PUNE MUNICIPAL CORPORATION

REVISION OF DEVELOPMENT PLAN SANCTIONED IN 1987

As per MR & TP 1966 Section 38

STRATEGIC ENVIRONMENTAL ASSESSMENT

SCOPING REPORT

1.0 INTRODUCTION

1.1 Background of Strategic Environmental Assessment

Pune is the 8th largest metropolitan city of India and one of the most fast growing cities in India. From being known as a military cantonment, Pune has gradually evolved into a dynamic city of academic, cultural and economic importance, and to a business centre with a burgeoning software industry. Population of Pune city is approximately 3.4 million in the year 2007, and the two neighbouring cities Pune and Pimpri-Chinchwad form an urban agglomeration with almost 5.0 million inhabitants. The annual population growth has been 3.5-4.0 per cent since 1981 and the driver of migration is the economy and especially the Information Technology (IT) Sector.

The 74th Amendment in the Constitution makes Local Self Government to facilitate the planning process through Maharashtra Regional and Town Planning (MR&TP)Act, 1966. According to the Maharashtra Regional and Town Planning Act, 1966, a Development Plan (DP) shall be carried out, based on an existing land-use map and a survey, in accordance with the provisions of the Regional plan. The first Town Planning Scheme was prepared for Shivaji Nagar in 1918. A Master Plan was prepared for the Poona City in 1952. The first Development Plan according to the new legislation was prepared in 1966. The first revision of the Development Plan was sanctioned in 1987. Eight Town Planning Schemes in Pune were finalized till 1989. Development Plan of Sutarwadi was prepared in 1992 and sanctioned in 1995. 38 fringe villages were merged in Pune Municipal area in 1997, out of these 15 villages fully & 5 villages partly deleted from the Municipal area. The DP for these 23 merged villages is submitted to State Govt for Sanctioning in December 2005. Road network for this DP has been already sanctioned.

The sanctioned Development Plan 1987-2007 is covering an area of 146.1 km^2. As per section 38 of MR&TP Act, 1966 it is ripped for revision in 2007. Revision of this Development plan for the year 2007-2027 is underway.

Strategic Environmental Assessment (SEA) is being undertaken for the proposed Development Plan (2007-2027) to incorporate environmental, social and economic issues in the planning process. The SEA process will be carried out in two steps. The first step is a Scoping Study, which will result in a Scoping Report, describing the outline and methods to be used in the second step, the SEA study.

Environmental assessments of more strategic decisions, such as the formulation of policies, plans and programmes, have been developed, under the label of SEA (Partidario, 1999; Therivel *et al.*, 1992 and Therivel and Partidario, 2002). SEA is gaining widespread recognition as a tool for supporting the sustainable development of the environment through policy, plan and program decision-making processes. SEA is a formalized, systematic process that integrates environmental considerations into decision making and aims to achieve sustainable development (Thérivel *et al.*, 1992 and Thérivel and Partidário, 2002). SEA has evolved out of the need for a broader, more

comprehensive tool to assess the potential significant adverse environmental impacts of proposed policies, programs and plans (PPPs) early in the decision-making process (Noble, 2002; Partidário, 1996; Sadler and Verheem, 1996 and von Seht, 1999). SEA is a formalized, systematic process that integrates environmental considerations into decision making and aims to achieve sustainable development (Thérivel *et al*., 1992 and Thérivel and Partidário, 1996). It is also argued that the adaptability and flexibility inherent in SEA is crucial to successful application in different cultural and decision-making environments around the world. The integration of environmental concerns into strategic decision-making and policy-making has been widely recognised as an essential feature for moving towards a more sustainable development in all policy sectors. SEA is a tool with the purpose of integrating environmental aspects in a structured manner into strategic decision-making processes (Fischer, 2003; Thérivel and Partidário, 1996; Partidário, 1996 and Verheem and Tonk, 2000).

Strategic Environmental Assessment (SEA) is not mandatory in India even after revision in environmental clearance process in September, 2006 by Ministry of Environment and Forests, Government of India. However, there are isolated examples of SEA studies in India majority of them have been done as per the directives of donor agencies such as the World Bank. SEA processes help planning authorities to fulfil the objective of contributing to the achievement of sustainable development in preparing their plans through a structured assessment of the objectives and core strategies against key sustainability issues.

Although the requirement to carry out SEA is NOT mandatory, internationally available guidance documents particularly from European Commission have been used to prepare scoping report. Scoping report is prepared to identify key issues to be incorporated in SEA report for the City Development Plan for Pune, India. The final output of the process is a combined Sustainability Appraisal/Environmental Report which will be published alongside the plan. This report will be referred to as the SEA Report.

1.1.1 Environmental Impact Assessment in India

EIA was introduced in India in 1978-79 initially for river valley projects extending later to industrial projects. The Ministry of Environment and Forests (MoEF) was assigned the responsibility for appraisal of projects with regard to their environmental implications and granting environmental clearance even before EIA Notification in 1994.

MoEF under the Environmental (Protection) Act 1986, promulgated a notification on 27th January, 1994 (as amended in May, 1994) making environmental clearance mandatory for expansion or modernization of any activity or for setting up new projects listed in Schedule 1 of the notification. Environmental impact assessment process was modified in India in September, 2006 with more objective screening, scoping, decentralization of power to state government and public consultation process. Environmental clearance based on EIA is required for developmental projects which can be broadly categorized under different sectors of economy viz., mining, thermal power plants, river valley, ports, harbours and airports, communication, atomic energy, transport (rail, road, highway), tourism (including hotels and beach resorts) and infrastructure

projects including township and industrial estates. However, SEA was not included in EIA Notification of September, 2006 (MoEF, 2006).

1.1.2 Strategic Environmental Assessment in India

The experience in SEA is limited and few studies have been carried out which can be effectively called as SEA. Gupta and Yunus (2004) reported that in India, government assistance between 1990-2000 for environment, forestry, wildlife and relevant areas of agriculture and development sectors (excluding investments to improve social development indicators) runs to about US $ 500 million. However, tools like natural resource accounting or budgeting, strategic environmental assessment, and life-cycle assessment are yet to be placed in proper practice. However, there are few SEA case studies available in India.

Rajwanshi (2001) has undertaken SEA for an environmental appraisal to evaluate proposed investment under India Eco-development Project (IEP) supported from the Global Environmental Facility (GEF) and International Development Aid (IDA). A Strategic Environmental Assessment for Palar Basin in Tamil Nadu has also been prepared in the year 2001 covering Scoping, Capacity Building Identification and Analysis of Issues and Forming the vision and guiding principles on the behest of the World Bank which funded the project. SEA of Master Tourism Plan (MTP) for Andaman Islands was undertaken to identify bottlenecks of eco-tourism without jeopardizing sensitive ecosystem of the islands. SEA came out with modified MTP with due consideration to environmental issues and recognised the fact that haphazard tourism activities are detrimental to fragile ecosystem of the islands (Pawan Kumar and Sarin, 2003 and Pawan Kumar, 2005). Ratna Reddy *et al.* (2004) assessed the impact of policy interventions through watershed development (WD) on the livelihoods of the rural communities.

SEA was undertaken for evaluating the impacts of Transport Policy of Himachal Pradesh on Air quality. It is concluded that while the transport policy starts with the objective of protecting the environment, plans and programs taken up under the policy actually end up increasing air pollution. Rajvanshi and Mathur (2004) used SEA in India as a diagnostic tool to assess siting alternatives of a nuclear power facility. SEA approach was also adopted to review an EIA of a planned dam and irrigation scheme in Maharashtra which resulted in deadlock (WII, 2006).

However, the above studies except few indicated that the application of SEA was limited to either project or partial approach to SEA was adopted.

1.1.3 SEA for Sustainable City Planning for Pune

The vision for the city of Pune is:

An economically vibrant city, of its citizens, of diverse opportunities with a rich culture in which all the citizens enjoy a safe, livable environment with good connectivity.

The overall objective of SEA is to provide better and more sustainable plans, programmes or policies. This is achieved by ensuring that environmental issues are addressed at all stages in the development of the plan, programme or policy and also during the implementation processes. The SEA should focus on both optimizing positive contributions to environmentally sustainable development and on minimizing negative environmental impacts. SEA will contribute to improved quality of the Pune Sustainable City Action Plan, through:

- Integration of environmental, social and economic issues in the decision-making and implementation process; the focus should be on both optimising positive contributions to environmentally sustainable development and on minimizing negative environmental impacts.
- Clarification of the links between environmental issues and social and economic issues.

The expected results from the SEA are described below.

The SEA is composed of two main parts: a Scoping Study and an SEA Study. The Scoping Study will define the issues that need to be addressed in the SEA Study, considering the specific context in which the Sustainable City Action Plan is being developed and is likely to be implemented. The exact activities, calendar and budget for the SEA Study will be determined on the basis of the conclusions of the Scoping Study. The SEA Scoping Study will deliver the following results:

- A description of the draft plan and its alternatives;
- A brief description of the institutional and legislative framework;
- A brief presentation of relevant environmental policies and objectives;
- An identification of the key stakeholders and their main concerns;
- An identification of the key sector environment interactions;
- A description of the scope of the environmental baseline to be prepared;
- An identification of the impact assessment and evaluation methodologies to be used in the SEA Study;
- An indication of the time-frames, costs and resources needed to carry out the SEA Study.

1.2 Sustainability City Plan for Pune

1.2.1 Location

Pune district lies in the Bhima and Nira river basins. The district has an area of 15643 km^2 and is surrounded by Ahmednagar district in the north and northeast, Solapur district in the east and southeast, Satara district in the south, Raigad district in the west

and Thane district in the northwest. The headquarter of district is located at Pune on the banks of Rive Mula-Mutha. Pune is known as "The Queen of Deccan" because of its own historic associations, picturesque surroundings and its importance as a major cultural social and political center in the Deccan.

1.2.2 Physical Settings

Pune (18^0 31' N, 73^0 51' E) is a plateau city situated near the western margin of the Deccan Plateau. It lies on the leeward side of Sahyadri (Western Ghat) and located 50 km from crest of the Ghat. It is almost 160 km southeast of Mumbai. It is situated at an altitude of 560 m above the mean sea level near the confluence of Mula and Mutha rivers. The city is surrounded by hills on the west and the south. The Sinhagad -Katraj-Dive Ghat range is the southern boundary of the urban area. The highest point within the city is the Vetal hill whereas the highest point of urban area is the Sinhagad. Two more rivers, Pavana and Indrayani traverse the northwestern outskirts of urban area. Mula and Mutha rivers meet Bhima River and therefore Pune is located in upper Bhima basin.

1.2.3 Economy and Activity Centers

Pune, the district headquarter of Pune district has diversified economy. At present Pune is bustling with economic activity. Areas around Pune like Baramati, Khed, Mundhwa, Loni, yerawada, Talegaon, Alandi, Warje, Wadgaon etc are agriculturally active with the first six accounting for a majority of Pune's agricultural produce. Although not an 'agricultural city' or an agriculturally developed city Pune has a reasonable population connected to agriculture. Thus very little can be said of Pune's agro activities although some research and development does take place in places like The Agricultural College at Shivaji Nagar, the College of Agricultural banking funded by Reserve Bank of India (India's central bank), nation Chemical Laboratory on the Pune University road, Agharkar Institute close to the Briahn Maharashtra College of Commerce, etc.

A number of large-scale industries (MIDC) are also present around Pune. These companies produce a variety of goods such as commercial vehicles (light and heavy), locomotives, electronic consumer durables, oil engines, pump sets, pharmaceuticals, chemicals, two wheeler vehicles, processed food, refrigeration systems (industrial and domestic), industrial filters, family cars, luxury cars, landrovers, pick up trucks and a number of intermediate goods also.

Pune is fast becoming a favorite haunt or literally a target place for the regular hotel goers as well as connoisseur of good food. Restaurant, hotels, dhabas (traditional highway joints) and motels cluster in and around the historic city.

The City of Pune has been a trading city since is inception because good communication and banking facilities. The commercial activities are concentrated as regional, wholesale, local markets in Gultekari market, Timber market, nanapeth, Bhavanipeth and on the road like Laxmi road, M.G. Road etc. The city is also equally popular for trade and commerce, Major private and public sector banks are situated in Pune. Bank of India, State Bank of India, Bank of Baroda, syndicate Bank, Central Bank and Bank of Maharashtra are some nationalized banks with a prominent and important base operations in Pune.

Location of Pune and extent of Pune Municipal Corporation are shown in Figures 1.1 - 1.4.

Figure 1.1 Maharashtra in India

Figure 1.2 Pune District in Maharashtra

Figure 1.3:Pune Municipal Corporation

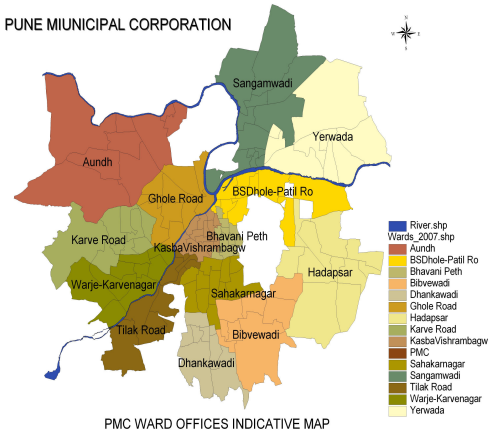


Figure 1.4:Pune Municipal Corporation-Area

1.3 Development Plans for Pune

The 74th Amendment in the constitution makes Local Self Government to facilitate the planning process through Maharashtra Regional and Town Planning Act, 1966. The MR&TP Act 1966 provides three tier planning process; a Regional Plan, a Development Plan and a Town Planning Scheme.

The first Town Planning Scheme in Pune was prepared for Shivaji Nagar area in 1918. A Master Plan was prepared for the Pune city in 1952. The first Development

Plan according to the new legislation was prepared in 1966. The revision of the Development Plan was undertaken in 1976 and sanctioned in 1987. Eight Town Planning Schemes were finalised till 1989. Development Plan of Sutarwadi was prepared in 1992 and sanctioned in 1995. Sequence of development plan process is shown in Figure 1.5.

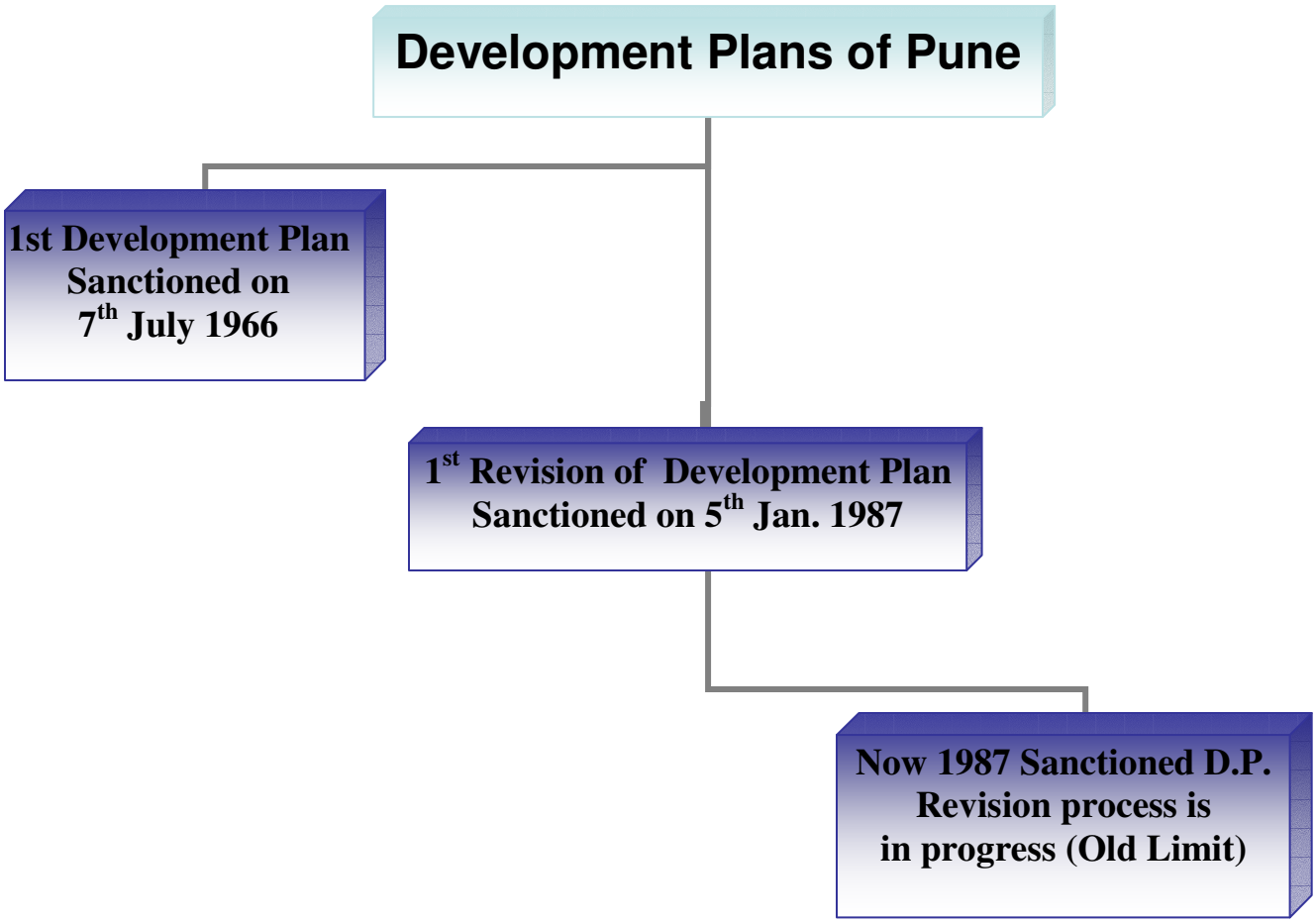


Figure 1.5 : History of Development Plan Process in Pune

1.3.1 Development Plan 1987-2007 for Pune

The existing Development Plan 1987-2007 is covering an area of 146.1 km^2 . The land use according the sanctioned DP has been implemented to approximately 30 per cent and about 60% of the roads proposed in 1987 DP have been developed. More details concerning the content and implementation of the Development plan can be found in Development Plan (1987-2007) and Sustainable City Planning for Pune (SCPP) documents (2008).

1.3.2 Development Plan for 23 Added Villages

A Development Plan of the newly added 23 villages was submitted to the State Government for sanction in December 2005. The total area including the newly added villages is 243.8 km^2 . The proposals of the Development Plan have to be implemented over a period of 20 years.

An attempt was made to integrate the new Development Plan with the sanctioned Development Plan of the old area. Active participation from the citizens was sought and was well received, during the preparation of the plan. The ambition was to prepare a "Green DP" in order to ensure that the urban development does not cause negative effects on the environment.

Chronological expansion of area under PMC is presented in Table 1.1.

Table 1.1 : Expansion of area under PMC limits

Year	Area (km^2)
1857	7.74
1889	9.86
1890	18.04
1931	18.79
1935	19.05
1958	138.90
1975	138.05
1981	146.95
1985	145.92
1997	368.69(after including of 36 fringe villages)
2001	243.84 (after delusion of few newly added villages)

1.3.3 Regional Plans

The Government established in 1967 the Pune Metropolitan Region for an area of 1500 km^2 including Pune city, Pune and Khadki cantonments, Pimpri-chinchwad and a number of villages. A Regional Planning board was constituted for preparations of a Regional Plan. The first Regional Plan 1970-1991 was sanctioned by the Government and came into force into force in May 1976. A new Regional Plan 1990-2011 was approved by the Government in 1997, and is still valid.

1.3.4 Development Plan for PCMC

The Pimpri- Chinchwad Municipal Corporation came into being from 1982. A development plan was prepared for the whole area and was sanctioned 1995. In 1997 the area of PCMC was extended by merging 18 new villages within the corporation area. A Development plan (DP) was to be prepared for these newly merged villages in order to yield a guided future growth in the region. PCMC was the nodal agency for the preparation of DP. The Development Plan – 2021 for newly merged areas in Pimpri-Chinchwad Municipal Corporation was prepared in May 2000.

1.3.5 Overview of the Development Plan

As per 1987 Sanctioned Development Plan total reservations were 527 out of overall 814 sites for designated purpose (Reservations) proposed prior to sanction. After Sanctioning, as per modifications under MR&TP Act 1966 sec 37 & 50, the total numbers of reservations are 519.Total area for these 519 reservations is around 827 Ha. Out of which around 272 Ha reservations are developed. Also considering implementation of DP Roads from 1987 sanctioned DP, on an average around 40% Development Plan is implemented till now.

PMC's own finance and Central & State Government's finance assistance are the sources for monetary compensation to be given to affected Land Owner. Following are some of the ways for Land Acquisition to facilitate implementation of DP.

- Built Operate & Transfer (BOT)
- Acquisition of Land Reserved for proposal in Development Plan by consent from and negotiation with the land owner under adequate legislation.
- Acquisition of land through Town Planning Schemes.
- Acquisition through provisions made in MR & TP Act 1966 (Under LA Act of 1984)
- Acquisition by introduction of new concepts like TDR (Transferable Development Rights).
- An amendment in DC Rules appendix R-7 (Accommodation Reservation).

Out of these TDR is the main driving factor in facilitating DP Implementation. Being a semi government organization with funds available for development mainly from recovery of property tax, water charges, octroi, land development charges, building premium etc. financial limitation is the main hurdle in DP Implementation.

1.4 SEA Methodology

The SEA process will continue and run parallel to the planning process, as shown in Figure 1.6 below, and the intention is that the SEA will provide important input into the planning process, focusing on strategic issues and the decision-making process.

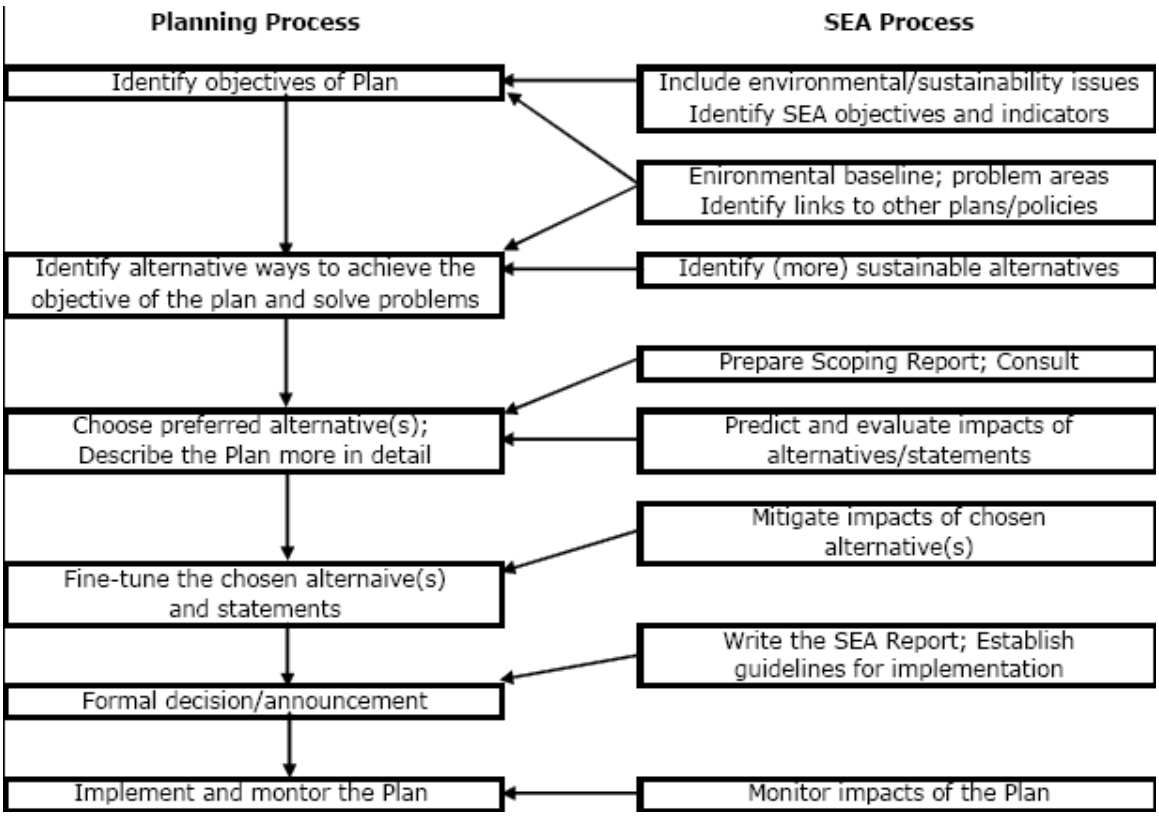


Figure 1.6 : Integration of the SEA process into the planning process

Through out the SEA process, prioritization of issues to be handled in the planning process will take place, a prioritization that will be based on what can be handled by the plan. Identified issue might all be of equal importance but some of them have to be dealt with in other instances. The key stages of SEA process of SCPP are given below:

SEA Phase I

- Training, interviews and workshop
- Identify objectives and indicators for the SEA
- Development of the draft Scoping Report

- Consultations with NGOs and the public; Agreement on Scoping Report
- Decision/Approval of Scoping Report

SEA Phase II

- Identification of reasonable alternatives
- Identification of links and conflicts between suggested actions
- Analysis of environmental, social and economic impacts at rough level
- Detailed analysis and mitigation of chosen alternatives
- Recommendations for draft SEA Report
- Preparation, consultation and finalization of SEA report
- Monitor impacts of the Plan

1.5 Purpose of Scoping Report

Scoping is an integral part of SEA process and prepared to include findings of the consultation with stakeholders. The scope and level of detail of the information that must be included in the detailed SEA report are included in this scoping report. Scoping Report is considered an appropriate method of presenting the results of the initial stages of the SEA process. It will assist to identify the issues relevant to stakeholders of SEA process. The Scoping Report will be made available to stakeholder and wide publicity will be given to the report to have comments from large number of stakeholders prior to initiate preparation of SEA report. Scoping report will also help in identifying major environmental, social and economic issues to be considered in detail during SEA process.

1.6 Outline of the Scoping Report

Outline of scoping report is worked based on the international guidelines and in consultation with the stakeholders. There are no SEA guidelines available in India, hence, SEA prepared internationally for development plan process are followed in preparing teh scoping report.

Chapter I - Introduction
Background of Strategic Environmental Assessment
Environmental Impact Assessment in India
Strategic Environmental Assessment in India
Terms of Reference for SEA for Sustainable City Planning for Pune
Key Planning Issues and Focus of the Project

Chapter II- Environmental and Sustainability base line and planning context

Environmental and Sustainability base line
Environmental, Social and Economic Issues
Relationship with other plans, strategies and visions/objectives

Chapter III - SEA Scope and proposed SEA Process
Spatial and Temporal scope
Scope of Environmental, Social & Economic Issues
Proposed SEA objectives & indicators
Proposed outline of the SEA process & SEA Report

Chapter IV -

2.0 Environmental and Sustainability Baseline and Planning Context

This chapter describes the framework of the plan, the current situation, including a brief description of the environmental and sustainability baseline (state of the environment, but also including social and economic issues); environmental, social and economic problems; and an analysis of the relationship with other plans, strategies and visions/objectives. The baseline environment is identified in order to set up subsequent stages of SEA: impact prediction, evaluation and monitoring.

The SEA system can be "baseline-led" or "objectives-led". The baseline-led system establishes a distinct environmental yardstick of discrete SEA core areas (attributes), objectives and/or indicators/targets, which is used to describe the baseline environment and identify problems, which in turn are expected to influence the strategic action objective. In objective-led system, sustainable objectives for the strategic actions are developed first, then indicators which test whether various alternatives achieve The analysis of the relationship with other plans, strategies and visions/objectives is also done through an internal compatibility analysis, where different objectives and visions are analysed against each other in a matrix, showing compatibility or incompatibility.

The following section provides the environmental and sustainability context. It involves:

- Identify building blocks of the baseline environment description: attributes (core areas), objectives, indicators and targets
- Assembling data on the current and future state of the environment (baseline) related to all environmental and sustainability topics which may be affected by the plan. The analysis of data can later be used for establishing the effects of the development plan documents; and
- Examining the relationship of the development plan documents with other plans and programmes, to ensure that all relevant environmental protection objectives are identified and that potential conflicts can be addressed within the plan making process;
- Identifying present and future environmental problems and opportunities in order that development plan documents can address these issues as far as possible.

SEA building blocks and baseline should preferably *already be available*. Existing monitoring systems and data should be used where possible o provide information for SEA.

2.1 Environmental and Sustainability Building Blocks

SEA uses overarching themes or objectives to represent larger clusters of data or more detailed attributes to act as representative examples of such data for monitoring purposes. Objectives specify a desired direction for change, for instance "improve traffic management" or "restore river water quality". Objectives often form hierarchy which goes from a general

statement to more detailed targets. Indicators are measures of variables over time, for example NOx levels reduced from x to y.

Core areas (attributes), objectives and indicators to be used in SEA will affect or direct baseline data collection, prediction details and setting-up of monitoring system. These building blocks particularly objectives and indicators should say what they mean, and not be able to be manipulated.They should be of the appropriate scale.

2.1.1 Core areas

Core areas which are mentioned as attributes in Environmental Status Report (ESR) prepared by PMC are identified based on the environmental, social and economic issues of significance. These core areas are used to develop objectives, indicators and targets for determining environmental and sustainability baseline. Environmental and sustainability attributes have been identified using information from ESR and findings of consultation undertaken with stakeholders of SEA in December, 2008 and January, 2009. The identified attributes are not prioritized and all these attributes have been considered to be of equal importance.

PMC is producing ESR for the last 10 years with the help from environmental experts. ESR includes the status of environment of Pune city based on identified environmental and sustainability attributes & in addition, environmental and sustainability attributes as given below are also identified based on consultation with stakeholders during December, 2008 and January, 2009 as listed below in Table 2.1.

Table 2.1 : Attributes

Sr No	Attributes by ESR	S.No.	Attributes by consultation with stakeholders
1	Demography	1	Water quality in river, nalla and lake
2	Housing and slums	2	Air pollution
3	Health	3	Municipal solid waste
4	Garden (and green areas)	4	Hill environment and biodiversity
5	Heritage	5	Traffic
6	Transportation	6	Housing
7	Electricity	7	Slums
8	Sewerage	8	Social infrastructure and services
9	Solid waste (management)	9	Landuse
10	Water supply	10	Governance
11	Environment (Air quality)		
12	Global warming		

It is clear from Table 1 that the attributes identified in ESR and through consultation are almost similar. Hence, attributes identified through consultation are considered for further analysis.

2.1.2 Objectives

The following core areas and objectives as presented in Table 2.2 were identified based on ESR and public consultation. These core areas and objectives will be used throughout this scoping report.

Table 2.2 : Core areas and objectives

S. No.	Core areas (Attributes)	Objectives
1	Water quality in river, nalla and lake	Improved river, nalla & lake water quality
2	Air pollution	Improved air quality
3	Municipal solid waste	Solid waste management
4	Hill environment and bio-diversity	Regenerated, forested for biodiversity and protected hill environment
5	Traffic	Improved traffic condition
6	Housing	Affordable and liveable housing
7	Slums	Slum free Pune
8	Social infrastructure and services	Improved and equitable social infrastructure and services
9	Land use	Integrated land use for old city limit and newly merged village area
10	Governance	Improved governance

2.1.3 Indicators

In SEA, indicators are normally used to describe and monitor the baseline environment, and indicators and objectives are used to predict impacts. For instance the number of traffic accidents can be monitored annually, and quantitative predictions can be made of accidents resulting from different approaches to transport management, or location of future development. SEA objectives and indicators should focus on outcomes, not how the outcomes will be achieved ('inputs'); on ends rather than means; on the state of environment rather than on responses to pressures on it. Core areas, objectives and indicators are presented in Table 2.3.

Table 2.3 : Core areas, objectives and indicators

S. No.	Core areas (Attributes)	Objectives	Indicators
1	Water quality in river, nalla and lake	Improved river, nalla & lake water quality	BOD <30 mg/l, DO> 3 mg/l, COD <150 mg/l ,
2	Air pollution	Improved air quality	SO_2 <80 µg/m^3 NOx <80 µg/m3

			SPM < 200 µg/m^3 RSPM <100 µg/m^3
3	Municipal solid waste	Solid waste management	• 80% segregation of municipal solid waste • 100% collection of municipal solid waste • 60-80% composting and 20-40% landfill • Emissions of methane from landfill sites reduced by 20%
4	Hill environment and bio-diversity	Regenerated, forested for biodiversity and protected hill environment	Regeneration and afforestation increased by 20%
5	Traffic	Improved traffic condition	Increasing use of public transport to 50-60%
6	Housing	Affordable and liveable housing	Provide affordable housing with basic amenities to 100% population
7	Slums	Slum free Pune	Reduce Population living in slum area to 10-20%. Accessibility to amenities in slum comparable to other parts of city
8	Social infrastructure and services	Improved and equitable social infrastructure and services	Equitable distribution and accessibility to garden, schools, hospitals, playgrounds, parks, etc. in planning sectors/wards
9	Land use	Integrated land use for old city limit and newly merged village area	• Proposed landuse plan as per the planning standards • Compatible land use planning for old city with new city limits i.e.23 villages
10	Governance	Improved governance	• Improved PMC and public partnership • Annual monitoring of implementation of development plan • Targeted revenue generation • Linking development plan to annual bugetory allocation • Annual monitoring of the indicators and inclusion in ESR • Improved coordination among various departments

2.1.4 Targets

Developing SEA objectives and indicators and arriving at the targets is a complex task because of many things that they should do and the mistakes they should avoid. Targets are built based on indicators and sometimes interchangeably used. A target is a desirable level.

Pragmatic targets are often set by policy makers on the basis of some judgement that they are realistically attainable or politically acceptable. Pragmatic targets are often can help to secure public support and help to get things moving in the right direction without having to wait for agreement on more daunting or contentious targets. Ideal or aspirational targets, instead, specify the desired state of affairs regardless of practilities of reaching them.

To be able to verify the fulfilment of the objectives it is very important that the indicators and are Specific, Measurable, Accepted, Realistic, and Time-bound (SMART). Baseline environment conditions and time period to describe the futuristic condition assist in describing and developing SMART indicators and targets. Considering this fact, the targets are formulated after establishing and assessing baseline environment status.

2.2 Environmental and Sustainability Baseline Data

Once the SEA objectives and indicators have been agreed, data on the baseline environment should be collected using indicators as framework. The baseline environment is the current (or immediate past) environment. Data sources on the baseline environment include environmental status report will be Environmental Status Report (ESR) being prepared by PMC, environmental data available with Pune University, Maharashtra Pollution Control Board, Central Pollution Control Board, Ground Water Source Development Agency and other statutory, government and non-government organizations.

2.2.1 Water

PMC periodically collects data on water quality of surface water sources. Mula and Mutha rivers due to its ecological significance have been assigned stringent standards by statutory authority i.e. Maharashtra Pollution Control Board (MPCB). The water quality standard of BOD_5 for these rivers and other surface water sources is 30 mg/l. BOD5 is found to be more than 30 mg/l in all the surface water sources almost in all the seasons. Dissolved Oxygen (DO) in river stretch is reported to be high (<3 mg/l). Lakes are comparatively less polluted as they are located on upstream side hence reported to have high DO levels whereas all the nallas have low DO and anaerobic as witnessed by the foul smell in nallas. Sawarkar Bridge location on river Mutha has very low DO revealing high sewage discharges.

Nallas are the highest polluted surface water sources as they receive raw sewage.The trends presented in Table 2.4 indicate that the surface water quality is deteriorating in Pune city.

Table 2.4 : Trends of river water quality in Pune

Parameter	2002	2003	2003-04	2004-05	2005-06	2006-07	207-08	2009	Standards
BOD_5						20-105	50-55	10-70	<30
DO	0.0-2.7		0.0-3.6	0.0-0.8	0.0-1.2	0.0-5.5		0.0-2.4	>3
COD				29.6-109.2		100-650		20-160	<150

Turbidity	6.3-79			26.5 - 47.1					
Conductivity	339 - 715								
TSS			12-396	57-300				32-280	
TDS			20-359	240-290		100-500	100-150	166-378	
Total coliforms	**No data available**								
Faecal coliforms									

Table 2.4 clearly indicates that as the Mula river is passing through Pune city, the river water quality is deteriorating.

Water requirements and supply

At present Pune gets its water supply from Khadakwasla dam about 12 km from the city through right bank canal and a closed pipeline. Three more dams i.e. Panshet, Warasgaon and Temghar have been constructed on the same river, upstream of Khadakwasla. The storage capacity of these 3 dams is 900 MM^3 whereas the present annual requirement of city is about 200 MM^3. It is estimated that 80-90% of the population is connected through PMC water supply. PMC serves a water supply of 195 l/person-day (including water losses) against standard of 135 l/person-day.

Drinking water is supplied to Pune Municipal Corporation through New Mutha right Bank Canal. It was to tune of 5 trillion cubic meter (TMC) up to 1997. As the population of Pune city is increasing rapidly the demand for drinking water has also increased. In water planning of Khadakwasla Project, only 5 TMC water was reserved for drinking water purpose.

Existing and proposed water supply system in PMC is shown in Figure 2.1.

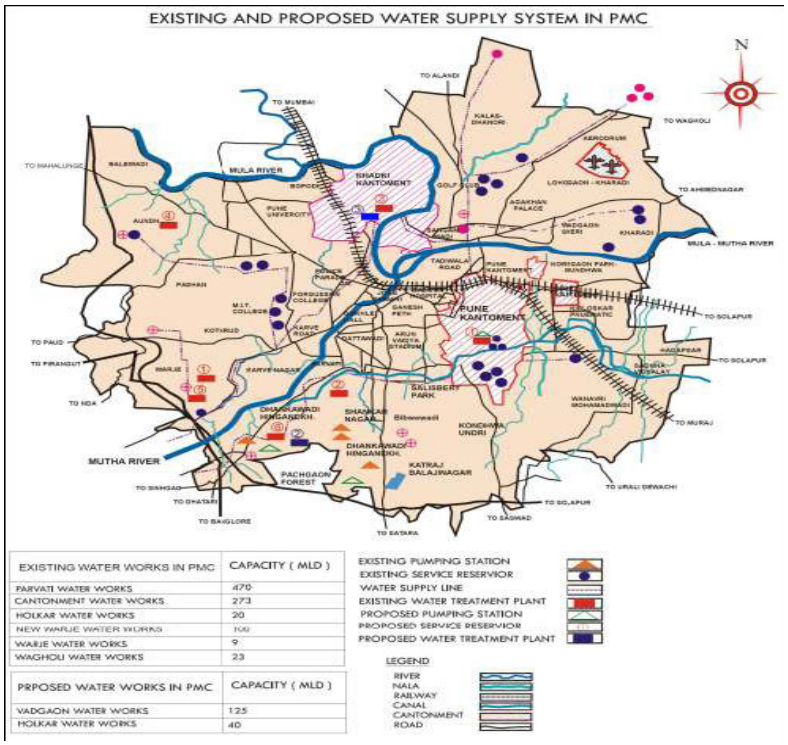


Figure 2.1 : Existing and proposed water supply systems

Water Supply and Sewage Treatment Projects - Master Plan

In year 1997, the area under the jurisdiction of Pune Municipal Corporation, has increased due to merger of 38 villages around Pune City into the Corporation Limits. The 146.11 km^2 of area within old PMC Limits has increased to 430 km^2 in the year 1997. There has been sudden increase of about 40% population load on the available municipal services like water and sanitation. PMC initiated formulation of the Master Plan up to year 2025 of Water Supply and Sewerage services for entire 430 km^2 area. In the year 2001, 15 villages included earlier, were excluded from PMC Limits and the total area under the PMC's jurisdiction remained around 243 km^2 alongwith old area. Salient features identified are presented in table 2.5.

Table 2.5 : Salient Features of the Master Plan

Phase	Year	Projected Population	Water Supply in MLD	Sewage Generation in MLD
I	2005	34,60,875	791	567
II	2015	47,45,800	1074	757
III	2025	66,61,000	1506	1090

Sewage generation, sewerage system and Treatment

The first sewage system for Pune city was designed in 1928 which only included preliminary treatment such as screening and grit removal at Bhairoba Nalla. The treated sewage was then used for irrigation purposes by pumping to Nalla canal areas. The designed capacity was 31.8 million liter per day (MLD) to cater to the population of 0.26 million in 1951.

In 1981, a complete collection and disposal system was planned considering future population growth and a 90 MLD sewage treatment plant was constructed at Dr. Naidu hospital. One Intermediate pumping station of 90 MLD capacity was provided at Kasba Peth. By 1997, main sewer length was approximately 146.83 km. Dr. Naidu STP having primary and secondary treatment facility, was treating 90 MLD sewage and Bhairoba STP with primary treatment facility was treating 32 MLD sewage. With an increase in population & demographic pressure on infrastructure services PMC initiated the formulation of Master Plan with total treatment capacity of 305 MLD (5 Treatment Plants) for the increase in population. These Plants were commissioned in the year 2005

Sewer is laid in Pune having length of 1500 km with 227 km of sewer along rivers and nallas. It is estimated that ----- population and households connected to sewer network. Table 2.6 provides the details of operational sewage treatment plants in Pune.

Table 2.6 : Sewage Treatment Plants

Sr.No.	Name of STP	Capacity in MLD	Treatment Process
1	Bahiroba	130	Activated Sludge Process followed by anaerobic digestion
2	Tanajiwadi	17	Bio-Tower & extended aeration process
3	Bopodi	18	Extended aeration process
4	Erandawane	50	Extended
5	Dr.Naidu -I	90	Activated Sludge Process
		305	

Table 2.7 presents the details of JNNURM (Jawaharlal Nehru National Urban Renewal Mission) funded STPs under construction. These STPs are likely to be in operation in 2009 except Kharadi STP.

Table 2.7 : JNNURM funded STPs under construction

Sr.No.	Name of STP	Capacity in MLD	Treatment Process
1	Dr.Naidu II	115	Activated Sludge Process
2	Vitthalwadi	32	Activated Sludge Process
3	Mundhawa	45	Cyclic Activated Sludge Technology
4	Baner	50	Cyclic Activated Sludge Technology
5	Kharadi	90	Cyclic Activated Sludge Technology
		262	

PMC will be having a total sewage treatment capacity upto 477 MLD in 2009. It is proposed to construct and commission following STPs (Table 2.8) by the year 2010.

Table 2.7 : JNNURM funded proposed STPs -Phase II

Sr.No.	Name of STP	Capacity in MLD
1	Bahiroba (Augmentation)	80
2	Mangalwarpeth	30
3	Kalyaninagar	30
4	Warje	30
5	Tanajiwadi (Augmentation)	10
6	Bopodi (Augmentation)	10
		190

Hence by the year 2010 PMC can have a total sewage treatment capacity of 757 MLD. as stated earlier 757 MLD Sewage will be generated by 2015.It shows 100% sewage treatment capacity will be achieved by 2010 to 2015.

Recycle of treated sewage

In an agreement between Irrigation Department and Pune Municipal Corporation, the quota of water sanctioned to PMC was 11.5 TMC and in the same agreement it was stipulated that 6.5 TMC of treated sewage would be recycled as water for irrigation purposes in the irrigation canal. In order to start the recycle of treated sewage it is essential for PMC to complete the Sewage Treatment Plants and also construct the necessary infrastructure like Weir, Pumping station and rising main to lift the treated sewage up to the irrigation canal.

It is proposed to construct a weir downstream of Mundhwa to divert 6.5 TMC of water into a pumping station from where it will be pumped through rising main up to the canal. The construction work of weir downstream of Mundhwa has already been taken up by the Irrigation Department. After construction and commissioning of the scheme, 6.5 TMC of treated sewage will be used for irrigation purposes.

Reuse of treated sewage and sludge

Pune Municipal Corporation has sewage treatment capacity of 305 MLD and treated sewage is currently disposed off in Mula-Mutha river. In order to reuse this treated effluent and sludge, PMC has invited offers for purchase of treated effluent (treated sewage) and treated sludge. The characteristics of raw sewage and treated effluent are presented in Table 2.8

Table 2.8 : Characteristics of raw sewage and treated effluent

Sr.No	Parameter	Raw Sewage	Treated Effluent
1.	pH	7 to 8 mg per lit	7 to 9
2.	BOD	250 mg per lit	< 20 mg per lit

3.	COD	350 mg per lit	< 100 mg per lit
4.	TSS	250 mg per lit	< 20 mg per lit
5.	Faceal coliforms	10^6 Nos / 100 ml	< 100Nos/100 ml

Treated sewage can be used for flushing of toilets, cooling water makeup, floor washing, gardening, construction purposes etc.

Treated Sludge

The characteristics and quantity of Treated Sludge generated at various Sewage treatment plants is given below in Table 2.9.

Table 2.9 : Characteristics of raw and treated sewage

Sr. No	Name of the plant	Treatment Process adopted	Characteristics of treated sludge	Approximate Quantity of sludge generated per day
1	50MLD Erandawane STP	Modified Activated Sludge Process with Aerobic Digesters	Nitrogen 1.17 % Phosphate 0.0458 % Potassium 0.17 %	3 cum per day
2	17 MLD Tanajiwadi STP	Extended Aeration with Bio-tower	Nitrogen-0.68 % Phosphate 0.61 % Potassium 0.63 %	1 cum per day
3	18MLD Bopodi STP	Extended Aeration	Nitrogen-0.98 % Phosphate 0.87 % Potassium 1.16 %	1 cum per day
4	130MLD Bhairoba STP	Activated Sludge Process	Nitrogen-0.905 % Phosphate 0.0386 % Potassium 0.007 %	5 cum per day

- The treated sludge can be used as manure.

Reuse of treated sewage in housing colonies

For housing colonies of 150 tenements and above, it has been made mandatory to construct its own package sewage treatment plant and reuse the treated sewage.

2.2.2 Air Pollution

Pune was selected as demonstration city for the Urban Air Quality Management project after the agreement between United States Environmental Protection Agency (USEPA) and Ministry of Environment and Forests (MoEF), Government of India in 2002. Air Quality Management Cell was set-up to carryout weekly monitoring of air quality parameters from October 2006 onwards. Other agencies such as Pune University, Indian Institute of Tropical Meteorology (IITM) and other academic institutions also carry out air quality monitoring, however, these data are of intermittent in nature and of specific locations.

Trends of ambient air quality in Pune in terms of Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. Particulate Matter less than 10 micron (PM10), sulphur dioxide (SO_2) and oxides of nitrogen (NOx) are presented in Table 2.10 and Table 2.11.

Table 2.10 : Ambient air quality status (February, 2009)

Unit : µg/m^3

Location	SO_2	NOx	RSPM	SPM
Karve Rd	15	48	147	-
Karve Rd	22.32	33.27	158.82	-
Nal Stop	17.5	50.75	130.75	356.75
Swargate	20.33	42.33	133.67	382.67
Standard	80	80	100	200

Source : Maharashtra Pollution Control Board

Table 2.11 : Air quality trends in Pune-source PMC Environmental Cell (Frequency: Two days in a week)

Unit : µg/m^3

Location	Duration	SO_2			NOx			RSPM		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Navi Peth	January'09	17	25	20	47	61	54	94	199	138
	February'09	15	26	21	46	68	53	88	187	134
Mandai	January'09	12	22	18	44	54	49	82	202	123
	February'09	14	27	20	42	57	48	102	212	126
Oasis Hotel	January'09	18	26	21	52	63	56	109	199	152
	February'09	16	29	20	49	65	54	96	194	147
Standard		80			80			100		

Data related to particulate matter in terms of PM10 and PM 2.5 (particulate matter less then 10 micron) were collected and shown in Figures 2.

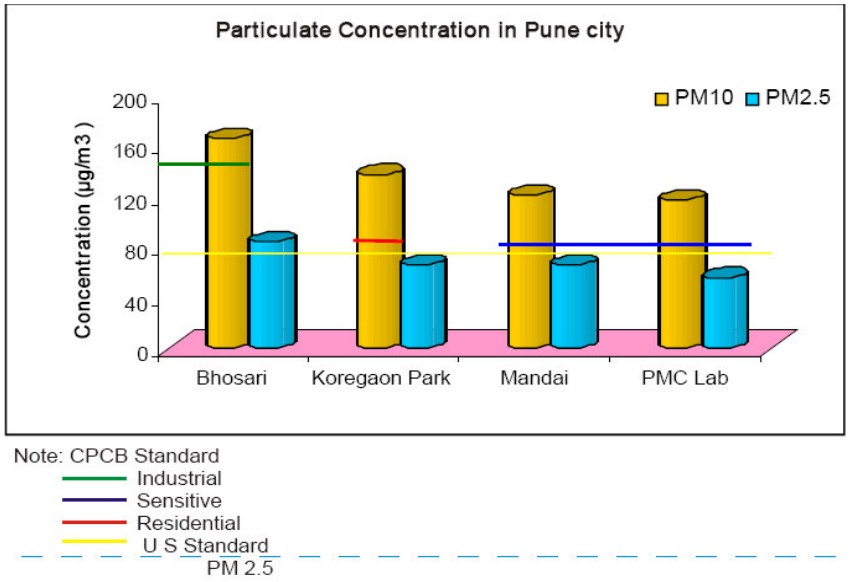


Figure 2.2 : Particulate Concentrations in Pune

Emission inventory for major air pollutants are also available (Figure 2.3) for major contributor of PM10 in the city is found to be the re-suspension of road dust from paved roads that accounts for approximately 55% of the total particulate load.

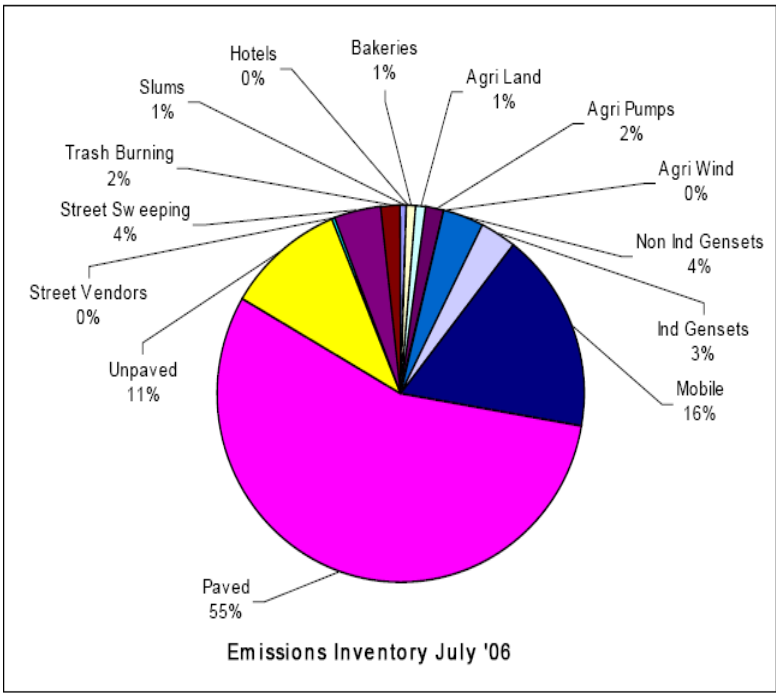


Figure 2.3 : Emissions Inventory for Pune City (PM10, Tons/year)

2.2.3 Municipal solid waste

Municipal solid waste generation in Pune is among the highest in Indian cities with average 0.400 kg (0.294 - 0.540 kg per person per day) of waste being generated per person per

day. Currently, about 1100 metric tons solid waste is generated per day. Figure 2.4 indicates that the solid waste generation per unit area in old city areas such as Bhavani Path, Kasba Peth, Vishrambag etc. are very high as compared to recently developed areas such as Aundh. This is due to higher population density in the old city areas and commercial activities. Source apportionment of solid waste (Figure 2.5) indicates that residential areas and commercial activities including hotel and restaurants contribute major proportion of solid waste.

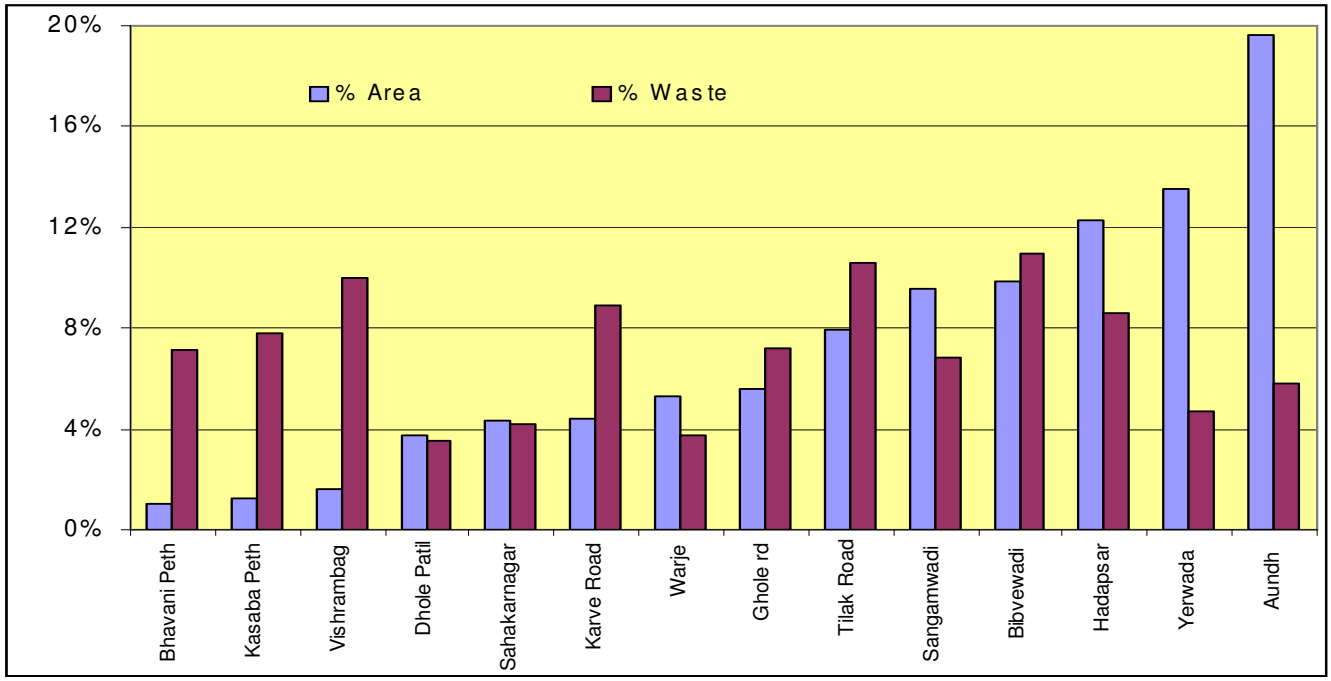


Figure 2.4 : Ward wise solid waste generation and ward area

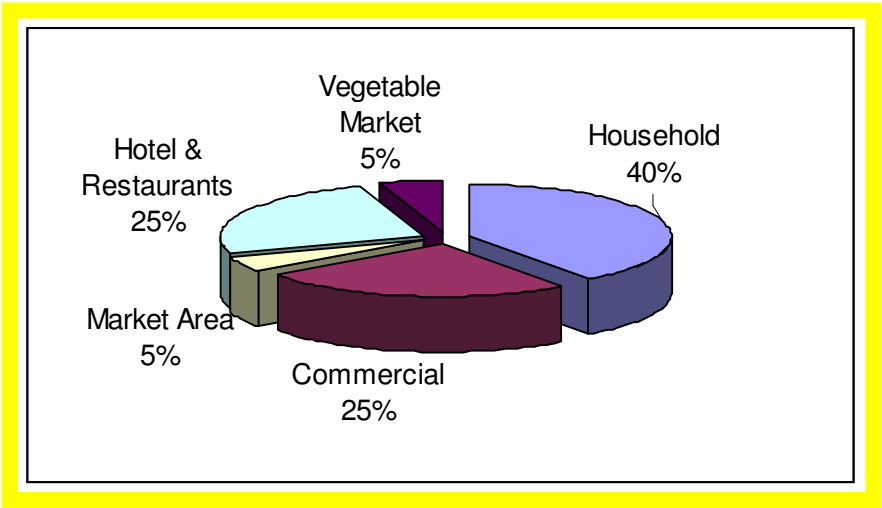


Figure 2.5 : Solid Waste Generation by source

Composition of solid waste is presented in Figure 2.6. Organic and bio-degradable portion of solid waste is 70% and therefore can contribute significantly in solid waste management if the waste is segregated properly at the source.

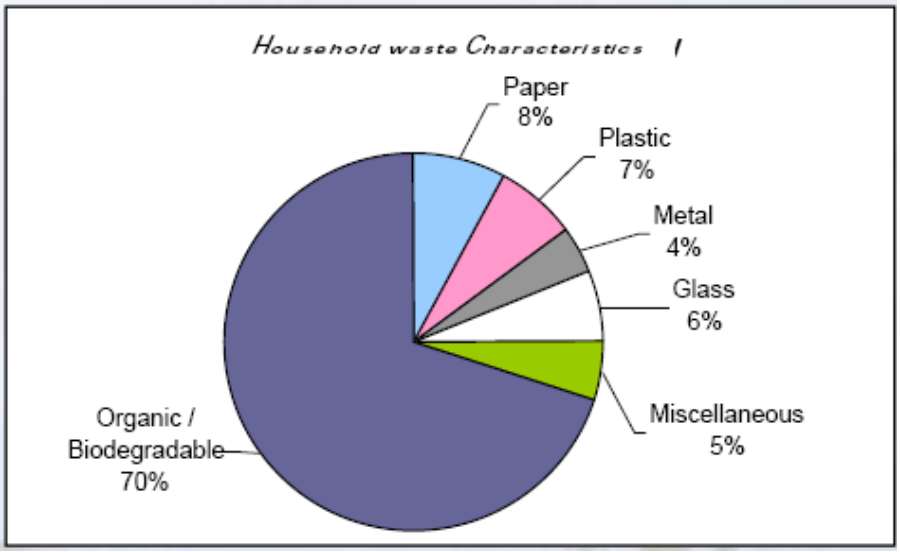


Figure 2.6 : Composition of solid waste

Solid waste management

Currently, 1100-1200 TPD solid waste is generated in Pune out of which 950 TPD reaches at landfill site at Devachi Urali, about 20 km from Pune. About 45% of solid waste is segregated and 80-90-% is collected in Pune. It estimated that 250 – 300 TPD of dry waste is recycled and reused through waste pickers.

It is estimated that 500 TPD of solid waste will undergo mechanical composting at landfill site. Methane emission from solid waste generation and landfill is estimated to be 65,80,000 tons per annum (@1100 TPD). The total cost for collection, transportation and disposal is about Rs.600 million per year, and Rs. 200 to 250 million is spent on management at the sanitary landfill site. Solid waste management measures are presented below:

Vermi composting / Bio Composting -

- 1500 units are in operation
- 100 TPD is used in composting/vermi-composting
- 550 units are nonfunctional which needs to be revived
- Voluntary participation of Citizens – more than 300 units are in operation

Biomethanization

- In this process waste is converted to Energy.
- Use of various Technologies-BARC, Australian Technology
- Near about 37 biomethanization Plants are working in City.
- Taking care of 20 to 25 MTD of Solid Waste

Organic waste converter

- Biodegradable waste crushed in a machine with addition of culture to it
- Time required for decomposition and formation of manure is substantially reduced
- bout 20 units are in operation and taking care of 10 to 12 tons per day of solid waste

Landfill Mining

- Conservation of landfill space.
- Reduction in landfill area.
- Elimination of potential contamination source.
- Rehabilitation of dump sites.
- Energy recovery from recovered wastes.
- Reuse of recovered materials.
- Reduction in waste management costs.
- Redevelopment of landfill sites.

E-waste

- Land has been identified for e-waste storage and treatment.
- Expression of interest floated, seven agencies participated

Bio Medical Waste

Pune Central Incineration Facility includes:

- Incinerators – 3 nos.
- Scrubber
- Autoclave
- Shredder
- On-line temperature recording mechanism
- Transportation system

It is estimated that the waste generation in Pune will be around 0.650 kg to 0.700 kg per person per day in future. Estimated solid waste generation is presented in Table 2.12.

Table 2.12 : Estimated Waste generation in Pune City

Year	Estimated Population growth	Waste Generation (400 gm per capita per day)	Waste Generation (650-700 gm per capita per day)
2011	4500000	1800 MTD	3150 MTD
2021	6000000	2400 MTD	4200 MTD
2025	6500000	2600 MTD	4550 MTD

2.2.4 Hill environment and bio-diversity

Pune is surrounded by many hills from almost all sides like Katraj Hill, Pachgaon Parvati, Ramtekdi, Gultekdi, Range Hills, Chatushringi Hill, Vetal Tekdi etc. To restore the ecology and enrich the green cover on these hills regeneration, forestation for biodiversity and protection of these hills is necessary. Around 728 ha area from the old city limit is under hills and hill slope whereas around 978 ha area from newly merged villages is under hills & hill slope. In old area construction for specified use is allowed which is upto 4% of total plot area. However, slums (10000 huts ~ 50000 population) exist on hills and hill slope area.

By proposing a Bio-Diversity Park Reservation in Draft Development Plan of newly merged village area this hill area is protected with not allowing any construction on it.

Following data will be collected during SEA study:

- Hills and hill slope has ----% land under vegetation
- Vegetation density in hills and hill slope is ----% and has species such as --------
- Landuse on hills and hill slopes indicate ---% construction, --% vegetation, ---% barren land

2.2.5 Traffic

The Comprehensive Mobility Plan (CMP) of Pune is a transportation vision document for Pune. CMP provides a broad outline of present and future traffic scenarios. It addresses traffic growth of all modes of transportation and suggests a direction for the multi-modal transport system of Pune. Apart from developing transportation vision, CMP specifies strategies and measures to address traffic growth of all transportation in an effort to meet set goals and CMP implementations along with block cost estimates. Road network in Pune city is shown in Figure 2.7.

Pune in 2007 had 1,445,364 registered vehicles, of which 1,123,898 were two wheelers (78%). Figure 2.8 shows the vehicle registered in the city.

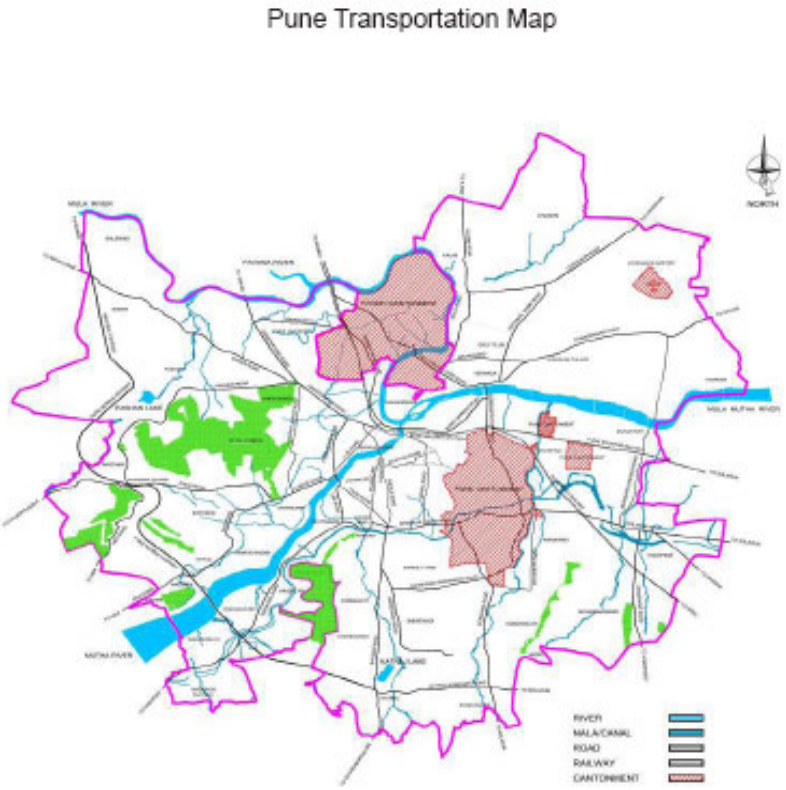
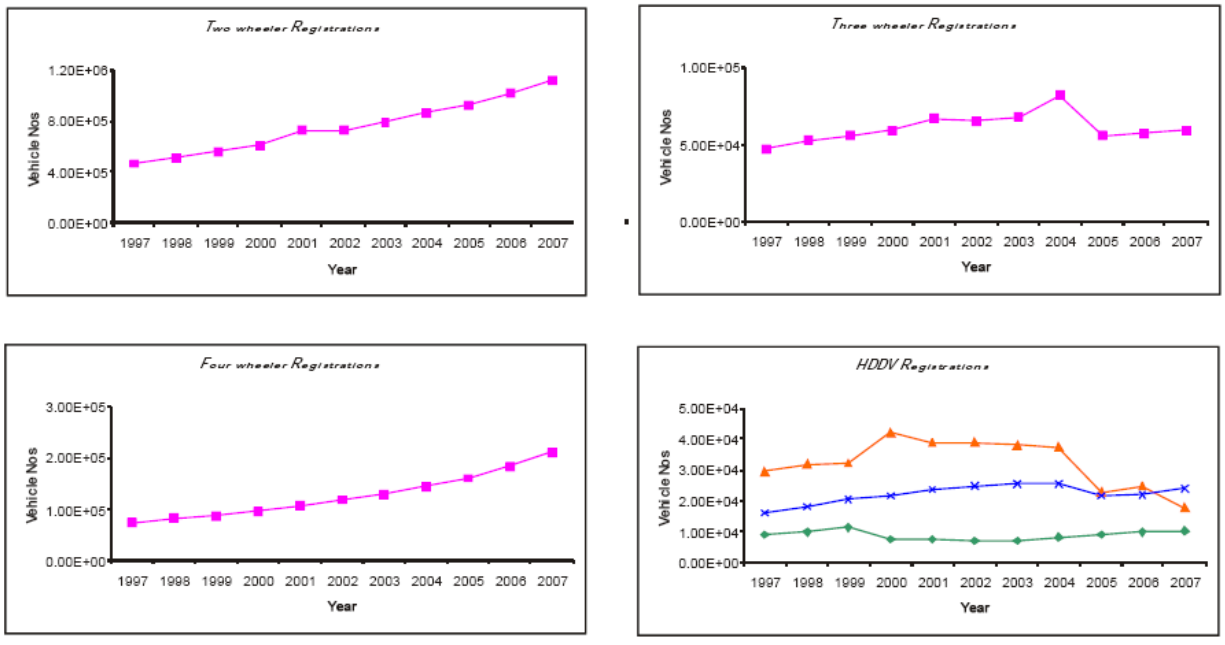


Fig 2.7 Pune City – Transport Netwrok



Source : Regional Transport Authority, Pune

Figure 2.8 : Growth of registered vehicles in Pune

Total area served by the road network in PMC was about 139 km^2, with road length per km^2 equal to 1.95 km. About 88 km are within the congested parts of PMC. The estimated land area consumed by the road network mainly of narrow widths is hardly 10.4 km^2. Only about a quarter of the length of the roads amongst those in urban areas possess a road width of 24 m, and a major parts of these roads are classified as highways (NH & SH) and district roads.

The roads in the CBD of the city are highly irregular with encroachment and ribbon development in residential and commercial areas. The roads form a grid with numerous intersections at short intervals. Widening of these roads is almost impossible. The result is critical congestion and low operating speeds of vehicles irrespective of their capacities to attain higher speeds. According to Department of Town Planning, nearly 75% of the road length has a width less than 24m. At the same time it leaves very little possibility of widening because of intensive development both sides. The city has largely a congested road network. There has also been a high capacity mass transport route (HCMTR) of 24 m width provided in a closed circle ring corridor along the city in the 1987 DP for the city. The total HCMTR proposed is about 21 km starting from Khadki Railway Station. along the city upto Vadgaonsheri in old PMC limit. The alignment has yet to be developed. There are also cycle tracks proposed in the1987 DP for Pune. Overall about 70% of cycle tracks are developed and are in use. A 60 m ring road along outer boundary of PMC limit is proposed in DP for newly merged 23 villages. Land acquisition process for 60 m wide ring road is going on.

There are several traffic surveys done in Pune. This scoping report presents traffic study undertaken in June and July 2006 at **34 junctions all across Pune** including the fringe areas added into the city considering the distribution of these junctions in various grids all across the city. Hourly classification of the number of vehicles in each of the junctions considered were evaluated into 2 wheelers, 3 wheelers, cars, tempos and bus/trucks. The counting network was developed by considering the 6 major roads entering into Pune city contributing to the entry of vehicles from the floating population as well as those from the highly developed fringe areas surrounding the city. There exists a very prominent and gradual variation every hour of the Pune vehicular travel on the road. This represents the typical vehicular travel trend across the city at all the junctions though the number and category of vehicles contributing to this trend are different at different junction at each hour of the day as shown in Figure 2.9.

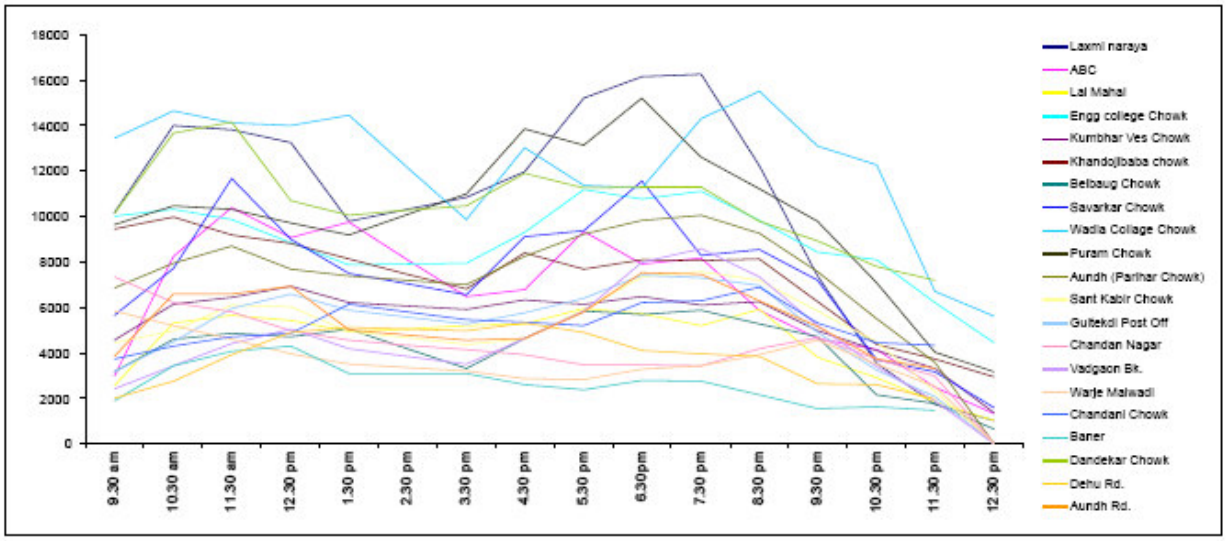


Figure 2.9 : Hourly variations in number of vehicles at each junction

Vehicles contributing to the population on road are mostly from the local area as seen from the graph depicting the number of vehicles dropping to zero at many of the junctions. However, some of the junctions showing higher numbers during night time are contributed by the trucks which pass through these and travel to other adjoining cities of Pune and use Pune as by pass road. On an average, the number of vehicles on these junctions varied from a minimum of 2000/hour to 16000/hour. Some junctions such as Savarkar chowk and Engineering College chowk shows high hourly variation as these are the roads connecting to all the commercial areas of the city.

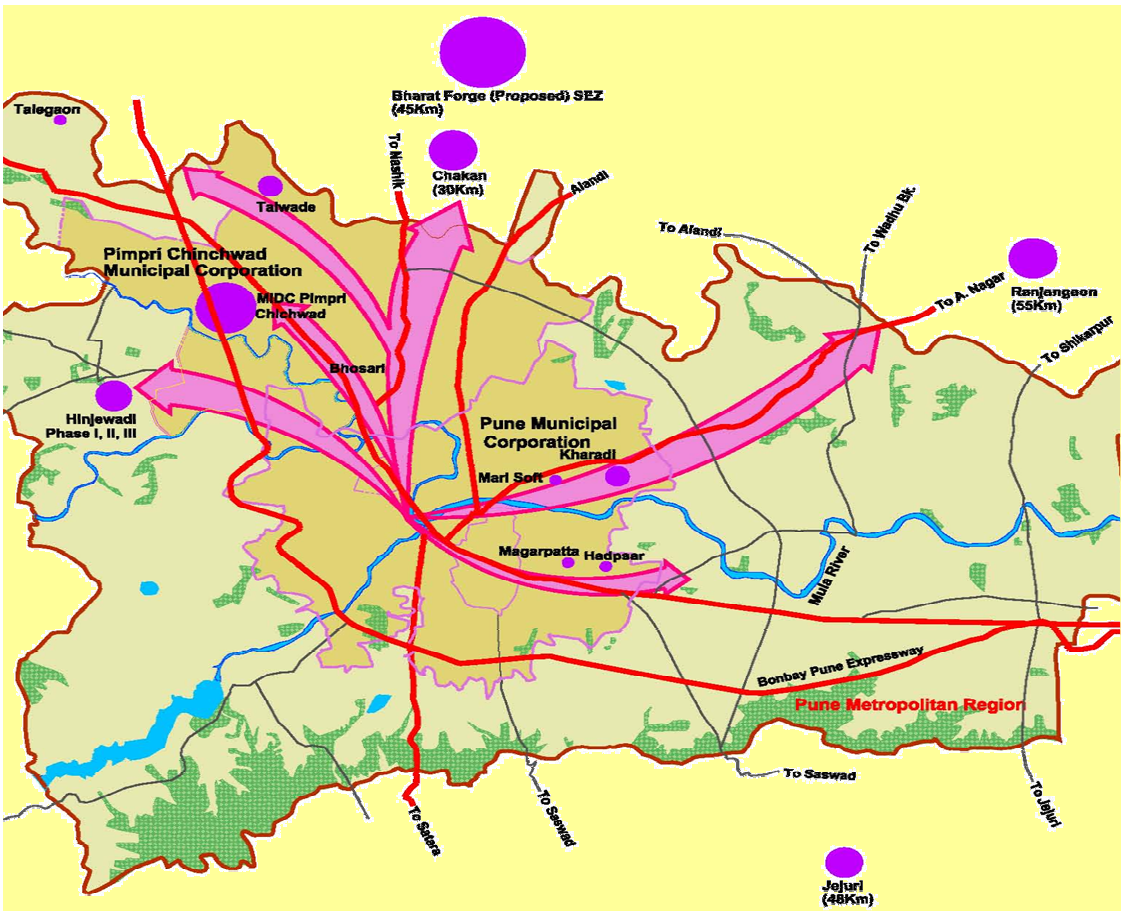


Fig 2.10 Growth Directions

Public Transport

Public Transport carries many people in one vehicle, its per-capita usage of resources, per-capita pollution and per-capita accident rate is much lesser than a private vehicle. Table 2.13 quantifies this for some systems.

Table 2.13 : General Vehicle standing with variation of Mode of transport

Mode of transport	Occupancy persons	Energy consumption kj/passenger-km	CO2 emission gm/passenger-km	Fatalities/million passenger-km
Scooter	1.3	706	9.2	19.21
Car	2.2	1825	6.5	3.17
Bus (Diesel)	40	267	0.26	0.4
Train (EMU)	1080	88	0.12	0.001

Source : Survey by PMC

Overall Outercordon Modal split

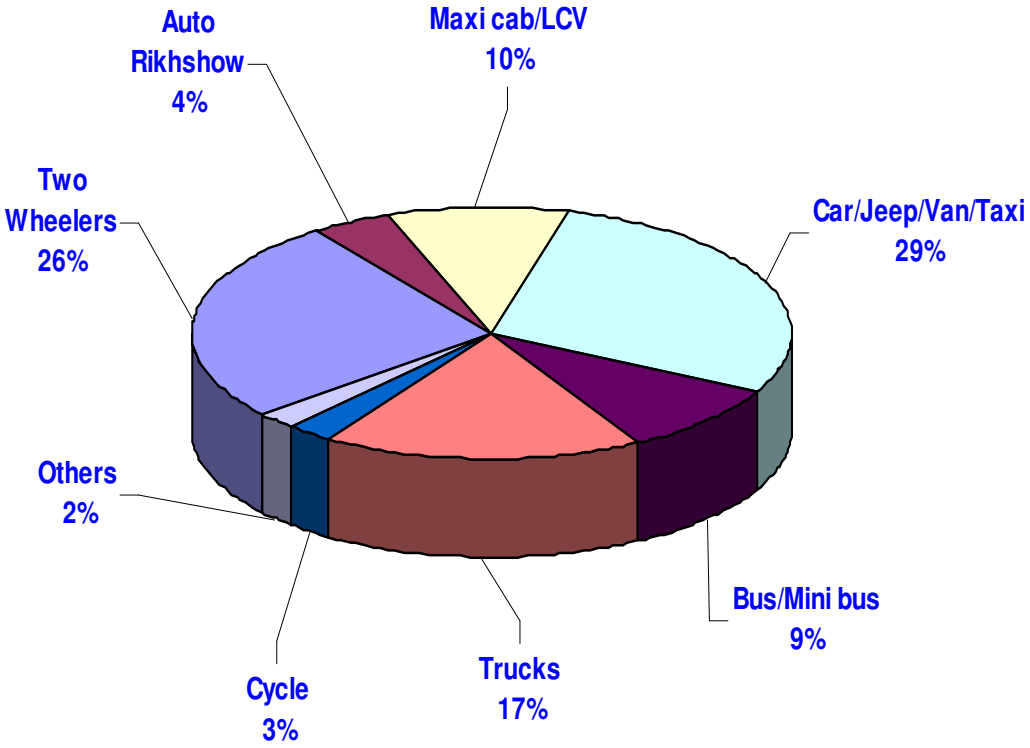


Fig 2.11

Public transport in Pune is operated by Pune *Mahanagar Parivahan Mahamandal Limited* (PMPML) details of which are presented in Table 2.14. There are 933 PMPML buses which operate on 297 routes covering a distance of 281,000 km. Over 1 million passengers travel every day by PMPML buses. In addition, there are 8000 private buses in Pune which transport the employees of private companies. This suggests that there is considerable under-provision of public transport in Pune.

Table 2.14 : Present situation of PMPML Jan 2009

Average age of PMPML buses	8 Years 3 month 3 days
PMPML buses	1186
No. of BRT buses	20
Rental buses	337
No of Depots	10
No of Buses on Road	933 (77.81%)

No of Routes operated	297
Average vehicle km covered daily	238
Daily km covered	281000
Daily cancellation of km due to Traffic congestion, Accident, Breakdown etc	23587 Km
Daily Passenger traveled	1066312
Break down rate	0.66 for 10000Km
Km per liter of diesel	3.47
Bus Staff ratio	7.56
Workshop Staff	1.01 (Whereas CIRT norms 1.71 per bus)
Earning per km	Rs.29.62
whereas cost of bus operation	Not Available

Bus Rapid Transit

A bus based Mass Transit System (MTS) includes physically segregated, dedicated bus lanes, seamless integration with pedestrian and cycle paths, sophisticated system for ticketing and special buses and bus stops that allow rapid loading and unloading of commuters. Pune is one of the first cities in India to implement a Bus Rapid Transit (BRT) system, along the Hadapsar - Swargate - Katraj corridor, a total of 13.6 km at a cost of Rs 620 million. In addition, 15 more corridors will be completed, covering all the major arterial roads, for an extensive Pune wide BRT network.

2.2.6 Housing

In Pune, non-residential area is much lesser than the residential area. Maximum permissions are given for construction of residential area (Figure 2.13).

Table 2.15 : Distribution of residential and non-residential tenements

Year	Sanctioned Cases	Total FSI	Tenem-ents	Residential area, m^2	Non-residential area	Professinal Offices	Offices	Shops
2006	3999	5563714	52500	4148699	1415014	1781	2862	4648
2007	4531	7666543	76395	6006917	1659625	1085	1576	3479
2008	2508	5330636	28015	4648557	682078	324	508	1361
2009*	737	158515	1310	135996	22519	39	61	71

* Jan 09 to 17 March09

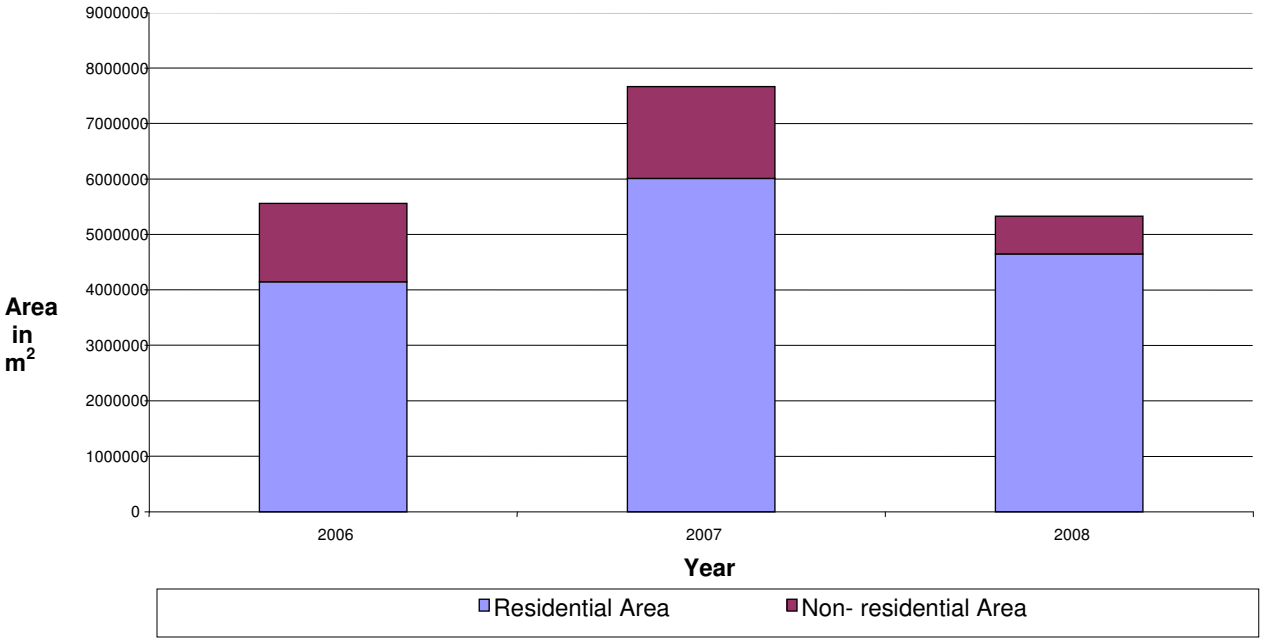


Fig 2.12 : Year wise permission for residential and non-residential areas

2.2.7 Slum

The urban poor population (slum population) in Pune is 30-35% of the total population of the city; the rapid growth of slums has largely an outcome of economic activity and job creation capacity of the city. In Pune, 90% slums are on private land and 10% are on government land. Growth of slum in Pune is presented in Table 2.16. The density in slums (person/km^2) is about 6 times that of the overall density prevailing in the rest of the city. A high density also indicates high health and social costs. It is also observed that 27% of the city's population resides in declared slums and they occupy only 4% of the total city area.

Table 2.16 : Slum growth in Pune

Year	Total population	Slum population	Slum population (%)	Annual growth in city population (%)	Annual growth in slum population (%)
1961	606,777	92,101	15.18%	2.19	9.63
1971	856,101	239,701	28.00	3.5	10.04
1981	1,203,363	377,000	31.33	3.46	4.63
1991	1,691,430	569,000	33.64	3.46	4.2
2001	2,538,473	1,025,000	40.38	4.1.4	6.06

Source : Census of India, 2001

Status of slum in terms of employment, housing types, location and access to basic amenities is presented in Table 2.17. Table 2.18 and Table 2.19 for 447 slums indicate that about 38% of the slum tenements (58,928) are in critical locations which need to be relocated to safer areas in order to develop these locations and also in the interests of the safety of slums dwellers.

Table 2.17 : Status of slum

Parameter	**Status**
Employment	Working population in slum comprises of skilled construction workers (fitters, masons, electricians, painters), unskilled workers, vendors (food and vegetables), factory workers, drivers and domestic maids. Very few slum dwellers are professional workers and government servants
Housing type	Most slum houses in *kuchcha* (temporary) category are built of *patras* (sheets). As per the survey in 2000in Sangam Ward, 52% houses are kuchcha, 33% are permanent and 12% are semi-permanent. All the declared and non-declared slums have access to water supply, sanitation facilities, street light and other social infrastructure such as schools, primary health care facilities etc.
Location	Majority of slums in Pune are located on private land
Access to basic services	Most of the slum dwellers either have direct accessor access the services through community or common facilities. A survey in 211 declared slums, over 58% of the households have individual water supply connections and rest depend on public stand post (8.5 families per public stand post). Each toilet sheet serves 84 persons, whereas 93% households have access to some form of electricity connection

Source : ESR

Table 2.18 : Location of Slums as per land tenure

Land ownership	**No of slums**
Defense	3
Forests	3
Government land	135
Government and private land	16
Irrigation Department	13
Private	233
Railways	21
Others	23

Source : ESR

Table 2.19 : Location of Slums as per land use

Land use	Households	% of households	Population
Water bodies	27,847	17.67	142,161
Hill slope	31,081	19.72	153,031
Flat terrain	94,558	60	499,886
Not recorded	4139	2.63	20,389

Source : ESR

Critical environmental concerns in slums are given below:

- Structure of the dwellings
- Water supply
- Electricity supply and energy needs
- Water logging during monsoon
- Environmental sanitation including solid and liquid waste
- Access to services

2.2.8 Social infrastructure

Gardens

The Garden Department of PMC has developed 75 gardens on 359.35 acre, and 35 new gardens are proposed on 267acre. Pune Municipal Corporation has also developed 5 Nalla parks. Road beautification and road side plantation along 20 km has also been undertaken.

Development of forest area on Bhamburda and Vetal tekdi covering area of 100 ha and 45 ha respectively is being undertaken in collaboration with State Forest Department. A Biodiversity Park is being developed in an area of 218.61 ha. This is a hilly area and located in the rapidly developing areas like Baner, Pashan, Hadapsar, Kondhawa, Mohammadwadi, Sutarwadi. Existing gardens and hilly areas in Pune are shown in Figure 2.14.

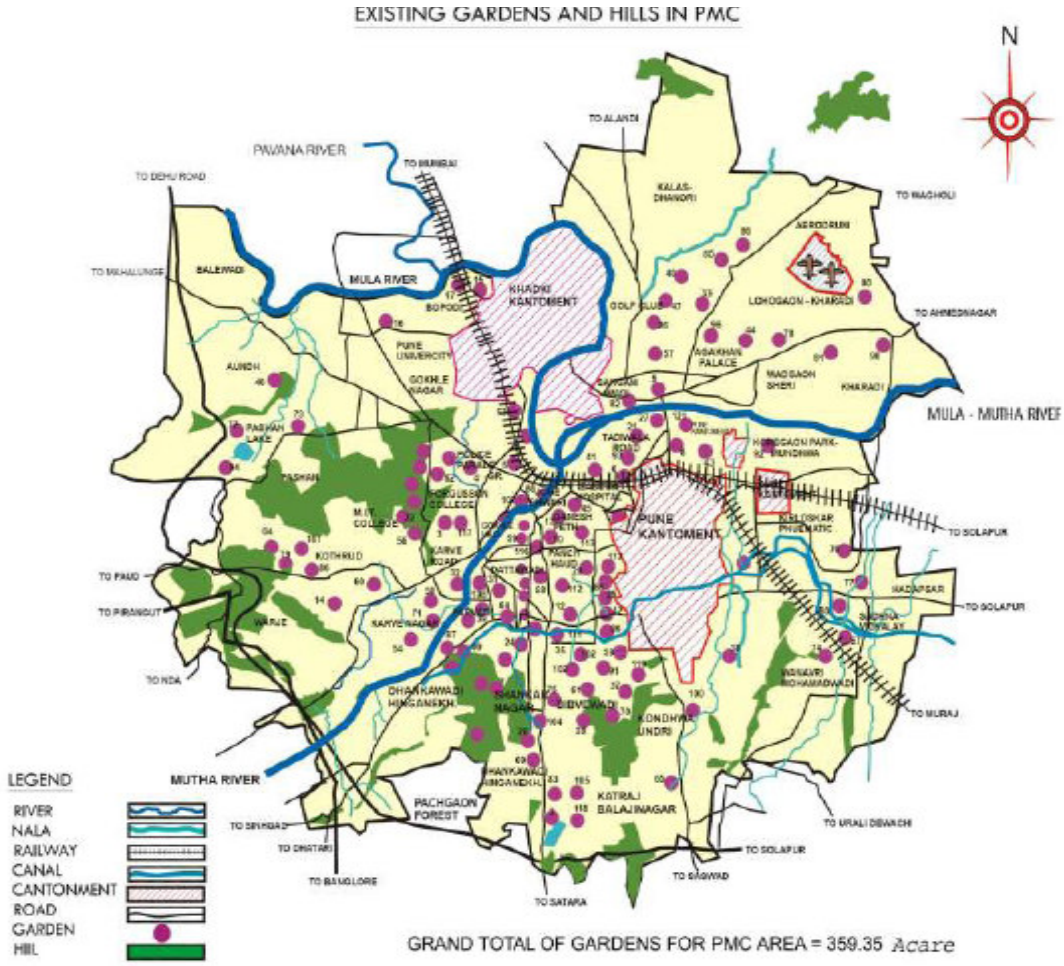


Figure 2.13 : Existing gardens and hills in Pune

Heritage

Heritage Committee constituted by Government of Maharashtra in 195 classified historical building into grade I, II and III. According to this list, Pune has about 200 heritage properties. Out of these, following heritage buildings/places/monuments are of tourism interest in Pune:

- Shaniwarwada
- Aga Khan's Palace
- Lal Mahal
- Kelkar Museum
- Scindia Chatri
- Vishrambagh Wada

Health facilities

Nursing Homes	=	523
Blood Banks	=	09
Laboratories	=	91

Clinics/Dispensaries	=	581
PMC Hospitals	=	020

Education institutions

Graduate/Postgraduate students enrolled as per University of Pune are 141983.Out of which 33217 students are in Engineering Colleges and 16472 students are in Management Institutions. There are --- schools in Pune in which ---- students study.

2.2.9 Land use

Proposed land use for newly merges villages is submitted to State Government for sanctioning. State Govt has sanctioned part of one out of ten planning units. Existing Land use survey work for old city area is going on.

2.3 Compatibility with other plans, policies and programmes

There are separate plans prepared for thematic areas in Pune Municipal Corporation which have significant influence on preparation of the Development Plan. In addition, there are national, state and regional which also affect process of preparation of the Development Plan. A review of other relevant policy and planning documents is required to establish the environmental objectives that they contain, and this stage allows opportunities and synergies to be identified, as well as potential conflicts between aims, objectives of these policies and plans.

The review also highlights sustainability drivers between plans to be identified. Table 2.20 lists all reviewed policies, plans and programmes.

Chapter 3 : SEA Scope and Methodology

3.1 Spatial and Temporal Scope

This SEA study is being carried out for proposed revision in Development Plan (2007-2027) of Pune Municipal Corporation for an area of 146.11 km^2. Spatial extent of the study confines to the area of 243.84 km^2, however, impacts due to activities undertaken in an extended area of Pune Metropolitan Regional have also been considered to a limited extent. Temporal scale of SEA study is 20 years as the proposed revision in the Development Plan of Pune Municipal Corporation is for the period 2007-2027.

Scope of spatial planning includes all levels of land use planning including urban and regional planning, transport planning and environmental planning. Spatial planning is characterized by an integrated approach, a wider view of the development, and strategic aspects. Development Plan should consider wider planning concept, including economic, social, cultural and environmental policies.

3.2 Scope of Environmental, Social and Economic Issues

Identification and detailing of core areas (attributes), objectives, indicators and targets, review of plans and programmes and the collation of the environmental and sustainability baseline data informed the identification of environmental problems or issues that could be addressed by, or affect the strategies and measures developed for consideration in strategic environmental assessment and development plan for Pune. Inputs during consultation with PMC authorities and NGOs are also included while identifying environmental and sustainability problems and solutions. Such issues, problems and opportunities have been confirmed through:

- Discussion and consultation with Pune Municipal Corporation authorities;
- Interview with stakeholders of SEA
- Consultation with NGOs
- Review of the baseline data, especially where targets are not on track to be met or trends are negative; and,
- Incompatibility with other plans, programmes and sustainability objectives.

Issues/problems/opportunities are identified and presented in **Table 3.1**.

Table 3.1 : Issues/problems/opportunities in Pune

Issues/problems/opportunities	How this could be addressed in the SEA/Development Plan
Water quality in river, nalla and lake	
• Physico-chemical and microbiological water quality deteriorated over the years • Untreated sewage discharge into river • Slum along the river • Very low natural water flow quantity in river	• Improve river quality by e.g. using sustainable drainage schemes • Reduce contaminated run off into water courses • Restrict unsustainable water abstraction • Maintaining minimum natural water flow quantity in river
Air pollution	
• High number of private vehicles on road • Traffic congestion in the city is leading to poor air quality • More development could lead to more traffic and worse parking conditions • High concentrations of particulates due to poor condition of road	• Improve public transport system • Implement traffic management plan • Improve road condition to minimize particulate emissions • Provide cleaner fuel like CNG for the vehicles • Use of cleaner fuel in stationary combustion source • Resort to bio-gas generation, recycle and reuse to minimize methane emissions
Municipal solid waste	
• Household waste recycled is low • Segregation of municipal waste is low • Land-fill is principal mode of municipal solid waste management • Absence of leachate collection and treatment, prone to fire hazards, increased air pollution at landfill site • Methane emission is substantial due to land-fill and inefficient segregation and collection	• Promote the reduction, reuse and recycling of waste • Require/promote the use of locally sourced, secondary and recycled materials • Promote sustainable construction methods • Well designed land-fill site with arrangements for leachate collection, prevention of fire hazards and improved air quality • Switch over from land fill to composting/ bio-methanisation with due objectives of use of biogas and reduction in GHG emission
Hill environment and bio-diversity	
• Being a mainly urban borough, extended areas of high biodiversity are limited in Pune • Hill environment is subject to intense pressure due to development and encroachment	• Existing designated areas and open spaces should be maintained and enhanced • Green belt land should be protected from development pressures • Use of previously developed land with

•	low biodiversity value should be encouraged • Opportunities for extending wildlife corridors should be explored
Traffic	
• Traffic congestion in the city • More development could lead to more traffic and worse parking conditions • Insufficient public transport	• Make sure new developments are well served by public transport • Integrate land use and transport planning • Improved alternate mode of public transport • Adequate parking space
Housing	
• House (land) prices are high • Lack of affordable housing •	• Proposed housing growth would require transport and other investment • Promotion of higher housing densities without compromising design or quality of life • Introduction of eco-housing
Slums	
• Unabated and accelerated growth of slums • Almost 40% population of Pune live in slums • Lack of slum rehabilitation	• Control of slum growth • Alternate housing and services to slum dwellers • Improved services in slums
Social infrastructure and services	
Cultural Heritage • Concern that these heritage buildings may be damaged by poorly designed development • New development could lead to erosion of the character of sons of soil	• To preserve the character of the city by measures such as declaring conservation areas or issues design guides should be considered • Careful in planning to consider preservation of heritage structure while promoting new development
Human Health • Pune has --- hospitals and ---beds which are higher than national average • Environmental disease burden is high particularly in slum • Malnutrition is ------% among children under five	• Improve facilities and access in government and municipal hospitals • Improve and monitor environmental disease burden particularly in slums • Identify, treat and monitor malnourished children
Garden and landscape • Pune is constrained with space for development of gardens • The small area available is subject to many competing demands	• Maximise the use of previously developed land having low biodiversity value • Ensure developments are in keeping with local character

	• Maximise utilization of vacant space for greenbelt/garden/plantation • Do not divert land available for garden and bio-diversity park
Landuse	
• Congested core area with limited scope of land reservation • Population density in the core areas is very high • Narrow road width and insufficient land availability leading to traffic congestion • Unequal distribution of social infrastructure and land allocation	• Developing compatible and integrated land use plan with 23 merged villages • Variable FSI in city limits • Equitable social infrastructure
Governance	
• Developing PMC and public partnership • Mechanism for monitoring of implementation of development plan is not in place • ESR is prepared for compliance • Scope for improvement in coordination among various departments of PMC	• Improved PMC and public partnership • Developing mechanism for monitoring implementation of development plan • Linking development plan to bugetory allocation • ESR linked to implementation of development plan • Improved coordination among various departments

3.3 Methodology for Assessment of Impacts and Analysis of Alternatives

The assessment of impacts and analysis of alternatives will be made as integral parts of the planning process. PMC will discuss, predict and evaluate the effects of different elements of the Sustainable City Plan for Pune (SCPP), including alternatives, while working on the development of the plan and refining the alternatives. The assessment will be made in several different steps and from different angles, following the sequence described below.

3.3.1 Overall assessment of the Sectors/Potential issues of the SCPP against SEA objectives

As a first step in assessing the SCPP, an overall assessment will be made of the sectors and potential issues of the SCPP against the SEA objectives and the indicators described in Section 3.4. The assessment will be made using the framework shown in Table 3.2 below.

Table 3.2 : Overall assessment of the sectors and potential issues of the SCPP against the SEA Objectives

Sectors/potential issues in DP / SEA Objectives	Land-use and Spatial Planning	Transport and Mobility	Housing and Urban Renewal	Waste Management	Water supply	Sewage treatment	Energy	Natural Resources and Environment	Culture		
Improved river, nalla & lake water quality	+/-	+/-	+/-	++/--	?	++/--	N/A	++/--	+/-		
Improved air quality					N/A				N/A		
Solid waste management	+/-	N/A	++/--	++/--	N/A	+/-	N/A	++/--	+/-		
Regenerated, forested for bio-diversity & protected hill environment	++/--	+/-	++/--	N/A	N/A	N/A	+/-	++/--	?		
Improved traffic condition	+/-	++/--	+/-	?	N/A	N/A	?	N/A	N/A		
Affordable and liveable housing	++/--	?	++/--	+/-	+/-	+/-	+/-	N/A	N/A		
Slum free Pune	++/--	N/A	++/--	+/-	+/-	+/-	+/-	+/-	N/A		
Improved & equitable social infrastructure & services	++/--	+/-	++/--	++/--	++/--	++/--	++/--	+/-	?		
Integrated landuse for old city limit & newly merged villages .	++/--	+/-	++/--	+/-	+/-	+/-	+/-	?	N/A		
Improved governance	++/--	++/--	+/-	++/--	++/--	++/--	++/--	+/-	N/A		

Legend

?	Uncertain relationship
N/A	No impact on each other
+/-	Certain linkages
++/--	Strong linkages, positive/negative impacts

3.3.2 Internal Compatibility Analysis of the SCPP Objectives

The objectives of the SCPP will also be assessed against each other, in order to identify possible inconsistencies that may give rise to adverse effects. This will be done through an internal compatibility analysis, identifying positive and negative relationships and links between the different objectives. Table 3.3 below shows the framework which will be used for assessing the SCPP objectives against each other.

Table 3.3 : Internal compatibility analysis of objectives

Comment: Like table 3.2, insert the table (from Excel) using "paste special" and insert it as "Picture (Windows Metafile)" it will fit in one page.

Objectives	Improved river, nalla & lake water quality	Improved air quality	Solid waste management	Regenerated, forested for bio-diversity and protected hill environment	Improved traffic condition	Affordable and liveable housing	Slum free Pune	Improved & equitable social infrastructure & services	Integrated landuse for old city limit & newly merged village area.	
Improved river, nalla & lake water quality		N/A	?	N/A	-	N/A	?	N/A	?	+
Improved air quality	N/A		?	-	+	-	N/A	?	N/A	+
Solid waste management	?	?		-	N/A	N/A	?	N/A	?	+
Regenerated, forested for bio-diversity & protected hill environment	N/A	-	-		-	+	+	-	N/A	+
Improved traffic condition	-	+	N/A	-		+	?	?	+	+
Affordable and liveable housing	N/A	-	N/A	+	+		+	?	+	?
Slum free Pune	?	?	?	+	?	+		?	?	+
Improved & equitable social infrastructure & services	N/A	N/A	N/A	-	?	?	?		+	+
Integrated landuse for old city limit &	?	?	?	N/A	+	+	?	+		?

newly merged village area.										
Improved governance	+	+	+	+	+	?	+	+	?	

Legend

?	Uncertain relationship
N/A	No impact on each other
+	Compatible
-	Potentially incompatible

3.3.3 Testing the SCPP Objectives against the SEA Objectives

The SEA objectives, described more in detail in Section 3.4 below, state the broad intention of the SEA and to be able to more specifically assess the performance of the SCPP against these objectives, indicators are established for each objective. The proposed indicators against which the SCPP will be assessed are described in Section 3.4. The overall focus of the SEA objectives is sustainable development, through integrating environmental, social and economic issues in the SCPP decision-making and implementation process. The objectives of the SCPP should be the same. But it is also possible that part of the objectives of the SCPP are different, e.g. more detailed in certain sectors or aspects or to some extent focus on other areas.

If any of the identified SCPP objectives are different than the SEA objectives, an assessment will be made of how they could influence each other and how and to what extent they overlap. This assessment will be made as an integrated part of the planning process, in order to support the development of the plan and the identification of alternatives. Each SCPP objective will be tested against the SEA objectives, in a table showing positive as well as negative effects and uncertainties, in a similar way as in the figures above. The framework to be used for assessing the SCPP Objectives against the SEA Objectives as well as for the assessment of alternatives is presented in Table 3.4. The table also includes columns for assessing the total or aggregated impact, comments and for marking issues that need further assessment.

3.4 Development and Assessment of Alternatives

When conducting the SEA, PMC will appraise the likely significant environmental, social and economic effects of the SCPP and reasonable alternatives. The alternatives will be developed and assessed in an iterative process, where the alternatives will be revised as part of the SEA and the planning process to enhance positive effects and reduce negative ones.

It is not the role of the SEA to decide the alternatives to be chosen for the SCPP. The SEA simply provides information on the relative environmental, social and economic performance of different alternatives, in order to facilitate decision-making and make the process more transparent. As in the case of the SCPP Objectives, each alternative will be tested against the SEA objectives, in a table showing positive as well as negative effects and uncertainties. However, in order to more easily be able to determine which alternative is more favourable than the other, a more detailed scale, using numbers, will be used while the assessment is being made. Table 3.4 will be used also for this assessment.

The assessment of alternatives, and if deemed convenient, also the assessment of objectives, will hence be made through using number from e.g. -3 to -1 for negative effects, where -3 indicate significant and potentially irreversible impacts, -2 significant impacts, and -1 minor negative impact. Positive impacts will be assessed in a similar way, using figures +1 to +3 and "0" will be used for indicating "no impact/neutral". Through using figures, the total impact of each alternative can be compared and impacts can also more easily be weighted.

Apart from the alternatives developed during the planning and SEA process, the assessment will also include a so called "zero alternative", i.e. no plan or the proposals in the alternative plans are not implemented. Only reasonable, realistic and relevant alternatives need to be put forward. It is helpful if they are sufficiently distinct to enable meaningful comparisons to be made of the possible impacts of each alternative.

When assessing the alternatives the following questions will be used for guidance[1]:

- Are the alternatives distinct and clearly presented?
- Are they likely to have any adverse effects? Can these be prevented, reduced or offset?
- Can positive effects be enhanced?
- Can any of the effects be quantified in a meaningful way?
- Who are likely to be the 'winners' and 'losers' for each alternative (e.g. poor versus rich people, slum versus developed areas; people with cars versus without cars; etc)?
- Are any effects of the alternatives unclear or ambiguous? Is any further analysis appropriate?
- Are the effects likely to be variable over the short, medium and long-term?

To present the outcome of the assessment in a visually more attractive way, colour codes, combined with signs for positive (+) and negative (-) will be used in the final presentation of the findings in the assessment in the SEA Report, as shown in Table 3.4 below.

[1] Adapted from: Office of the Prime Minister, UK, A Practical Guide to the SEA Directive

Table 3.4 : Presentation of assessment of SCPP objectives and alternatives in SEA Report

	SEA Objectives										
	1	2	3	4	5	6	7	8	9	10	
The Sustainable City Plan for Pune - Strategic Options, Objectives and Alternatives	Improved river, nalla & lake water quality	Improved air quality	Improved solid waste management	Regenerated, forested for biodiversity and protected hill environment	Improved traffic condition	Affordable and liveable housing	Slum free Pune	Improved & equitable social infrastructure and services	Integrated land-use for old city limit & newly merged village area	Improved governance	**Comments** on overall assessment, short-term, medium-term and long-term impacts; permanent or temporary; positive or negative; secondary, cumulative and synergy effects
"Zero alternative"											
Strategic option 1 [name...]											
Strategic option 2 [name...]											
Strategic option 3 [name...] etc.											
SCPP Objective 1 [name...]	--	++	N/A	-	?	+	-	--	-	N/A	
Alternative objective... [name...]											
SCPP Objective 2 [name...]											
Alternative objective... [name...]											
SCPP Objective...											

Legend

?	Uncertain impact
N/A	No impact
+/++	Positive impact
-/--	Negative impact

3.4.1 Selection and rejection of alternatives

Those alternatives that may have significant negative impacts but that are considered to be feasible for other reasons will be taken forward for further assessment and evaluation, e.g. through using Geographic Information System (GIS) for comparing different scenarios.

To make the process of selection of alternatives more transparent and open for stakeholder consultations, the SEA Report will include a table with a short description of the assessed alternatives and a short justification of the reasons for why each alternative was accepted or rejected. Table 3.5 below presents the framework to be used for the presenting the justification of selection or rejection of alternatives.

Table 3.5 : Presentation of justification of selection or rejection of main alternatives

Short description of alternative	Justification

3.5 Proposed SEA Objectives and Indicators

SEA objectives, indicators and targets have been derived and presented in detail in Chapter 2. Indicators and targets are attempted to be as SMART as possible and derived based on the baseline data, standards and guideline values of environmental parameters stipulated by Indian statutory authorities and international organizations such as WHO. Objectives, indicators and targets are presented in Table 3.6. Some of the targets could not be identified due to lack of data at the stage of scoping and will be considered while preparing SEA report. It is expected that the detailed baseline data will be available to set-up the targets for identified objectives and indicators.

Table 3.6 : Objectives, indicators and targets for SEA of SCPP

S. No.	Core areas	Draft SEA Objectives	Indicators/targets
1	Degraded river, nalla and lake water quality	Improved river, nalla & lake water quality	• DO increased from 0 (baseline) to > 3 mg/l (CPCB standard) • BOD reduced from > 30 mg/l (baseline) to < 30 mg/l (CPCB standard) • No sewage discharge and solid waste disposal into river and water bodies • Increase of the percentage of population connected to sewage by 20-30% • Flow in river and nallas maintained at xx • Reduction in water distribution losses from 30-35% to 10-15% • Water metering aimed at 100% households • 100% sewage is recycled and reused
2	Air pollution	Improved air quality	• Ambient air quality in terms of particulates (SPM, PM10), SO_2 and NOx are wthin the stipulates standards of CPCB • Emission of air pollutants increased only by 20% over 2007 baseline • Greenhouse gas emissions (GHGs emissions) increased only by 20% from 2007 baseline
3	Municipal solid waste	Solid waste management	• Collection of solid waste increased from 80-90% to 100% • Segregation of solid waste from 40% to 80% • Increased solid waste reuse and recycle from 2-5% to 20% • Increased composting/bio-methanisation to 60-80% from 20-40% • Emissions of methane per ton of solid waste generated is reduced by 20-40%
4	Degraded hill environment	Regenerated, forested for bio-diversity and protected hill environment	• Hill and protected area maintained at 2007 level • Biodiversity in protected area maintained/improved from 2007 level • Vegetated area on hill and hill slope increased by 20% • Green cover in city increased by 20-30%
5	Poor traffic condition	Improved traffic condition	• Increasing use of public transport to 50-60% • Reduction in vehicle challans, accidents by 20% • Reduction of pedestrians injured or killed in traffic

			from X to Y
6	Unaffordable and congested housing	Affordable and liveable housing	• Number of low-cost houses increased by 20% • Tenement density at ---% • FSI variation between --- and ----
7	Growing slums	Slum free Pune	• Slum area reduced from 6-8% (baseline) to 1-2% • Population living in slum area reduced from 40% of total population to (baseline) to 0-10% • Provision of services in slums comparable to those in other parts of the city e.g. increasing number of households having water taps increased from 58-60% to 100% • 100% slum dwellers have *pakka* (permanent) houses
8	Insufficient & inequitable social infrastructure & services	Improved & equitable social infrastructure & services	• Number and area of gardens increased from 625 acre (baseline) to 750-800 acre • Number of educational, recreational, health institutions increased from xx to yy • Status of protected/heritage buildings to be maintained at 2007 (baseline) level • Number of tourists increased from xx (baseline)
9	Unintegrated Land-use	Integrated land-use for old city limit & newly merged village area.	• Proposed landuse plan as per the planning standards Compatible land use planning for old city with new city limits i.e.23 villages
10	Governance	Improved governance	• Improved PMC and public partnership • Annual monitoring of implementation of development plan • Targeted revenue generation • Linking development plan to annual bugetory allocation • Annual monitoring of the indicators and inclusion in ESR • Improved coordination among various departments

3.6 Proposed Outline of the SEA Process and SEA Report

In the SEA Report information on the potential impacts of the plan and the main alternatives will be presented. The report is an important part of the SEA process. However, the most important objective of the SEA process is to ensure that sustainability issues are integrated into the planning process and included directly in the Sustainable City Plan for Pune (SCPP). The Scoping Report and the process around the formulation of this report is already a significant first step in the right direction.

The main purpose of the SEA Report will be to provide a description of the likely significant effects of the SCPP and its alternatives, which can be used both in the discussions, to influence the planning process, and to provide information to the consultations with the public and other authorities.

Therefore the SEA Report will be kept rather short, summarizing the assessment process and more detailed information on assessment findings, information from consultations etc can be included in appendices. The report will also include a summary of certain parts of the Scoping Report, to provide sufficient background information on e.g. the context to better understand the assessment process and how and why different conclusions were made.

The assessment process will be integrated into the planning process and, in brief, the SEA Report will provide a summary of how this was done. The report will focus primarily on briefly describing:

- significant social, economic and environmental impacts (both positive and negative) of the plan;
- main strategic alternatives considered and how they were identified;
- comparison of the significant effects of the alternatives;
- how the sustainability issues were considered in choosing the preferred strategic alternatives;
- other alternatives that were considered and why the were rejected;
- proposed measures for mitigating negative effects and for enhancing positive effects.

The report is suggested to have the following tentative outline and content:

1. Non-technical summary
1.1 Summary of the SEA process
1.2 Summary of the likely significant effects of the SCPP
1.3 Summary of the impact of the SEA process so far
1.4 How, where and when to comment on the report

2. Background and introduction
2.1 Purpose of the SEA process and the SEA report
2.2 SEA activities to date

3. Methodology used
3.1 Approach adopted in the SEA
3.2 Who was consulted and when
3.3 Difficulties encountered in compiling the information and carrying out the assessment

4. Context
4.1 Outline and objectives of the SCPP
4.2 Relationship with other plans, strategies and visions/objectives
4.3 Short description of baseline characteristics and predicted future development
4.4 Key strategic environmental, social and economic issues and opportunities
4.5 SEA objectives and indicators

5. Summary of assessment findings

5.1 Main strategic alternatives considered and how they were identified

5.2 Comparison of the significant effects of the alternatives

5.3 How the sustainability issues were considered in choosing the preferred strategic alternatives

5.4 Short description of other alternatives that were considered and why the were rejected

5.5 Proposed measures for mitigating negative effects and for enhancing positive effects

6. Monitoring

6.1 Proposals for monitoring during implementation

Chapter 4 DRAFT

Consultations and Next Steps

4.1 Introduction

Stakeholder consultations are an integral part of the SEA process. Centre for Environment Education has been sub-contracted by Ramboll Natura AB to facilitate consultations with civil society organizations. This sub-contract is financed within the project implemented by Ramboll, and is approved by the PMC.
In the Scoping Phase, the consultations have included

1. Interviews of individuals from the PMC and civil society organizations (CSOs) in Nov 2008 conducted by the PMC officials together with the Ramboll consultants
2. One training and workshop on SEA 26 Nov 2008 and a SWOT analysis workshop with PMC officials 2 Dec 2008, conducted by the Ramboll consultants
3. A presentation about SCPP to CSOs held on 18 Nov 2008, conducted by the Ramboll consultants and CEE
4. Two workshops with CSOs on 3 Dec 2008 and 17 Jan 2009, conducted by the Ramboll consultants, PMC and CEE

This chapter briefly describes the stakeholder consultations conducted during the Scoping Phase. It also lists the issues emanating for future consultation, and suggests the approach and strategies for future detailed consultations through which strategic options and trade-offs can be arrived at. The expectation is that the next phase of consultation, termed the **SEA Study Phase**, would help arrive at optimal solutions for some key aspects of the development of the Pune urban area in line with the vision and aspirations of the people of Pune.

4.2 Consultations during Scoping Phase

Interviews with Individuals from PMC and CSOs in November 2008

With both the aim for the Ramboll consultants to get a better understanding of the situation in Pune and as a first step in the SEA process and the identification of SEA objectives and indicators a series of interviews with key stakeholders were made by the Ramboll consultants together with PMC staff. The people interviewed (in total 21) were selected by PMC and included both officials from PMC and NGO's.

From the interviews seven different "sectors" were identified with some connected key words, see Figure 4.1. The sectors and key words illustrate the difficult task to include important topics in the Sustainable City Planning but should also be seen as tools to understand and analyze the need for cross sector analysis.

Environment	Housing
Air pollution monitored regularly	Change FSI
Air quality	Housing
Air quality (PM10)	Is slum rehabilitation the answer?
Groundwater pollution (Solid waste & sewage)	People forced into the slums
Hill protection	Schools (bad houses)
Integration development & environment	Slum rehabilitation
Nature (green cover)	
Nature preservation	**Power Supply**
Noise	Electricity
Protect the natural assets	Powercuts
River/sewage	
Solid waste	**Solid Waste**
Some hills can not be protected	New landfill (location)
Sustainable resource management	Solid waste - problem with leachate from landfill
	Solid waste - treatment!
Planning	Wastereduction
Denser city	
Develoment outside the city/central area	**Transport**
Governance	Cycle network
Growth of Pune must be supported	Mass transport (tram)
Land pooling	Mass transport needed
No mixed landuse	Mass transportation is a must
Parks	Parking policy (need for)
Parks/open spaces	Pedestrian
Planning should be followed!	Public transport
Planning traffic/housing	Public transport - feeder system
Playgrounds	Public Transport - rapid
Political support	Public transport - willingness to pay
Protect the man-made heritage	Public transport (buses is best)
Satelite cities/townships	Traffic - higher parking fees, sky walks, reduce traffic
Schools	Traffic - need to be diversified
Strategy planning / better planning	Traffic management
Town planning - R1/R2	Traffic/Mobility
Town planning ahead of building	
Transport planning	**Water supply**
Urban renewal (open spaces)	Water supply
Urban unplanned land	Water supply - unequal distribution

Figure 4.1 Identified sectors and key words (not ranked)

Trainings and Workshops with PMC Officials

With the aim to have the same base for the coming work and to give an introduction to the SEA process at an early stage, a half-day training session and workshop was held by the Ramboll consultants with key personnel at PMC on 26 November 2008. During the workshop participants discussed key features in the future Sustainable City Plan for Pune and initiated the identification of key strategic drivers and critical factors for the SEA process.

A second training and workshop for PMC staff was held on 2 December 2009. The discussions during the second workshop built on the outcome from the first workshop and provided further input to the identification of key strategic drivers and critical factors, to be used for the analysis and identification of the objectives of the SEA and the continued Scoping Study. Important parts of the two workshops were the SWOT Analyses for the City of Pune which were done as group discussions and presented in plenary.

Presentation about the SCPP to CSOs

This meeting was organized with the objective of providing an opportunity for direct interaction of CSOs with the Ramboll consultants, so as to present the overall process of the SEA and the findings of the Inception Phase. The invitations were sent out by CEE, to the various CSOs, including members of the DP Coalition. The detailed notes are attached as Appendices and uploaded http://government.wikia.com/wiki/Sustainable_City_Planning_in_Pune.

Workshops with CSOs

Two workshops were organized for CSOs to conduct a SWOT analysis of Pune. The participation in the first meeting in early December was quite low. Another meeting was therefore arranged on 17 Jan. The detailed notes are attached as appendices and uploaded at http://government.wikia.com/wiki/Sustainable_City_Planning_in_Pune.

4.3 Proposed Issues, Methods and Timescale for Consultations

This section outlines the major issues emanating from the Scoping Phase, and suggests the approach, methods, preparatory tasks and timescale for the next phase of consultations. The next phase of consultations, termed the **SEA Study Phase** is expected to take place from June to October 2009, or as appropriate to be better coordinated with the DP process.

Before the next phase, an additional consultation will be held on the draft final version of the Scoping Report.

Objectives for Public Consultations during SEA Study Phase

1. Undertake consultations on issues that are strategically important to guide the future development of Pune
2. Develop for these key issues the range of choices and options, clearly articulating costs, benefits and trade-offs for each option, through stakeholder engagement with technical experts
3. Present the choices and trade-offs for public input

Issues for Future Consultations

Some cross-cutting aspects that emerge from the stakeholder workshops and interviews include:

1. Governance and citizen participation mechanisms
2. Institutional capacities to address the rapidly growing needs for civic administration and to implement newer types of solutions/ innovations
3. Institutional framework for regional planning
4. Transparent systems for information dissemination and monitoring systems for tracking progress, including by the public / citizens, and including through the mandatory Environment Status Report
5. Energy efficiency and 'carbon neutral' strategies in all municipal/ civic functions
6. Integrating EIAs into the contracting terms in green fields projects and Environmental Damage Mitigation Actions and Cost-Benefit analyses into brown fields and renewal projects
7. Improved & equitable social infrastructure & services
8. Integrating the land-use controls and plans for the old city limit and the newly merged village areas

Similarly, issues for evolving options and trade-offs and requiring detailed discussions including with primary stakeholders, include:

- Degraded river, nalla and lake water quality
- Air pollution
- Municipal solid waste
- Degraded hill environment
- Poor traffic condition
- Unaffordable and congested housing
- Growing slums
- Insufficient & inequitable social infrastructure & services
- Unintegrated Land-use
- Governance

4.4 Approach

The SEA Study Phase Consultations Events will be conducted by the PMC in the coming months and will feed into the development plan process. Information about consultation events will be published in local mass media and at the PMC website.

Comments/ Observations on the SEA for land use planning

Sr. No.	Refrence Document / Page No.	Para. No.	Comment	Clarification
Comments made by Mr. Harshad Abhyankar				
1	Ref Document not specified chap. 2.pdf.		The table on page 4 mentions the objective of traffic and an indicator as "Improved traffic condition" and "Increasing use of public transport to 50-60%" respectively.This is a good direction. However, the objective needs to be more firm - are we aiming at 50% or 60%? Let us choose a single number!	Target in CMP is 80% although deatailed study on T & T is underway and phasewise targets will be incorporated.
2	Ref Document not specified chap. 3.pdf.		Table 3.1 lists Issues/problems/opportunities and ideas to address those. The head "Traffic" mentions "... worse parking conditions". We hope this is looked at as an opportunity and not a problem! Numerous studies all over the world have shown that fewer parking spots lead to higher usage of public transport & vice versa. If we wish to achieve usage figures of 50-60% of population using public transport, "Adequate parking space" need not be our objective. If people can park their vehicles, they don't use public transport.	Included the relevent suggestion in table 3.1 of chapter 3. Parking spaces to be developed to support PT & NMT modes of transport, therefore developing adequate parking spaces is still an objective.
3	Ref Document not specified		Somewhere in these documents and/or the development plan itself, we would like to see hard numbers as our objectives, instead of subjectives like merely "improved" traffic conditions. Only then can we say whether our city is going to be environmentally sustainable.	SEA is in progress to give sectoral directions & at this stage it is not possible to mention figures but in the next phases and after detailed study figures can be incorprated.
Comments made by Poornima Chikarmane				
4	Ref Document not specified		Under Air Pollution (Table 3.1), a possible solution is resort to bio-gas etc, but the corresponding problem of waste burning and methane generation due to unsustainable dumpsite management is not mentioned	Included the relevent suggestions in table 3.1 of chapter 3 - "Waste burning and unsustainable dumpsite mgmt" added as an issue
5	Ref Document not specified		Under Municipal Solid Waste (Table 3.1) a. The statement household waste recycled low is incorrect – as much as 410 metric tons of recyclables are recovered everyday by the waste-collectors b.The Issues column should include 'there is a lack of appropriate system of management of construction and demolition waste'	a. Please provide reference for the data quoted. b. Included the relevent suggestions in table 3.1 of chapter 3
6	Ref Document not specified		In column 2 under Municipal Solid Waste, add a.Creation of systems to maintain segregated waste streams b.Identify sites at neighbourhood level for preliminary sorting and aggregation of dry recyclables, neighbourhood composting c.Identify a site for a bulk scrap market as several hundred tons of recyclable materials are processed through the city everyday, currently in 'informal spaces' affecting both people and the environment d. Identify appropriate sites / methods for sustainable disposal of construction and demolition wastes, (which do not disturb wetlands, quarries or other important eco-systems, wildlife habitats)	Included the relevent suggestions in table 3.1 of chapter 3

7	Ref Document not specified		Consultations to consider or develop alternative systems of solid waste management must fully involve waste-pickers, itinerant buyers, scrap dealers etc. These groups are managing close to one-third of the total waste generated in the city. The space needs of recycling sector must be recognized, understood and catered to, in planning the land-use of the city.	Will be addressed during consultation process
Comments made by Supriya Goturkar (INTACH)				
8	Ref Document not specified		Rather than calling heritage as a 'problem',can we call it as an 'unexplored asset to be potentailly used for better city development'? This changes the entire perspective of looking at heritage as a problem.	Included the relevent suggestions in table 3.1 of chapter 3
9	Ref Document not specified		The 'problem' is the threat to this heritage- ie the asset/resource and we could elaborate on the various threats- from bad development to neglect of old structures.	Included the relevent suggestions in table 3.1 of chapter 3
10	Ref Document not specified		The major problem we have been saying all throughout is the absence of recognition of heritage as a tool for planning. This would lead to various ways in which heritage could become a part of the DP process like declaring it a 'landuse' or putting it as a 'reservation'.	Can be considered in next phases if MR&TP Act 1966 permitts
11	Ref Document not specified		The other solutions to be mentioned in the second section of the report are definitely some legal provisions that prevent abuse of heritage and secondly reward for its preservation, conservation and adaptive reuse.	Included the relevent suggestions in table 3.1 of chapter 3
12	Ref Document not specified		An institutional frame work also needs to be proposed such as a much more empowered heritage committee, an urban arts commission and initially a subcommittee on heritage under the DP steering committee which feeds in heritage concerns in the new DP. We would also like facilitate Detailed Consultation for the same.	Yes - absolutely, proposal accepted.
Comments made by Sanjay Deshpande				
13	Ref Document not specified		When dealing with Heritage properties, one must first keep in mind that they are divided ito 4 categories (National & State Monuments, Grade 1, Grade 2, Grade 3). Each of these need to be dealt with differently.	will be addressed during consultation process
14	Ref Document not specified		The first groups maintainence (National & State Monuments) are the responsibility of the Archaeological Survey of India and the Maharashtra Government. The National monuments typically are major landmarks (Shaniwar Wada, Pataleshwar, Aga Khan Palace) while the State ones are important to the state's cultural heritage.The remaining thre groups Grades 1-3 are determined by the PMC Heritage Committee and are graded on a variety of architectural, cultural, historical and social elements. There is no issue with the Grade 1 and 2 buildings as the majority are largely owned by government or trusts and in a few cases private people and their importance is accepted by most. Grade 3 buildings however are those that many do not see any value in.	will be addressed during consultation process

15	Ref Document not specified		The heritage properties of National, State, Grade 1 & 2 be treated as assets by the PMC that have great tourism potential. They allow tourists and local people to preserve aspects of their cultural heritage. Natural Heritage generally falls in Grade 1. As such, their should be changes in the PMC property tax code to exempt such buildings (we are only talking about 700 or so buildings) if the owners agree to maintain them. Owners should be encouraged to sell FSI via TDR to finance repairs with the PMC fast tracking such cases to help. Here a higher FSI for Heritage structures of these grades can also be given.	General principal of incentive is been recognized in table 3.1 of Chapter 3
16	Ref Document not specified		In the case of Grade 2 structures a further relaxation permitting large scale interior alteration with the case by case permission of the PMC Heritage Committee should be permitted.	General principal of providing incentives has been recognized in table 3.1 of Chapter 3. The specifications can be worked out in the consultation process.
17	Ref Document not specified		In the case of Grade 3 structures the issue is more complex and here I feel we should try something different. As these buildings are the ones that give an area character and link Grade 1 & 2 structures; a Heritage Precinct/Zone approach is needed. Here I reccomend that we first map and locate all Grade 3 structures and in those areas where there is a concentration of such buildings especially in conjunction with Grade 1 & 2 buildings Heritage Precincts should be formed. Examples would be Omkareshwar to Mandai between Baji Rao and Shivaji Roads; Laxmi Road; Saraswat Colony; Kasba Peth around Kasba Ganpati.	Detailing will be addressed during next phases of SEA process
18	Ref Document not specified		Here the Grade 3's and other buildings can be given demolition permissin; however, before such permission is given a plan showing the new construction with the first 3 floors facade (Ground +2) having a heritage 'look' must be approved by the PMC Heritage Committee. This way we can cater to the new requirements of the owners/residents while maintaining an areas heritage character. In fact when such facade rules are applied to a entire Heritage Precinct we have a potential of slowly over time recreating a period look and creating a potential tourism center in the cities heart without cost to the PMC.Added features such as Heritage walks, signage, walking plazas, street carnivals and shopping fairs can then be also considered.	Detailing will be addressed during next phases of SEA process
Comments made by Sarang Yadwadkar				
19	Ref Document not specified		1) About the quantity aspect of flow: a) Floods- The quantity of water that can flow through riverbeds and nallas is crucial to avoid FLOODING DISASTERS during rainy season. If unexpected huge quantity of water is discharged from the dams the risk of urban areas flooding is very high. With the global changes in the climate, the meteorological predictions are uncertain. When the Indian Meteorological Dept. (IMD) predicts heavy rain fall in the catchment areas, the Irrigation Dept. (ID) starts emptying the dams well in advance to accommodate the rain water. This process continues during the rain and even after rains. ID can not discharge water from Khadakwasla dam at its maximum capacity because the river can not carry that flow in the urban stretch due to encroachments in the river beds. It is extremely important and crucial to consider the possibility that the IMD predictions may go wrong. In that case, the dams will be emptied in advance and may not get filled up.	Included the relevent suggestions in table 2.3 of Chapter 2 (Core area amended to "Water quality and quantity in river, nalla and lake" & table 3.1 of chapter 3

20	Ref Document not specified		b) Encroachments- All encroachments in the submersible green belts of rivers and nallas are the main cause of this huge risk of flooding. - The actual encroachments have to be removed immediately. - De-silting must be done periodically; - The proposed “development works” in the river beds must be stopped e.g. roads, circus, parking lots, shops, parks, any type of constructions: they not only encroach but pollute the green areas of the city centre and encourage people use it in an anti social way.	Included the relevent suggestions in table 2.3 of Chapter 2 & table 3.1 of chapter 3
21	Ref Document not specified		2) About the quality: a) Evaluate- The targets have been formulated after establishing and assessing baseline environment status.But for surface waters, this status only focuses on the average pollution figures: they show that the trend of water quality is deteriorating since, at least, 2002. But the data is neither complete nor precise, so unhelpful for any prediction. INDICATORS CHOSEN = BOD <30 mg/l, DO> 3 mg/l, COD <150 mg/l Are they Realistic and Time-bound? There is a huge gap between the present level of pollution and the chosen indicators. It seems very difficult to close the gap in one step. Intermediate steps must be defined and earmarked from where we stand today.The first one is to make periodical quality surveys to have trustworthy figures.	Detailing will be addressed during next phases of process
22	Ref Document not specified		a) Improve - To improve the quality, it is crucial to plan strategies for WATER DEMAND MANAGEMENT (WDM). The WDM means LESS WATER CONSUMPTION and therefore LESS VOLUME OF SEWAGE GENERATED By: - public education - providing ecological recycling water systems in communities - encourage rainwater harvesting - encourage dual flush valve in toilets Be careful about our daily consumption of water PMC today’s water supply is not 195 but 228 litres/person-day, when the standard is 135 l/p/d. Reduction in this supply will result in 4 ADVANTAGES: a) Less water purification i.e. reduced load on Water Treatment Plants (WTPs) b) Less generation of waste water and sewage c) Smaller and therefore cheaper sewage treatments plants d) Conservation of water in dams in case of dry season □ Programme of WDM should be taken up at priority level by PMC	Included the relevent suggestions in table 3.1 of chapter 3

23	Ref Document not specified		[1] The NATIONAL BUILDING CODE OF INDIA 2005 (Bureau of Indian standards) considers that a minimum of 70 to 100 litres per head per day may be adequate for domestic needs of urban communities, apart from non-domestic needs as flushing requirements. For communities with population above 100000 together with full flushing system = 150 to 200 lphd; but may be reduced to 135 litres per head per day for houses for Lower Income Groups (LIG) and Economically Weaker Section of Society (EWS), depending upon prevailing conditions. Out of the 150-200 l/head-day, 45 l/h/d may be taken for flushing requirements and the remaining quantity for other domestic purposes. II/ Remark on the water requirements and supply: considering the figures, enormously huge quantity of treated water is being wasted.	Detailing will be addressed during next phases of process
24	Ref Document not specified		1) Who is concerned? It is estimated that 80-90% of the population is connected to PMC water supply. Consequently, in all the present data, 10-20% of the population might not have been considered for data projections. However this population does consume ground water from other sources like bore wells or open wells and generates equivalent sewage. □ It must be considered precisely and taken into account while estimating the sewage quantity and also for WDM education.	Detailing will be addressed during next phases of process
25	Ref Document not specified		Considering the population projected, the water supply projected remains at the average level of 226 lt./person-day (i.e. 91 liters/pers-day more than required). This is almost 70% more water used than what is really required This also means 67% more volume of sewage to treat. With a total capacity of 305 Million litres per day (MLD), the actual treatment system can only treat half of the total sewage . But if the water consumption is reduced to 135 lt/pers-day, proportionately the need of sewage treatment will reduce to 338 MLD. 567 MLD, based on an estimate population supplied by PMC; and the estimate need of treatment is around 800 MLD, with the population growing. So, the plan to enhance the total capacity of the STPs to 477 MLD in 2009 would be almost unnecessary. Sewer is laid in Pune having length of 1500 km with 227 km of sewer along rivers and nallas. But there is no estimation about the population and households connected to sewer network.Moreover many pipelines are broken at different points so the sewage goes directly into the nallas and then into the river.	Included the relevent suggestion of WDM in table 2.3 of Chapter 2 & table 3.1 of chapter 3

			So a large part of the population generates untreated (and non recycled) sewage that pollutes the rivers, nallas and lakes.The funds saved due to reduction in capacities of STPs because of WDM, could be utilised for laying more efficient sewage collection and transportation systems. This ultimately will result in reduction in pollution of water bodies.If we consider the option of developing decentralized and ecological sewage treatment plants (with anaerobic system), it can treat the remaining sewage (139 MLD) in a much more sustainable way. Such a treatment doesn't need energy to work, it can be constructed in various places in the nalla beds to treat the sewage before it comes to the river. On the contrary, centralized STP means big investments and delays in land acquisition, construction, maintenance and running costs, energy consumption which is not continuously available due to load shedding.	
Comments made by Vishal Jain				
26	Ref Document not specified		The issues of Slums and Housing may be considered together as a single sector called 'Affordable Housing'. Instead of the current 'Housing' sector, it may be useful to add 'Renewal and Redevelopment' as a core sector. Considering that the current revision of the 1987 DP pertains to an area that is largely built over, both renewal of the core and historic city as well as redevelopment of other areas is the only way forward for any further development. An important area completely missing in the listing of Environmental/ Social/ Economic issues in Pune is of Informal Sector Economy and Occupations. You may also consider Energy as a core issue.	Included the relevent suggestions in table 2.3 of Chapter 2 & table 3.1 of chapter 3 - Slums & AH has been clubbed together as a single sector called as "Housing" - Renewal of core area, and area allocation for informal sector activities added as ways to address land use objectives in the SEA/DP process
27	Ref Document not specified		Affordable Housing :- Some actions that the PMC can take to address the adequacy of affordable housing may include: 1. Expanding the Accommodation Reservation principle to ALL properties and not just above a certain size (in terms of land area) and allowing payment in cash rather than land or built tenements for smaller properties. This would ensure that for every square foot of "regular" construction, there is either construction of smaller affordable tenements or acontribution in cash towards a PMC fund for low cost housing. 2. Simplify the approval and NOC process for low cost housing so as to make the entire process much faster and efficient than the current building permission and NOC process.This will reduce the time and cost of construction for low cost housing projects leading to lower prices 3. Provide FSI or TDR incentives for low cost housing - but rather than providing more FSI to allow more low cost units to be able to be built per unit of land as has been propo	Detailing will be addressed during next phases of process

28	Ref Document not specified		Renewal and Redevelopment :- Renewal: Issues/ Opportunities 1.The core city of Pune has a historic character (opportunity) 2.Several buildings are dilapidated 3.Sewage, water and other infrastructure may be old and needing extensive repairs 4.Several properties have been divided and sub-divided over time and property rights are not clear 5. Most of the area under the current planning unit is built over	Included the relevent suggestions in table 3.1 of chapter 3 (under landuse issue)
29	Ref Document not specified		Ways to Address in SEA/DP 1.Create a 'heritage quarter' and use it to create economic and cultural activity around tourism 2. Encourage amalgamation of properties and put in new infrastructure along with area-level redevelopment / renewal proposals to be put in place sector by sector in a phased manner 3. Develop new area planning norms for revitalization of the core and congested areas, taking into account new needs such as for decentralized waste processing, informal sector economic activity 4. Create traffic-calming and limited access zones to improve quality of life as well as improve ambient air quality	Detailing will be addressed during next phases of process
30	Ref Document not specified		Redevelopment: Issues/ opportunities 1.The area under the planning unit is largely built over; however with newer economic opportunities redevelopment is a continuing process 2.Residential or how rise buildings are getting converted into high rise buildings, often increasing densities	Detailing will be addressed during next consultation phase of DP/SEA process
31	Ref Document not specified		Ways to address this in the SEA/ DP 1.All new building permissions should require an impact analysis report that covers basics like solid waste management, water, energy and traffic, which are not directly covered by the DP but eventually impact the sustainability of the city; thus, every building plan above a particular size (in floor space) may be required to file a report on each of these parameters saying how these needs will be met and what measures are incorporated that will minimize the need from the city. 2. The SEA / DP could provide the framework of impact analysis and reporting when applying for building or redevelopment permission. For example, this could include the current water supply to the area (average, lowest), how much is currently being supplied by tankers, per capita in the area etc. A reporting framework would help to create some level of checks on say being able to create a new large complex in an area that is already facing water shortage including for instance an area which may be f	Detailing will be addressed during next phases of process

32	Ref Document not specified		4. Energy conservation measures and eco-housing criteria should be made mandatory in the new DC Rules / building code 5. Levy a "TDR" consumption fee" so that when an existing property is redeveloped to a larger size using TDR (as is almost always the case) there is corresponding fee collected by the PMC which can go towards improving the infrastructure required to support the increased density as a result of redevelopment. This "TDR consumption fee" should ideally be linked to RR values (say 10% of RR value).	Energy conservation is an important issue but considering Development Planning and as per earlier workshops held for SEA Pune Core Areas (critical factors for decision making) have been finalised on priority basis.And as per SEA practical guidelines there should be 3 to 7 core areas for not to loose the main perspective of the plan. Hence this issue will be addressed in next phases.
33	Ref Document not specified		Informal Sector Economy and Occupations- 'Informal Sector Economy and Occupations' should be added as a new core sector / issue should be added. A very large proportion of the working population of Pune is in the informal sector (hawkers and vendors, waste pickers, daily wage labour, construction labour, auto rickshaws, domestic help / molkarins, washermen/ dhobis, etc). Each of these occupations contributes to the economy of the city. They also have different space needs that ought to be considered in land-use planning and in the design of the city-scape, the DC Rules and area planning norms. The non-recognition / full recognition of these sectors in land-use planning has impacts on the people engaged in these occupations, as well as on the environment. For example, hawkers and vendors are subject to harassment from the anti-encroachment dept. They also impact the use of footpaths. Better road design and identification of appropriate designs and locations for hawking zones in appropriate	Included the relevent suggestions in table 3.1 of chapter 3
34	Ref Document not specified		Future Consultations:- Stakeholder consultations should not only integrate the views of various informal sector occupation groups as regards their space needs, but also involve them in developing solutions and neighbourhood planning/ designs. The DP Coalition has undertaken a pilot study of space needs of hawker- vendors and of daily wage labour (mazoor addas). The insights from these studies can be shared with the DP Cell/ DP Steering Committee.	Yes - DPCoalition, and other stakehlders to be involved in further consultative processes
Comments made by Sudhir Jatar				
35			The comments of COEP should be obtained first and circulated to all concerned. This is because COEP is ideally placed to analyse the draft report. Then only there will be some meaningful dialogue.	No comments received from Prof.Raval of COEP even after request for the same.
36			b. The criterion for prioritization of the major sectors needs to be spelt out. E. g. only traffic is included but not transportation. Also, water supply, which is an emergent and critical problem, does not appear in the list.	Traffic in including Transportation.Water supply is included in Social infrastructure and services (Water Supply, Sewerage etc). As per SEA practical guidelines there should be 3 to 7 core areas for not to loose the main perspective of the plan.This doesn't mean that other factors will not be considered at all.
Comments made by Ajay Phatak				

38			PMC is producing ESR for the last 10 years with the help from environmental experts.ESR includes the status of environment of Pune city based on identified environmental and sustainability attributes & in addition, environmental and sustainability attributes as given below are also identified based on consultation with stakeholders during December, 2008 and January, 2009 as listed below in Table 2.1.	Scoping report is already updated as per the comments which were submitted after very first draft which was presented in the workshop held on at ICC.
			Example of how the table can be constructed which can include various aspects together in just one table: The table can be filled completely with right entries. Examples provided from 1 thro' 7 can be used for the same.	-do-
39			Another very important input is to look at objectives in the "desired" direction. E.g. if our desire is to decrease per capita garbage production, we should move towards this desire and set the target in that direction – such as reduce per capita waste handling from say 400 p per day to 100 g per day.	-do-
			These type of targets will help us focus on the "reduce" element well and will contribute the most to see out city move towards sustainability. Our policies then will be in the right direction. Just assuming that we will increase per capita waste from 400g to 750g per day and then we need to manage the extra garbage is certainly not a good enough direction – simply because it cannot be sustainable …	-do-
Comments made by CEE				
40			1. In Section 3.2 'Scope of Environmental, Social and Economic Issues', Stakeholder consultation meetings and personal interviews were held to discuss and confirm issues, problems and opportunities for urban planning of Pune city. Could we provide a brief list of who these stakeholders are? a. PMC officials from DP Cell, ….. b. NGOs like CEE, Janwani, … c.Resident Associations NSCC d.Youth groups – Yugpath e. Independent civic activists f. Others	Included the relevent suggestions
42			2. In Table 3.1, under Water Quality in river, nalla, lake, in column 1, rephrase: "Slum along the river" to "encroachment along the river".	Included the relevent suggestions in table 3.1 of chapter 3
43			3. In Table 3.1, under Water Quality in river, nalla, lake, the following could be added in column 2: a. Clearly demarcate river and stream / nalla banks, channels and High Flood Lines b. Remove encroachments that fall below the High Flood Lines c. Undertake restoration work of streams and river banks	Included the relevent suggestions in table 3.1 of chapter 3
44			4. Under table 3.1 Air Quality, 'high number of private vehicles on road' is not the issue from an air pollution point of view; the core issue is 'deteriorating air quality'.	Included the relevent suggestions in table 3.1 of chapter 3

45			5. Under Hill Environment and Biodiversity (Table 3.1), add in Column 1, that natural streams, rivers and lakes are under pressure of encroachment, dumping of wastes/ pollutants (solid and liquid), siltation due to soil erosion caused by excavations for construction, road building etc (e.g. Pashan Lake) – this requires an appropriate solution suggestion as well.	Included the relevent suggestions in table 3.1 of chapter 3
46			6. Under Hill Environment and Biodiversity (Table 3.1), add in Column 2: a. Map and conserve heritage (old) trees/ rare trees as well as 'hot-specks' of biodiversity (small remnants of natural habitat such as ponds with turtles, bat roosting sites, heronries etc, or culturally important precincts with biodiversity, such as paars) b. Develop and implement a Biodiversity Management Plan to restrict exotics, control alien invasive species etc c. Identify and map wetlands (including small ponds, quarries, lakes, streams) and grasslands and not just open areas/ forested lands/ plantations	Included the relevent suggestions in table 3.1 of chapter 3
47			7. In 'Cultural heritage' in Table 3.1, a. can mention an opportunity – "City has a rich cultural heritage with ..heritage buildings" b. Rephrase "New development could lead to erosion of the character of sons of soil".	Included the relevent suggestions in table 3.1 of chapter 3
48			8. In Table 3.1 'Human Health' – isn't inequity in access and distribution of medical services in the city an issue?	Included the relevent suggestions in table 3.1 of chapter 3
49			9.In Garden and landscape section, a. Mention that ~ 78 gardens spaces are within PMC area as an opportunity. The DP/SEA can address this by not de-reserving these spaces. b. "Ensure developments are in keeping with local character" means that DP/SEA process denounces creation of specialty/exotic gardens like Japanese gardens? c.Maximize the use of previously developed land having low biodiversity value – very vague and slightly disconcerting, since does not specify how?	a. Garden spaces mentioned as opportunity in the relevent suggestions in table 3.1 of chapter 3 b. Implies that garden development will focus more on indigenous species c. Statement implies that those areas will be taken up for improving the green cover
50			10. Table 3.2: Overall assessment of the sectors and potential issues of the SCPP against the SEA Objectives Affordable and liveable housing has strong linkages with Transport and Mobility	Included the relevent suggestions in table 3.1 of chapter 3
51			11. Table 3.6: Objectives, indicators and targets for SEA of SCPP There was discussion to limit no. of indicators/targets to only 3, based on priority level.	Issue was discussed, and decided that indicators cannot be limited to only 3
52			12. 3 statements in 'indicators for water supply' do not seem appropriate a.No sewage discharge and solid waste disposal into river and water bodies b. Increase of the percentage of population connected to sewage by 20-30% c. 100% sewage is recycled and reused	This topic has been deleted from Scoping report
53			13. Hill and protected area maintained at 2007 level – means the extent, or the status/quality?	Extent or spread of hill & PA will be maintained, appropriate amendments made
54			14. Number of low-cost houses increased by 20% - can we instead mention the amount of housing stock to be created, or no. of households to be rehabilitated? Or add a target related to proportion of people in decent/ livable houses	Statement changed to "no. of households living in slum conditions to be reduced from current 40% to 20% of the total population"

55			15. Number of tourists increased from xx (baseline) - is this an appropriate indicator/target for Improved & equitable social infrastructure & services?	
56			16. Annual monitoring of implementation of development plan is good – does the DP also have a project implementation plan? As in – so much this year, then next tranche in the following year? This can also be worked out for each theme.	Project implementation plans to be worked out in later stages of SEA.
Comments made by Tasneem				
40			**1. Water quality in river, nalla and lake ,** add restoration of the stream eco-systems in a natural way/non-concretisation of nalla surfaces etc. in column 2	Relevant changes made in Chpt 2
41			**2. Air Pollution** Is it only traffic that contributes? What about the air-conditioners? Industrial pollution? are these nil in contribution or insignificant? If insignificant, and if we can have ways of dealing with then then I would suggest that they still need a mention	Other air pollution sources also been added in relevant section of chapter 3
42			**3. Municipal Solid Waste:** While you have mentioned Promote sustainable construction methods, there is no corresponding issue/problem mention for the same in the first column. Things like ensuring waste segregation and composting in post 2000 societies is important. Or providing recycling units in the city vicinity, promoting research and design improvisations for recycling waste to other uses need a mention. Promote policies to decrease or eliminate use of non-degradable wastes. Incentivise or mandate recycling among producers themselves etc.	Relevant changes made in Chpt 3, table 3.1
43			**4. Hill environment and bio-diversity *(is this hill biodiversity or overall biodiversity?) (if it is overall biodiversity a lot could come in)*** Being a mainly urban borough, extended areas of high biodiversity are limited in Pune (I may be mistaken but I don't think we can say this, as Pune has a high specie diversity. We need to check this with some expert) Existing designated areas and open Spaces as per the existing land use (hills, wetlands, play grounds, gardens, parks, and grasslands) should be clearly demarcated, maintained , and enhanced in numbers wherever possible Hill environment is subject to intense pressure due to development and encroachment. Hills should be protected from any development activity including all kinds of constructions. Hill ecosystems should be restored ecologically. *Green belt land (this is river related, if this is the case then we can add more on other ecosystems)* should be protected from development pressures	This refers to overall biodiversity. The noenclature of the core area has therefore been changed to "Green Spaces". Pune being a city - biodiversity areas are scattered and fragmented. Statement amended in the report. Necessary changes made in document Necessary changes made in document Yes - core area modified to encompass al the green and open spacexs in the city
44			Opportunities for extending wildlife corridors should be explored. (is there a research or study saying we need to have wildlife corridors? Also what is the definition of wildlife corridors used here?)	
45			**5.Garden and landscape**	

			Ensure developments are in keeping with local character and enhancing local biodiversity needs *Maximise utilization (?) of vacant space for reenbelt/garden/plantation. (the statement is misleading if it wants to be, kindly rephrase)* *Do not divert land available for garden and bio-diversity park to other uses* *Encourage roof-top and terrace gardens for permaculture (urban agriculture), and simultaneously encouraging use of wet-waste compost effectively wherever possible*	Relevant statement modified Relevant statement modified Relevant statement modified Statement added in Table 3.1 in Chapter 3
45			We would need something on water supply as well specially groundwater use and water harvesting structures. We need to add something on this separately.	Can be considered in next phase of SEA/DP process
46			Table 3.2 - Did not look at the whole table but tell me how is there an uncertain relation between “improved river, nalla .. water quality” with “water supply”? If this improves, would not more people use it? - Or forestation and protected hill environment not add to water supply (hydrological cycle?) - Integrated land use and newly merged villages has its effect and impacts on Natural resources and environment. So why is it uncertain?	-Curently our water supply is only through out-of-city dams. If the water regime in the nallahs and lakes are improved, then water supply from these can be a probability. Therefore, uncertain relationship. - Forest/Hill biodiversity within Pune will not affect the water collection of our upstream dam sites. - Linkages exist between integrated land use and natural resources - necessary changes made to table 3.2