOLUR	205
258	2921000502219100	Garageswarapura	279.4976	295.04	SOLUR	574
259	2921000502216500	Goruru	373.7902	341.19	SOLUR	922
260	2921000502219000	Gudemaranahalli	510.0588	504.69	SOLUR	3313
261	2921000502219200	Hakkinalu	223.2774	251.56	SOLUR	826
262	2921000502215500	Hemapura	178.0377	175.68	SOLUR	518

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
263	2921000502218000	Hosahalli	238.5005	210.27	SOLUR	558
264	2921000502214900	Kalluhattipalya	51.8055	49.65	SOLUR	78
265	2921000502218500	Kalyanapura	148.9442	152.18	SOLUR	485
266	2921000502216500	Kanikenahalli	206.1395	220.26	SOLUR	736
267	2921000502217800	Kannasandra	119.8012	402.67	SOLUR	240
268	2921000502215300	Kempapura	76.6812	82.26	SOLUR	147
269	2921000502219600	Kodihalli	70.2453	69.21	SOLUR	120
270	2921000502218100	Koramangala	273.8877	256.75	SOLUR	712
271	2921000502218300	Kudaluru	200.3327	198.14	SOLUR	543
272	2921000502215700	Kuppemala	75.1056	69.14	SOLUR	387
273	2921000502217900	Lakkenahalli	554.3731	586.09	SOLUR	1327
274	2921000502217600	Lingenahalli	69.3275	80.73	SOLUR	60
275	2921000502212500	Madigondanahalli	463.3272	489.60	KUDUR	1331
276	2921000502214400	Mallapura	175.9928	100.38	SOLUR	308
277	2921000502216400	Mallikarjunapalya	35.3402	51.15	SOLUR	
278	2921000502219300	Murikuppe	264.0531	311.72	SOLUR	574
279	2921000502214300	Mooganahalli	178.7133	139.16	SOLUR	148
280	2921000502215200	Muppenahalli	319.7654	323.09	SOLUR	315
281	2921000502214100	Mylanahalli	133.0398	340.06	SOLUR	412
282	2921000502219700	Naganahalli	188.9046	185.76	SOLUR	321
283	2921000502215400	Narasapura	90.3352	93.05	SOLUR	268
284	2921000502217300	Ombathanakunte	167.1052	175.66	SOLUR	476
285	2921000502215000	Palanahalli	336.2158	345.50	SOLUR	462
286	2921000502217700	Parvathapalya	115.5163	115.53	SOLUR	22
287	2921000502219500	Pemmanahalli	242.3333	219.13	SOLUR	541
288	2921000502216700	Ramanahalli	96.5776	94.92	SOLUR	108
289	2921000502216800	Ranganabetta	70.1006	76.43	SOLUR	
290	2921000502215600	Rangenahalli	127.4757	156.04	SOLUR	291
291	2921000502215100	Shanthapura	137.5731	137.83	SOLUR	242
292	2921000502214500	Shiraganahalli	31.2448	159.80	SOLUR	560
293	2921000502217500	Soluru	430.7213	430.76	SOLUR	3470
294	2921000502218600	Somedevanahalli	283.5988	242.91	SOLUR	313
295	2921000502216900	Thattekere	284.2583	280.20	SOLUR	890
296	2921000502217100	Thimmasandra	140.3648	164.01	SOLUR	215

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
297	2921000502219800	Thirumalapura	170.8222	156.03	SOLUR	49
298	2921000502217400	Tubarapalya	130.042	151.54	SOLUR	11
299	2921000502214800	Udakunte	592.0192	594.66	SOLUR	819
300	2921000502218900	Uddandahalli	252.9348	271.97	SOLUR	343
301	2921000502216000	Vaddarahalli	168.5628	181.61	SOLUR	373
302	2921000502210900	Veerapura	309.5604	320.02	KUDUR	623
303	2921000502215800	Yannegere	421.1068	470.50	SOLUR	1039
	Total		**12955.88**	**13741.36**		

BANGALORE NORTH TALUK, BANGALORE URBAN DISTRICT

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS 1991)	HOBLI	POPULATION (2001)
304	2920000102030700	Agrahara Palya	115.0665	188.09	DASANAPURA	192
305	2920000102034700	Avverahalli	258.7805	645.36	DASANAPURA	442
306	2920000102030400	Bethanagere	471.5727	1196.11	DASANAPURA	1028
307	2920000102036000	Bettahalli	193.6868	362.13	DASANAPURA	574
308	2920000102030200	Bommasettihalli	123.3833	274.34	DASANAPURA	301
309	2920000102033300	Byregowdanahalli	167.5997	362.15	DASANAPURA	456
310	2920000102036200	Gattisiddanahalli (B)	98.9802	266.35	DASANAPURA	9
311	2920000102033100	Gejjagadahalli	60.3998	163.39	DASANAPURA	726
312	2920000102036300	Giddenahalli	202.0878	321.36	DASANAPURA	444
313	2920000102035200	Gollarapalya	67.0054	143.28	DASANAPURA	46
314	2920000102029800	Gopalapura	408.4367	982.21	DASANAPURA	887
315	2920000102033800	Gowdahalli	218.3964	548.26	DASANAPURA	490
316		Guddadahalli		186.95	DASANAPURA	
317	2920000102031000	Honnasandra	183.7904	449.04	DASANAPURA	750
318	2920000102030800	Hosahalli Palya	95.0873	225.17	DASANAPURA	412
319	2920000102031100	Huchana Palya	55.4473	141.18	DASANAPURA	234
320	2920000102033200	Hullegowdanahalli	367.1526	977.07	DASANAPURA	1322
321	2920000102034800	Hunnigere	231.8764		DASANAPURA	534
322	2920000102030600	Huskur	407.2489	1032.15	DASANAPURA	1273
323	2920000102036400	Kadabagere	602.3712	1462.05	DASANAPURA	3465
324	2920000102035400	Kammasandra	262.1042	549.16	DASANAPURA	556
325	2920000102033600	Kenganahalli	191.3757		DASANAPURA	456
326	2920000102036100	Kittanahalli	442.1594	1090.29	DASANAPURA	2142

Sl. No.	CODE (CENSUS_2001)	VILLAGE NAME	AREA IN ha (as per notification)	AREA IN ha (CENSUS BOOK 1991)	HOBLI	POPULATION (2001)
327	2920000102031400	Kodipalya	21.0427	51.01	DASANAPURA	157
328	2920000102029900	Kukkanahalli	468.383	1142.2	DASANAPURA	823
329	2920000102033500	Lakkenahalli	202.6439	542.33	DASANAPURA	767
330	2920000102035100	Mallasandra	276.7148	734.29	DASANAPURA	722
331	2920000102031600	Mariyanapalya	89.5819	24.02	DASANAPURA	1
332	2920000102031700	Mathahalli	253.3404	666.32	DASANAPURA	901
333	2920000102031300	Nagarur	410.7496	999.09	DASANAPURA	1485
334	2920000102035000	Nagasandra	187.2916	443.23	DASANAPURA	264
335	2920000102031200	Pillahalli	237.4024	835.04	DASANAPURA	900
336	2920000102030500	Rampalya	63.7044	161.26	DASANAPURA	219
337	2920000102035300	Ravuthanahalli	407.6813		DASANAPURA	822
338	2920000102031500	Seshagiri Rao Palya	31.1319	93.09	DASANAPURA	5
339	2920000102030000	Shamabhattara Palya	47.2173	140.21	DASANAPURA	332
340	2920000102033700	Shivanapura	450.1949	1091.2	DASANAPURA	905
341	2920000102034900	Sondekoppa	633.4377	1519.15	DASANAPURA	3687
342	2920000102030300	Syadamipalya	8.1946	76.05	DASANAPURA	149
343	2920000102030100	Totagere	303.0394	795.28	DASANAPURA	836
344	2920000102032100	Vaderahalli	140.075	353.19	DASANAPURA	567
345	2920000102033400	Venkatapura	83.9072	233.25	DASANAPURA	204
	Total		**9539.74**	**21466.30**		
	Grand Total		**73408.85**	**85982.92**		

(SOURCE : CENSUS OF INDIA, BANGALORE RURAL & URBAN DISTRICTS)