



Maharashtra State Road Development Corporation Ltd.

DRAFT DEVELOPMENT PLAN REPORT

FOR

71 Villages along the Mumbai Pune Expressway

NOVEMBER, 2018

SPECIAL PLANNING AUTHORITY

FOR

71 VILLAGES ALONG MUMBAI PUNE EXPRESSWAY

Appointed by Government of Maharashtra under Section 40(1B) of MR and TP Act, 1966 on 18th March, 2016

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LIST OF ABBREVIATIONS

AAGR	Annual Average Growth Rate
ADTP	Assistant Director of Town Planning
AR	Accommodation Reservation
ASR	Annual Schedule of Rates
AVGC	Animation, Visual effects, Gaming and Comics
BMEC	Bengaluru Mumbai Economic Corridor
BRTS	Bus Rapid Transit System
CBD	Central Business District
CFS	Container Freight Station
C&D Waste	Construction and Demolition Waste
CGWB	Central Ground Water Board
CIDCO	City and Industrial Development Corporation
CPHEEO	Central Public Health and Environmental Engineering Organization
CT	Census Town
DCPR	Development Control and Promotion Regulations
DCR	Development Control Regulations
DMIC	Delhi Mumbai Industrial Corridor
DP	Development plan
DR	District Road
DSR	District Schedule of rates
DTC	Distribution Transformer Centre
DTP	Directorate of Town Planning
EHV	Extra High Voltage
ELU	Existing Land Use
ESA	Ecologically Sensitive Area
ESR	Elevated Storage Reservoir
ESS	Eclectic Sub Station
ESZ	Eco-Sensitive zone
EWS	Economically Weaker Section
FDCM	Forest Development Corporation of Maharashtra
FSI	Floor Space Index
GES	Gaothan Expansion Scheme
GIS	Geographic Information System
GoM	Government of Maharashtra
GR	Government Resolution
GSR	Ground Storage Reservoir

HCBRT	High Capacity Bus Rapid Transit
HH	House Hold
HIG	High Income Group
HT	High Tension
ICD	Inland Container Depot
IT	Information Technology
ITDP	Institute for Transportation and Development Policy
ITP	Integrated Township Project
IDP	Interim Development Plan
JNPT	Jawaharlal Nehru Port Trust
KNT	Khopla New Town
KPI	Key Performance Indicators
LARR	Land Acquisition, Rehabilitation and Resettlement
LDZ	Low Density Zone
LIG	Low Income Group
MHADA	Maharashtra Housing and Area Development Authority
MIDC	Maharashtra Industrial Development Corporation
MIG	Middle Income Group
MJP	Maharashtra Jeevan Pradhikaran
MLD	Millions Liters Per Day
MMC	Multi-Modal Corridor
MMR	Mumbai Metropolitan Region
MMRDA	Mumbai Metropolitan Region Development Authority
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoRTH	Ministry of Road Transport & Highways
MPEW	Mumbai Pune Expressway
MR&TP	Maharashtra Regional and Town Planning
MRS	Main Receiving Station
MRTS	Mass Rapid Transit System
MRVCL	Mumbai Railway Vikas Corporation Ltd
MSEB	Maharashtra State Electricity Board
MSETCL	Maharashtra State Electricity Transmission Company
MSRDC	Maharashtra State Road Development Corporation
MSRTC	Maharashtra State Road Transport Corporation
MSW	Municipal Solid waste
MTDC	Maharashtra Tourism Development Corporation
NAINA	Navi Mumbai Airport Influence Notified Area

NH	National Highway
NISM	National Institute of Securities Markets
NMA	Nagpur Metropolitan Area
NMT	Non-Motorized Transportation
NMMC	Navi Mumbai Municipal Corporation
NMIA	Navi Mumbai International Airport
ODR	Other District Road
OHT	Over Head water-tank
PHC	Primary Health Center
PLU	Proposed Land Use
PMAY	Pradhan Mantri Awas Yojana
PPH	Population per hectare
PSP	Public-Semi Public
PWD	Public Works Department
PU	Planning Unit
RoW	Right of way
RP	Regional Plan
RRP	Raigad Regional Plan
RS	Receiving Station
SEBI	Securities and Exchange Board of India
SEZ	Special Economic Zone
SH	State Highway
SOR	Schedule of Rates
SPA	Special Planning Authority
STP	Sewage treatment plant
SUTP	State Urban Transport Policy
SWM	Solid Waste Management
TBZ	Theme Based Zone
T&CP Department	Town and Country Planning Department
TDR	Transfer of Development Rights
TOD	Transit Oriented Development
TP	Town Planning
TPD	Tons Per Day
TPS	Town Planning Scheme
TTP	Tertiary Treatment Plant
UDC	Urban Design Control
UDD	Urban Development Department

UDG	Urban Design Guidelines
ULB	Urban Local Body
URDPFI	Urban and Regional Development Plans Formulation and Implementation
UTTIPEC	Unified Traffic and Transportation Infrastructure (Planning & Engineering) Centre
WPR	Workforce Participation Rate
WTP	Water Treatment Plant

1 INTRODUCTION

1.1 BACKGROUND AND GENESIS OF SPA

World-over, cities are rapidly growing. The burgeoning population of Indian cities is spilling over to its suburban areas, leading to unplanned, haphazard growth and urban sprawl. As urbanization is imposing itself like a juggernaut, cities are struggling with increasing pressure on their environment, infrastructure and resultant issues such as pollution, overcrowding, declining quality of life, resource shortage, etc. Planners, city managers and governments are constantly looking for solutions and ways to bring about cities which are sustainable, self-sufficient, economically vibrant and that provide good quality of life for its citizens. Maharashtra State Road Development Corporation Limited (MSRDC), declared their intent to develop 71 villages along the Mumbai-Pune Expressway (MPEW) with total area of 186.72 sq.km. and has taken the initiative to develop the Special Planning Area and prepare its Development Plan.

MSRDC is a corporation established and fully owned by the Government of Maharashtra through a resolution on 9th July, 1996 and has been incorporated as a limited company under the Companies Act 1956 on 2nd August 1996. MSRDC is responsible for planning, designing, constructing and managing selected road projects, flyovers, bridges, sea-links and toll collection in the state of Maharashtra. The additional chief Secretary PWD, Mantralaya Mumbai, in its report recommended Maharashtra State Road Development Corporation (MSRDC) to be appointed as a Special Planning Authority (SPA) by the Government of Maharashtra for 2 km. wide stretch between Mumbai Pune Expressway and Mumbai – Pune old Highway (NH-4) excluding the area of Pune District (Mawal Taluka), area covered under IDP-1, project of NAINA and local authority under Notification No. TPS-1815/UOR/78/15/UD-13 dated February 17, 2016. This was further amended vide notification dated 18/03/2016 deleting some of the villages for the reasons specified therein in the notification.

This SPA Notified area comprises 71 villages of Panvel & Khalapur Taluka of Raigad District covering an area of 186.72 sq. km. and has a population of 1,01,175, as per census 2011. This area was part of NAINA before appointing MSRDC as SPA for said area.

1.2 NEED FOR DP PREPARATION

Following are the major factors that necessitate the preparation of a development plan:

- Market demand pressure due to the scarcity of land availability for new developments within the urban nodes especially Mumbai, Navi Mumbai and Pune. SPA is expected to relieve some of that pressure off these cities while providing quality of life.
- To create a vibrant, diverse, inclusive, modern and smart development along Mumbai - Pune Expressway which shall act as a magnet for people and attract investment and economic activities from across the globe. It would synthesize the best features of urban planning, sustainability, environment protection and effective governance to create an inclusive, livable, and world class regional city.
- Presently, development in the SPA is guided by MMR Regional Plan (RP) of MMRDA and Raigad RP of T&CP Department, for the areas under their corresponding jurisdictions. The SPA owing to its locational advantages of being on Mumbai-Pune Expressway and in close proximity to various ports and airports is expected to grow at a fast pace. To manage such development pressures, provisions of MMR RP and Raigad RP are not adequate hence; legal provisions by way of Development Plan (DP) and Development Control Regulations (DCR) are considered to be necessary.

Based on the above considerations, it was proposed to prepare a Development Plan for 71 Villages along Mumbai-Pune Expressway as provided under section 23 to 26 of the MR&TP Act, 1966.

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2 REGIONAL SETTING

The MSRDC SPA Area is situated in Western Ghats biogeographic zone between the coordinates of 73°13'18.221"E and 18°50'52.809"N' in Panvel and Khalapur Talukas of Raigad district in the State of Maharashtra. The area being delineated along the Mumbai- Pune Expressway, it has a linear spatial distribution with spine formed by the Expressway and exhibits high degree of regional connectivity. The site is strategically located between the two important urban centers of the state - Mumbai and Pune, which are at a distance of around 45 km and 80 km. respectively, while Navi Mumbai is at a distance of about 20 km. It is situated between outskirts of Panvel city and Khandala hill station in the Western Ghats. The SPA is also located close to other second and third order towns of the region - Panvel (30 km), Khopoli (20 km), Lonavala (12 km), Khandala (8 km), Thane (54 km), Kalyan (52 km) and Karjat (15 km).

2.1 DELINEATION OF THE AREA

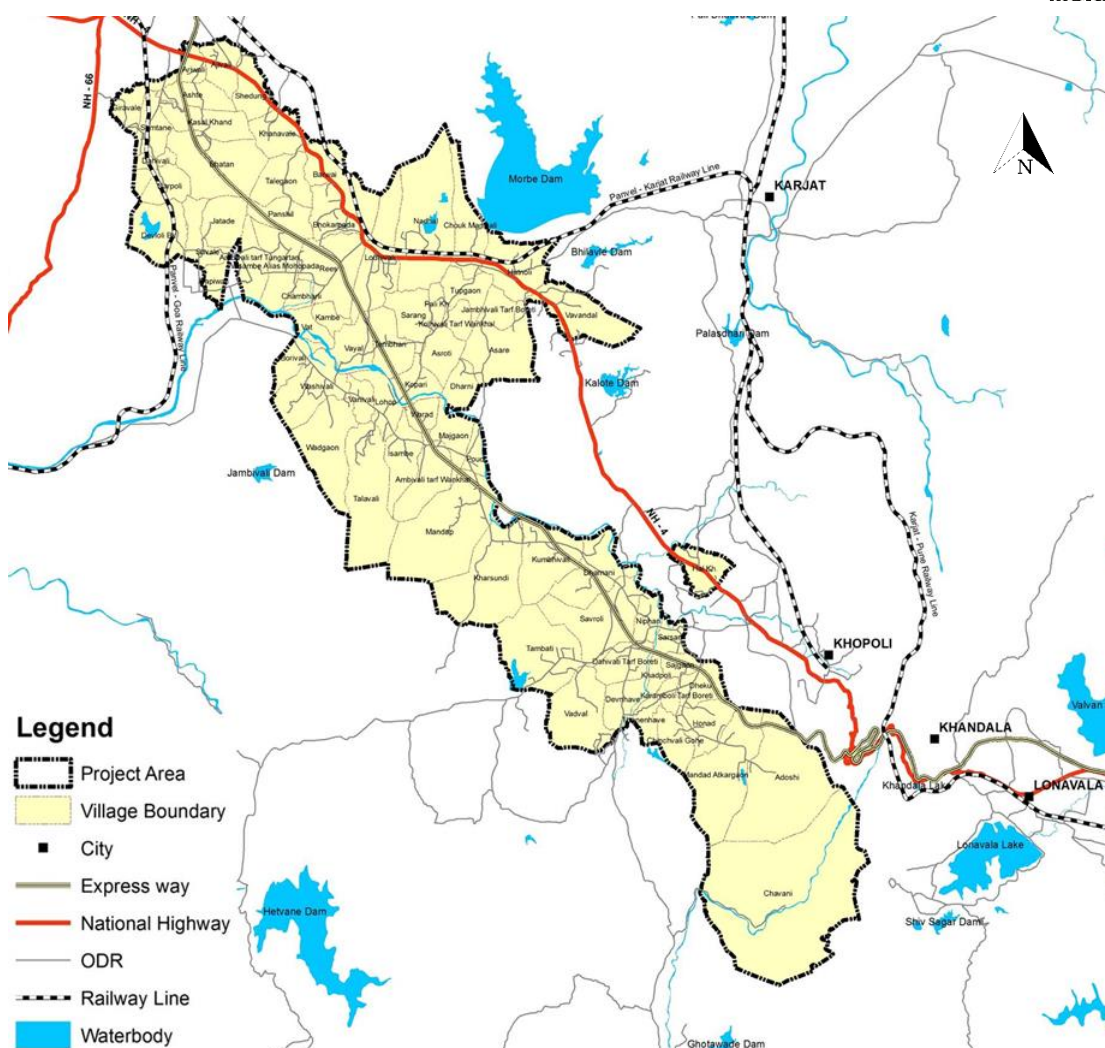
MSRDC SPA area falls under two Regional Plans: MMR Regional Plan (2016-2036) and Raigad Regional Plan (notified in 1991). The northern portion of the SPA comprising 41 villages from Panvel and Khalapur tehsils fall under the southern portion of the MMR Region. The southern portion of MSRDC SPA, consisting of 30 villages is located on the north eastern edge of the Raigad RP, which also falls in the environmentally sensitive areas of the Western Ghats. The project area extends from Ariwali, Ajivali and Giravale villages on northern tip to Chavani village at the southern end and has a linear distance of approximately 34 km. Thus, the project site extends to a total area of 18672 Ha (within boundaries of the notified special planning authority) along Mumbai-Pune Expressways shown in Map 2-1.

North: The northern boundary of village touches NAINA-IDP area and Matheran Eco Sensitive Zone (Morbe Reservoir). Northern portion of site is very close to Panvel city.

South: The southern boundary is Khandala/Lonavala reserved forest and hilly terrain near to Sangade, Donvat and Golewadi villages.

East: The eastern boundary is close to Khopoli Municipal Council and Khalapur Nagar Panchayat.

West: The western boundary touches Karnala Bird Sanctuary, Rasayani Industrial area and settlement along NH-66.



Map 2-1: Project area

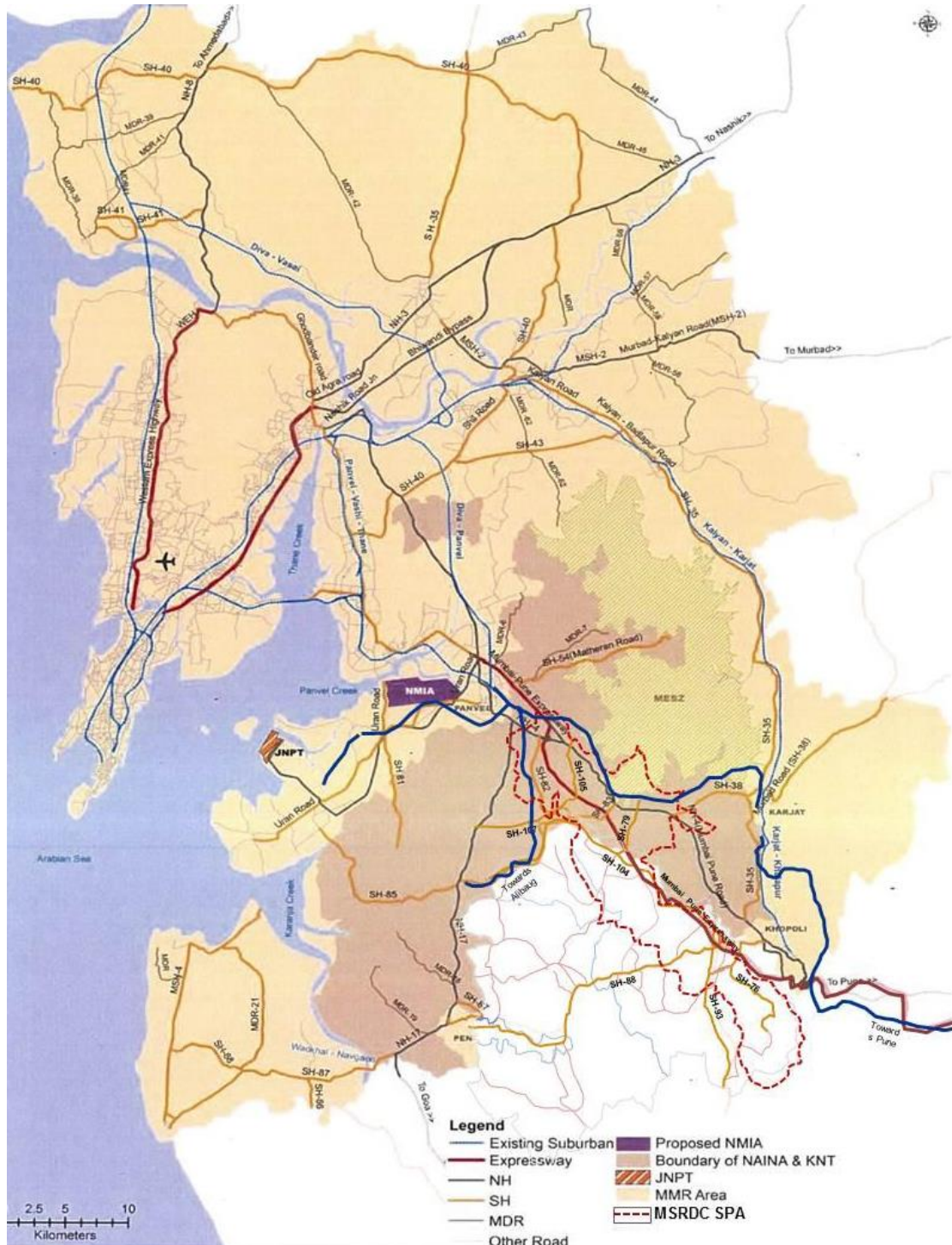
2.2 REGIONAL LINKAGES

Two major transportation corridors, namely MPEW and NH-48 are traversing through MSRDC SPA project area. It is placed in an advantageous location owing to its proximity and good transportation linkages to the urban growth centers like Mumbai, Pune, Navi Mumbai and NAINA. NH 48 which initiates at Delhi, terminates at Chennai and connects Jaipur, Udaipur, Vadodara, Mumbai, Pune and Bengaluru, passes through the SPA. Apart from this, the intra state connectivity is established through SH 107 & 104, SH 88, SH 79, SH 13 and SH 76. It also has good connectivity with existing airport at Santa Cruz via Vashi Bridge and along Sion-Panvel highway. In addition, the area is in proximity to major transport nodes like ports, proposed airport and railway stations.

Two railway lines- Konkan railway and Western railway (connecting Central Line of Mumbai Suburban Rail Line) are passing through the SPA. Rail connectivity for commuters in SPA area is available in Chouk Manivali village with limited frequency. The village settlements are connected through Major District Roads and village roads other than state highway and national highway. The existing transport network (road and railway) for MSRDC SPA area with rest of the MMR region is shown in Map 2-2.

There are three international airports within a 100 km radius of MSRDC SPA area, namely, Chhatrapati Shivaji International Airport located around 50 km from the SPA and Pune International Airport located at a distance of around 70 km. The upcoming Navi Mumbai,

International Airport (located in Ulwe node of Navi Mumbai) falls within 13 km from the SPA. As far as sea ports are concerned, India's major port, Jawaharlal Nehru Port Trust (JNPT) is situated in close proximity to MSRDC SPA area which is the highest container handling port of India, due to which, warehousing and logistic hubs activities have developed in the MSRDC SPA area.



Map 2-2: Regional connectivity of MSRDC SPA
Source: Mumbai Metropolitan Region Development Plan, 2036

2.3 TOPOGRAPHY AND LANDSCAPE

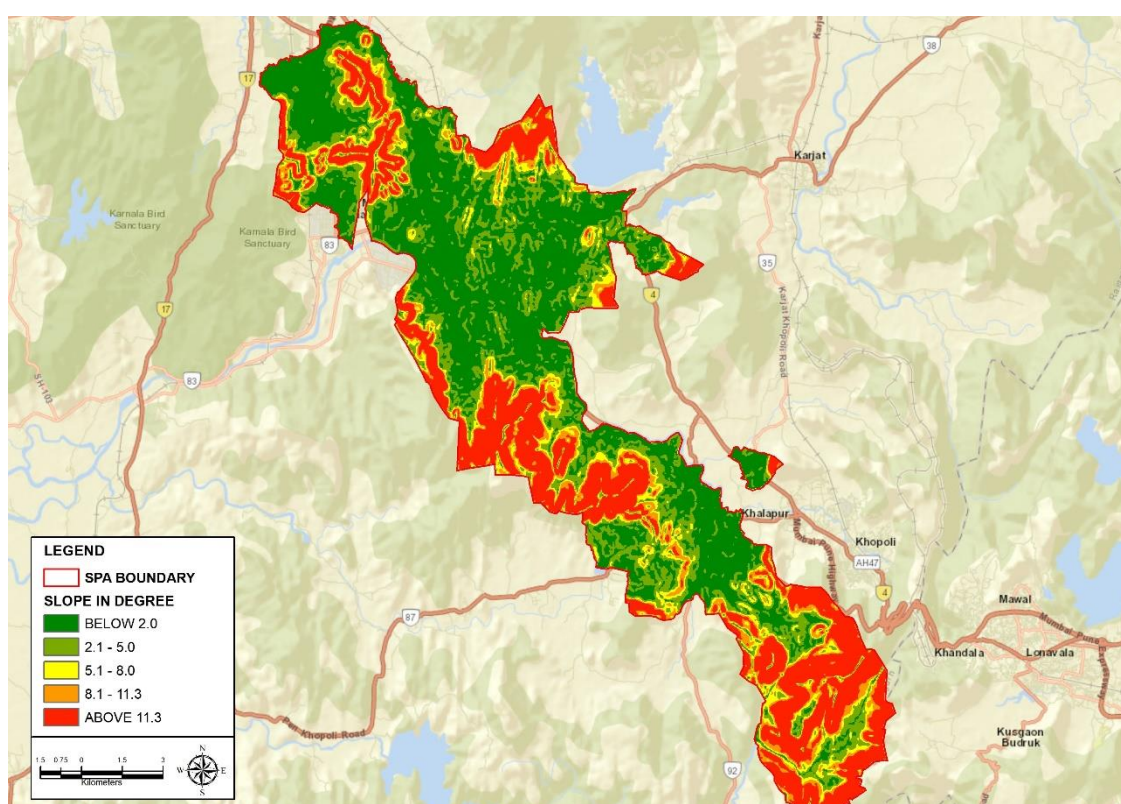
2.3.1 TOPOGRAPHY

The project area is a narrow strip of land from Panvel taluka in North to Khalapur taluka in South with hilly and rugged topographic features on south and western boundaries with reserved and private forests. These hills are an extension of the Sahyadri hills formed by the offshoots of the Sahyadri, which runs parallel to the drainage pattern of the district. The project area has diverse topography with hills at the edges to the plain land in the middle, which creates an ideal river valley setting for the development surrounded by natural assets.

Elevation of the project area ranges from 12 meters in Ajivali village and increases southwards up to 531 meters. At northeast, Irshalgad is the highest peak with 531m altitude, followed by extension of Manikgad at west with 525m height having steep slopes on the eastward direction. Garmal plateau in the south with altitude of 485m is the highest plateau suitable for development. The continuous mountainous terrain lies at southwestern and southern part of the study area.

2.3.2 SLOPE

MSRDC SPA project area has number of hills of varied slopes from gentle to very steep. In the central to western part till southern extent, a mix of flat and hilly areas having valleys & peaks is observed. In order to carry out slope analysis, the values are determined in map (Map 2-3) with slopes in the range of 0° to $>11.3^{\circ}$. The steepest slope observed in project area is 25° i.e. 47%. Through this slope analysis, it is observed that approximately 49% of land is levelled ground, which has a slope angle from 0° to 2° , which is suitable for all types of land uses.



Map 2-3: Slope map (in degrees)

From the figure, it can be observed that approximately 75% of land is within the safe slopes (i.e. below 11.3°) to propose suitable type of land uses. However, out of this 75%, about 14% is within forestland and 4% is within water bodies. Thus, it is inferred that, approximately 57% of land (i.e. approximately 106 sq.km) is suitable for development within safe slopes.

2.3.3 SOIL CONDITION

The soils in project area are formed from the Deccan Trap with medium black and deep black soil type. The soil characteristics are predominantly shallow, well-drained, loamy and clayey soils. The basalt is a predominant rock formation of the project area.

2.3.4 HYDROLOGY

MSRDC SPA lies in the sub basins of Patalganga and Amba rivers. Amba river originates from Chavani village, which flows towards the west from east. Patalganga River flows across central part of SPA area. There are several streams, which contribute to the flow of Patalganga. The project area is bestowed with fresh water resources like Devloli, Donvat, Nadhal, Borila and Adoshi Dams and several reservoirs, lakes and ponds.

2.4 CLIMATE

2.4.1 TEMPERATURE

The mean minimum temperature is 16°C and the mean maximum temperature is 38°C . April and May are the hottest months with mean daily temperature between 38°C to 36°C . The temperature statistics reveal that the period from December to April is dry, humidity increases in summer and is the maximum in May. The period from June to October is a wet period. The precipitation as well as humidity gradually decreases in November. Mist and dew upto the month of December is observed and thereafter the climate is dry.

2.4.2 RAINFALL

For Khalapur average rainfall in 10 years (2003-2013) is 3900 mm and that of Panvel, is 3016 mm. Average rainfall of Khalapur taluka is more owing to the presence of Sahyadri Mountains of Pune district, which hold the monsoon clouds that result into precipitation.

2.4.3 WIND

Winds are very strong and blow from west-southwest during the monsoon season. During October to December, winds are moderate but sometimes strong in October and blow from directions between northeast and southeast to southwest and northwest. The winds continue to be moderate during January to March and are predominantly from North to South and East to West. In April, there is slight strengthening of wind and the direction is variable. In May, the winds are further strengthened and the magnitude is between southwest to northeast and northwest to southwest. This yearly pattern of wind direction will have to be considered while planning the locations of amenities such as dumping ground and industrial zone.

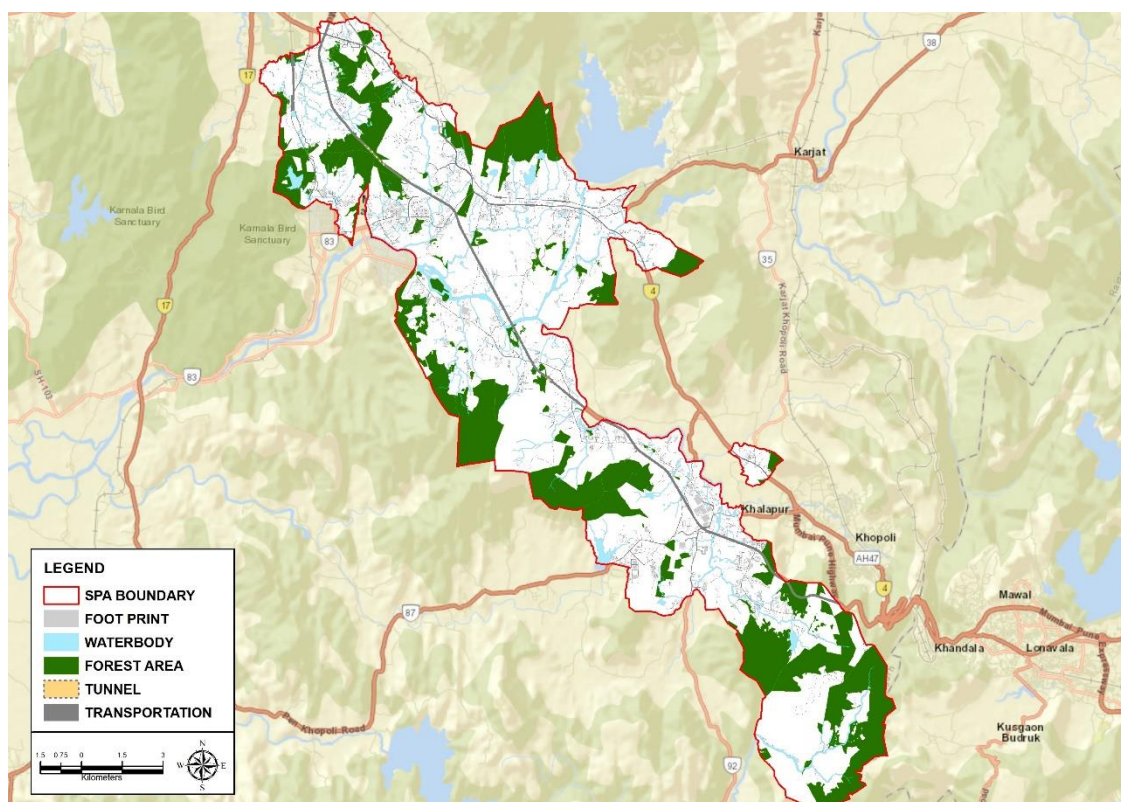
2.5 ENVIRONMENT

Ecological setting of MSRDC SPA is different from the nearby areas. From environmental point of view, the SPA area is strategically located as it is surrounded by Matheran ESZ, Karnala Bird Sanctuary and Lonavala, Khandala ESZ on three sides.

2.5.1 FOREST

Almost a quarter of the project area is under forest, land, which characterizes more or less

sparse to thick vegetation of average height of 4-12 m. The type of forest in the project area is tropical semi-evergreen and moist-deciduous Forest. As per the records of Forest department, the project area covers reserved forests and protected forests. Location of forest areas in MSRDC SPA area is shown in Map 2-4.



Map 2-4: Forest area map of MSRDC SPA
Source: Ground Water Information, CGWB

2.5.2 ECOLOGICALLY SIGNIFICANT AREAS

ESZ Villages

Matheran has been declared as an Eco-Sensitive zone (ESZ) by the Union Environment Ministry on 4 February 2003. Four villages of MSRDC SPA are included in buffer area of Matheran ESZ viz., Chowk Manivali, Lodhivali, Nadhal, and Barwai. However, the ESZ buffer area is limited upto existing Panvel-Karjat railway line.

Western Ghat ESA

Western Ghat ESA has been declared by the Union Environment Ministry in February 2017. Total four villages of MSRDC SPA come in the Western Ghats (Malabar Plains) ESA viz., Nadhal, Adoshi, Chavani and Talavali.

2.5.3 PLACES OF INTEREST

There are several tourist destinations and heritage sites within and around project area, which are shown in Figure 2-1 and listed as follows:

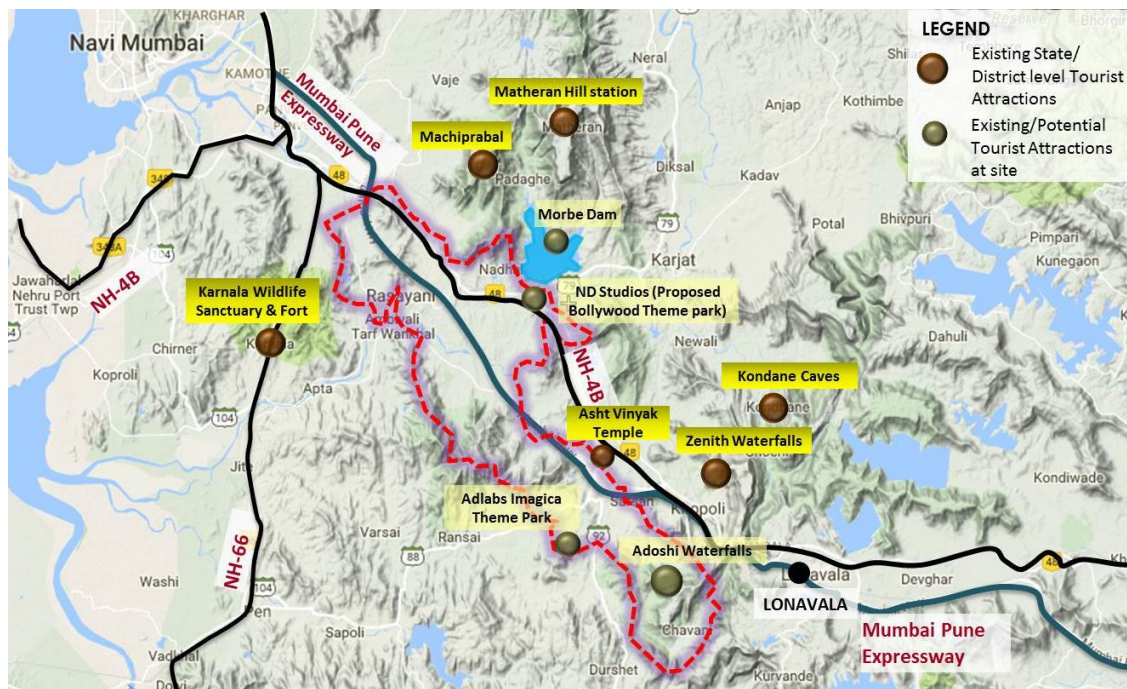


Figure 2-1: Tourist destinations around site

2.5.4 WITHIN NOTIFIED AREA

ND Studios

ND Studios is named after director Nitin Desai. It is located at Hatnoli village near Chowk and is spread over 37 acres of land. This studio is a major tourist attraction, many famous films and TV shows are shot here and sets of few films are still there. It falls within the project boundary and is located around 18 kms from Panvel. ND Studios is also coming up with a ND Theme Park.

Adlabs Imagica Theme Park (Partly in notified area)

Adlabs Imagica is an amusement park situated in Khopoli. Spread over an area of 300 acres and built with an investment of INR1650 Crores, it includes international standard theme park, water park, snow park and a hotel. The park has an estimated daily capacity of 12,000 to 15,000 visitors. The footfalls every year is in the range of 15 to 17 lakhs, and in the last 4 years, the total footfalls were around 50 lakhs. Around 35% of the visitors are from outside the State, out of which 60% of visitors are from Gujarat and the remaining are from the states of Rajasthan, Madhya Pradesh, Delhi and Telangana. With a staff strength of around 1500, it generates employment and attracts population. Poor accessibility and last mile connectivity are challenges faced by this facility. Pick-up and drop-off points on Khalapur Toll, direct bus facility to Khopoli Railway Station are some of the urgent requirements.

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Umberkhind Chavani

Umberkhind is a famous trekking destination at Chavani. At Umberkhind, one can retrace the footsteps of Chhatrapati Shivaji and his army, where he cleverly defeated Mughal ruler Kartalab Khan. Battle of Umberkhind took place on 2 February 1661 in the mountain range of Sahyadri. The battle was fought between the Marathas under Chhatrapati Shivaji and Kartalab Khan of Mughals. The Marathas defeated the Mughal forces. Mughal forces consisted of 35,000 men while there was just 1,000 light Maratha cavalry. The battle is known for the strategic manner in which Shivaji deployed his forces and rapid movement that his cavalry was able to achieve.



Figure 2-2: Umberkhind Chavani

Source: Trell.com

2.5.5 OUTSIDE NOTIFIED AREA

Matheran

Matheran is the famous hill station in Karjat Tehsil, Raigad District. It is located on the range of Western Ghats at height of 800m above mean sea level. It is an eco-sensitive region, declared by the Ministry of Environment and Forest and therefore, vehicles are not allowed inside its limits, which make the place different from others. It is around 80 kms from Mumbai and 60 km from Navi Mumbai. There are several spots, which provide spectacular views of the surrounding hills and valleys, and it has a reasonably dense forest cover. It is situated at a distance of 30 km from Mumbai-Pune Expressway.

Machiprabal

Machiprabal village is located in Panvel Tehsil, Raigad District. There are about 32 houses in the village with total population of 165 people. There are two main tourist spots in the village Prabalgad Fort and Kalavantin Durg. Prabalgad lies on the Prabal plateau between Matheran and Panvel and can be easily seen from the Mumbai-Pune Expressway.



Figure 2-3: Machiprabal

Karnala Wildlife sanctuary

The Karnala Bird Sanctuary is located in Panvel Taluka, Raigad district. This is the first bird sanctuary of Maharashtra covering an area of about 12.11 sq.km. At a height of 445 meters above sea level, Karnala is known for the thumb shaped pinnacle on the top. Pinnacle is a famous spot for professional mountain climbers. It is centered on the historic Karnala Fort and lies just off to Mumbai-Pune Highway. It is around 60 kms. from Mumbai and 30 kms. from Navi Mumbai.

Kondane Caves

Kondane caves are situated at the base of Rajmachi Hills fort overlooking the Ulhas River in Karjat Tehsil, Raigad District. It has a group of 16 Buddhist caves. The caves were excavated in first century B.C. Apart from the lush green surroundings; there is beautiful cascading waterfall in the front of the rock cut caves. Rappelling under the waterfall besides

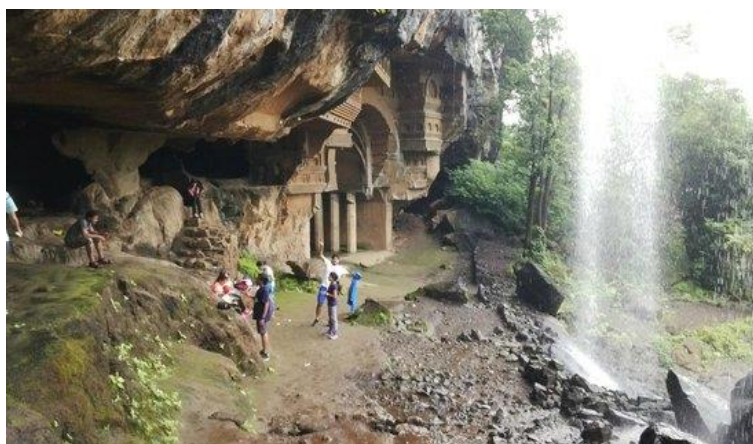


Figure 2-4: Kondane caves

the Kondane caves is also organized by various trekking groups. Caves attract many tourists from Mumbai and Pune, mainly in monsoon season.

Zenith Waterfalls

Zenith Waterfall is a very famous waterfall in Khopoli, Raigad District. The waterfall has scenic surroundings and attracts a large number of tourists every year. The height of the waterfall is about 80-90 feet and it is a seasonal waterfall, remains active only in monsoon. Apart from waterfall, major attractions are rappelling and trekking around the waterfall.

Asht Vinayak Temple, Mahad

Mahad village is situated in Khalapur Taluka, Raigad District. The temple is situated in a scenic place and is the new extension to the main temple. The Varadvinayak temple at Mahad is located on the Mumbai-Pune Highway. Mahadcha Varadvinayak is considered to be one of the Ashta Vinayak shrines of Maharashtra, celebrating eight instances of legends related to Ganesha.

Morbe Dam

Dam is on Dharavi River near Khalapur, Raigad District. The Morbe Lake is the main water source for the city of Navi Mumbai. Morbe Dam is surrounded by mountains of Matheran. Many people visit the dam to relax in silent atmosphere and view the scenic surroundings.



Figure 2-5: Morbe Dam

Watching the sunset is a wonderful experience at Morbe dam.

3 DEMOGRAPHY

Demographic profile for the entire MSRDC SPA area i.e. for all 71 villages from Panvel and Khalapur Taluka of Raigad District is given in Table 3-1.

Table 3-1: Demographic Profile of SPA area as per Census of India 2011

Parameters	Value
Geographical Area (in Sq. km.)	186.70
Population	1,01,175
Gross Population Density (Population per Sq. km.)	542
Sex ratio	878 females per 1000 males
Literacy rate (in %)	73.93%
WPR	39%

Source: Census of India, 2011

3.1 SPATIAL DISTRIBUTION OF POPULATION AND ITS GROWTH

As per 2011 census, MSRDC SPA has a population of 1,01,175 with an annual average growth rate (AAGR) of 0.77% for the decade 2001-2011. It has been observed that AAGR has decreased from that of 5.87% in 1991 to 0.77% in 2011, maybe because of out-migration to surrounding urban areas especially Panvel Municipal area, Navi Mumbai and NAINA. Though two major transport corridors that are Mumbai Pune Expressway (MPEW) and NH-48 passing through SPA area, AAGR is comparatively less than previous years. It may be due to lack of direct accessibility to the area from MPEW. The Table 3-2 and Figure 3-1 indicate the AAGR of MSRDC SPA from 1961-2011.

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Table 3-2: SPA Area Total Population 1961-2011

Year	Census Population	Decadal Variation in Population	Average Annual Growth Rate (AAGR)
1961	25,577	-	-
1971	26,054	477	0.19
1981	40,966	14,912	5.72
1991	65,024	24,058	5.87
2001	93,927	28,903	4.44
2011	1,01,175	7,248	0.77
Average Annual Growth Rate			3.40

Source: - Census of India 1961 – 2011

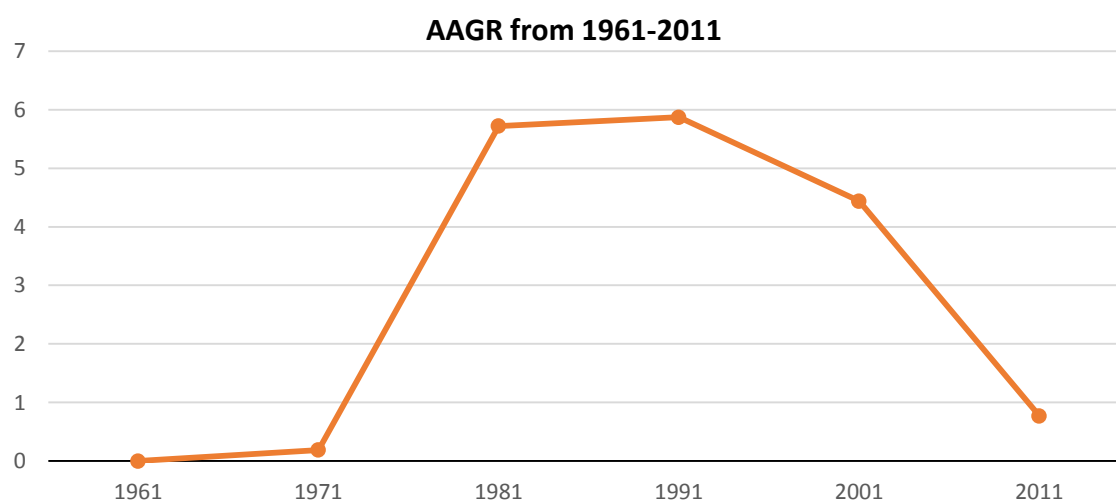
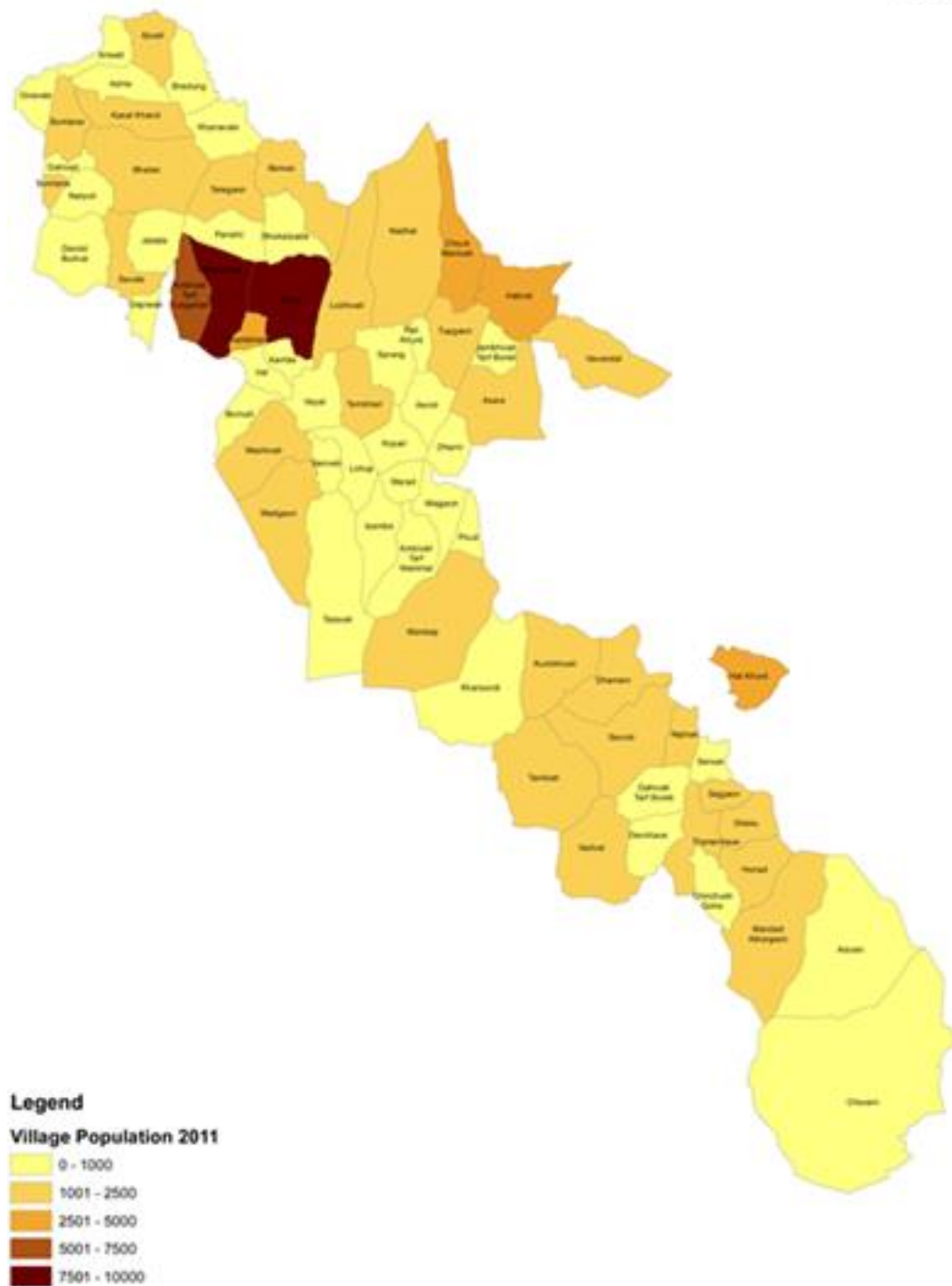


Figure 3-1: Average annual growth rate of MSRDC SPA from 1961-2011

Source: Census of India, 1961 to 2011

The above trend shows sudden decrease in AAGR in between 2001-2011, which needs to be considered while projecting the future population. Population distribution within the area varies significantly based on geographical context and provision of infrastructure. Village wise population distribution within the MSRDC SPA is shown in Map 3-1 below.

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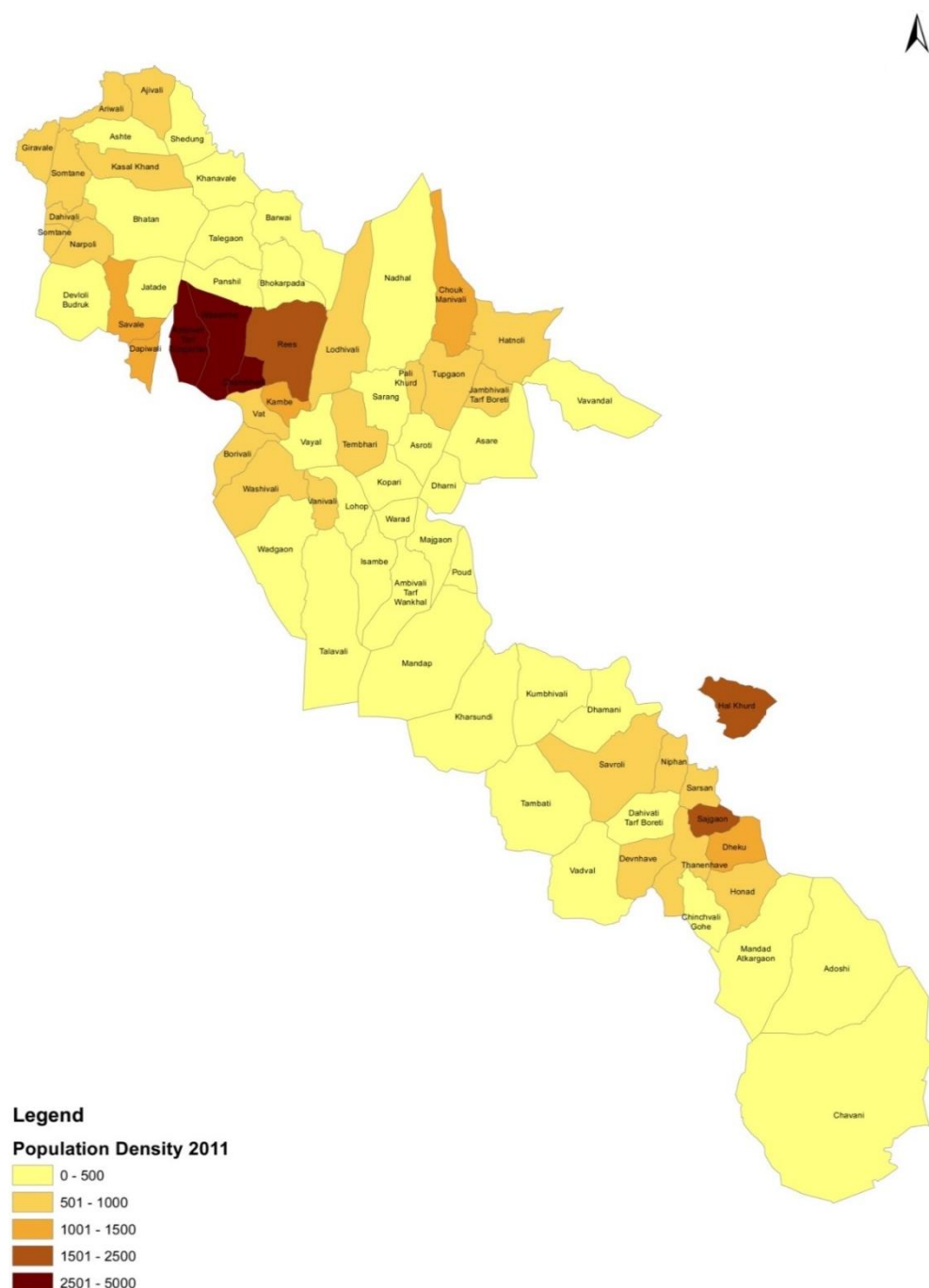


Map 3-1: Village wise population distribution of MSRDC SPA
Source: Census of India 2011

If observed village wise, the villages with proximity to Railway Stations and Expressway possess higher population from those at distance. This clearly shows that accessibility to transportation and livelihood opportunities are responsible for population growth in any settlement.

3.2 POPULATION DENSITY

Population density is a measurement of population per unit area. As per Census of India 2011, on an average there are five people living in one-hectare area of MSRDC SPA. Existing population density is less as compared to surrounding developing areas of SPA. The three census towns namely Wasambe, Rees and Ambivali Tarf Tungartan are densely populated as compared to other villages in SPA area with population density of 37 PPH, 24 PPH and 26 PPH respectively. The access to transport linkages especially the rail transport is responsible for high density in these areas. The map showing village wise population density within the MSRDC SPA is shown in Map 3-2:



Map 3-2: Village wise population density
Source: Census of India 2011

3.3 LITERACY RATE

As per Census, literacy rate is high in Ariwali, Ashte, Bhokarpada, Lodhivali, Rees Ambivali, Tarf Tungertan, Sajgaon and Dheku as compared to other villages. It is observed that proximity to education hubs is an important factor for higher literacy rate.

3.4 SUMMARY

In existing scenario, MSRDC SPA area is peri-urban in nature. The growth rate of project area is low as compared to surrounding development. The share of total population of MSRDC SPA out of MMR population is 0.45% only, whereas it occupies 4.28% of MMR area. Hence, the area occupied by MSRDC SPA has potential to accommodate more population share of MMR. The density and growth rate of MSRDC SPA is comparatively low as compared to adjoining ULBs, which may be due to lack of direct access from MPEW. Thus, improved connectivity to the villages in SPA Area will help in boosting the growth of MSRDC SPA area. Apart from the Census Towns and villages adjoining them, the overall density of MSRDC SPA is low, which can be further increased by boosting economic growth and improving transport connectivity.

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4 EXISTING LAND USE

This chapter presents an overview of existing land use survey and analysis of the existing land use.

4.1 EXISTING LAND USE SURVEY AND PREPARATION OF BASE MAP

The stage wise methodology adopted for conducting the existing land use survey and preparation of ELU map is given below:

1. Stage-I: Inception Report

- Start-up meeting and team mobilization
- Finalization of methodology, work plan and deliverables
- Reconnaissance surveys of site and surroundings
- Introductory meeting with all line departments
- Collection of baseline information and review: reports/maps/studies
- Preparation and finalization of survey, site analysis and data collection formats
- Secondary data collections
- Preparation of inception report

2. Stage-II: Geo-referenced Base Map

- Procurement of high resolution satellite imagery (ortho ready) and procurement of cartosat stereopairs
- Geo-referencing of satellite imageries by using cartosat stereopairs
- On ground survey using drone technology
- Basemap preparation by digitization (using satellite images and drone images)
- Ground truthing of Base Map
- Updation of base map as per site observations
- Land use data collection
- Preparation of final base map

3. Stage-III: Geo-referenced Land Records System

- Preparation of geo referenced land record system

- Collection of all revenue maps
- Superimposition of revenue maps onto high resolution images
- Computerization of development permission collected from ADTP, Alibaug
- Superimposition of development permissions onto high resolution images

4. Stage-IV: Geo-referenced Existing Land-use Map/ Report

- Preparation of draft existing land use map as per MR&TP Act, 1966
- Joint verification of existing land use map
- Analysis of existing land use
- Preparation of existing land use report.

4.2 EXISTING LAND USE ANALYSIS

The land use survey has been carried out at micro level, with the help of latest available technology and equipment wherein 18 categories of land use were identified which are provided in detail in the ELU Report. However, as per conventional method, the DP manual has specified 10 broad land use categories for the purpose of preparation of Land Use map. Hence, the 18 categories detailed in ELU report were merged in the following 10 land use categories. The distribution of broad land use as per DP manual has been given in table 4-1 below.

Table 4-1: Existing broad land use details of project area

Land Use	Area in Hectares	% to Total Developed Area	% to Total Area
Residential	949.31	29.89	5.08
Commercial	201	6.33	1.08
Industrial	1142.32	35.97	6.12
Public And Semi- Public	117.83	3.71	0.63
Garden, Play Ground And Recreation	81.84	2.58	0.44
Public Utility	39.4	1.24	0.21
Transportation	643.84	20.27	3.45
Total Developed Area	3175.54	100	17.01
Agricultural	6469	--	34.64
Water Bodies	604.9	--	3.24
Vacant Land	3713.47	--	19.89
Forest	4709.76	--	25.22
Total Un-developed Area	15497.13	--	82.99
Total Area	18672.67	--	100

Source: ELU Survey, 2017

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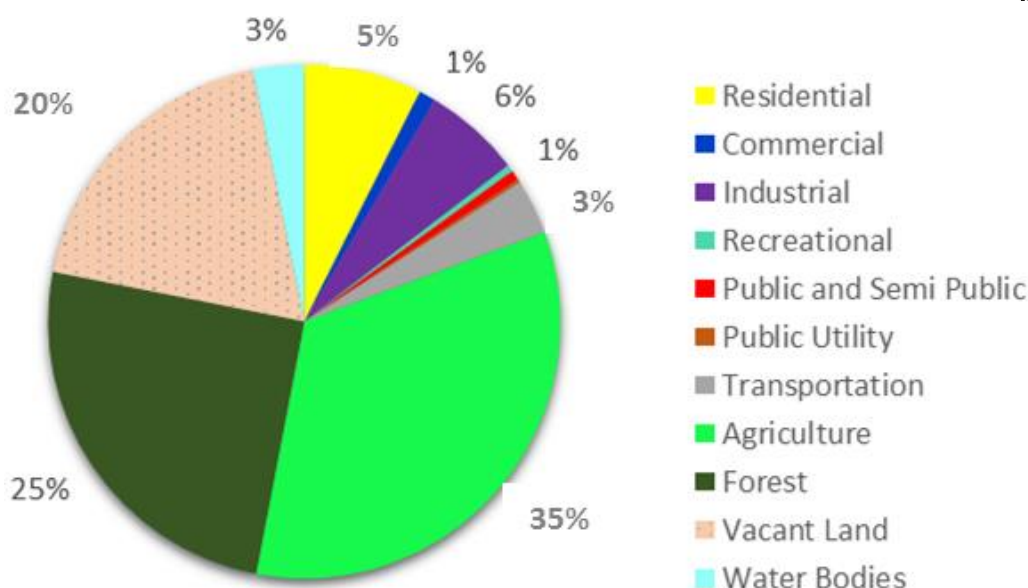


Figure 4-1: Existing broad land use details of project area
Source: ELU Survey, 2017

4.3 SUMMARY

The figure 4-1, existing land use details of project area, clearly portrays the predominant peri-urban character of the area. Agricultural activity occupies 35% of the total area indicating the presence of agrarian economy. Almost a quarter of the project area is covered by forestland with hilly terrain.

The total developed land occupies only 17.01% of the total area, out of which industrial activity is the most prominent one occupying 6.12% as it is in consonance with sanctioned Regional Plan of Raigad. The residential areas account for only 5.08% of the project area. This can be enhanced to accommodate the projected population for future years. As a whole, the project area has very less organized recreational area, which needs to be further improved in the planning exercise. Only 3.45 % of the project area is used for transportation. The project area has significant percentage of vacant land, which can be utilized for further growth. A comprehensive strategy on land utilization with respect to land use of the project area is necessary, which will improve development prospects of the project area.

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5 TRANSPORTATION

5.1 REGIONAL CONNECTIVITY

The geographical position of the SPA and the presence of MPEW and NH-48, links the SPA with Mumbai, Navi Mumbai and Pune along with the other second and third order towns of the region. NH-48, which starts at Delhi, traverses through 6 states of India before it terminates at Chennai and connects enroute Jaipur, Udaipur, Vadodara, Mumbai, Pune and Bengaluru. Thus, the SPA area is exceptionally well connected to all the nationally important urban centers of the region by the virtue of NH-48. Apart from NH-48, the intra state connectivity is established through SH-107 & SH-104, which connects the SPA to Rasayani industrial area and further to Ratnagiri, SH-88 that connects the area to Pen, SH-79 that connects the site with Aurangabad, SH-13 which connects to Navapur, Kudashi, Sakri and SH-76 which connects the area to Solapur. MSRDC SPA area has two railway lines namely Panvel - Karjat in eastern side and the Konkan railway on the western side of the project area but these are mostly used for goods transport.

5.2 HIERARCHY OF TRANSPORT NETWORK WITHIN PROJECT AREA

5.2.1 ROADS

Mumbai- Pune Expressway

The MPEW traverses along the notified area touching Arivali village at the north and Adoshi village at southern end of the area. The length of the expressway falling within MSRDC SPA notified area is around 30 km. Further, the alignment passes through almost 30 villages giving ample opportunity for economic development. MPEW has five grade separators viz : 1) Shedung, 2) Khalapur, 3) Lonavala, 4) Kusgaon, 5) Talegaon connecting east and west parts of the notified area.

National Highway 48 (Old NH-4)

National Highway 48 (earlier known as NH-4), with a total length of 2807.5 km starts at Delhi and ends at Chennai traversing through six states of India. It is a major trunk road within SPA area, enters the project area at Kon village in north, runs for a length of 18.45 kms. before it

leaves the site at Chavani village in south. This is a four lane road, with ROW varying between 45m. to 60m. It has 18 road intersections within the MSRDC SPA area. Before the construction of the Mumbai Pune Expressway, this was the only link between Mumbai and Pune.

State Highways

The state highways mostly pass through rural areas and are a major connectivity provider to the existing industrial establishments. The major state highway within the MSRDC SPA area is SH-104 (Sawla - Apta road). Total length of the state highways within SPA area is 48.58 kms. Seven state highways pass through SPA area and provide major connectivity to the other urban centers of the region. The detail lengths of State Highway are shown in Table 5-1 below.

Table 5-1: Details of existing state highways within the development plan area

SH No.	Length (in km)
SH 76 (Takai-Adoshi Road)	5.26
SH 79 (Chouk-Karjat-Murbad Road)	5.36
SH 88 (Khopoli-Pen Road)	5.91
SH 93 (Khopoli-Pali Road)	2.50
SH 104 (Savroli-Kharpada Road)	14.77
SH 105 (Sawala-Apta Road)	6.92
SH 107 (Dand-Apta Road)	5.35
Total	48.58

Source: Public Works Department, Alibaug

Major District Roads

MSRDC SPA area has several Major District Roads passing through various villages. It is the tertiary road system to provide accessibility to the village settlements and forms vital link with state highway and national highway in the project area. The details of existing Major District Roads/ Other District Roads are given in Table 5-2.

Table 5-2: Details of existing major district road networks

Category	District Road numbers	Length of Road (in km)
Major District Road	MDR 14 (Shedung - Nere to SH-54 Connecting Road)	0.86
Major District Road	MDR 22 (Chouk-Asare-Nigdoli-Khalapur)	NA
Other District Road	ODR 13 (NH-4 to Ariavli Ashte Bhatanpada Narpoli to SH-82 Road)	5.33
Other District Road	ODR 40	3.08
Other District Road	ODR 41 (NH-4 to Talegaon Panshil Mohapada Road)	9.65
Other District Road	ODR 39 (Tambati - Thane Nhave - Dheku Road)	6.83
Other District Road	ODR 35	NA
Other District Road	ODR 36	NA
Other District Road	ODR 34 (NH-4 to Wavandhal Palibhdu to SH Connecting road)	NA

Source: Public Works Department

Other local/ village roads

Other local road and village roads are considered to be major contributors to economic development and provide basic connectivity to the villages for its all-round socio-economic development. Mostly these roads are narrow, with average width varying between 5-6 meter.

5.2.2 OTHER MAJOR TRANSPORT INFRASTRUCTURE

Railways

Panvel - Karjat railway line traverses from north to east direction and Panvel - Goa railway line from north to western part of the MSRDC SPA area. Rasayani railway station (Konkan Railway) is situated just outside the SPA area at less than 1km distance. Apta railway station on Konkan railway network is situated at 5 km distance from the nearest village Washivali inside SPA area. Mohape railway Station on Panvel - Karjat railway line is within a kilometer from Khanavale village. There is only one railway station in Chouk Manivali village with limited frequency and do not cater enough to the needs of the local population of SPA area. The southern part of the MSRDC SPA area totally lacks railway connectivity from other parts of the region due to its hilly terrain.

Airport

A proposed International Airport named Navi Mumbai International Airport is coming up at Navi Mumbai, about 30 km from the center of the project area which will improve the connectivity of SPA area by air.

Ports

Jawaharlal Nehru Port Trust (JNPT), which is the highest container handling port of India, is situated in close proximity (31 km approximately) to MSRDC SPA area, due to which, warehousing and logistic hubs activities have developed in the MSRDC SPA area. Industrial developments, logistic and warehousing facilities have been established all along the major transport corridors in the northern most part of the project area. Proximity to JNPT is an added advantage to MSRDC SPA area.

The port is connected to Southern region of Maharashtra and India by the interchange in SPA through Expressway, NH 48 and NH 348 at Arivali. The other major port nearby is Mumbai port which is situated at a distance of 60 kms from SPA and is connected through Mumbai-Pune expressway and SH 105. The minor ports of Rewas and Dighi are about 60 km and 112 km from SPA, respectively.

5.2.3 PUBLIC TRANSPORT

Presently, Maharashtra State Road Transport Corporation (MSRTC) operates the bus services to the project area.

5.2.4 SUMMARY

The project area has good existing and proposed regional connectivity with Greater Mumbai, Mumbai Metropolitan Region & surrounding areas. The entire SPA area suffers due to lack of poor internal connectivity. Lack of proper access within the SPA area makes the site less preferred destination as compared to nearby MMR areas. Due to this, though there is availability of vacant land the same cannot be accessed. There is lack of Public Transportation facilities within the SPA Area.

6 EXISTING SOCIAL AND PHYSICAL INFRASTRUCTURE

The sustainability and quality of life in any urban area is closely linked to the quantity and quality of basic infrastructure facilities that supports it. This chapter gives the brief assessment of existing social and physical infrastructure in MSRDC SPA.

6.1 SOCIAL INFRASTRUCTURE

For understanding the existing status of the social amenities in the MSRDC SPA area, Existing Land Use (ELU) data collected through primary survey, secondary data information collected from various government departments, Development Plan Manual of GoM and Census data 2011 have been referred. The existing social infrastructure facilities in the MSRDC SPA are shown in Table 6-1.

Table 6-1: Existing social infrastructure facilities in the SPA area

	FACILITIES	Existing facility as per ELU (Numbers)
A	EDUCATIONAL FACILITIES	
1	Balwadi/Creche	80
2	Primary & Secondary School (Building area)	132
3	Colleges	9
4	Professional Colleges/Technical College	
B	HEALTH FACILITIES	
1	Clinic	0
2	Dispensary/PHC	5
3	General Hospital	7
4	Super Speciality Hospital	0
C	SOCIAL AND CULTURAL FACILITIES	
1	Library	2

	FACILITIES	Existing facility as per ELU (Numbers)
2	Multipurpose Hall	–
3	Health Club & Gymnasium	3
5	Working Women Hostel	0
6	Daily Bazaar	0
7	Community Center	60
D	PUBLIC FACILITIES	
1	Police Station	5
2	Fire Brigade and Allied Services	0
3	Burial/ Cremation ground	80
E	PARKS / PLAYGROUNDS	
1	School Play grounds	4
2	Parks & play grounds	0
3	City Park	0
TOTAL		387

Source: ELU Survey, 2017

With regard to educational facilities, there are 132 primary schools and secondary schools, out of which only eight schools satisfy the planning norms. These eight schools are in villages namely Arivali, Bhatan, Wasambe, Tupgaon, Savroli, Devnhave, Kharsundi, Majgaon and Somtane. Most of the primary schools are of Zilla Parishad. Only 19 primary schools are private schools. Most of the schools in the area are in rented premises with no playground facility and have inadequate and poor building.

In case of health facilities, there are five PHCs and seven private hospitals in MSRDC SPA area. These five PHCs are located in Ajivali, Hatnoli, Dapiwali, Rees and Tupgaon. The seven hospitals are located in Ambivali Tarf Tungartan, Wasambe, Chouk Manivali, Tupgaon, Lohop, Kumbhivali and Lodhivali. Apart from these, there are two veterinary hospitals located in Wasambe and Tupgaon.

There are in total 65 socio-cultural facilities in MSRDC SPA area. Two libraries are located in Tupgaon and Chowk Manivali. There are 60 community centers. These small community centers and libraries are developed in Gaothan area through Zilla Parishad fund with very inadequate built up area and without adequate basic facility like toilet, parking etc. Existing recreational facilities are nil as there are no parks and gardens in MSRDC SPA area.

Apart from these, there are nine colleges within the SPA Area - Amity University, Wilfred's College, Pillai College and Vishwaniketan college are major ones. Facilities like Anganwadi, Police stations and crematorium are also located in MSRDC SPA area. There are five police stations located within the project area. Numbers of cremation and burial ground facility are 80. The area lacks the fire brigade and allied services.

6.1.1 SUMMARY

Even though the social facilities appear to be more in number, most of these facilities are not as per the required norms. The following inadequacies are observed with regard to existing social facilities:

- Insufficient built-up area
- Absence of adequate or basic toilet facility

- Lack of playgrounds (in case of schools)
- Lack of adequate parking facilities
- Lack of approach road to the amenity making it inaccessible.

While preparing the development plan, those facilities which fulfill the planning norms and above criteria are only considered and accordingly new facilities are spatially distributed across the DP Area.

6.2 HOUSING AND REAL ESTATE

The housing condition in MSRDC SPA area is assessed based on condition of census houses and type of structure of houses. For this purpose, Census data of 2011 has been analysed.

As per Census 2011, the census houses based on their condition are classified in three categories viz. good, livable and dilapidated. The number of households living in dilapidated condition of census houses will have to be considered while calculating the housing demand for horizon year. Out of the total number of households in MSRDC SPA area, 72.9% live in census houses having good condition and 24.8% live in census houses having livable condition, while 2.21% of households live in houses which are dilapidated in condition.

As per Census 2011, the type of structure of census houses is divided in four categories viz. permanent, semi-permanent, temporary and un-classifiable. Further, temporary houses are again sub-divided in two categories – serviceable and non-serviceable. The number of households living in non-serviceable houses has to be considered while calculating the housing shortage as these households will add to the housing demand. Out of the total number of households in MSRDC SPA area, 73.75% live in permanent houses, 22.85 % live in semi-permanent houses and 1.33% live in temporary houses. Out of temporary houses, 0.5% households live in serviceable houses and 0.83% live in non-serviceable houses.

As per Census of 2011, there are no identified slums in MSRDC SPA area. This was verified during the primary survey carried out while preparing the ELU. Also, no emerging sites of slums were identified.

6.2.1 REAL ESTATE SCENARIO

As the project area is situated in the outskirts of city area, the land value is comparatively lower. This results in construction of bigger size houses in project area leading to an increasing demand for affordable housing. The current trend of developers around Panvel is that of budget housing i.e. to build bigger and affordable homes at comparatively less prices than city areas, by seeking benefit of the railway and highway connectivity, and also the road connectivity from Kalyan, Karjat at Kalamboli. Due to the presence of educational institutions and student's population, rental housing is in good demand. Currently, there are small and big developers already working in the project area. Developers like Hiranandani, India Bulls, and Godrej, etc. have already commenced building huge townships. The development of MSRDC SPA project would also bring in speculation in the market giving boost to overall development.

Development of the entire area is currently regulated as per DCRs applicable for MMR & Raigad Regional Plan. Majority of the clusters in north and south of the project area have observed industrial development along the existing national & state highways. Industrial development includes small & large-scale manufacturing & service industries, warehouses, container stations, engineering units, brick kilns, etc. Commercial development within the area is restricted to small-scale hotels and shops along the highways and in nearby villages. Major attraction in the area is Nitin Desai Studios and part portion of Adlabs Imagica, which is included in south-west part of the area. As far as institutions are concerned, there are a few major universities, colleges & hospitals developed along Mumbai Pune Expressway and Old

Mumbai Pune Highway. Some of these major institutes include Amity University & Dhirubhai Ambani Hospital. The Securities and Exchange Board of India (SEBI), the regulator of the securities markets in India, has opened the new campus of National Institute of Securities Markets (NISM) in Mohopada (CT) in 2016. Types of residential settlements include mostly gaathan/ village settlements, few low-rise apartments, large-scale residential/ commercial townships and staff quarters.

6.3 PHYSICAL INFRASTRUCTURE

6.3.1 WATER SUPPLY

As per National Rural Drinking Water Programme, 58% of the population of the MSRDC SPA area has drinking water within habitation and 34% of population has drinking water availability within the village. However, 8% of the population has to fetch water from outside the village.

In project area, there are total 335 water sources, out of which, 264 (79%) are ground water sources and 71 (21%) are through water distribution network points. Ground water sources include community well and bore well with power pump / dual pump / hand pump, whereas, water distribution network points include stand post/ cisterns and house tap connection. Out of the groundwater sources, community wells are highest in number. In the MSRDC SPA area, the main agencies responsible for delivery of water supply are the respective Gram Panchayats through MJP, a GoM undertaking. In addition to MJP, CIDCO and MIDC also supply water to villages falling on the way of their bulk water supply line.

As per the existing scenario, the total quantity of water supplied by various agencies is 7.131 MLD. It is seen that in some villages, water is supplied through tankers, which indicate there is no accessibility to water supply in these villages.

Out of the total 71 villages, 50 villages have access to safe drinking water. Eleven villages get water from unsafe water sources. Also, there are 10 villages which have both safe and unsafe drinking water sources.

6.3.2 SEWERAGE AND SANITATION

There is no existing sewerage system in MSRDC SPA area. As per data available from Ministry of Drinking Water and Sanitation, GoI, 100% population has access to toilets in the form of individual toilets or through community toilets. The overflow as well as sullage from the houses is let out into the rainwater drains wherever present or let out into the open in nearby areas.

6.3.3 DRAINAGE

The MSRDC SPA area receives a good amount of rainfall. Generally, there are no occurrences of stagnation of water or flooding. As per Census of India, 2011, in MSRDC SPA, 41 villages have open drainage. Three villages have closed drains while in 27 villages there are no drainage connections. Closed drains are present in three Census town of Ambivali Tarf Tungartan, Rees and Wasambe.

6.3.4 SOLID WASTE MANAGEMENT

There is currently no planned collection and disposal of solid waste in the MSRDC SPA area. The solid waste is disposed off/dumped in nearby areas close to the settlements. Most of the industrial waste is dumped in Patalganga River. No major waste disposal site is earmarked in MSRDC SPA area. At present, while granting group housing permissions, STP plants are made mandatory to be provided by developer.

6.3.5 POWER SUPPLY

The project area is provided with electricity by Maharashtra State Electricity Distribution Company Ltd. There are four existing EHV substations of 100/200 KV within and in the vicinity of MSRDC SPA area. In addition to the existing substation and switching station, two more EHV (Extra High Voltage) substations are proposed at Palasphata, near Sai World City and a 220 KV substation is proposed in Tambati for Godrej company. In project area, out of the total consumers, 88.25% are residential, 8.14% are commercial, 2.94% are Industrial and 0.67% are agricultural consumers.

6.3.6 SUMMARY

The project area being partly peri-urban and partly rural in nature does not have a well-developed water supply, sewerage and solid waste management network. These need to be properly planned and developed to cater to the future growth in project area. Patalganga River, Morbe and Devloli dams are in proximity however, there no assured water supply to the project area through these sources. Thus, identifying water sources for SPA area will be a major task while preparing development plan. Storm water drainage and storm water management are major concerns due to undulating topography. Also, appropriate ways of solid waste management needs to be thought of and sites should be earmarked for the same.

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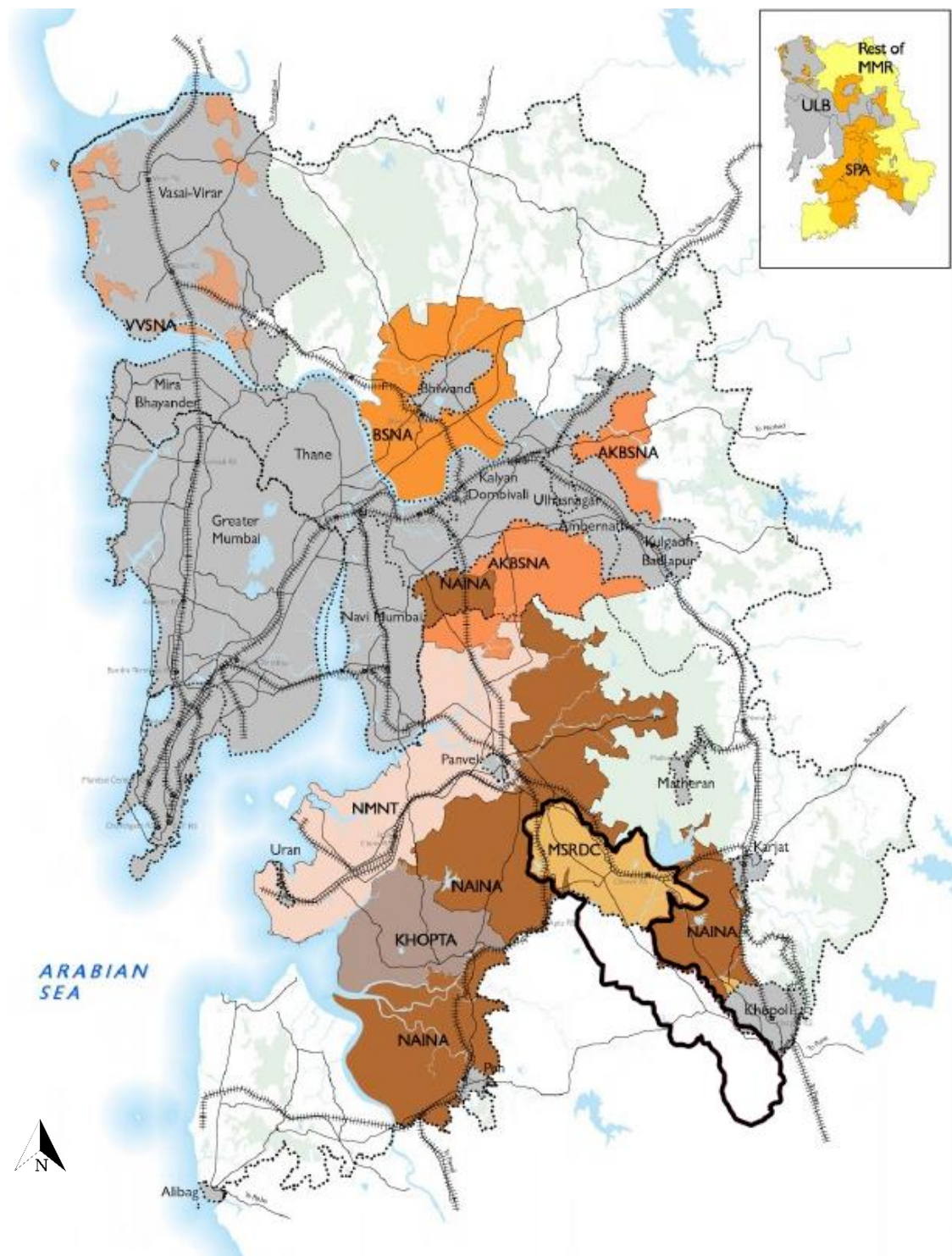
7 REVIEW OF EXISTING PLANS

7.1 INTRODUCTION

The review of existing plans will facilitate the preparation of Development Plan for MSRDC SPA. This chapter reviews in detail the Regional Plan for Mumbai Metropolitan Region 2016-2036, Development Plan for NAINA, Khalapur Smart City Concept Plan, Development Plans of Urban Local Bodies adjacent to project area, namely Navi Mumbai Municipal Corporation, Panvel Municipal Council and Khopoli Municipal Council, and Khopta New Town Development Plan.

This review focuses primarily on aspects relevant to MSRDC SPA. The review of MMR-RP 2016-2036 and Raigad RP includes study of objectives, economic strategies and proposed zoning and land use. The review of Khalapur Smart City Concept Plan focuses on Smart City development concepts, broad zoning, environmental stewardship, and Smart City incentives and development model. The review of Development Plans of adjacent ULBs includes study of population projections, proposed land use pattern, transport network and social infrastructure. The review of Khopta New Town Development Plan discusses objectives, development potentials, land use allocation, environment and land development model. The Map 7-1: illustrates surrounding regions of MSRDC SPA area which will have impact on future development of the SPA area.

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Map 7-1: Areas surrounding MSRDC SPA
Source: Mumbai Metropolitan Region Development Plan, 2036

7.2 SUMMARY

The Regional Plans, Development Plans and the SPA project area plans have been studied for its application in terms of ELU preparation, technical inputs and implementation mechanisms. While the MMR-RP and Raigad RP has a direct influence on the MSRDC – SPA project area, others provide insights in the methodology and process in carrying out the DP.

The MMR–RP 2016-2036 has direct bearing in terms of jurisdiction of its plan on the MSRDC SPA area. The status of Transport Network proposed in MMR RP and NAINA plans has a bearing on the development of project area and thus these aspects needs to be considered while preparing the DP of the Project area. While the MMR RP guided in preparation of the DP, the Development Plan for MSRDC SPA will have to be largely looked independently, considering the current trends and future needs. The Smart City concepts adopted in Khalapur Smart City proposal can be explored and implemented in project area to develop it on lines of the Smart City mission.

As far as the Development Control Regulations are concerned, some of the above-mentioned proposals have focused on encouraging land pooling privately with incentives in the form of FSI and TDR. MMR-RP 2016-2036 has proposed a Land Use zoning system that distinguishes the Development areas and Conservation areas and made provisions to regulate development in each zone. NAINA have adopted four zones namely, Urbanisable Zone 1 & 2, Green Zone 2 and Industrial Zone. The proposals considered while planning for MSRDC SPA area is shown in Table 7-1.

Table 7-1: Proposals that are considered while planning for MSRDC SPA area

Sr. No.	Existing planning proposals	Reference for MSRDC SPA
1	Mumbai Metropolitan Region – MMR Regional Plan	Land Use Zones, Economic Strategies, Transport Network, Development Control Regulations
2	Raigad Regional Plan	Regional Setting and Environment aspects
3	Navi Mumbai development plan	Population Projections, Proposed Land Use Pattern, Transport Network, Social Infrastructure
4	Panvel development plan	
5	Khopoli development plan	
6	Khalapur Smart City Proposal	Development concepts, broad zoning, Environmental Stewardship and Smart City Incentives, development model
7	NAINA SPA Plan	ELU report, Population Projections, Development Control Regulations, Land use zones

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8 ECONOMIC BASE

8.1 INTRODUCTION

The SPA area, at present, is predominantly peri-urban in nature. It is rich in terms of natural resources such as rivers, soil, hills and forest and also conducive for industrial growth. The project area is well connected to MMR and surrounding areas due to presence of NH-48, Mumbai-Pune Expressway and other State Highways. These aspects merit the project area for locating diverse economic activities.

8.2 EMPLOYMENT PATTERN

Out of the total population in MSRDC SPA, 23.83%, 3.90% and 72.27% population are engaged in primary, secondary and tertiary sectors respectively. Tertiary and secondary sectors including services, warehousing, etc. provide most employment to the population of MSRDC SPA area followed by the agricultural workers and labourers. Hence, while planning for economic development, all the three sectors shall be taken into consideration with due respect given to stakeholders' needs and aspirations. The sectoral distribution of workers is given in Table 8-1.

Table 8-1: Sector wise distribution of workers

Sr. No.	Employment Pattern	Total Workers	Percentage (%)
Primary Sector			
1	Cultivator	5,007	23.83
2	Agricultural Labourer	4,560	
	Total of Primary Sector	9,567	
Secondary Sector			
3	Household Industry Workers (Secondary Sector)	1,566	3.90
Tertiary Sector			
4	Other Workers (Tertiary Sector)	29,009	72.27
TOTAL WORKERS		40,142	100.00

Source: - Census of India, 2011

8.3 INDUSTRIAL DEVELOPMENT IN MSRDC SPA AREA

As per the data of registered industries in project area collected from Director of Industrial Health and Safety, total no. of industries are 167, which gives employment to 13,399 population. The industrial employment is shown in Table 8-2 below.

Table 8-2: Industrial employment

Taluka	No. of Employees in industries
Khalapur	12,739
Panvel	660
Total	13,399

Source: - Director of Industrial Safety and Health

The types of industries present in MSRDC SPA include automobile, chemical, construction, electrical, engineering, food processing, metal industries, steel industries, packaging, oil industries, etc. Also, there are two textile industries at Dhamani and Kharsundi villages with 465 employees. Film industry, i.e. ND Studio at Hatnoli Village in Khalapur Taluka employs 30 people. Dheku village and Honad village have maximum number of industries and most of them are chemical based industries.

8.4 WORK FORCE PARTICIPATION RATIO

The percentage proportion of dependent population is indicated by the parameter of work participation rate of any city. The Workforce Participation Rate (WPR) in MSRDC SPA is nearly 39.68% with a total of 40,142 workers as per 2011 Census. The WPR in SPA Area is shown in Fig 8-1.

Sarang, Lohop and Mandad Atkargaon villages have the highest WPR at 64%, 63% and 62% respectively. Lowest WPR is seen in Asroti, Warad and Narpoli Villages with 25%, 28% and 29% respectively as per 2011 Census. The village wise WPR is shown in Map 8-1.

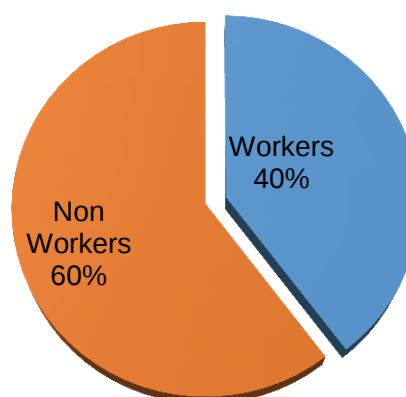
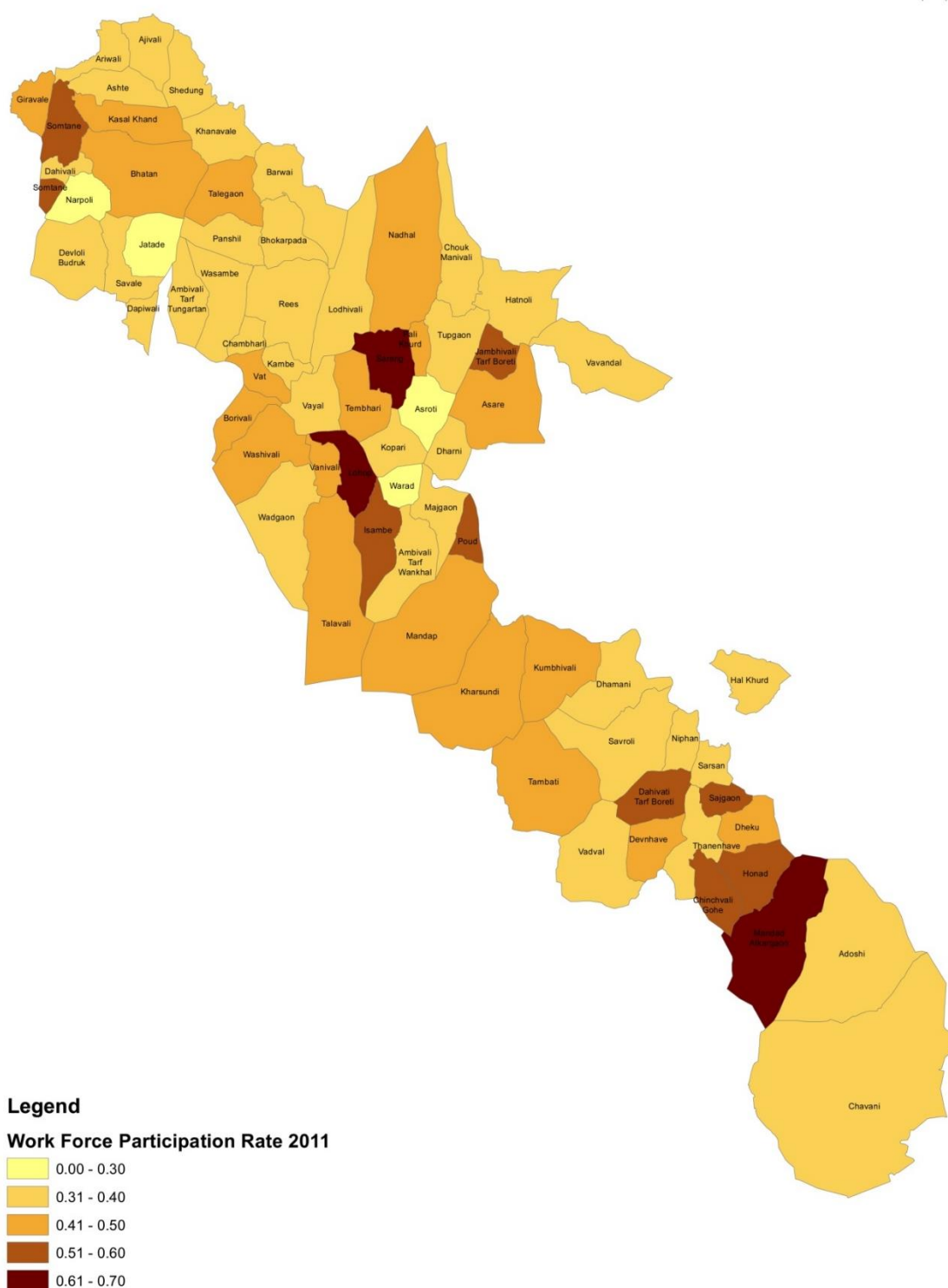


Figure 8-1: Work participation ratio – SPA area
Source: Census of India, 2011

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Map 8-1: Village wise work force participation rate of MSRDC SPA
Source: Census of India, 2011

8.5 EXISTING ECONOMIC DEVELOPMENT

Existing economic developments within and outside project area will be responsible to trigger growth in MSRDC SPA. Promoting such developments in holistic manner can result in sustainable growth of the city. The existing economic developments within and outside project area are shown in Table 8-3.

Table 8-3: Existing economic developments within and outside MSRDC SPA

Economic Developments within and outside MSRDC SPA			
Existing			
Within SPA		outside SPA	
Existing Developments within project area (Res, Com, Ind, Inst.)	Existing Tourist Destinations and Heritage Sites within project area	Existing Developments outside project area (Industrial)	Existing Tourist Destinations and Heritage Sites outside project area
I. Industrial Development II. Private ICD and CFS at Somatane and Ajivali III. Residential Development IV. Institutional & Educational Development	I. ND Studios II. Adlabs Imagica Theme Park (Partly in project area) III. Umberkhind Chavani waterfall	I. Rasayani MIDC Area II. Jawahar Cooperative Industrial Estate, Kamothe Warehousing Clusters in MMR	I. Matheran II. Machiprabal III. Karnala Wildlife sanctuary IV. Kondane Caves V. Zenith Waterfalls VI. Asht Vinayak Temple, Mahad VII. Morbe Dam

8.6 SUMMARY

The project area is partly located within the limits of MMR, which is known for its strong economic base. This can be seen as locational advantage for the project area. Due to strategic location of the project area, it is an important link between two major metropolises in the state viz. Mumbai and Pune. Economic development within the project area and its surrounding can trigger the existing growth in the area. Also, close proximity to Navi Mumbai International Airport and JNPT will further boost the economic development in the project area. Over the years, there has been a shift in employment from primary to tertiary sector. This trend can be continued forward and the industrial development can further be strengthened along with introducing service sector industries. Connecting the project area to regional transport network will further improve the connectivity to surrounding important economic growth centers which will in turn benefit the project area. Also, the untapped tourism potential due to the proximity to Lonavala, Khandala and Matheran needs to be explored.

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9 CONCLUSIONS AND OBSERVATIONS

Following are the major inferences of existing situation analysis carried out for MSRDC SPA area.

- Total population of MSRDC SPA area is 0.45% of MMR Population which is far below the proportion of geographical area covered (4.5%)
- Excellent regional connectivity.
- Poor internal connectivity and public transport.
- Inadequate recreational open spaces and social facilities.
- Low density and low growth rate as compared to nearby ULBs.
- Developed area consists of mostly residential and industrial land use.
- Undeveloped area consists of predominantly forest and agricultural land with significant percentage of vacant land.
- Considerable industrial growth due to land use zoning of Raigad regional plan.
- Tourism potential remains untapped in spite of proximity to Lonavala, Khandala and Matheran while having similar geographic character.
- Since four villages have already been included in Western Ghat eco-sensitive zone and due to proximity to Karnala bird sanctuary and Matheran eco sensitive zone, environmentally sensitive development to be undertaken.
- Possible sources of water are Patalganga river, Morbe and Devloli Dams in proximity. However, there is no assured water supply to the project area from these sources.
- Storm water drainage and storm water management are major concerns due to undulating topography.
- No proper sewerage and solid waste management in the project area.
- Shift of employment pattern from primary sector to tertiary sector over the decades.

Based on the inferences of the existing situation analysis carried out for MSRDC SPA area, following are the conclusions.

1. Through the base study regarding the MSRDC-SPA area, it is understood that the project area is unique in terms of its size, scale, context and setting. The planning of this area needs to be looked through a combination of the Development Plan and Regional Plan lens. The approach of this project thus covers the Development Plan mandates as well as

other planning aspects.

2. In existing scenario, MSRDC SPA area is peri-urban in nature. The growth rate of project area is low compared to surrounding development. The share of total population of MSRDC SPA out of MMR population is 0.45% only, whereas it occupies 4.28% of MMR area. Hence, the area occupied by MSRDC SPA has potential to accommodate more population share of MMR. The density and growth rate of MSRDC SPA is comparatively low as compared to adjoining ULBs, which may be due to lack to direct access from MPEW. Thus, improved connectivity to the villages will help in boosting the growth of MSRDC SPA area.
3. The project area is partly located within the limits of MMR, which is known for its strong economic base. This can be seen as an advantage for the project area. Due to strategic location of the project area, it is an important link between two major metropolises in the state viz. Mumbai and Pune. Economic development within the project area and its surrounding can trigger the existing growth in the area. In addition, close proximity to Navi Mumbai International Airport and JNPT will further boost the economic development in the project area. Connecting the project area to regional transport network will further improve the connectivity to surrounding important economic growth centers, which will in turn benefit the project area. Also, the untapped tourism potential due to the proximity to Lonavala, Khandala and Matheran should be addressed while framing Development Plan proposals.
4. The area is predominantly covered by forest and agricultural land. The project area has significant percentage of vacant land, which can be utilized for further growth. 3.4% of the project area is used for transportation. The residential areas account for 7.44% of the project area. This can be enhanced to accommodate the projected population for future years. As a whole, the project area has very less organized recreational area, which needs to be further improved. A comprehensive strategy on land utilization with respect to land use of the project area is necessary, which will improve development and urban infrastructure prospects of the project area.
5. 25 % of the project area is covered under forest and few areas are marked as eco-sensitive zones. These areas should be prevented from further development to retain their original form. Adoshi and Chavani falls under eco-sensitive zone and preservation of these areas has to be an important aspect while envisaging development.
6. It will be a challenging task to synchronize between the existing/proposed roads and Mumbai-Pune Expressway, which is an access control highway. The project area therefore demands good quality network of transport within the project area through various hierarchy of transport network and modes. BRTS, MRTS, NMT in specific zones needs to be developed taking into consideration the proposed land uses. Various alternatives need to be systematically explored to make a land use responsive transport network. Further, it is important to derive inter regional nodes and state connectivity through various options in consultations with the stakeholders as the MSRDC SPA area demands a Transport led land use plan. Non-Motorized transport links should be developed while planning for development to make transport network more sustainable and environment friendly.
7. The project area does not have a well-developed water supply, Sewerage and solid waste management network. These need to be properly planned and developed to cater the future growth in project area. Patalganga River, Morbe and Devoli dams are in proximity however, there no assured water supply to the project area through these sources. Thus, identifying water sources for SPA area will be a major task while preparing for development plan. Storm water drainage and storm water management are major concerns due to undulating topography. Also, proper ways solid waste management needs to be thought of

and sites should be earmarked for the same. Considering social facilities, the existing facilities are not as per required norms. Thus while preparing the development plan, upgrading these facilities and provision of new facilities as per planning standards should be taken up.

8. As the site is ecologically sensitive, the planning proposals should duly consider the environmental aspects to safeguard the ecological balance and green cover in SPA area.
9. The MMR-RP 2016-2036 has direct bearing in terms of jurisdiction of its plan on the MSRDC SPA project area. The status of Transport Network proposed in MMR RP and NAINA plans are to be considered while preparing the Development Plan of the Project area. While the MMR RP can guide in preparation of the draft DP, the Development Plan for MSRDC SPA will have to be largely looked independently, considering the current trends and needs.

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10 VISION AND DEVELOPMENT STRATEGIES

10.1 INTRODUCTION

Based on the existing land use study and the situation assessments, it is understood that the MSRDC SPA has high development potential due to presence of the MPEW, proximity to regional centers such as Navi Mumbai, Mumbai and Pune as well as to towns like Panvel, Khopoli and proposed NAINA. The area is also environmentally sensitive owing to the presence of eco sensitive zones, forests and varied topography. Being in proximity to various hill stations like Lonavala, Khandala, Matheran and Karnala Bird Sanctuary, the area has tremendous potential to tap tourism and recreation related activities.

Thus, the planning exercise is aimed at bringing about economically progressive as well as environmentally benign development, which is also socially inclusive. These understandings along with the case studies and study of regional and local level influencing factors led to the formulation of the vision for the MSRDC SPA area. This chapter states the vision, goals, objectives identified as well as the approach adopted in formulation of development plan and DCPR for MSRDC SPA area. This chapter also discusses the development principles and strategies used in this development planning exercise.

10.2 VISION, GOALS AND OBJECTIVES

10.2.1 VISION STATEMENT

“To enable transformation of the area into a magnet city which is resilient, high in quality of life and is underpinned with green growth fostering social inclusion and economic competitiveness”.

10.2.2 OVERARCHING GOALS AND OBJECTIVES

The goals derived from the vision for MSRDC SPA area are,

1. To transform MSRDC SPA area into a magnet city.
2. Planning MSRDC SPA area to be resilient & inclusive city.
3. Foster MSRDC SPA area to be a green growth city.

In order to achieve the overall vision through facilitating accomplishment of the structured goals, certain tangible growth objectives were identified under each goal. All objectives are based on four components that are economic, social, environmental and spatial planning. The goals and the objectives identified are listed here.



10.3 APPROACH AND PLANNING IMPERATIVES

10.3.1 BROAD FRAMEWORK OF METHODOLOGY ADOPTED

The broad framework of technical methodology followed to arrive at the development plan for MSRDC SPA area with the contents as outlined by section 22 of MR & TP act, 1966 making it a comprehensive development, may be categorized into the following five stages.

A. Preparatory and assessment stages

This included data collection and collation, integrated base map and existing land use map preparations. This also included the technical assessments such as growth trends, demand estimations, infrastructure projections etc. Extensive literature review was also carried out which offered the required background for further planning.

B. Decision enabling through analytical tools utilization.

Using the GIS platform, developable area delineation was carried out. The main objectives achieved were to arrive at contiguous areas, which would be best suitable for development in view of specific land uses; maximize the utilization of areas suited for urban development and conserve the sensitive areas through GIS based land potential and constraint analysis.

C. Multiple concepts formulation

Grounded on the baseline studies, existing land use analysis, sector wise- development capability analysis, developable area delineation and demand assessments three development scenarios/ concept plans were generated to achieve the goals and objectives of the project. All the alternative scenarios are prepared in alignment with the overall vision and objectives formulated for the project area.

D. Evaluation and Finalization of Concept

The evaluation of the multiple scenarios/ concepts was performed based on the following:

1. Stakeholder consultations.

The stakeholder consultations were conducted with various organizations, private bodies, government and parastatal bodies and with residents of villages in MSRDC SPA. Their key considerations were examined and plausibly integrated into a fourth concept plan, which is an integrated outcome of various key growth drivers suggested in the previous three concepts.

2. Key Performance Indicators (KPIs) based evaluation.

All the four concepts were also evaluated based on KPIs derived from the vision, goals and objectives of the project. This promoted the comparison of possible alternatives, in order to choose the best solution for future development. The themes selected for the evaluation of KPIs are as given below.

- Optimization of resources
- Competitiveness
- Resilience
- Environment sustainability
- Stakeholder preferences

E. Preparation of Development Plan and DCPR

The finalized fourth concept that was the resultant of stakeholder interactions and ex-ante evaluation by KPIs was further detailed and refined to make the development plan. The development plan prepared is inclusive of proposed land use plan, transportation network, physical and social infrastructure proposals, block cost estimates and implementation strategies. The development control and promotion regulations (DCPR) and urban design controls were also prepared which is described in detail in the volume on DCPR that is prepared along with this report.

10.3.2 PLANNING IMPERATIVES IN FORMULATION OF DEVELOPMENT PLAN

The key principle adopted here is to make the development plan a guiding tool for the future developments within the SPA, without formulating highly deterministic and rigid development plan and control regulations. The development plan is envisaged to be accommodative of the futuristic market led developments responding to the evolving needs of its citizens, with focus on abating multi-level negative externalities.

The approach adopted is anticipatory, adaptive, consultative and integrated in nature.

Anticipatory: Understanding and envisaging the national, regional and city level development dynamics and planning accordingly.

Adaptive: The development plan should not be restrictive and contained. It shall allow flexibility and accommodate changes, channelizing the growth in to desirable and sustainable ways.

Consultative: Incorporating multi-level stakeholder perspectives into the formulation and execution of the plan.

Integrated: The planning area is not viewed in isolation while preparing the plan. The development model and the growth strategies proposed are well integrated with the surrounding planning areas and development plans in addition to integrating existing developments.

10.4 DEVELOPMENT STRATEGIES

10.4.1 GROWTH ORIENTATIONS

The SPA area is proposed to be positioned as a 'logistic, service sector and tourism powered city with knowledge hubs.' Large contiguous land availability, proximity to ports, regional linkages and the locational advantages of being situated in proximity to Pune, Mumbai and Navi Mumbai enhances the possibilities of development of the above-mentioned sectors within SPA.

Adhering to the objectives of the exercise, multiple growth stimulators were identified. They are,

- Logistic activities including multi modal logistic hubs.
- Strengthening of Industrial activities.
- Strong institutional area for bringing in investment in educational sector with hosting national/ state level prestigious institutions of excellence.
- Strong commercial centres and CBD zone to strengthen the service sectors.
- Theme Based zone to offer strength to tourism sector as well as promoting investor attractiveness.

It is envisaged that freight logistics comprising of transportation, warehousing and value added services spanning road, rail, sea and air shall act as an enabler and catalyst spurring economic growth for MSRDC SPA area. It is also understood that the logistics hub generates direct and indirect jobs and thus can be a key economic growth stimulus for the city. Tentative alignment of dedicated freight loop connecting Konkan and Panvel- Mumbai railway line is also recommended to stimulate and support logistic and industrial activities by enhancing port connectivity.

The SPA area is proposed to be opened up for large areas of educational facilities with sufficient permissible other uses so it can provide strategic placement of global, national and state level institutions of excellence. This shall help in generation of high skilled talent pool/ labor force. The retention of the high skilled labor force is also imperative and to achieve this, waterfront and other physical settings in the area is leveraged.

In order to boost the tourism sector in SPA area, flexible guidelines are formulated that shall promote lands that are particularly suitable for development of tourism in view of the existing water bodies, scenic beauty, plantations and geological formations.

The theme based zone approach is also followed. This is to provide conducive atmosphere for investors from around the world to implement within SPA area, multiple markets led and innovative concepts which may be in various sectors such as tourism, entertainment, education, health, finance etc. This is anticipated to increase employment opportunities, educational facilities, social inclusiveness and quality of life.

Creating distinct urban places that promote social interaction and increased value of the area is the key idea that is articulated into developing zones with specific design guidelines. Establishing high quality open spaces and establishing a relation with the context of the site were prime considerations.

Particulars of the various land use zones proposed along with the rationale for proposing the same are detailed out in the following chapter on Proposed Land Use Zones.

10.4.2 STRATEGIES FOR SPATIAL STRUCTURE OF THE SPA AREA

Given below are the factors that determined the evolution of spatial structure and land use zoning of the SPA area:

- Judicious and realistic assimilation of land use proposals of applicable regional plans i.e. Raigad regional plan, 1992; Mumbai Metropolitan Regional Plan 2016-2036 as well as Rees- Lodhivali Complex 1996(Growth Centre Plan) subsequently sanctioned for MMR Plan and Pen-Panvel-Khalapur Growth Centre Plans sanctioned for Raigad Region Plan.
- Integration of existing land uses and proposing complimentary adjacent uses.
- Augmenting the existing regional and local transportation linkages proposing suitable activities in proximity.
- Topography and ecological settings of the planning area, framing the larger part of SPA area at the northern portion of Patalganga river which was within MMR and a linear growth pattern in the southern part of MSRDC in the Pen Panvel Khalapur growth center portion of Raigad RP.
- Leveraging visibility offered by MPEW (Mumbai Pune Express Way) for branding, by placing institutional core and central business district along MPEW.
- Transit Oriented Development (TOD) corridor proposed parallel to the metro lane running from MMC interchange along the eastern part of expressway and connecting to the Khopoli town, prescribing a denser, compact and mixed use development within the corridor.
- Mobility for all by provision of public rapid transit systems such as metro rail connecting the MMC to Khopoli and passing through major commercial and residential areas providing north south connectivity; Sub urban rail extension that provides connectivity between Chowk and Apte stations and provides regional linkage to sub urban system; BRTS providing loops and linear connectivity for internal public transportations.
- Alignment of residential and employment hubs along one or more of the mass public rapid transit systems to provide affordable and efficient mobility.
- The riverfront areas, which will provide east west NMT connectivity and green belt areas.
- Protecting the eco sensitive areas by assigning eco sensitive zones adhering to the relevant MoEF & CC notifications.

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11 PROPOSED LAND USE

11.1 INTRODUCTION

The development plan generally indicates the manner in which the use of the land in the area of the planning authority shall be regulated as well as the manner in which the development of land therein shall be carried out. This chapter discusses the proposed land use of the development plan 2016-2041, which shall provide the proposals for allocating the uses of land for residential, commercial, CBD, industrial, public and semi- public uses etc., as well as land allocation for recreational activities, transport, social and physical infrastructure.

Developable area delineation

This forms the basis on which the land use proposals are attributed, along with considering the various development strategies and approaches described in the earlier chapter 10. Developable area delineation carried out here, is a comprehensive exercise, which integrates relevant parameters, issues, constraints and potentials on to a common GIS platform for framing proposals. This is done through overlay analysis by attributing composite weightages to the four major sectors namely (1) Environment, topography & protected areas (the area being highly contoured with elevation ranging from 10m to 530 m from mean sea level); 2) existing land uses; 3) Development proposals under various relevant planning exercises 4) Connectivity and transport, along with the identified sub sectors and parameters. As per the analysis, the most suitable area for development is approximately 106 sq.km. which is about 57% of the total extent of the planning area. About 15% of the total extent is found to be moderately suitable for development.

11.2 ASPECTS CONSIDERED FOR FORMULATION OF PROPOSED LAND USE

Following are the aspects considered while preparing the proposed land use pattern for MSRDC SPA.

- Population projections.
- Integration of existing land uses of MSRDC SPA area.
- Due cognizance of sanctioned regional plan proposals.
- Existing social and physical infrastructure in and around the planning area.
- All stakeholder perspectives.

11.2.1 POPULATION PROJECTION

MSRDC SPA has declared its intention to prepare development plan u/s 23 of MR&TP Act 1966 in 2016 (MGG dated 26.5.2016). As per directives issued by Director of Town Planning dated 25.3.1997, the horizon years for reservations and land use zoning shall be 15 and 25 years respectively from the date of declaration of intention. Accordingly, the projected population is considered for horizon year 2031 and 2041 for reservation and zoning respectively.

The population of the MSRDC SPA area as per Census 2011 is 1,01,175. The population for the years 2021, 2031 and 2041 for MSRDC SPA area has been projected through various methods considering natural and induced growth. The existing population trends of the last five decades in SPA area is as mentioned in Table 11-1.

Table 11-1: Existing population trends in the SPA area from 1961-2011

Year	Census Population	Decadal Variation in Population	Average Annual Growth Rate (AAGR)
1961	25,577	-	-
1971	26,054	477	0.19
1981	40,966	14,912	5.72
1991	65,024	24,058	5.87
2001	93,927	28,903	4.44
2011	1,01,175	7,248	0.77
Average Annual Growth Rate			3.40

Source: Census of India, 1961 to 2011

11.2.2 VARIOUS METHODS USED FOR POPULATION PROJECTION

The population for the years 2021, 2031 and 2041 for MSRDC SPA has been projected through various methods and the summary is tabulated in Table 11-2:

Table 11-2: Populations projections through various methods

Sr. No.	Forecasting Methods	2021	2031	2041
1	Arithmetic Increase	1,16,295	1,31,414	1,46,534
2	Geometric Increase	1,19,863	1,42,003	1,68,233
3	Incremental Increase	1,17,987	1,36,492	1,56,690
4	Comparative Density Method	1,56,094	5,22,760	11,48,205
5	Ratio - Constant Share	1,22,384	1,35,336	1,48,584
6	Ratio - Shift and Share	1,30,802	1,50,999	1,68,506
7	Population Growth rate (Arithmetic)	2,27,051	6,51,250	8,62,819
8	Population Growth rate (Exponential)	1,82,957	3,26,290	3,53,888
9	Population Growth rate -Split up	1,85,656	5,19,342	9,37,822
10	Population Growth rate -Split up	1,59,819	3,05,035	4,06,600

From Table 11-2, it is observed that the population growth rate is not very high as compared to surrounding developing area in all methods excluding comparative density method. MSRDC SPA project area has a low density / peri-urban character, which shall be converted into urban character through MSRDC development initiatives. The conventional methods based on past trends which are generally used for population projection does not hold good for induced growth which are envisaged in this development plan. Considering all these, comparative

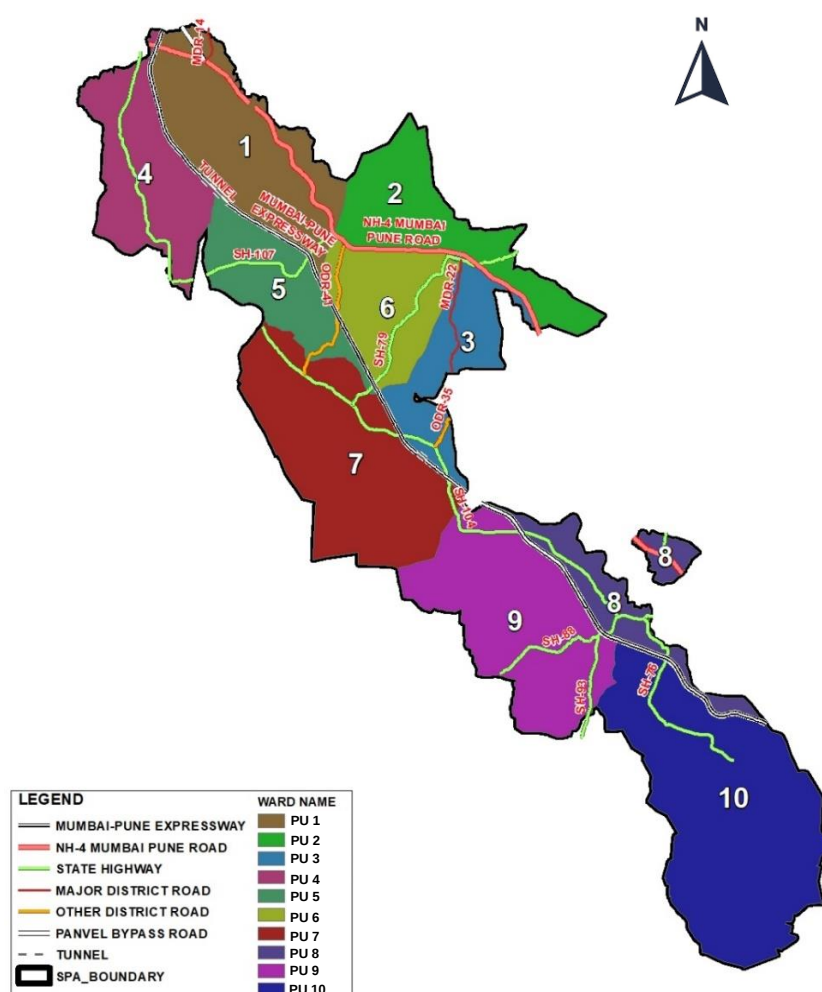
density method is adopted in which the population growth has been projected along the lines of area within the jurisdiction of Navi Mumbai Municipal Corporation (area of 108.63 sq. km) and which was also a green field area. Further to it, the Navi Mumbai area is in proximity with MSRDC SPA area and with all due considerations it is expected that MSRDC SPA will also develop in the same direction. Following table 11-3 shows the projected population adopted for MSRDC SPA.

Table 11-3: Projected population for MSRDC SPA

Sr. No.	Horizon Year	Projected Population (in lakhs)
1	2021	1.56
2	2031 (For Reservation)	5.23
3	2041 (For Zoning)	11.48

In order that social and physical infrastructure is not stressed beyond its carrying capacity, due to unchecked urbanization that might happen in decades to come, its proposed to cap the total population at 20.83 lakhs, which is the population projected based on land use method, as given in ELU report. A permanent cap on FSI at four is also proposed to meet this objective.

Proposed Planning Units: For ease in planning and allocating reservations uniformly, the SPA area is divided into ten planning units taking into consideration the physical barriers such as nala, river, road, rail and gaathan boundary as represented in the map 11-1 below.



Map 11-1: Planning Units in MSRDC SPA

The projected population given in Table 11-3 is distributed amongst ten planning units as given in the Table 11-4. In the existing land use report when prepared and submitted, nine clusters were initially identified based on administrative boundaries (village boundary). However, in the planning stage the same has been fine-tuned to ten planning units keeping in view aforementioned criteria. The Planning Unit wise Population distribution is shown in Table 11-4.

Table 11-4: Planning unit wise population distribution

Planning Unit	Projected Total Population - 2041	Area of Planning Unit (in Ha.)
PU 1	364182	2040.12
PU 2	17283	1501.67
PU 3	12042	1057.27
PU 4	13110	1548.93
PU 5	192546	1121.94
PU 6	246243	1242.07
PU 7	33732	2772.15
PU 8	42627	847.36
PU 9	120657	2485.55
PU 10	104847	3800.54
Total Population of SPA Area	1147269	18417.16

Note: The above area does not include area under MPEW, which comes to 264.92 Ha. Together the area comes to 18672.65 Ha, which is the MSRDC SPA area.

11.2.3 INTEGRATION OF EXISTING LAND USES OF MSRDC SPA

Inferences are drawn from the existing situation assessments and existing land use studies. The key ideas that emerged after the existing land use assessment that shall act as key principles for determining the proposed land use for the SPA area are as follows:

- The prominent existing developments in the MSRDC SPA are leveraged and used as anchors for accommodating the expansion of activities.
- The agglomeration economies of similar or complementary industries are considered.
- The connectivity prospects of the MSRDC SPA area shall be augmented and complimentary uses are proposed within the same cluster, which has high potential for establishing regional access points.
- The project area has very less organized recreational areas, which needs to be further improved through the proposed land use plan.
- Existing residential areas of the SPA area are boosted by provision of required social and physical infrastructure and new residential areas are proposed in proximity to the same to cater to the projected population.
- Forest and water bodies are preserved. The ecologically sensitive areas conservation is addressed without diminishing the green growth prospects of the areas.

Further, the total land available have been categorized into three sections namely, already developed areas, areas open for new development and non-developable areas.

Already Developed Areas: These include the growth that has already taken place in the areas where substantial land is put to use for residential, commercial, industrial activities, and for public semi- public utilities. In order to integrate existing built-up areas, a broad approach to

retain all the existing developments ensuring minimum or no disturbance, is adopted. The land use zones proposed are well compatible with the existing or already permitted activities within the existing land uses.

Areas open for new development: This includes mainly open vacant lands and to some extent Agricultural lands.

Non-Developable areas: This includes the environmentally significant areas such as forests, water bodies, hills with slope of 22.5° (This is in concurrence with the MMR DCR 2036) and eco sensitive zones. Areas coming under these zones are conserved in their natural form. The orientation of the planning exercise as discussed in the previous chapter is to incorporate environment sustainability.

11.2.4 PROPOSED TRANSPORT NETWORKS IN AND AROUND THE PLANNING AREA

The surrounding proposals, which will have an effect on the planning area, are to be integrated with the development plan of the planning area in order to ensure regional level integration and for efficient functioning of the proposed network by the various development plans. Considering the significance of this aspect, effective integration of these is incorporated in the concept plans. The key aspects included are:

- Virar- Alibaug Multi Modal Corridor (MMC)
- Sub urban rail extension line between Chowk and Apte proposal
- Proposed road widening of National Highway and state highways.
- Integrating the proposed network with NAINA transport proposals ensuring regional connectivity.
- Sanctioned modification to Mumbai-Pune Expressway alignment within SPA.

11.2.5 VARIOUS STAKEHOLDER PERSPECTIVES

The stakeholder consultations were conducted with various organizations, private bodies, government and parastatal bodies and with residents of villages in MSRDC SPA area for information dissemination regarding the Development Plan for MSRDC SPA area. This was also a platform to understand the stakeholder demands and gather their opinions and suggestions for incorporation into the development plan wherever. The key result of the stakeholder consultations may be summarised as; the development plan should be able to leverage the strategic location of MSRDC SPA area between Mumbai and Pune along the MPEW and focus may be given to service sector with emphasis on logistics, commerce and tourism without hampering the industrial development potential of the planning area.

11.2.6 DUE COGNIZANCE OF SANCTIONED REGIONAL PLAN PROPOSALS

The provisions of the sanctioned Regional plans as listed below have been considered while allocating the spatial distribution of land use zones.

1. Mumbai Metropolitan Regional Plan 2016-2036 (Draft).
2. Raigad regional plan, 1992.
3. Rees-Lodhivali complex plan, 1996 of MMR Plan.
4. Pen-Panvel-Khalapur Growth Centre Plan of RRP.
5. Development permission granted previously by various Authorities.

11.3 PROPOSED LAND USE ZONES

Keeping in view of the predominant land use zones as per the guidelines in the Manual of Development Plan prepared by the Directorate of Town Planning coupled with intention of promoting area specific activities as many as 13 land use zones are proposed. The details of which are enumerated below:

1. Residential Zone (R)
2. Commercial Zone (C)
3. CBD Zone
4. Industrial Zone (I)
5. Public & Semi Public Zone (PSP)
6. Theme Based Zone (TBZ)
7. Logistics Park Zone
8. Green belt / Recreational Open Space along water bodies.
9. Transportation Zone.
10. Agriculture/Green Zone/ No Development Zone
11. Forest Zone.
12. Eco-Sensitive Zone
13. Buffer of Eco Sensitive Zone

11.3.1 PROPOSED RESIDENTIAL ZONE & DENSITY

About 949.31 Ha of land is under existing residential use. This takes care of the Residential Zones proposed in earlier sanctioned regional plans including those of growth centres and for which the development permissions were sanctioned. During the analysis, it was found that the Residential zones, which were proposed in the earlier sanctioned Regional plans / Growth Centres, are not utilized to the full extent. Keeping in view of the additional population of approximately 10 Lakhs, it is imperative to take cognizance of unutilized residential zone shown in sanctioned RPs and further open up the vacant lands / barren lands to accommodate the additional population. Further, in order to encourage inclusive housing for EWS, provisions have been made in this development plan. Thus, an additional area of 2981.13 Ha of land is proposed under residential zone, thus making the total residential land use zone to the extent of 3930.44 Ha. This proposed residential zone is approximately 41.05% of the developable area. This also includes reversal of zoning from residential to green zone in high contour non-developable areas, which were otherwise shown as developable area (Residential) in earlier sanctioned RP. Further, the plan took cognizance of the sanctioned development permissions wherein the industrial zone is converted into residential zone under I to R policy.

Residential Density

Keeping in view the projected population of 11.48 lakhs and the area proposed for residential zone of 3930.44 Ha, the residential density works out to be 342 persons per hectare (pph). This is slightly higher than gross neighborhood density of 250 pph as per the guidelines of the TP circular/development plan/TPV-1/3891, dated 5-6-1985 owing to the following reasons:

- Because of the topography and site conditions, the area best suitable for development is only 51.28% (106 sq.km.) of the total extent. Out of this 51.28%, the total residential land area forms about 41.05%. Thus, the total land available for residential use is limited to accommodate the induced population growth forecasted for 2041.
- In order to translate the objective of optimization of resources as identified under the vision, a slightly higher average density is proposed. This is also supported by the case studies of the recent planning exercises at national and global levels that are opting for compact development with higher residential densities.
- SPA area is located between two Metro Cities Mumbai and Pune.
- The TOD corridor proposed shall have higher residential density based on the Maharashtra Sustainable Urban Transport Policy, 2017. Thus, the non-TOD areas shall have an average density, which shall be within 250 pph only.

11.3.2 COMMERCIAL (C)

Adhering to the overall vision and approach, flexibility is attributed to the development plan by allowing compatible regular retail and commercial activities within the residential zones. The commercial zone demarcated in the plan shall allow over and above these, the exclusive developments of large retail and specialized commercial uses, wholesale establishments etc.

The existing commercial zone is 201 hectares. An area of 594.05 Ha of land is demarcated under commercial zone of the proposed land use. This forms 6.20% of the total developable area. This is in line with the URDPFI guidelines, which prescribes 5%-6% of total developable area for commercial zone in case of metropolitan & mega cities.

Spatially, two approaches have been adopted to distribute the proposed commercial zone across the SPA area. One approach is to strengthen the available land parcels along the already existing growth nodes and key corridor (NH 4) where there are substantial commercial and other real estate developments. The other approach is to introduce commercial activity on the land parcels where it is non-existent or not dominant, based on the factors including but not limited to existing and proposed connectivity, proposed overall structure of the city, degree of favourability offered from proposed and existing social and economic conditions etc. Thus, the predominant commercial zones demarcated are along NH 4 and 60 m Spine road with metro rail and TOD corridor. Further to this, other strategic locations along MPEW in southern portion, have also been identified which has strong commercial development potential within MSRDC SPA area which shall support the surrounding developments. These also include MSRDC owned land parcels, with excellent connectivity prospects and commercial potential.

11.3.3 CBD ZONE (CENTRAL BUSINESS DISTRICT)

As per the vision formulated for MSRDC SPA area, one of the key goals of the DP- 2041 is to make the city magnetic through creating attractiveness and competitiveness. It can be seen that, specific branding exercises and conscious effort through planning tools focusing economy-generating sectors are carried out in the recent urban development plans around the world to achieve competitiveness and attractiveness. This approach is followed here in MSRDC SPA also. The focus is proposed to be on the following two components:

1. Have a strong central core for the city with high attractiveness for young wealth creators and talent pool through:
 - a) Promoting financial and techno centers and startups as in Maharashtra Fin Tech Policy 2018
 - b) Strengthened service sector and employment opportunities.
 - c) 24/7 active zone combining business, leisure and residential components
 - d) Excellent visibility and accessibility
2. Create unique identity through,
 - a) Physical form
 - b) Iconic buildings
 - c) Quality of spaces offered to its citizens.

Keeping in view of the above, the CBD zone admeasuring 130.45 Ha of area is proposed abutting the MPEW, which shall provide excellent visibility to the zone, which may be used for branding of the MSRDC SPA. The 60 m arterial spine with metro rail along with BRTS passing through the zone provides excellent accessibility. Therefore, this zone is envisaged to function as the central business district of the city.

In order to attract younger wealth creators, apart from the commercial uses permitted, the zone shall host smart Fintech centers as per Maharashtra Fin Tech Policy 2018, which promotes startups, incubators, accelerators along with financial services. Animation, visual effects,

gaming and comics (AVGC) Parks, IT Parks, IT SEZs, financial services shall also be permissible for the same reason.

With a maximum FSI of 4.00 and corresponding ground coverage of 35%, the zone is deemed to have iconic high-rise buildings. Specific urban design controls (UDC) are made mandatory to achieve a unique physical built form for the zone. (The details are as given in the UDC annexure of DCPR.) The zone is proposed to be developed as a predominantly commercial zone with minimum residential component in proportion of 70:30 in order to have a 24/7 vibrant space with social surveillance. Accordingly, necessary provisions have been incorporated in the DCPR.

11.3.4 INDUSTRIAL

An area of 1875.13 Ha is demarcated as industrial zone, which comprises 19.58% of the total developable area of MSRDC SPA, making it the second largest zone.

The approach adopted for spatial allocation of this use is two-fold, one of which is to propose a new industrial belt in the northern portion of MSRDC SPA area in between Apte-Panvel rail line and MPEW. This will harness the connectivity to ports, proximity to MMC proposed by MMRDA, existing logistics and warehousing activities flourishing along SH 104 and also compliments the proposed logistic park zone and proposed freight corridor loop.

The second approach is to retain and strengthen the existing industrial cluster that has come up on ground in Pen-Panvel-Khalapur growth center demarcated in Raigad RP, of which the proposed predominantly industrial belt is along the Patalganga River and Thanenhavle-Honad, Tambati-Wadval areas.

As per the sanctioned Raigad regional plan, an area admeasuring about 1900 Ha was designated as Industrial zone. However, over a period of 25 years this Industrial zone has not flourished as that was envisaged in 1991. Moreover, some parts of this land are high contoured lands and forest lands, which are not developable.

Therefore while proposing the industrial land use such area which were shown in industrial zone in Raigad RP are reduced and re-designated as residential use / green zone, which further led to reversal of zoning to some extent. Alternately, as mentioned above additional industrial use is proposed in the northern portion of MSRDC SPA area in between Apte-Panvel rail line and MPEW.

Further, in order to bring in flexibility in development plan and to generate revenue by way of payment of premium, residential /commercial uses are permitted within industrial zone by means of I to R Policy as detailed in section 25.4.2, Part II of DCPR. This shall allow the MSRDC SPA to be more accommodative of market led future demands.

11.3.5 LOGISTIC PARK ZONE

This zone covers 184.07 Ha of land forming about 1.92% of the total developable area. Recognizing the potential of SPA area in accommodating logistics & allied activities and incorporating the stakeholder consultations, the logistic park zone is proposed to facilitate the growth as envisaged by Maharashtra Logistic Parks Policy 2018 with respect to logistic hubs.

Some of the key factors that shall help the development of logistics related activities within SPA area are port connectivity strengthened through freight corridor loop, excellent regional connectivity, large contiguous land availability, existing warehousing facilities, high skilled labor availability and the locational advantages of being situated in proximity to Pune, Mumbai and Navi Mumbai. The key benefits of these parks are that they are cost saving through economies of scale.

The potentials of the planning area for hosting a logistic park zone are briefly described here.

- Proximity of JNPT port and DMIC corridor development projects: Proximity to JNPT port well established through the rail lines and road as well as regional connectivity through the MPEW and MMC offers good potential. Two corridor development projects of India- the DMIC (Delhi Mumbai Industrial Corridor) and BMEC (Bangalore Mumbai Economic Corridor) has an influence area including the SPA region. Both have JNPT as a major Node. The port connectivity is a prime requisite for setting up a multimodal logistic facility. As a part of BMEC's perspective plan, it is envisaged that by 2041, there is a requirement of multi modal logistic parks, spread across the region to meet the logistic needs of the industries in the region. These geographical proximity advantages to the economic node may be leveraged in setting up the logistic hubs.
During discussion with JNPT officials it was requested that suitable logistics zone be provided in the MSRDC SPA area in order to cater to the needs of the emerging Rewas and Mandwi Ports as the hinterland around these Ports are not suitable for developing logistics activities. In addition, JNPT is reaching saturation and the proposed Logistics Hub in the MSRDC SPA area will only complement the future demand and requirement of the JNPT Port.
- Availability of large contiguous land parcels: Across the nation, the main constraint of establishing a logistic park is the availability of large contiguous land parcels, which has a clear value proposition in terms of logistic saving, ease of connectivity and a high potential catchment area. The planning area can offer large contiguous parcels of more than 100 acres (40.5 ha) which are sufficient to accommodate multi modal logistic hub and thus can offer flexible options for the customer in terms of financing and space planning.
- Existing logistic activities: As Raigarh district is one among the locations, which account for about 50% of the road freight movement, is an ideal location for Investments in Multi modal Logistics Parks in India in the first phase. Draft Policy Document on Development of Multimodal Logistics Parks by Ministry of Road Transport & Highways (MoRTH) has identified Raigarh district as one of the locations prioritized for development of Multimodal Logistics Parks in Phase 1. The logistic park zone is spatially located predominantly at Narpoli, Savale, Devoli Budruk and Barwai along the established dedicated port connectivity through freight loop between the two rail lines. The logistic park zone shall boost the existing warehousing activities as well as establishment of advanced/ next generation industrial clusters in proximity to these.

In order to award flexibility to the development plan, warehousing and industrial activities are also permitted apart from the logistic services in this zone. In addition to this all users, which are permissible in the Industrial zone are also permitted in this zone.

11.3.6 PUBLIC AND SEMI PUBLIC ZONE

This zone covers about 529.82 Ha of area and form 5.53% of the total developable area of MSRDC SPA. This includes Govt/ Semi Govt/ public offices, public and semi-public uses and facilities including education, medical, socio cultural, religious etc. Along with the existing facilities, new areas are also marked which largely falls on either side of the MPEW.

Global economy has started to be knowledge driven as it moves up in the ladder of development, which addresses how education can be a productive asset, and generate economic development. MSRDC SPA area opens up large area in Bhatan opposite to Amity University, in Panshil opposite to NISM and on either side of expressway near Vayal – Tembhari and Warad near Patalganga River. It is expected that national and state level educational and research institutions (as stipulated in DCPR) shall come up here thus making MSRDC SPA a knowledge city. The World Bank suggests that in order to build knowledge economies, an access to infrastructure and vibrant innovation landscape including academia,

private sector and civil society is required. Hence, these large chunks of areas demarcated in the plan are placed along the public transit network, easily accessible from metro rail/ BRTS. The positioning of these along the MPEW shall offer high visibility to the area where the global academic institutions might come up. As these are situated near to the under or over passes of MPEW, easy movement of intra institutional traffic is also facilitated.

In this zone, commercial uses upto 15% of basic permissible FSI shall be allowed on private lands and upto 33% shall be allowed on lands owned by Government / Semi-Government organizations. Certain incentivization through reduction in premium for granting additional FSI is also proposed in the DCPR for such organizations.

11.3.7 THEME BASED ZONE (TBZ)

This zone may be utilized to tap the market of leisure and hospitality. This zone is an outcome of various stakeholder consultations, which suggested that, since the planning area is located strategically with tourism potential, the feasible developments could have multiple themes thus creating it a hub or destination. Some of the suggested developments were film city entertainment theme park, amusement parks, adventure activity hub, IT hub, education hub, financial hub, etc. Thus, TBZ is demarcated for destination creation within SPA. This Zone is expected to retain and attract local talent pool with unique urban experience. The retaining of the talent pool in turn will be an asset and key magnet in attracting more investments into the city. This zone covers approximately 143.61 Ha of land forming about 1.50% of the total developable area. The development plan opens up this area for investors from around the world to implement multiple market led and innovative concepts, such as entertainment, education, health, sports, IT or any other theme.

Strong regional connectivity is vital to bring in more footfalls to the SPA Area. Hence, the zone is strategically proposed in proximity to NH 4, and Chowk railway station along with the proposed BRTS. This area can also utilise the scenic backdrop of Matheran hills and Morbe dam. The adjacent proposed residential and commercial shall supplement the TBZ. Thus, TBZ is proposed to promote MSRDC SPA as a magnet City.

11.3.8 GREEN BELT/ RECREATIONAL ZONE

The green belt/ recreational zone forms 5.24% of the total developable area and comprises approximately 501.58 Ha of land. The areas between the river and the blue flood line of Patalganga river and 15 m from the banks of Dhavri river, a major tributary of Patalganga river in MSRDC SPA have been zoned as recreational/ green belt in order to conserve the river banks.

11.3.9 TRANSPORTATION ZONE

An area of approximately 1646.79 Ha of land is demarcated under transportation zone and this forms 17.20% of the total developable area of MSRDC SPA. This zone includes the land demarcated under classified roads, all DP roads up to a width of 18m and rail right of ways, Bus Rapid Transit System (BRTSs), bus depots, truck terminals etc. Specific transportation proposals are described in detail within Chapter 12: Framing of Infrastructure proposals.

11.3.10 AGRICULTURE/ GREEN ZONE/ NO DEVELOPMENT ZONE

This zone covers about 2423.82 Ha of area and forms 12.98% of the total area of MSRDC SPA. Acknowledging the need for development that this zone may possibly have, due to opening up of SPA for urbanization by the development plan, the growth potential of these zones are not restricted only to the agricultural and allied uses. Multiple other uses such as research and development institutions, entertainment activities such as amusement parks, film production and allied, educational and medical institutions, integrated amenities, industries, etc

are proposed to be permitted in this zone, with a very minimal floor space index, subject to conditions as detailed in DCPR.

In addition to above activities, special activities like town planning scheme with minimum 20-Hectare area is proposed to be permitted. In addition, Pradhan Mantri Awas Yojana (PMAY) with 1.0 FSI is proposed to be permitted in this zone. Further, a special enabling provision is made in DCPR to allow any Public uses permissible on land owned by Government / Semi-Government organizations. This will render flexibility to the overall development plan, as this zone shall accommodate the uses as per the market demand.

11.3.11 FOREST ZONE

Areas under Forest Zone are lands under ownership of the Forest Department and are subject to applicable rules and regulations of the Forest Department. The forest zone is not included under the developable area of MSRDC SPA.

11.3.12 ECO SENSITIVE ZONE OF WESTERN GHAT

Four villages within MSRDC SPA namely, i) Adoshi, ii) Chavani, iii) Nadhal and iv) Talavali are included in the eco sensitive areas as per the Draft Notification of MoEF & CC, 27th February 2017 and also 3rd October, 2018 on ecologically sensitive areas of Western Ghats. These four villages are classified as eco sensitive zones and the development prospects are to be adhering to the MoEF & CC's timely notifications and amendments. This occupies 1422.47 Ha of land and form about 7.62% of the total MSRDC SPA area.

11.3.13 BUFFER OF MATHERAN ECO SENSITIVE ZONE

As per the Government of India, Ministry of Environment and Forests Notification dated 4th February 2003, the villages namely i) Barvai, ii) Lodhivali, iii) Nadhal and iv) Chowk Manivali are included in Buffer of Matheran Eco Sensitive Zone and the said buffer zone is restricted upto the Railway line. This occupies 413.57 Ha of land and forms 2.21% of the total MSRDC SPA area.

11.4 TRANSIT ORIENTED DEVELOPMENT (TOD) CORRIDOR

In order to support creation of compact communities with access to high quality public transport with walking and cycling links as stipulated by the State Urban Transport Policy- 2017, TOD corridor is proposed within the MSRDC SPA area. The corridor is formally designated within the DP as a band of 500 m on either side of the MRTS/ Metro rail corridor, which is on the arterial road of 60 m ROW as per the draft State Urban Transport Policy 2017.

The total area falling within this corridor is about 1429.01 Ha, which forms about 7.65% of the total MSRDC SPA area. This accommodates residences, jobs, places of commerce and recreation and other uses within walking distances from the MRTS.

Specific provisions are incorporated within the TOD corridor to facilitate mixed use, compact and sustainable development with accessibility of high quality public transportation for all. The TOD corridor is envisaged to accommodate about 600 pph (residential density) to offer advantages of this corridor for maximum population. This is also in line with the draft State Urban Transport Policy 2017 of Maharashtra, which stipulates double the density than the average non-TOD area density.

A maximum permissible FSI of 4.00 on payment of premium, which shall generate revenue, subject to conditions as, stipulated in DCPR. This is allowed within this corridor to support compact development accommodating more people.

11.5 PROPOSED LAND USE ANALYSIS

The total developable area within the jurisdiction of MSRDC SPA is 95.76 sq.km, which forms 51.28% of the total MSRDC SPA area. Residential zone is the largest zone forming about 41.05% of the total developable area. Industrial zone occupies the next largest component of the total developable area with a share of 19.58 % followed by transportation zone at 17.20%. Commercial, public semi-public and recreational zone occupy a share of 6.20%, 5.53% and 5.24% respectively. Logistics park zone, theme based zone and CBD occupies 1.92%, 1.50% and 1.36% respectively.

Since no development is envisaged within the eco sensitive zone and the buffer to eco sensitive zone apart from the stipulations of the respective MoEF & CC notifications, these two are not considered under the total developable area. Similarly, the agriculture/ green zone/ no development zone also does not feature in the total developable area, as the development prospects of this zone are very limited. Forest land and water bodies, which also forms a part of non-developable area, forms about 23.03% and 2.87% of the total MSRDC SPA. The area statement of the land use distribution for 2041 is given in the Table 11-5.

Table 11-5: Proposed land use analysis, 2041

Land Use	Area in Hectares	% to Total Developable Area	% to Total Area
Residential	3930.44	41.05	21.05
Commercial	594.05	6.20	3.18
CBD	130.45	1.36	0.70
Industrial	1875.13	19.58	10.04
Public And Semi- Public	529.82	5.53	2.84
Green belt/Recreational	501.58	5.24	2.69
Transportation	1646.79	17.20	8.82
Theme based Zone	143.61	1.50	0.77
Logistic Park Zone	184.07	1.92	0.99
Mine and Quarries	39.59	0.41	0.21
Total Developable Area	9575.53	100.00	51.28
Agricultural/Green Zone	2423.82	--	12.98
Eco sensitive Zone	1422.47	--	7.62
Buffer of Matheran ESZ Zone	413.57	--	2.21
Forest	4301.10	--	23.03
Water Bodies	536.15	--	2.87
Total Non-developable Area	9097.11	--	48.72
Total Area	18672.64	--	100

The land use analysis with respect to the total area is represented in the figure 11-1 below.

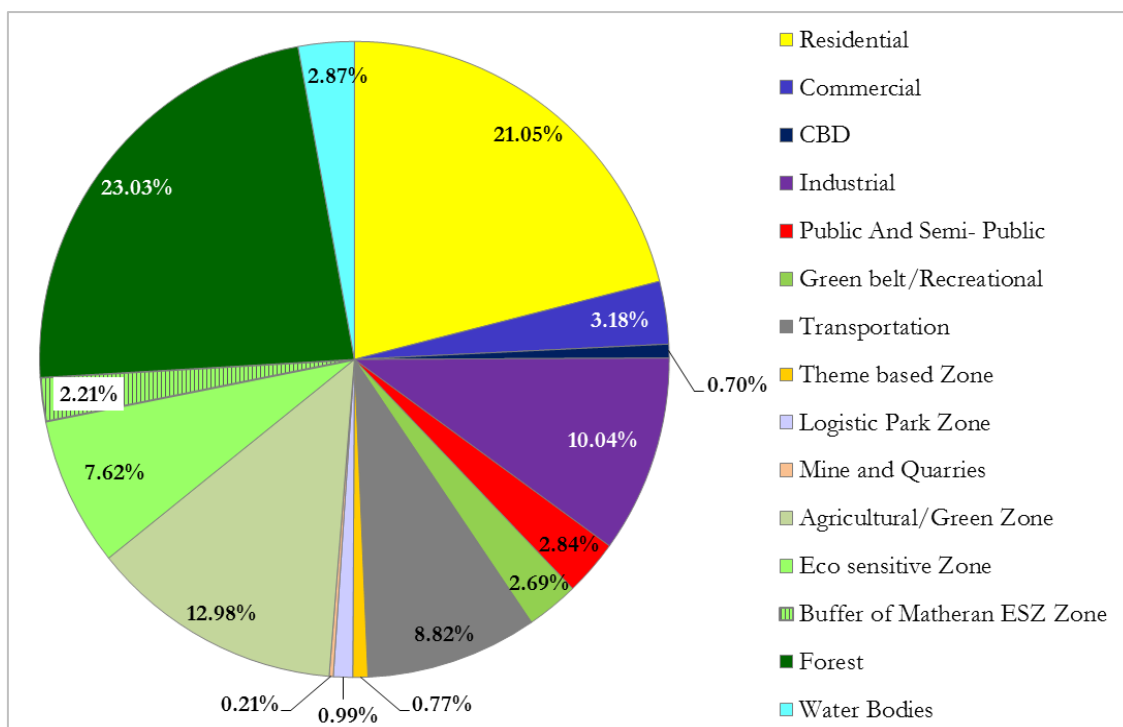


Figure 11-1: Proposed land use details of project area

The land use distribution map for 2041 is given in Map 11-2:

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12 DEVELOPMENT CONTROL AND PROMOTION REGULATIONS

The Development Control and Promotion Regulations (DCPR) gives the zoning as well as building regulations for all developments falling in the area under MSRDC SPA jurisdiction. These regulations are given in a separate document supported by the Draft Development Plan document. This chapter, however, introduces and provides justifications for some of the regulations given in the DCPR.

12.1 DEVELOPMENT CONTROL AND PROMOTION REGULATIONS

12.1.1 APPROACH

For formulation of DCPR for the anticipated development in MSRDC SPA area, several DCPR Regulations were considered such as: DCPR of Nagpur Metropolitan Area Development Plan 2012-32, NAINA Development Plan, 2017, Raigad Regional Plan, 1992, Draft Standardised Development Control and Promotion Regulations for D class Municipal Corporations in Maharashtra, Standardised Development Control and Promotion Regulations for Regional Plans in Maharashtra, and URDPFI.

Among these the DCPR of Nagpur Metropolitan Area (NMA) Development Plan 2012-32 has been taken as a base to which certain changes are made wherever it was relevant and modified to be project specific in manner appropriate to MSRDC SPA context. The reason for taking NMA DCPR was due to several similarities between NMA and MSRDC SPA area. NMA DP is also one of the most recent approved development plans in the State of Maharashtra. The similarities of NMA with respect to the MSRDC SPA area are given below:

- Similar to NMA DP area, MSRDC SPA DP area is a peri-urban area of Mumbai.
- Nagpur is influenced by the spill over developments of a major city (Nagpur) similar to MSRDC SPA area, which is influenced by both Navi Mumbai, and Pune and both are undergoing urbanization.
- There is an abundance of land available for industry and farm sector growth similar to SPA.

- NMA is well connected to its region and therefore connected to several other major cities by roads, railways and air, similar to that of SPA, which has an additional advantage of proximity to seaports.
- Being located in a strategically advantageous location, NMA also experiences high volume of freight traffic and is supported by development in the logistic industry similar to that of SPA.
- There are several industries and existing developments and is currently witnessing a substantial growth in the real estate sector.
- Significant portion of land in the NMA are under protected and reserved forests (including portion of Pench National Park and Bor Wildlife Sanctuary) similar to MSRDC SPA, which has portion of Matheran Eco-Sensitive zone, as well as several forests of Western Ghats.
- There are several rivers, reservoirs and water bodies in NMA similar to MSRDC SPA, which is crisscrossed by river and streams and dotted with water bodies.

12.2 INTRODUCTION OF “LAND LINKED PREMIUM”

Land Linked Premium: MSRDC SPA comprises of part of RRP area and part of MMR area. The prevailing FSI as per RRP is 1.0 to 1.1, whereas the FSI in U1, U2 zone of MMR varies from 0.2 to 0.35. Further there would be loss of premium amount that SPA would otherwise accrue through Gaothan Expansion Schemes as most of the Gaothans are now included in the developable zone with Basic Permissible FSI of 1.1. Hence, in order to bring uniformity of Basic Permissible FSI in the entire SPA area, it is proposed to enhance the Basic Permissible FSI to 1.1 in MMR villages and retain the Basic Permissible FSI of 1.1 in RRP villages. Further to recover the loss of revenue by way of premium through Gaothan Expansion Scheme (GES), it is proposed to levy a nominal premium @ 5% of ASR applied on entire land holding on Basic Permissible FSI, which is termed as "Land Linked Premium". Accordingly, necessary provisions have been proposed in the DCPR.

In addition to these changes, a separate Chapter on Urban Design Guidelines and Hoarding Policy are also added as an annexure to the DCPR document.

12.2.1 SALIENT FEATURES OF DCPR

The salient features evolved for the DCPR of MSRDC SPA are given below:

- 1 For PMAY FSI permissible is 2.5 in developable zone without any premium
- 2 Development of reserved sited through concept of Accommodation Reservation
- 3 Provision of sharing of premium (50% by Govt. and 50% by Authority) is deleted.
- 4 The housing stock created through Inclusive housing shall be at the disposal of MSRDC SPA instead of MHADA
- 5 Applicability of TDR shall be also for widening of MPEW, widening of NH and land required for interchanges
- 6 For speedy development of 60 M spine and service roads, the incentivization of TDR is proposed as mentioned below:
 - a) 1st Year 40%
 - b) 2nd Year 30%
 - c) 3rd Year 20%
 - d) 4th and 5th Year 10%
- 7 Certain compatible users are permitted with the permission of VC&MD (without referring the matter to DTP or UDD)
- 8 Provision regarding Structural stability is incorporated.
- 9 In order to generate revenue in SPA area, the Hoarding Policy is incorporated.
- 10 Percentage of Premium rates to be levied on grant of additional FSI for different land uses proposed for MSRDC SPA area are as mentioned below:

- a. For residential / mixed use 40% of ASR
 - b. For industrial use 40 % of ASR
 - c. For Commercial use 50% ASR
- 11 Tourism development activities are permitted with the approval of the committee constituted in all zones except Industrial and Logistics Zone with basic permissible FSI of 0.25 and minimum area required 1.00 HA
 - 12 Certain uses under fly over are proposed
 - 13 Hill station bye laws as per sanctioned Raigad Regional Plan are retained
 - 14 On lands owned by Government / Semi Government Organizations, activities related to Government are permitted irrespective of zoning shown on Development Plan.
 - 15 License fees related to license supervisor / engineer / technical persons are enhanced from Rs.1000/- to 5000/-.

12.3 URBAN DESIGN CONTROLS

Urban design is the art of place making at a city level, creating liveable spaces for people, integrating the physical form with the socio-cultural fabric of the city. Urban design is an integral part of urban planning. It weaves together various elements like buildings, streets, open / green spaces, transportation network, water bodies into a single coherent and organized whole city.

Since MSRDC SPA is predominately a Greenfield development, this opportunity can be used to design the city along the global urban design standards and evolve it into a world-class city.

Urban design controls for the MSRDC SPA area have been formulated to arrive at harmonious, coherent and rhythmic built form responding to the land uses that are envisioned for CBD Zone. These controls shall apply to all development, redevelopment, erection and/or re-erection of a building, change of user etc. as well as to the design, construction or reconstruction of, and additions and alteration to a building only within CBD zone.

The Urban Design Controls in this Draft Development Plan mainly emphasizes on the built form with respect to design of Arcades. The details of the controls to be followed are annexed to DCPRs prepared for this DP.

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13 SOCIAL FACILITIES – DP RESERVATIONS

13.1 DEVELOPMENT PLAN RESERVATIONS (SOCIAL FACILITIES)

- i) MSRDC is declared as a Special Planning Authority vide UDD GR dated 17.2.2016. However, subsequent to the said GR, directives were issued from Govt. of Maharashtra in UDD vide letter dated 18.3.2016 to take cognizance of the planning proposals framed by CIDCO for NAINA IDP I and adopt similar strategy while preparing the development plan for the MSRDC SPA area (copy enclosed). This was mainly due to the fact that part of MSRDC SPA area was earlier included in the NAINA area for which CIDCO was Special Planning Authority. Thus, the requirements of (social facility) reservations for the horizon year of 2031 for the population of 5,22,760 have been computed after comparing with the provisions of NAINA IDP II. Accordingly, requirement of social facilities (DP Reservation) for 5.22 lacs population – horizon year, 2031 are shown in Table No. 13-1.
- ii) Section 22 of the MR&TP Act 1966 describes about the contents of the Development Plan wherein it mentions that the Development Plan shall provide allocating the use of land for various purposes including those of public purpose. However, the Act highlights the fact the above may be provided as may be necessary for ‘all or any’ of the purposes mentioned in the Act. Also Section 31(5) of the MR&TP Act 1966 states that the Planning Authority may indicate only those reservations on the Development Plan, which in its opinion can be acquired by the Authority with its resources. This reveals that it is not mandatory for the Planning Authority to provide all the allocations as mentioned in the Act to be incorporated in the Development Plan.
- iii) The Town Planning Schemes are proposed to be implemented in SPA area. Section 64 of MR&TP Act 1966 describes contents of the draft TP Scheme wherein allotment of land to the extent of 40% of the total area covered under the scheme is to be shown for the following purposes:
 - a) Road
 - b) Park, Garden, Playground and Open spaces
 - c) Social Infrastructure such as School, dispensary, Fire brigade and Public Utility place.
 - d) Sale by Planning Authority.

Thus, it is inferred that certain social facilities can also be developed through the TP Scheme.

- iv) In the DCPR, provision is made to provide 10% amenity space for area admeasuring 1.00 Hectare or more. Therefore, it is expected that certain percentage of Social facilities required can be met through this provision and therefore suitable call has to be taken in allocating social facilities.
- v) As per the Integrated Township Project (ITP) policy, it is mandatory to provide certain social facilities while developing the township projects. Hence, it is expected that certain percentage of social facilities required can also be met through this policy.
- vi) Further, it is to be mentioned that certain social facilities will also be developed through private players.

In view of above, i to vi factors and based on the extent of (social facilities) reservations to be provided in DP, following categories of reservations and rationale are adopted for designation of the reservations in the draft Development Plan:

1. 100% reservations to be shown on draft DP - facilities which are required to be provided at city level like general hospital, super specialty hospital, city park and sports complex, land multipurpose hall, fill sites, STP and TTP, crematorium and burial ground, truck terminal, bus terminal, parking etc.
2. 50 % reservations of total requirement to be shown on draft DP and remaining 50% reservations to be shown through TPS – Out of the total facilities required for horizon population of 5.22 lakhs, only 50% will be shown as reservation in the draft Development Plan and remaining 50% social facilities will be developed through above mentioned Planning tools (ii) to vi) above). These facilities include police stations, primary and secondary school with playground, dispensary/PHC, library, old age homes, parks and playground, garden, reservation for EWS housing and ESR/GSR etc.
3. Reservations to be developed through TPS – Facilities like Balwadi / Creche, Clinic, Health Club and Gymnasium and Daily Bazaar, which requires smaller areas, can easily be accommodated through Town Planning schemes. Hence, such reservations are not shown on the Development Plan.
4. Apart from the above, reservations like Zonal Offices/ Government offices envisaging its need in future are shown on this draft development plan, as suggested by the board of directors of MSRDC SPA in their board meeting held on 2.11.18. They will be developed through Accommodation Reservation. Facility of crematorium is planned to be expanded in their existing locations. Moreover, to benefit the vulnerable population and bring in socially inclusive development, facilities like women empowerment center and old age home are also provided in SPA at appropriate location indicated in DP. As far as parks and playgrounds are concerned, their total requirement is estimated in terms of area and subsequently they are spatially distributed in the project area based on proposed land use, proximity to roads, presence of green belt etc.
5. Also there are 19 reservations have been indicated on Development Plan as suggested by the board of directors of MSRDC SPA in their board meeting held on 2.11.18. The list of these reservations is given in table 13-2.

Based on above rationale, a total of 163 social facility reservations are shown on the draft Development Plan and the list of such reservations with their approximate area is given in Table 13-2 below.

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Table 13-1: Requirement of Social Facilities (DP Reservation) for 5.22 lacs population – Horizon Year, 2031

Sr. No	Name of facility	No. of existing facilities as per ELU	Adopted Norms				No of existing facilities as per norms	Reservation to be proposed		Reservation shown in DP		Reservation to be considered in TPS		Remarks
			Population served by single facility	Area/site requirement as per adopted norms (In ha)	Estimated demand by 2031 (No of sites)	Area requirement (in ha)		No of required sites	Area required (in ha)	No of required sites	Area required (in ha)	No of required sites	Area required (in ha)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	Educational Facilities													
1	Balwadi/Creche	80	12000	0.05	44	2.20	2	42	2.10	Not shown on DP		42	2.10	Not shown on DP. All sites will be implemented through TPS and through amenity space allocation.
2	Primary School with playground & Secondary School with playground	132	10000	1.00	52	52.00	7	45	45.00	23	22.00	22	23.00	50% is shown on DP and 50% will be implemented through TPS and through amenity space allocation and also through ITP, STP and private players
3	Colleges	9	125000	1.0	4	4.00	9	Not shown on DP since existing facilities are sufficient as per the norms						Not shown on DP, as Existing Facilities are sufficient as per norms.
4	Professional Colleges/Technical College		125000	2.0	4	8.00		Not shown on DP since existing facilities are sufficient as per the norms						
B	Health Facilities													
1	Clinic	10	10000	0.06	52	3.12	0	52	3.12	Not shown on DP		52	3.12	Not shown on DP. All site will be implemented through TPS and through amenity space allocation
2	Dispensary/PHC	5	25000	0.15	21	3.15	5	16	2.40	9	1.20	8	1.20	50% is shown on DP and 50% will be implemented through TPS and through amenity space allocation and also through ITP, STP and private players
3	General Hospital	7	100000	0.5	5	2.61	2	3	1.50	3	1.50	NA	NA	All reservations are shown on DP as City level facility
4	Super Specialty Hospital	0	250000	2	2	4.18	0	2	4.00	1	2.00	NA	NA	1 super specialty hospital is shown on DP with deficiency of 1 site (City level facility)
C	Social and Cultural Facilities													
1	Library	2	10000	0.05	52	2.60	0	52	2.60	1	1.00	NA	1.60	Out of total required area of 2.6 Ha, 1.00 Ha area is shown on DP for reservation of central library as a City level facility and remaining 1.6 Ha area for library will be provided through TP schemes/Amenity space
2	Multipurpose Hall/Convention Centre	0	10000	0.2	52	10.45	0	52	10.45	3	10.45	NA	NA	2 sites are shown in DP for multipurpose hall. Also International Trade and Convention centre admeasuring about 16.83 Ha is shown on DP as as a City level facility.
3	Health Club & Gymnasium	3	10000	0.1	52	5.23	0	52	5.23	Not shown on DP		52	5.23	Not shown on DP. All sites will be implemented through TPS and through amenity space allocation.
4	Daily Bazaar	0	10000	0.1	52	5.23	0	52	5.23	Not shown on DP		52	5.23	Not shown on DP. All site will be implemented through TPS and through amenity space allocation
5	Old Age Home	0	500000	0.1	1	0.1	0	1	0.1	As per requirement		NA	NA	Adequate facility is provided as per the requirement.
D	Public Facilities													
1	Fire Brigade and Allied Services	0	200000	1.0	3	3.00	0	3	3.00	3	3.00	NA	NA	All reservations are shown on DP as City level facility

Sr. No	Name of facility	No. of existing facilities as per ELU	Adopted Norms				No of existing facilities as per norms	Reservation to be proposed		Reservation shown in DP		Reservation to be considered in TPS		Remarks
			Population served by single facility	Area/site requirement as per adopted norms (In ha)	Estimated demand by 2031 (No of sites)	Area requirement (in ha)		No of required sites	Area required (in ha)	No of required sites	Area required (in ha)	No of required sites	Area required (in ha)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	Burial/ Cremation ground	80	500000	4.0	1	4.00	0	1	4.00	NA	NA	NA	NA	Instead of providing the required area at one location, it is distributed throughout the project area, preferably near the existing locations of burial/cremation ground. The existing facilities will be regularized and upgraded with minimum area of each facility to the extent of 0.2 Ha.
3	Police Station	5	50000	0.16	10	1.67	0	10	1.67	5	0.84	5	0.84	50% of the total required numbers is shown on DP and the balanced sites will be developed through TPS
E	Parks / Playgrounds													
1	Parks & play grounds	0	10000	3.0	52	156.81	0	NA	156.81	NA	78.41	NA	78.41	50% of the total required area (78.41 Ha) is shown on DP spatially distributed at various locations and 50% area will be implemented through TPS and through amenity space allocation.
2	Sports Complex	0	100000	8.0	5	40.00	0	5	40.00	3	24.00	2	16.00	50% of the total required are is shown on DP and the remaining 50% area will be implemented through TPS.
3	City Park	0	500000	50.0	1	52.27	0	1	50.00	1	50.00	NA	NA	City level facility shown on Development Plan (72.55 Ha). This area proposed is more than that required.
F	Transport													
1	Bus depot and ISBT	0	As per URDPFI guidelines				0	NA	20.9	5	12.75	NA	NA	The area requirement of bus depot and ISBT has been calculated based on URDPFI standards given for number of bays required per unit population. Based on this, total numbers of bays required for projected population were calculated and area required for bus terminal is arrived at considering circulation space. Out of the total required area of 20.9 Ha, 12.75 Ha is shown on DP. However, there is a deficiency of 8.15 Ha.
2	Truck terminal	2	As per local requirement				2	NA	NA	2	8.31	NA	NA	The area requirement of truck terminal is calculated based on existing local requirement and observations. Also, MSRDC has already developed two truck terminals at Sarsan and Thanenhav having area 4.5 Ha and 5.2 Ha respectively. Hence, the total requirement of truck terminals is met.
3	Parking	0	As per local requirement				0	1	3.6	19	As per requirement	NA	NA	The facility is provided as per local requirement.
G	Housing													
1	Sites for affordable Housing	0	Calculated as per Technical Group-12 report, projected population and standards by MoHUA				0	NA	30.12	3	10.04	NA	NA	As per the calculations, 30.12 Ha area is required for providing affordable housing for EWS and LIG category. Out of the total requirement of 30.12 Ha area; 1/3rd (10.04 Ha) will be developed on MSRDC land; 1/3rd (10.04 Ha) is shown on government land other than MSRDC land and remaining 1/3rd (10.04) will be provided through AR policy.

Sr. No	Name of facility	No. of existing facilities as per ELU	Adopted Norms				No of existing facilities as per norms	Reservation to be proposed		Reservation shown in DP		Reservation to be considered in TPS		Remarks
			Population served by single facility	Area/site requirement as per adopted norms (In ha)	Estimated demand by 2031 (No of sites)	Area requirement (in ha)		No of required sites	Area required (in ha)	No of required sites	Area required (in ha)	No of required sites	Area required (in ha)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
H	Physical Infrastructure facilities													
1	ESR/GSR	13	Domestic	180	150		0	24	31.1	10	As per requirement	14	As per requirement	10 ESRS/ GSRs (1per Planning unit) are shown on DP remaining will be shown through TPS and other tools
			Employment	45	45									
			Fire Fighting	100 x P^0.5	101 x P^0.5									
			Storage	50% of Demand	50% of Demand									
2	STP	0	Sewage Generation with Infiltration	80% of water demand + 20% Infiltration	80% of water demand + 20% Infiltration		0	20	15.75	3	As per requirement	16	As per requirement	3 STPs are shown in DP remaining will be shown through TPS and other tools
			Capacity of STP	50% of the sewage generated	50% of the sewage generated									
3	Land fill sites	0	Solid Waste Generation Rate of Waste Generation= 600 gpcd	40% waste for composting works and 20% waste for landfill sites	600 gpcd	40% waste for composting works and 20% waste for landfill sites	0	4	27	3	As per requirement	0	None	3 landfill sites are shown on the DP. However one sites are deficient
			Construction and Demolition Waste Rate of Waste Generation= 325 tpd		10-20% of Municipal Solid Waste									
The total number of reservations shown in DP is 144.														

Note: Number of Existing facilities as per ELU is mentioned in Column No 3 above. However, these facilities do not comply with the space norms/standards. Hence, only those existing facilities that comply with the standards are considered as existing facilities and are shown in Column No. 8.

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The details of social reservations spatially allocated in the DP in terms of type, location (survey no., village), approximate area of the land and its ownership of land are provided in the table 13-2 below.

Table 13-2.: Statement showing the list of reservations provided in Draft DP

Sr. No	Name of Reservation	Reservation No.	Abbreviation	Name of Village	Survey No/Hissa Number	Approximate Area (Ha)	Ownership of Land	Remark
1	Extention to Burial Ground / Crematorium	1	CR/BG	Shedung	121/1(P), 121/3, 130	0.27	Group Grampanchayat Bhingar	Government land
2	Extention to Burial Ground / Crematorium	2	CR/BG	Rees	50(P)	0.19	Group Grampanchayat Wasambe - Grazing Land	Government
3	Extention to Burial Ground / Crematorium	3	CR/BG	Nadhal	149(P), 150(P)	0.14	Private Land	Private land
4	Extention to Burial Ground / Crematorium	4	CR/BG	Asare	10P	0.4	Government land	Government land
5	Extention to Burial Ground / Crematorium	5	CR/BG	Dharni	2/1(P)	0.17	Grazing Land-Group Grampanchayat Chauk	Government land
6	Extention to Burial Ground / Crematorium	6	CR/BG	Dharni	2/1(P)	0.39	Grazing Land-Group Grampanchayat Chauk	Government land
7	Bus Terminal	1	BT	Khanavale	129(p)	1.61	Private land	Private land
8	Bus Terminal	2	BT	Khanavale	101(P), 102(P), 105(P),106(P)	0.89	Private land	Private land
9	Bus Terminal	3	BT	Rees	119A(P), 125(P), 127(P), 135(P)	2.64	Grazing Land-Group Grampanchayat Wasambe & Maharashtra Government	Government land
10	Bus Terminal	4	BT	Asroti	79(P), 80(P)	2.05	Private land	Private land
11	Bus Terminal	5	BT	Sarsan	15(P), 16(P)	5.56	Groupgram Panchayat Sajgaon	Government land
				Niphan	23(P), 24(P)		Private land	Private land
				Dahivati Tarf Boreti	30(P), 31(P)		Private land	Private land
12	Conventional Center	1	CC	Kopari	3(P), 8,9,11(P), 12(P), 13/1,13/2, 13/3(P), 14(P), 14/1(P), 15(P), 16/1(P), 16/4, 16/5, 16/6, 16/7, 16/8, 16/9(P), 16/10, 16/11(P), 16/12(P), 18(P), 19(P), 20(P), 21(P), 20/4(P), 22PAI(P), 22/2(P),22/3(P), 26(P)	16.83	Maharashtra State Road Development Corporation	Government land
13	Fire Station	1	FS	Barwai	76(P)	0.9	Mine	Government land
14	Fire Station	2	FS	Tembhari	51P,53P	1.05	Private land	Private land
15	Fire Station	3	FS	Savroli	93(P), 94 (P)	0.61	Maharashtra Government	Government land
16	Park	1	P	Shedung	32(P),33(P),34(P),36(P),57(P),63(P),64(P),65(P),66(P),77(P),78(P),79(P),79(P),80,81(P)	2.97	Private land	Private land
17	Park	2	P	Dahivali	102(P), 105(P), 106(P)	5.49	Government land	Government land
18	Park	3	P	Talegaon	2/1, 2/2, 2/3(P), 2/4(P), 2/5, 2/6(P), 5(P), 21/8(P), 55/1(P)	3.34	Group Grampanchayat Wasambe	Government land
19	Park	4	P	Savale	59(P), 60/2(P), 60/3, 60/4, 61(P), 71(P), 73/1, 75, 76/2(P)	1.28	Maharashtra Government	Government land
20	Park	5	P	Savale	73/5(P), 76/4(P), 76/5(P), 76/6(P), 76/7(P), 76/8(P)	0.33	Maharashtra Government	Government land
21	Park	6	P	Rees	169, 170, 171(P)	2.56	Maharashtra Government	Government land
22	Park	7	P	Rees	119A (P)	2.53	Private land	Private land
23	Park	8	P	Tembhari	15(P),19(P),35(P)	2.2	Private land	Private land
24	Park	9	P	Pali Khurd	4/3(P), 4/4(P), 7/1(P)	1.11	Private land	Private land
25	Park	10	P	Vayal	31(P), 7D/7(P), 7D/8(P), 7D/9(P)	7.16	Private land	Private land
			P	Tembhari	80(P), 81(P), 82(P), 83(P), 84(P), 85(P)		Government	Government land
26	Park	11	P	Kopari	25/1, 25/2(P), 26(P), 32(P), 33/1(P)	8.79	Private/Government land	Private/Government land
27	Park	12	P	Madap	72(P), 73(P)	4.96	Group Gram Panchayat Mazgaon	Government land
28	Park	13	P	Savroli	56, 57(P), 66(P)	4.24	Maharashtra State Road Development Corporation	Government land
29	Park	14	P	Dhamani	33(P), 34(P), 35(P), 36(P), 42(P), 44(P)	6.56	Private land	Private land
30	Park	15	P	Hal Khurd	46(P)	1.9	Group Grampanchayat	Government land
31	Park	16	P	Thanenhav	18(P), 21(P), 22(P)	2.46	Group Gram Panchayat	Government land
32	General Hospital	1	GH	Savale	59(P),73/2(P),73/4(P),73/6(P)	0.53	Maharashtra Government	Government land

Sr. No	Name of Reservation	Reservation No.	Abbreviation	Name of Village	Survey No/Hissa Number	Approximate Area (Ha)	Ownership of Land	Remark
33	General Hospital	2	GH	Ambivali Tarf Wankhal	10P	0.59	Maharashtra Government	Government land
34	General Hospital	3	GH	Dahivati Tarf Boreti	23P	0.8	Mine	Government land
35	Library	1	CL	Kambe	25(P), 27(P), 28(P), 29(P), 35(P), 38(P), 42(P), 92(P)	1.66	Private land	Private land
36	Public Housing Scheme	1	PHGS	Rees	6(P), 7(P), 77(P), 81(P)	3.68	Maharashtra Government	Government land
37	Public Housing Scheme	2	PHGS	Tupgaon	172(P),179(P)	3.08	Private land	Private land
38	Public Housing Scheme	3	PHGS	Dahivati Tarf Boreti	23(P), 24, 25(P)	3.46	Government	Government land
39	PHC	1	PHC	Giravale	107(P),109(P),121(P)	0.15	Private land	Private land
40	PHC	2	PHC	Bhatan	15/4(P), 15/5(P), 16/1(P), 16/2(P)	0.39	Aakari Pad	Government land
41	PHC	3	PHC	Rees	81P	0.23	Maharashtra Government	Government land
42	PHC	4	PHC	Lodhiwali	54(P)	0.39	Private land	Private land
43	PHC	5	PHC	Kharsundi	5(P)	0.16	Maharashtra Government	Government land
44	PHC	6	PHC	Hal Khurd	35(P)	0.32	Maharashtra Government	Government land
45	PHC	7	PHC	Sarsan	2(P)	0.26	Government land	Government land
46	PHC	8	PHC	Thanenhav	1P	0.4	Grazing Land- Group Gram Panchayat	Government land
47	PHC	9	PHC	Chinchvali Gohe	2(P)	0.17	Maharashtra Government	Government land
48	Play Ground	1	PG	Rees	68(P), 69, 70(P), 71(P), 75(P), 76(P), 81(P)	0.86	Maharashtra State Road Development Corporation	Government land
49	Play Ground	2	PG	Rees	7(P), 8(P), 9(P)	1.13	Private land	Private land
50	Play Ground	3		LODHIWALI	54(P), 79(P), 80(P), 80PAI(P)	2.68	Private land	Private land
51	Play Ground	4	PG	Rees	132, 133(P), 134(P), 138(P), 139(P), 142(P), 143(P)	1.65	Private land	Private land
52	Play Ground	5	PG	Kambe	26(P), 27(P), 91(P), 92(P), 93(P), 94, 96(P) , 98(P), 100(P), 101, 102(P), 103(P), 124	2.9	Private land	Private land
53	Play Ground	6	PG	Tembhari	30(P),31(P),32(P),34(P),35(P)	3.02	Private land	Private land
54	Play Ground	7	PG	Vavandal	85(P)	1.59	Private land	Private land
55	Play Ground	8	PG	Dharni	10(P), 13(P), 14/2(P), 15(P)	1.88	Group Grampanchayat Chauk Grazing Land	Government land
56	Play Ground	9	PG	Ambivali Tarf Wankhal	9(P), 10(P)	0.34	Maharashtra Government	Government land
57	Play Ground	10	PG	Kharsundi	5(P)	0.51	Maharashtra Government	Government land
58	Play Ground	11	PG	Dhamani	2(P), 3(P)	1.07	Private land	Private land
59	Play Ground	12	PG	Devnhav	3(P)	0.67	Private land	Private land
60	School & Play Ground	1	S&PG	Shedung	114/1(P), 114/2(P), 115P	1	Private land	Private land
61	School & Play Ground	2	S&PG	Giravale	47(P),48(P),62(P),67(P),69(P)	1.08	Private land	Private land
62	School & Play Ground	3	S&PG	Bhatan	8(P)	1.03	Aakari Pad	Government land
63	School & Play Ground	4	S&PG	Somtane	126,127(P),128(P), 186(P),114(P), Gaothan(P)	1.02	Group Grampanchayat Somatane	Government land
64	School & Play Ground	5	S&PG	Bhatan	65/1(P), 65/2, 65/3(P),65/4(P),65/5(P), 72/2(P),72/4(P), 79/4(P)	0.98	Janardhan Govind Gharat	Government land
65	School & Play Ground	6	S&PG	Talegaon	40/2(P), 40/3(P), 40/4(P), 40/5(P), 40/9(P), 40/10, 40/11(P), 40/13(P), 40/6(P)	1.08	Private land	Private land
66	School & Play Ground	7	S&PG	Savale	59(P), 73/2(P), 73/4(P), 73/5(P),73/6(P),76/2(P), 76/3(P),76/4(P),76/5(P),76/6(P)	1.08	Maharashtra Government	Government land
67	School & Play Ground	8	S&PG	Wasambe	75P	0.92	Group Gram Panchayat Wasambe	Government land
68	School & Play Ground	9	S&PG	Rees	6P,7P,8P,81P	1.19	Private land	Private land
69	School & Play Ground	10	S&PG	Rees	99P,104P,105P,106P,112(P)	1.11	Private land	Private land
70	School & Play Ground	11	S&PG	Kambe	28(P), 38(P),41(P), 42(P), 43(P), 45(p), 90(P), 91(P), 92(P), 122(P)	1.61	Private land	Private land
71	School & Play Ground	12	S&PG	LODHIWALI	50(P), 51(P), 54(P)	0.97	Private land	Private land

Sr. No	Name of Reservation	Reservation No.	Abbreviation	Name of Village	Survey No/Hissa Number	Approximate Area (Ha)	Ownership of Land	Remark
72	School & Play Ground	13	S&PG	Tupgaon	111/11(P), 137P	1.01	Grazing Land-Grampanchayat Chowk	Government land
73	School & Play Ground	14	S&PG	Jambhivali Tarf Boreti	48(P), 64(P),65(P),66/1(P),66/2(P),68P	0.81	Maharashtra Government	Government land
74	School & Play Ground	15	S&PG	Vavandal	86(P),85(P)	1.19	Private land	Private land
75	School & Play Ground	16	SPG	Kopari	16/1(P), 54/2(P),54/3(P),63P	0.9	Private land	Private land
76	School & Play Ground	17	SPG	Dharni	10(P),13(P),14/2(P),14/4(P),14/6(P),15P	1.41	Group Grampanchayat Chauk Grazing Land	Government land
77	School & Play Ground	18	SPG	Ambivali Tarf Wankhal	10P	1	Maharashtra Government	Government land
78	School & Play Ground	19	SPG	Kharsundi	5(P),22(P), 23(P)	1.05	Maharashtra Government	Government land
79	School & Play Ground	20	SPG	Dhamani	1P	1	Private land	Private land
80	School & Play Ground	21	SPG	Hal Khurd	49P	0.96	Private land	Private land
81	School & Play Ground	22	SPG	Devnhave	3P	1.05	Private land	Private land
82	School & Play Ground	23	SPG	Chinchvali Gohe	2P	1	Maharashtra Government	Government land
83	City Park	1	CP	Dharni	5	72.55	Private land	Private land
				Asroti	21(P), 22(P), 23, 24, 31, 33, 34, 35, 36, 37(P), 38, 39, 40(P),41(P),42(P),44(P),45,46,47,48,49,50,51,52(P),53,54(P),55(P),61(P),86		Private land	Private land
				Asare	17, 18, 19, 20, 21(P) ,22		Private/Government land	Private/Government land
84	Super Speciality Hospital	1	SSH	Savroli	74(P),82(P),83(P),84(P),91(P)	3.01	Private land	Private land
85	Truck Terminal	1	TT	Dahivali	23(P), 25(P), 26(P), 71(P), 72, 73, 74(P), 75(P), 76(P), 77(P), 81P, (two plots for which Survey number missing)	4.31	Private land	Private land
				Narpoli	77/2 (P), 78(P), 80(P)		Private land	Private land
86	Truck Terminal	2	TT	Dapivali	42, 43, 44, 45/1(P), 45/3(P), 45/5	4	Maharashtra Government	Government land
87	STP	1	STP	Ajivali	50(P), 51, 52, 53 54(P), 55(P), 56(P), 58/1(P), 59(P), 60/1(P)	2.26	Group Grampanchayat Kon	Government land
88	STP	2	STP	Vavandal	68A (P)	0.49	Private land	Private land
89	STP	3	STP	Washivali	28E-(P)(53/2(P),53/3(P), 53/4(P)), 55(P)	2.15	Private land	Private land
90	LFS	1	LFS	Asare	100(P), 101(P), 102(P), 103(P)	6.09	Private land	Private land
91	LFS	2	LFS	Mandad Atkargaon	155(P),157(P),163(P),164(P),165(P),166(P)	1.39	Private land	Private land
92	LFS	2	LFS	Mandad Atkargaon	93(P), 99(P), 100(P), 101(P), 103(P), 104, 105, 106, 107(P), 108(P), 109(P),117(P),118(P),119(P), 125(P), 129(P), 130(P), 131, 132,133, 134, 135(P), 137(P), 138, 139, 140(P), 149(P), 150, 151,152, 153(P), 154(p), 156(P), 163(P), 164(P), 165(P),	8.48	Private land	Private land
93	GSR/ESR	1	GSR	Bhatan	13/3(P), 13/4(P), 13/5, 14(P), 15/1(P), 15/4(p), 15/5(P), 16/1(P), 16/2, 22(P)	3.04	Government land	Government land
94	GSR/ESR	2	GSR	Dahivali	90(P), 91(P)	0.46	Private land	Private land
95	GSR/ESR	3	GSR	Barwai	84(P), 85(P), 86(P), 87(P)	2.23	Private land	Private land
96	GSR/ESR	4	GSR	Tupgaon	146(P)	0.71	Private land	Private land
97	GSR/ESR	5	GSR	Vavandal	84(P)	0.51	Government land	Government land
98	GSR/ESR	6	GSR	Washivali	24/11, 24/12	0.65	Government land	Government land
99	GSR/ESR	7	GSR	Madap	97(P)	0.1	Private land	Private land
100	GSR/ESR	8	GSR	Khursundi	33(P)	3.36	Government land	Government land
101	GSR/ESR	9	GSR	Tambati	10(P), 13(P), 144(P)	3.49	Private land	Private land
102	GSR/ESR	10	GSR	Devnhave	45(P)	1.86	Government land	Government land
103	Multi Purpose Hall	1	MPH	Ajivali	21(P), 31, 32(P), 30(P), 81(P), 33(P)	1.15	Private land	Private land
104	Multi Purpose Hall	2	MPH	Sarang	8(p), 9(p)	1.03	Private land	Private land
105	Police Station	1	PS	Shedung	4(P)	0.32	Private land	Private land

Sr. No	Name of Reservation	Reservation No.	Abbreviation	Name of Village	Survey No/Hissa Number	Approximate Area (Ha)	Ownership of Land	Remark
106	Police Station	2	PS	Ambivali Tarf Tungartan	11(p)	0.16		
107	Police Station	3	PS	Asroti	1(P), 82(P), 84(P)	1.19	Private land	Private land
				Tembhari	29(P), 30(P)		Private land	Private land
108	Police Station	4	PS	Chouk Manivali	Gaothan Area	0.16	Private land	Private land
109	Police Station	5	pPS	Hal-khurd	35(P)	0.16	Government land	Government land
110	Zonal Office	1	ZO	Ajivali	143(P)	0.26	Private land	Private land
111	Zonal Office	2	ZO	Khanavale	81(p), 82(P), 83(P), 63(P)	0.79	Private land	Private land
112	Zonal Office	3	ZO	Sawale	76(P),77(P)	0.3	Government land	Government land
113	Zonal Office	4	ZO	Rees	135(P)	1.2	Government land	Government land
114	Zonal Office	5	ZO	Lohop	14(P), 16(P), 15(P)	1.05	Private land	Private land
				Vanivali	41(P)		Private land	Private land
115	Zonal Office	7	ZO	Kumbhivali	73(P), 27(P)	1.33	Private land	Private land
116	Zonal Office	6	ZO	Majgoan	2(P), 3(P)	1.33	Government land	Government land
117	Zonal Office	8	ZO	Savroli	93 (P), 36(P), 38(P), 35(P)	1.21	Government land	Government land
118	Zonal Office	9	ZO	Hal Khurd	35(p)	0.73	Government land	Government land
119	Zonal Office	10	ZO	Thanenhav	4(P)	1	Government land	Government land
120	Parking	1	Parking	Arivali	84(P)	0.18	Private land	Private land
121	Parking	2	Parking	Ajivali	110(P), 137(P)	0.41	Private land	Private land
122	Parking	3	Parking	Khanavle	129(P)	0.34	Private land	Private land
123	Parking	4	Parking	Khanavle	129(P)	0.18	Private land	Private land
124	Parking	5	Parking	Bhatan	153/1(p), 153(2), 153(3), 154(p), 155(p)	0.33	Private land	Private land
125	Parking	6	Parking	Khanavle	24(P),25(P),26(P),29(P)	0.59	Private land	Private land
126	Parking	7	Parking	Talegoan	33(P)	0.97	Private land	Private land
127	Parking	8	Parking	Ambivali tarf Tungartan	71(p)	0.31	Private land	Private land
128	Parking	9	Parking	Rees	99(P), 86(P)	0.55	Private land	Private land
129	Parking	10	Parking	Rees	134(P), 136, 137(P), 135(P)	1.77	Private land	Private land
130	Parking	11	Parking	Lodhivali	48(P), 51(P), 52 (P)	0.52	Private land	Private land
131	Parking	12	Parking	Nadhal	4(p), 7(p)	0.57	Private land	Private land
132	Parking	13	Parking	Vayal	7D/7, 32(P), 34(P)	0.42	Private land	Private land
133	Parking	14	Parking	Asroti	6(P)	0.89	Private land	Private land
134	Parking	15	Parking	Asroti	42(P), 43(P), 61(P), 60(P), 44(P)	2.95	Private land	Private land
135	Parking	16	Parking	Lohop	41(p)	0.51	Private land	Private land
136	Parking	17	Parking	Kumbhivali	62, 63, 64(P)	3.74	Maharashtra State Road Development Corporation	Government land
137	Parking	18	Parking	Savroli	82(p), 83(p), 84a(p), 91(p)	1.02	Private land	Private land
138	Parking	19	Parking	Thanenhav	4(p)	0.77	Government land	Government land
139	Sport Complex	1	SPC	REES	99(p), 102(P), 103, 105(P), 106(P)	3.18	Private land	Private land
140	Sport Complex	2	SPC	Asroti	27(P), 28, 29, 30	4.56	Private land	Private land
141	Sport Complex	3	SPC	Washivali	35(p), 36(p), 38, 39, 40, 41, 42, 43(p)	18.70	Private land	Private Land
142	Women Empowerment Centre	1	WEC	Asroti	52/5(p), 56(p), 57(p)	2.29	Private land	Private land
143	Old Age Home	1	OAH	Khanavale	116(p)	0.61	Private land	Private land
144	Old Age Home	2	OAH	Savroli	64(p), 66(p), 68(p), 69(p),	1.0	Private land	Private Land

Sr. No	Name of Reservation	Reservation No.	Abbreviation	Name of Village	Survey No/Hissa Number	Approximate Area (Ha)	Ownership of Land	Remark
List of facilities suggested by the board of directors								
145	Incubation Hub	1	PSP	Arivali	123(P), 124(P), 126, 125(P), 163(P), 165(P), 166(P), 167(P), 168(P), 169(P), 170(P)	0.73	Private land	Private land
146	Village Empowerment	2	PSP	Ashte	37(P), 38(P), 39(P), 48(P)	0.87	Private land	Private land
147	Institute of Skill Development	3	PSP	Shedung	92(P)	3.63	Private land	Private land
148	Ayurvedic Research Centre, College & Hospital	4	PSP	Shedung	73, 74, 75, 76, 77, 78, 79, 80, 81, 92, 93	5.95	Private land	Private land
149	Ayurvedic Research Centre & College (Herbal Plantation Area)	5	PSP	Ashte	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25	73.16	Private land	Private land
				Kasal Khand	75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110		Private land	Private land
				Khanavale	114		Private land	Private land
				Shedung	92, 93, 95		Private land	Private land
150	Watch Tower	6	PSP	Bhatan	62	0.16	Private land	Private land
151	Bird's Sanctuary	7	PSP	Nadhal	43(P), 44, 45, 46(P), 51(P), 52(P), 53(P), 58(P), 60, 61, 81(P)	19.40	Private land	Private land
152	Biodiversity Park	8	PSP	Nadhal	41(P), 42(P), 43(P), 46(P), 47(P), 48(P), 50(P), 51(P), 52(P), 81(P)	13.84	Private land	Private land
153	Community Hub	9	PSP	Tupgaon	111(P), 129(P), 130(P), 131(P)	4.18	Government/ Private land	Government/ Private land
154	National Integration Centre	10	PSP	Pali Khurd	4(P), 7(P), NA	11.15	Private land	Private land
				Sarang	10(P), 11(P)		Private land	Private land
155	Integrated Government Office	11	PSP	Lodhivali	58(P), 66(P)	11.05	Private land	Private land
				Tembhari	15(P), 16(P), 19(P), 20(P)		Government/Private land	Government/Private land
				Vayal	15(P)		Private land	Private land
156	Educational Hub	12	PSP	Tembhari	14 PAI(P), 16(P), 17(P), 18, 19(P), 20(P), 21(P), 22(P), 23(P), 24, 25, 26, 27A(P), 29(P), 35(P), 37(P), 40(P), 41(P), 42(P), 43(P)	23.95	Private land	Private land
157	Water Park	13	PSP	Kharsundi	NA	6.99	Private land	Private land
				Vat	105(P), 106(P), 107(P), 113(P), 115(P), 116(P), 122(P), 123(P), 124(P), 125(P), 126(P), 127, 128(P), 129(P), 130, 131, 132, 134(P), 135(P), 136(P), 137(P), 138, 139, 140, 141(P), 142(P), 143(P), 154(P), NA		Private land	Private land
158	Snow World	14	PSP	Kharsundi	NA	12.61	Government/Private land	Government/Private land
				Vat	River(P), 63(P), 65(P), 66, 67, 68(P), 69(P), 70, 71, 72, 73, 74, 75, 76, 77, 78, 79(P), 80(P), 81, 82(P), 83(P), 84(P), 85, 86, 87, 88, 89, 90, 91(P), 92(P), 110(P), 111, 112, 113(P), 114(P), 116(P), 117(P), 118, 119(P), 121(P)		Private land	Private land
159	Site Reserved For Water Conservation & Waterfront Development	15	PSP	Vayal	7D(P), 7E(P), 31(P), 34(P), 35, 37(P)	14.42	Private land	Private land
160	Ecological Research Centre	16	PSP	Lohop	24(P), 26(P), 28(P)	2.78	Private land	Private land
161	Planetarium Science Centre	17	PSP	Kharsundi	NA, 26(P), 29(P), 32(P), 33(P), 41(P), 43(P), 44(P), 45(P), 46(P), 47(P)	13.43	Government/ Private land	Government/ Private land
162	Auditorium	18	PSP	Dhamani	59(P), 60(P), 62(P)	3.64	Private land	Private land
163	Rest House	19	PSP	Tambati	13(P), 14(P)	2.66	Private land	Private land

Note: The boundaries and areas of reservations shown in the above table are approximate. The correct area and boundaries shall be considered as per the authenticated measurement plan.

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महाराष्ट्र शासन

जा.क्र. टीपीएस-१८१५/अनौसं/७८/१५/नवि-१३

नगर विकास विभाग, मंत्रालय, मुंबई-३२

दिनांक : १८/०३/२०१६.

प्रति,

✓ मा. सह व्यवस्थापकीय संचालक,
महाराष्ट्र राज्य रस्ते विकास महामंडळ,
वांद्रे, (प.) मुंबई.

विषय:- मुंबई-पुणे द्रुतगती मार्ग व राष्ट्रीय महामार्ग क्र.४ लगतचे क्षेत्राकरिता
महाराष्ट्र राज्य रस्ते विकास महामंडळास विशेष नियोजन प्राधिकरण
(Special Planning Authority) म्हणून नेमणूक करणेबाबत.

संदर्भ:- शासन अधिसूचना क्र. टीपीएस-१८१५/अनौसं/७८/१५/नवि-१३,
दि.१७/०२/२०१६ व समक्रमांकाचे पुरक पत्र दि.१८/०३/२०१६.

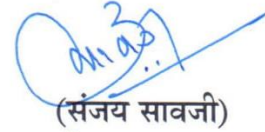
महोदय,

मुंबई-पुणे द्रुतगती मार्ग व राष्ट्रीय महामार्ग क्र.४ लगतचे क्षेत्राकरिता महाराष्ट्र राज्य रस्ते विकास महामंडळास विशेष नियोजन प्राधिकरण (Special Planning Authority) म्हणून नेमणूक करणेबाबतची अधिसूचना संदर्भित शासन निर्णयान्वये निर्गमित केलेली आहे. तत्पुर्वी सदर क्षेत्र NAINA या अधिसूचित क्षेत्रामध्ये समाविष्ट होते व त्याकरीता CIDCO विशेष नियोजन प्राधिकरण होते. या क्षेत्रातील नियोजन विषयक प्रस्ताव व विकास कामा संबंधी खालील प्रमाणे कार्यवाही करण्यास आपणास कळविण्याचे मला आदेश आहेत.

- ०१) उक्त अधिसूचना निर्गमीत होण्यापूर्वी सिडकोने उक्त क्षेत्रामध्ये काही विशेष नगर वसाहतींना परवानगी देण्याची कार्यवाही सुरु केली आहे. यासंदर्भात कळविण्यात येते की, या क्षेत्रामध्ये दाखल असलेल्या काही विशेष नगर वसाहतींच्या प्रकल्पांच्या बृहत आराखड्यांची मंजूरी / बांधकाम नकाशाची मंजूरी तुर्त पुर्वीच्या विशेष नियोजन प्राधिकरणाने म्हणजे CIDCO ने देण्याची कार्यवाही करावी.
- ०२) विशेष नियोजन प्राधिकरणाने नियोजन प्रस्ताव व विकास नियंत्रण नियमावली अधिसूचना निर्गमित झाल्यापासून एका वर्षात किंवा शासनाने वाढवून दिलेल्या कालावधीत तयार करावे. नियोजन प्रस्ताव व विकास नियंत्रण नियमावली होईपर्यंत सध्याचे अस्तित्वातील प्रस्ताव व विकास नियंत्रण नियमावली लागू राहिल.
- ०३) CIDCO ने IDP-II साठी नियोजनात्मक जे धोरण राबवून काम केले आहे तेच काम पायाभूत समजून नियोजनाचे पुढचे काम पूर्ण करावे.

- ०४) विशेष नियोजन प्राधिकरणाच्या समितीमध्ये नियोजन / विकास विषयक प्रस्ताव व त्या अनुषंगाने सल्ला देण्यासाठी संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे व व्यवस्थापकीय संचालक, सिडको हे स्वतः किंवा त्यांनी प्राधिकृत केलेल्या अधिकाऱ्याचा समावेश करावा.
- ०५) विशेष नियोजन प्राधिकरणाकडे जमा होणा-या शुल्कां पैकी ५०% हिस्सा शासनाकडे जमा करणे आवश्यक राहिल.
- ०६) प्रस्तावित क्षेत्रासाठी विशेष नियोजन प्राधिकरण घोषित केल्यामुळे शासनाकडून कोणताही निधी उपलब्ध करून देण्यात येणार नाही.

आपला,



(संजय सावजी)

अवर सचिव, महाराष्ट्र शासन

प्रत माहिती व कार्यवाही करीता:

- १) मा. व्यवस्थापकीय संचालक, सिडको. यांना माहिती करीता व उक्त पत्रातील अनुषंगीक मुद्याच्या अनुषंगाने कार्यवाही करीता सादर.
- २) मा.संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे यांना माहिती व कार्यवाही करीता.

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14 HOUSING

Draft Maharashtra State Housing Policy 2015 identifies creation of land bank for affordable housing as one of the key strategies to improve housing stock in the state. Affordable housing refers to housing units that are affordable by that section of society whose income is below the median household income. Thus, affordable housing should address the housing needs of the households belonging to economically weaker sections and lower income group. Disposable income of the people remains the primary factor in determining the affordability. As a result, it becomes the increased responsibility of the government to cater to the rising demand for affordable housing. Therefore, the issue of providing affordable housing has been addressed while preparing the Development Plan for MSRDC SPA area.

As the underlying aim of the Development Plan for MSRDC SPA area is to develop a self-sustained city providing employment opportunities, the area will be expecting an inflow of population due to various economic opportunities. This will in turn result in increase in demand for housing units. It becomes important to take into consideration this demand, especially from economically weaker sections of the society and provide suitable housing options for them. Thus, provision of affordable housing becomes an important part in development plan proposal.

For better understanding, the demand of housing in project area, the existing housing condition and the need of housing for projected population has been analyzed. Based on the analysis, the numbers of houses required for horizon year 2031 have been computed. The total housing demand for year 2031 is for 95,631 houses. The details of calculation are given in Table 14-1.

Table 14-1: Estimated housing demand – 2031

Estimated Housing Demand for 2031	
Existing Population of 2011	1,01,175
Projected population for 2031	522700
Increase in population by 2031	421525
HH Size	4.44
No. of Tenements Required (a)	94938
Number of HH living in Dilapidated houses (b)	504

Estimated Housing Demand for 2031	
Number of HH living in non-serviceable houses (c)	189
Existing housing shortage (b) + (c)	693
Housing Demand for 2031 (a) + (b) + (c)	95631

Source: Census of India- 2011

Out of the total housing demand for the year 2031, about 25% is assumed to be provided through affordable housing units i.e. 23908 units and market forces are assumed to cater the remaining 75% demand. This 25% demand for affordable housing is proposed to meet with as per following provision:

- Units to be provided under inclusive housing through DCPR provision - 20% = 4782
- Units to be provided through TP scheme (Section 64) - 10% = 2391

Hence, the total remaining number of units to be provided through affordable housing is 16735 units. These units will cater to the affordable housing need of EWS and LIG category. Out of the total required units to be provided under affordable housing, 50% will be provided for EWS category and 50% will be provided for LIG category. As per PMAY norms, an EWS unit should have carpet area upto 30 sq.m and LIG unit should have carpet area upto 60 sq.m. Based on this, area requirement for affordable housing units is computed. The Distribution of Housing Units is shown in Table 14-2.

Table 14-2: Housing unit distribution

Category	Income per annum	Percentage	No. Of units	Size of DU	Total BUA (sq. m.)	Plot area (sq. m.)
EWS	Upto 3 lakh	50	8368	30	251031.71	100412.69
LIG	3 - 6 lakh	50	8368	60	502063.43	200825.37
Total		100	16735		753095.14	301238.06 (30.12 Ha)

The requirements of these 16735 units have been fulfilled by showing affordable housing reservations on Development Plan. The plot area required for construction of these units is shown as Public Housing reservations on Development Plan. As far as possible, these reservations are proposed on government or MSRDC land parcels to ensure speedy development of Affordable Housing projects. In addition, proximity to existing settlement, transport connectivity and basic amenities have been considered while demarcating the sites for public housing. The rationale for these reservations is as follows:

Out of the total requirement of 30.12 Ha for affordable housing;

- 1/3rd area will be provided by showing reservation on government land (in Ha) – 10.04
- 1/3rd area will be provided by showing reservation on MSRDC land (in Ha) – 10.04
- 1/3rd area will be developed through AR policy (in Ha) – 10.04

15 PHYSICAL INFRASTRUCTURE AND TRANSPORTATION

15.1 PHYSICAL INFRASTRUCTURE

15.1.1 WATER DEMAND

From the existing situation analysis, it has been observed that there is a small gap between demand and supply for the existing population. Therefore, the future water demand will have to take into account only the water demand of the incumbent population. However, for working out the total water demand for the horizon year 2031 and 2041 the existing population has been merged.

Based upon the existing and proposed residential, commercial (employment), horticulture and firefighting demand, the gross water demand for the SPA Area is estimated as follows.

Two scenarios are considered for calculating the water demand

- Without the usage of treated/recycled water.
- With the usage of treated/recycled water

Recycled/treated water is recommended for catering the water requirement on account of Urban Greens, Fire-fighting, Industries and Flushing purpose in domestic supply. For working out Fresh Water demand at consumer end, the quantity of Recycled Water from Tertiary Treatment plant after subtracting the losses in the supply has been deducted from the Total demand at source.

For estimating gross water demands, 28% losses in distribution and transmission system has been considered as per the prevailing practices adopted in CIDCO and NAINA area.

Table 15-1: Estimation of water demand without usage of recycle water- horizon year 2021, 2031& 2041

Particulars of users	Population / Area in Ha			Rate of Supply in lpcd	Water Demand in mld		
	2021	2031	2041		2021	2031	2041
Residential Population	156094	522760	1148205	150	23.41	78.41	172.23
Employment Population	60877	203877	447800	45	2.74	9.17	20.15
Fire fighting	(Provision in kl/day of $100*\sqrt{P}$ $1000*100*\sqrt{P}/1000000$)				1.25	2.29	3.39
Urban Greens area in Ha	47	340	906	52200	2.45	17.75	47.29
Industries area in Ha	616	1010	1596	15000	9.24	15.15	27.13
Public / Semi Public Utilities area in Ha	284	494	725	45000	12.78	22.23	36.27
Total					51.87	145	303.27
Distribution, Treatment & Transmission losses 28%					14.52	40.6	84.92
Total Demand at source without recycling					66.39	185.6	388.19

Table 15-2: Estimation of water demand with usage of recycle water- horizon year 2021, 2031 and 2041

Particulars of users	Population / Area in Ha			Rate of Supply in lpcd	Water Demand in mld		
	2021	2031	2041		2021	2031	2041
Residential Population	156094	522760	1148205	150	23.41	78.41	172.23
Employment Population	60877	203877	447800	45	2.74	9.17	20.15
Fire fighting					1.25	2.29	3.39
Urban Greens area in Ha	47	340	706	52200	2.45	17.75	47.29
Industries area in Ha	616	1010	1596	15000	9.24	15.15	23.94
Public / Semi Public Utilities area in Ha	284	494	806	45000	12.78	22.23	36.27
Total					51.87	145	303.27
Distribution, Treatment & Transmission losses 28%					14.52	40.6	84.92
Total Demand without the usage of recycled water.					66.39	185.6	388.19
Usage of Recycled Water for Urban Green, Industries , Firefighting and Flushing					19.96	58.714	126.29
Net Fresh Water demand					46.43	126.88	261.90
Total Water demand with recycling water usage					46.43	126.88	261.90
Total Demand at source without recycling					66.39	185.6	388.19

From the above table it is clear that the water demand for the proposed area without the usage of recycled water is 388 MLD for the year 2041 and 262 MLD respectively with usage of recycled water. It is recommended that the water demand computed considering reuse of recycled water i.e. 262 MLD for the year 2041 to be adopted. Therefore, for meeting this demand suitable provision for the supply of the requirement for 2031 and 2041 will have to be made.

Water demand for the Year 2041 is also calculated planning unit wise based on the different land use category and worked out as follows:

Table 15-3: Planning unit wise estimation of water demand and storage requirement- horizon year 2041

Sr.No	Zone	Zone Area (In Hectare)	Population	Water Demand (In MLD)	Storage Requirement (In MLD)
1	PU 1	2040.12	364182	73.6	36.8
2	PU 2	1491.98	17283	7.63	3.815
3	PU 3	1057.27	12042	14.32	7.16
4	PU 4	1548.93	13110	11.44	5.72
5	PU 5	1121.94	192546	46.54	23.27
6	PU 6	1241.88	246243	49.7	24.85
7	PU 7	2772.15	33732	20.6	10.3
8	PU 8	847.36	42627	16.92	8.46
9	PU 9	2485.55	120657	29.35	14.675
10	PU 10	3800.54	104847	28.02	14.01
TOTAL		18407.72	1147269	298.12	149.06

From Table 15-3 the water demand works out to be 298.12 MLD for the horizon year 2041.

Hence, the Total Water Demand for the year 2041 is to be taken as 298.12 MLD and the storage requirement for meeting this estimated demand is 149.06 MLD.

For meeting the water requirement for the horizon year 2041, a proper source is to be identified. For the purpose of this the capacity and also the supply position of various reservoirs around the project site are studied. The details of the potential sources and their capacity are as follows:

Table 15-4: Sources of water around project area and their capacity

Sr. No.	Source	Capacity (In MLD)	Present Supply (In MLD)	Supply to
1	Hetawane (CIDCO)	350	150	Enroute villages (about 39 MLD) Donagiri, Ulwe & Kharghar (96 MLD) Dighode MIDC -7, MJP -8
2	Morbe (NMMC)	450	420	Kamothe 35 MLD + NMMC area 360 MLD +25MLD MJP
3	Pataganga (MJP)	115	115	
4	Barvi (MIDC)	770	296	
5	Balganga	350	0	Works stopped Presently due to litigation
6	Kondhane	250	0	Recently handed over by GOM to CIDCO for development.
TOTAL		2285	981	

From the above table, it is observed that in order to meet the daily demand of 298.12 MLD, availability from Balganga, Morbe and Kondhane may have to be considered. Suitable arrangements will have to be entered into with the Authorities controlling the reservoirs in order to secure the supply on a long-term basis. Patalganga as a source may also be examined. However due to pollution and limited capacity the same cannot be considered as a major source.

15.1.2 SANITATION AND DRAINAGE

The Sewage Generation upto the year 2041 have been computed by assuming 80% of water demand. The planning unit wise sewage generation is shown in the table 15-5 below.

Table 15-5: Estimation of sewage generation and capacities of STP- horizon year 2041

Zone	Zone Area (In hectare)	Population	Sewage Generation (in MLD)	Sewage Generation with Infiltration (in MLD)	Capacity of STP
PU 1	2040.12	364182	58.88	70.66	35.33
PU 2	1491.98	17283	6.10	7.32	3.66
PU 3	1057.27	12042	11.46	13.75	6.87
PU 4	1548.93	13110	9.15	10.98	5.49
PU 5	1121.94	192546	37.23	44.68	22.34
PU 6	1241.88	246243	39.76	47.71	23.86
PU 7	2772.15	33732	16.48	19.78	9.89
PU 8	847.36	42627	13.54	16.24	8.12
PU 9	2485.55	120657	23.48	28.18	14.09
PU 10	3800.54	104847	22.42	26.90	13.45
Total	18407.72	11472.69	238.50	286.20	143.10

From the existing situation analysis, it is seen that there is no proper sewerage network in the entire SPA Area. Therefore, to meet the daily requirement of 286.20MLD by the year 2041 a suitable sewerage and drainage network will have to be planned, which shall include sewerage network including STPs and network for storm water drainage.

15.1.3 SOLID WASTE MANAGEMENT

There is a table absence of solid waste management within the project area as per the existing situation assessment. Therefore, there is need for putting in place a proper garbage collection and disposal system for the horizon year 2031 and 2041 including the existing settlement.

Estimation of Solid Waste Generation

Municipal Solid Waste: The population projections made in this report and as per, per capita waste generation rate (of 600 gm per capita for resident population as per CPHEEO manual on SWM) are used for estimating future waste generation. The rate of waste generation throughout the horizon year of 2021-2041 is considered uniform i.e. 600 gm per capita per day.

Table 15-6: Projected quantity of solid waste generation

Sr. No.	Particulars/years	2021	2031	2041
1	Projected population	1,56,094	5,22,760	11,48,205
2	Solid waste generation (TPD)	94	314	689
3	Construction and Demolition Waste (TPD)	19	63	138

As per the Projections, the total population in the year 2041 will be 11.48 lakhs hence the quantity of waste generation will be around 689 tons per day.

Construction and Demolition Waste

This waste is usually part of MSW, however given the nature and quantity of such waste it is estimated as a separate head. There are no fixed standards for estimating C & D waste; the Handbook on Technologies for Solid Waste Management, GoM, 2016 suggests that 10-20% of MSW is usually C & D waste.

Land Required For Disposal Site

Area requirement for the composting and land fill sites is assessed for the horizon year 2041. At 689 tons per day total waste, the (40%) waste for composting works out to 276 tons per day and that for the land filling is 606 tons (including 20% compost rejects and C&D wastes) by the design years. The design capacities have therefore been considered as 276 tpd for composting and 606 tons per day for land-filling. These area calculations form the basis for identifying the new disposal site or assessing the adequacy of the proposed composting site. Summary of land required for disposal site is given in following Table 15-7 below.

Table 15-7: Calculation for requirement of land for composting – year 2031

Calculation of land required for composting - Year 2031			
Sr.No.	Description	Quantity	Unit
1	Trench dimensions		
a	length	90	m
b	width	2	m
c	depth	1.5	m
d	spacing	1	m
2	Total Area for 1 Trench	180	m ²
3	Capacity of 1 Trench	270	m ³
4	Volume of compost per day	203	m ³
5	No of Trench for 1 day	1.0	No
6	No of Trench for 21 day	21	No
7	Area requirement of Trench for 21 day	3780.0	m ²
8	Area of One Standby Trench	3780.0	m ²
9	Total Land Area Requirement	7560.0	m ²

Table 15-8: Summary of land required for disposal site –year 2031

Sr.no.	Calculation of Landfill area requirement	Quantification	Unit
1	MSRDC SPA Population in 2031	522760	Persons
2	Waste Generation in 2031 @0.6 Kg per capita per day	314	tpd
3	Total waste	314	tpd
4	Organic Waste @40% of Total Waste	126	tpd
5	Area requirement of Landfill site		
a	Waste coming to landfill @ 60% of waste generated	188	tpd
b	Construction and Demolition Waste @20%of Total Waste	63	tpd

Sr.no.	Calculation of Landfill area requirement	Quantification	Unit
c	Compost reject @ 20% of organic waste	25	tpd
6	Total waste coming to landfill (a+b+c)	276	tpd
7	Landfill site life	15	years
8	Assumed waste density	0.85	t/m3
9	Total waste generation for the 15 years period	1511100	t
10	Total volume of waste generated	1777765	m3
11	Volume of daily cover (10% of Waste)	177776	m3
12	Volume of liner and cover (12.5% of Waste)	222221	m3
13	Volume Reduction due to settlement (10%)	177776	m3
14	Landfill volume	1999985	m3
15	Assumed Landfill height	17	m
16	Area of Landfill site	117646	m2
17	Landfill Area required (say)	11.8	ha
18	Composting area requirement		
a	Quantity for Compost @ 40% of Total waste generated	125.5	tpd
b	Conversion factor 1 ton = 1.62 m3	1.62	m3
c	Volume	203	m3
d	Recycling period	21	days
e	Total area for composting (From Table 9-15)	7560	m2
f	Total area in ha (say)	0.8	ha
19	Total Landfill area = Landfill area req +Composting area	13	ha

Table 15-9: Calculation for requirement of land for composting – year 2041

Sr. No.	Description	Quantity	Unit
1	Trench dimensions		
a	length	90	m
b	width	2	m
c	depth	1.5	m
d	spacing	1	m
2	Total Area for 1 Trench	180	m2
3	Capacity of 1 Trench	270	m3
4	Volume of compost per day	446	m3
5	No of Trench for 1 day	1.7	No
6	No of Trench for 21 day	42	No
7	Area requirement of Trench for 21 day	7560.0	m2
8	Area of One Standby Trench	7560.0	m2
9	Total Land Area Requirement	15120.0	m2

Table 15-10: Summary of land required for disposal site –Year 2041

Sr.no.	Calculation of Landfill area requirement	Quantification	Unit
1	MSRDC SPA Population in 2041	1148205	Persons
2	Waste Generation in 2041 @0.6 Kg per capita per day	689	tpd
3	Total waste	689	tpd
4	Organic Waste @40% of Total Waste	276	tpd
5	Area requirement of Landfill site		
a	Waste coming to landfill @ 60% of waste generated	413	tpd
b	Construction and Demolition Waste @20%of Total Waste	138	tpd
c	Compost reject @ 20% of organic waste	55	tpd
6	Total waste coming to landfill (a+b+c)	606	tpd
7	Landfill site life	15	years
8	Assumed waste density	0.85	t/m3
9	Total waste generation for the 15 years period	3317850	t
10	Total volume of waste generated	3903353	m3
11	Volume of daily cover (10% of Waste)	390335	m3
12	Volume of liner and cover (12.5% of Waste)	439127	m3
13	Volume Reduction due to settlement (10%)	-390935	m3
14	Landfill volume	4342480	m3
15	Assumed Landfill height	17	m
16	Area of Landfill site	255440	m2
17	Landfill Area required (say)	25.5	ha
18	Composting area requirement		
a	Quantity for Compost @ 40% of Total waste generated	275.6	tpd
b	Conversion factor 1 ton = 1.62 m3	1.62	m3
c	Volume	446	m3
d	Recycling period	21	days
e	Total area for composting (From Table 9-15)	15120	m2
f	Total area in ha (say)	1.5	ha
19	Total Landfill area = Landfill area req +Composting area	27	ha

As per the Table 15-10, 27 hectares of land is required for establishing landfill sites for 2041. These landfill sites are also complemented by composting facilities as indicated in the table 15-10. It is recommended that separation of wet and dry waste be actively encouraged among the incumbent population as well as the existing population. Total land fill area should be approximately 15% more than the area required for landfilling to accommodate all infrastructure and support facilities as well as to allow the formation of green belt around the land fill. Therefore, the total land requirement for solid waste management is 31 Ha for 2041. This comprises of 2 Ha. of land for composting and 3 Ha area for all infrastructure and support facilities for the landfill area.

15.1.4 POWER

Power Demand:

Provision of power demand for horizon year 2031 and 2041 shall be adequately met with by both public and private players. The power demand for horizon year 2031 and 2041 is as calculated in table 15-11 and 15-12. The following standards have been adopted for the estimation of power requirement for the planning area.

Domestic demand

- 1.5 KW per household for EWS/LIG
- 3.0 KW per household for MIG
- 4.0 KW per household for HIG

Commercial and industrial demand

- 1 KW per Shop
- 10 KW per Service Industrial Unit

Social facilities and public utilities demand

- Public Facilities- 50 KW per 7500 persons
- Public Utilities – 120 KW 7500 persons

Demand Estimation

Based on the above standards the broad estimate for power supply for DP Area for the horizon year 2031 and 2041 is given below in Table 15-11 and 15-12.

Table 15-11: Estimation of power requirement for the year 2031

2031					
2031 Population =		522,760		Household =	116,169
Power requirement – Residential areas					
Sr. No.	Household	Percentage	No. of households	Demand per Household (KW)	Total Power requirement (MW)
1	EWS/LIG	30	34,851	1.5	52
2	MIG	55	63,893	3.0	192
3	HIG	15	17,425	4.0	70
	Sub Total	100	116,169		314
Power requirement – Commercial areas					
Sr. No.	Shops and Service Industries	Unit per 1000 persons	Estimated units	Power requirement per unit in KW	Total Power requirement MW
1	Shops	20	10,455	1	10.46
2	Service Industries	2	1,046	10	10.46
	Sub Total	-	-	-	20.91
Power requirement – Public Utilities and Facilities					
Sr. No.	Facility	KW per 7500 persons		Total Power Requirement MW	
1	Social	50		3.49	
2	Public Utility	120		8.36	
	Sub Total	-		11.85	
Total Power requirement (MW) for the year 2031				346.42	

Table 15-12: Estimation of power requirement for the year 2041

2041					
2041 Population =		1,148,205		Household =	255,157
Power requirement – Residential areas					
Sr. No.	Household	Percentage	No. of households	Demand per Household (KW)	Total Power requirement (MW)
1	EWS/LIG	30	76,547	1.5	115
2	MIG	55	140,336	3.0	421
3	HIG	15	38,274	4.0	153
	Sub Total	100	255,157		689
Power requirement – Commercial areas					
Sr. No.	Shops and Service Industries	Unit per 1000 persons	Estimated units	Power requirement per unit in KW	Total Power requirement MW
1	Shops	20	22,964	1	22.96
2	Service Industries	2	2,296	10	22.96
	Sub Total	-	-	-	45.93
Power requirement – Public Utilities and Facilities					
Sr. No.	Facility	KW per 7500 persons		Total Power Requirement MW	
1	Social	50		7.65	
2	Public Utility	120		18.37	
	Sub Total	-		26.03	
Total Power requirement (MW) for the year 2041				760.88	

As per above the power demand works out to be 760.88 MW for the year 2041 which can be effectively met with the power supply companies like MSETCL.

Power Requirement for the year 2041 is calculated based on standards given by MSEB. The calculation for the proposed load based on different land uses in the SPA area are as given in the Table 15-13 below.

Table 15-13: Estimation of power requirement (as per MSEB standards) for the year 2041

Land Use	Proposed Load (In MW)
Residential	337.60
Commercial	41.60
Industrial/Warehousing	131.87
Public & Semi Public	51.67
Recreational & Open Space	138.40
Transport and Communication	106.60
Special Area	6.53
Sub total	814.27
LDZ	7.33
Total	821.60

Norms adopted,

- Residential: 100 watts per sq.m
- Commercial: 150 watts per sq.m
- Power Factor: 0.9
- LDZ: Load is calculated for 5% area i.e 5% of 2195 Ha

From the table 15.13, the total power requirement is 821.60 MW. Hence, from the estimation above, the demand for year 2041 is worked out to be 800 MW.

Power Distribution

The standard commercial for distribution of power proposal is as follows:

The power will be distributed from a Receiving Station (RS) through a network of substations. Standards considered for distribution of Receiving Station (RS) and Electric Sub Stations (ESS) is as following:

Table 15-14.: Requirement of receiving station and electric substation–year 2041

Sr. No.	Utility	1 for No. of persons	Area required in Sq.m	Total Required	
				Units	Area in sq.m
1	Main Receiving Station 220/3 KV	-	60,000	2	1,20,000
2	Receiving Station 33/11 KV	1,00,000	4000	11	44,000
3	Distribution Transformer Centers DTC 11/0.44 KV	25000	2000	46	92000

From the Table 15-14, the total area required for MRS, RS and DTC is 25.6 Ha. Two numbers of main receiving stations are to be proposed, 11 nos of receiving station and 46 numbers of DTC is to be proposed for meeting the power demand for the year 2041.

15.2 TRANSPORTATION PROPOSALS

15.2.1 INTRODUCTION

Integration of transportation with land use is an important aspect for successful implementation of the Development Plan. The land use zoning and the transport infrastructure should complement each other for sustainable development. As regards to transportation infrastructure while framing the proposals the existing network, the deficiencies in it from accessibility point of view and its inter-connection with the regional network is analysed and the following proposals have been broadly identified ensuring regional as well as local connectivity.

1. Connecting with regional linkages like proposed multi-modal corridor.
2. Incorporating the proposals of doubling of Railway lines i.e., Panvel-Karjat and the Konkan Railway.
3. Ensuring smooth freight connectivity through freight loop paving way for direct access from JNPT towards Pune.
4. Incorporating the proposals of sanctioned / draft Regional Plan of MMR and Raigad, which include Road and Rail corridors.
5. Bus Rapid Transit System (BRTS) proposals.
6. A 60 m wide spine road connecting proposed Virar to Alibaug multi-modal corridor towards north along with provision for metro on it.
7. Service road on either side of Mumbai Pune Expressway to encash the potential that the MSRDC SPA area has along this corridor.
8. Incorporation of missing link / augmentation of Mumbai Pune Expressway as per the

sanctioned modification of the alignment.

9. Widening of state highways (upto 45m wide) and National Highways (upto 60 m wide).
10. Arterial roads with varying width from 18 m to 45 m ensuring connectivity to proposals formulated for IDP I and II by CIDCO NAINA.
11. Encouraging non-motorised transport through cycle tracks and paved pathways.

15.2.2 CONNECTING WITH REGIONAL LINKAGES LIKE PROPOSED MULTI-MODAL CORRIDOR

MMRDA while preparing the Regional Plan for MMR Region (2016-31) has proposed a Multi-Modal Corridor (MMC) connecting Virar and Alibaug with 130 m ROW. This high-speed corridor is envisaged to include different modes of transport to ply on it and is poised to connect NH8 (Mumbai-Ahmedabad), NH-3 (Mumbai-Agra-Delhi), NH-4 (Mumbai-Chennai) and NH-17 (Goa-Mangalore-Kerala) and also Mumbai Pune Express Way (MPEW).

The proposed alignment touches the Northern tip of MSRDC SPA giving impetus to the SPA area if integration with it is ensured. The transportation proposals framed in this DP ensured such integration through a proper interchange opening up the MSRDC SPA area for development.

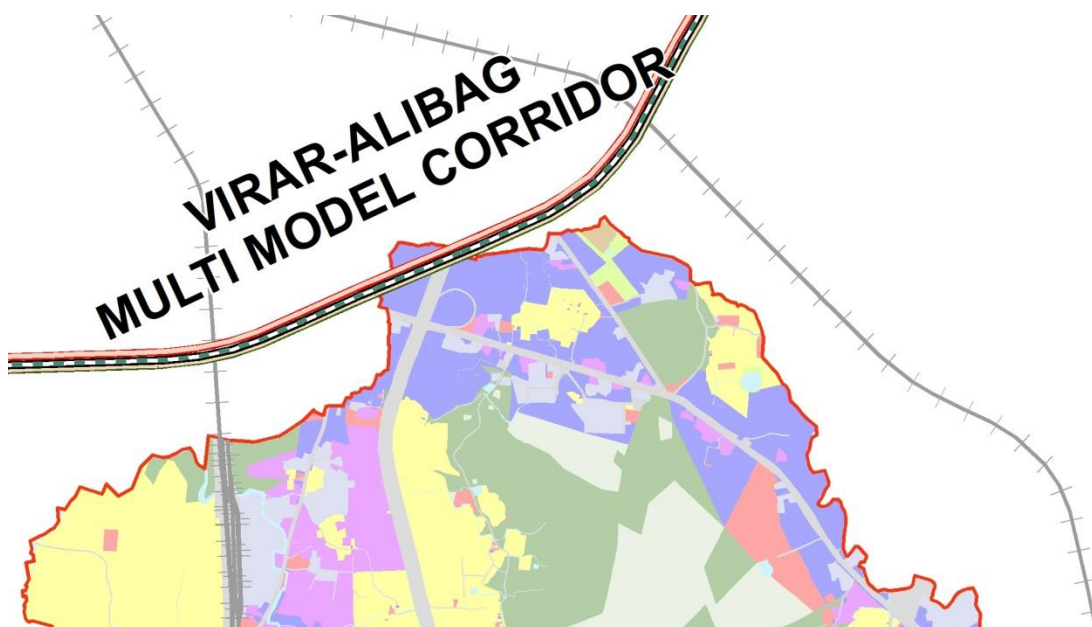


Figure 15-1: Proposed Virar-Alibaug multimodal corridor

15.2.3 INCORPORATING THE PROPOSALS OF DOUBLING OF RAILWAY LINES I.E., PANVEL-KARJAT RAILWAY LINE AND THE KONKAN RAILWAY

Panvel – Karjat Railway line: There is a single railway track connecting Panvel and Karjat passing through SPA area with a railway station at Chowk. It is understood that there are plans to augment the capacity of this railway line by introducing another lane along this corridor. It is also learnt that the steps for land acquisition for doubling of this railway line is already initiated. Keeping in view of this and coupled with the Development Plan Zoning system (predominantly residential) would give massive boost for development of this area. The proposal as formulated by the Indian Railways (MRVCL) is retained envisaging that this would act as a trigger for development of MSRDC SPA. This railway link if opened up for suburban services would reduce the travel time from 5 hours (by road) to 2 hours (by train) from Karjat to Mumbai.

Konkan Railway: Konkan Railway Corporation Ltd is set to enhance line capacity to handle more trains by doubling the track, which would positively impact the traffic of JNPT and its hinterland. This would also impact MSRDC SPA area on the western side where the logistics and industrial zones are proposed. By retaining this proposal into in this development plan

ensured MSRDC SPA to propose for two more railway lines connecting the Konkan railway and the Panvel Karjat Line which could provide a seamless East-West connectivity and further act as a regional link for the traffic originating from Konkan region and destining towards Pune. The details of the same are discussed subsequently.

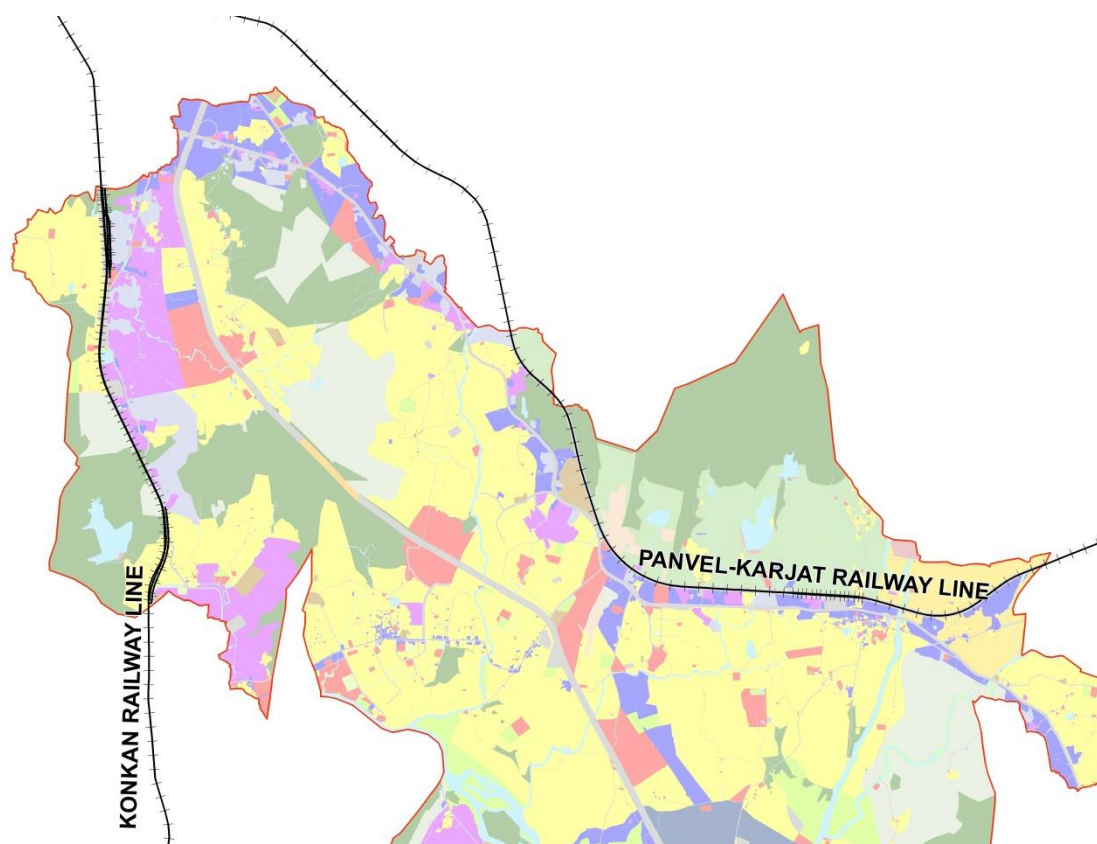


Figure 15-2: Railway lines passing through MSRDC SPA area

15.2.4 FREIGHT CONNECTIVITY

Freight connectivity through freight loop paving way for direct access from JNPT towards Pune: With a view to promote economic development within the SPA area a freight loop connecting Konkan Railway near Somatane on the West (to cater the needs of Logistics Park) and extend the catchment of it beyond MSRDC SPA area on the West is proposed which traverses across the Mumbai Pune Express way and joins the Panvel-Karjat Line. This freight corridor loop is one of the proposals envisaged as dedicated freight corridor connecting Mumbai and Pune and other regions in the South. The proposed freight loop and proposed sub-urban railway line is shown in Figure 15-3.

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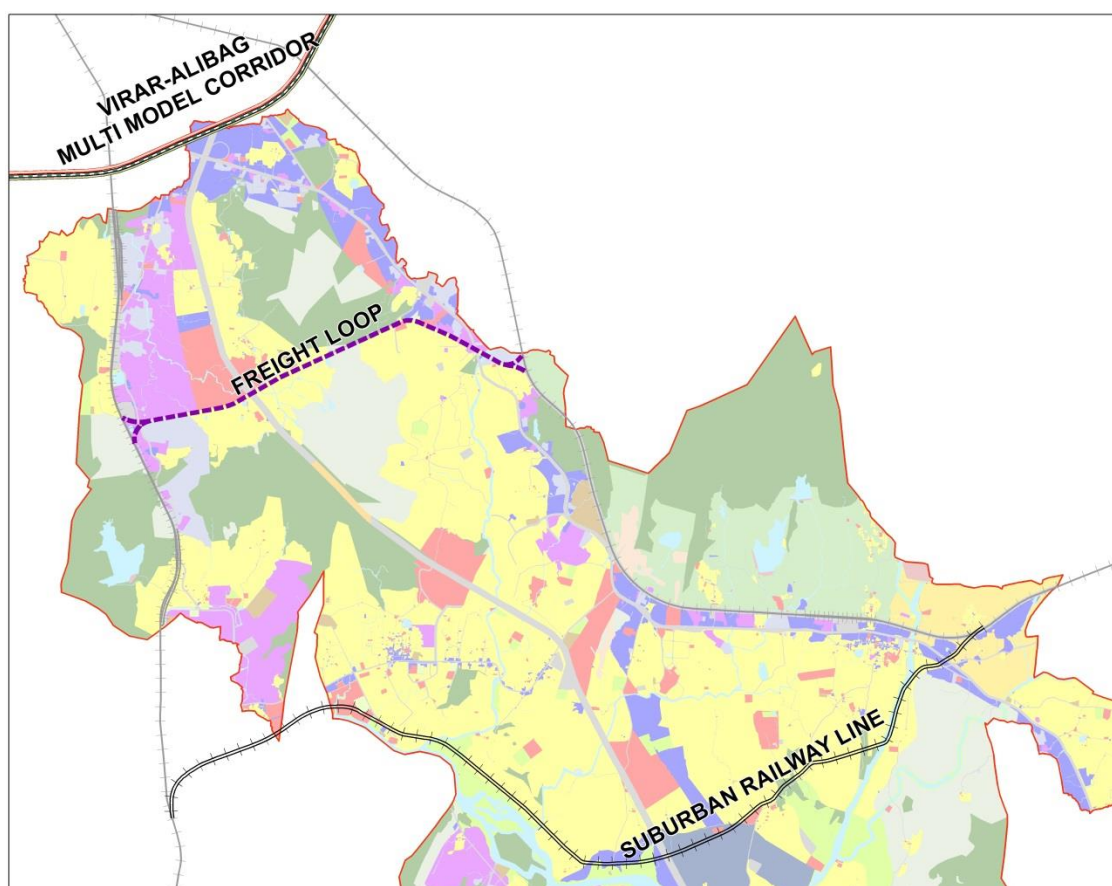


Figure 15-3: Proposed freight loop and proposed suburban railway line

15.2.5 INCORPORATING PROPOSALS OF REGIONAL PLANS

Incorporating proposals of sanctioned / draft Regional Plan of MMR and Raigad which include road and rail corridors: The MMRDA while preparing its draft Regional Plan 2016-36 have proposed East-West rail link passing through MSRDC SPA area and the cognizance of this alignment is taken while formulating the development proposals in the Development Plan.

The prevailing sanctioned Regional Plans within the MSRDC SPA are

- The Mumbai Metropolitan Regional Plan (1996-2011)
- The Raigad Regional Plan (1991).

Under the provisions of Section 20 of MR&TP Act 1966 the Urban Development Department have sanctioned two layout plans (growth centres) namely Rees-Lodhivali Complex layout plan and Rasayani Complex layout plan. The RP road alignments shown in those plans are taken into cognizance wherever feasible and slight modifications to these alignments are proposed where there is substantial built up area is existing. The Pen-Khalapur growth centre plan, which is a part of Raigad Regional Plan, have proposed many regional linkages, which are yet to be developed. These linkages based on the topography and feasibility are considered in this development plan wherever possible.

15.2.6 MULTI-MODAL CORRIDOR WITH METRO

A 60 m wide spine road connecting proposed Virar to Alibaug multi-modal corridor towards north along with provision with metro on it: In order to have improved and faster connectivity from Southern part of SPA area to the Northern part of SPA Area, a metro corridor is proposed along the major spine of 60 M ROW which in turn passes through the proposed CBD zone. This corridor which is a green field alignment is proposed to merge with NH4 near Khanavale

village and traverses along NH4 to connect further to the multi modal corridor towards North. It is expected that the Virar- Alibaug Multi-modal corridor should also have the metro component on it and therefore seamless regional connectivity is ensured. Further, it is expected that IDP I of NAINA shall grow at a faster pace and in no time the requirement of Metro in that area is inevitable. Though presently not shown in the IDP I, it would be desirable to connect Vashi-Belapur-NMIA line proposed by CIDCO to the Metro corridor proposed by MSRDC SPA through IDP I. This shall ensure continuous connectivity from Karjat in the South to Vasai Virar in the Northern portion reducing substantial travel time and this would act as a major Regional link. The details of the Metro corridor proposed along with TOD Belt or corridor is shown in Figure 15-4.

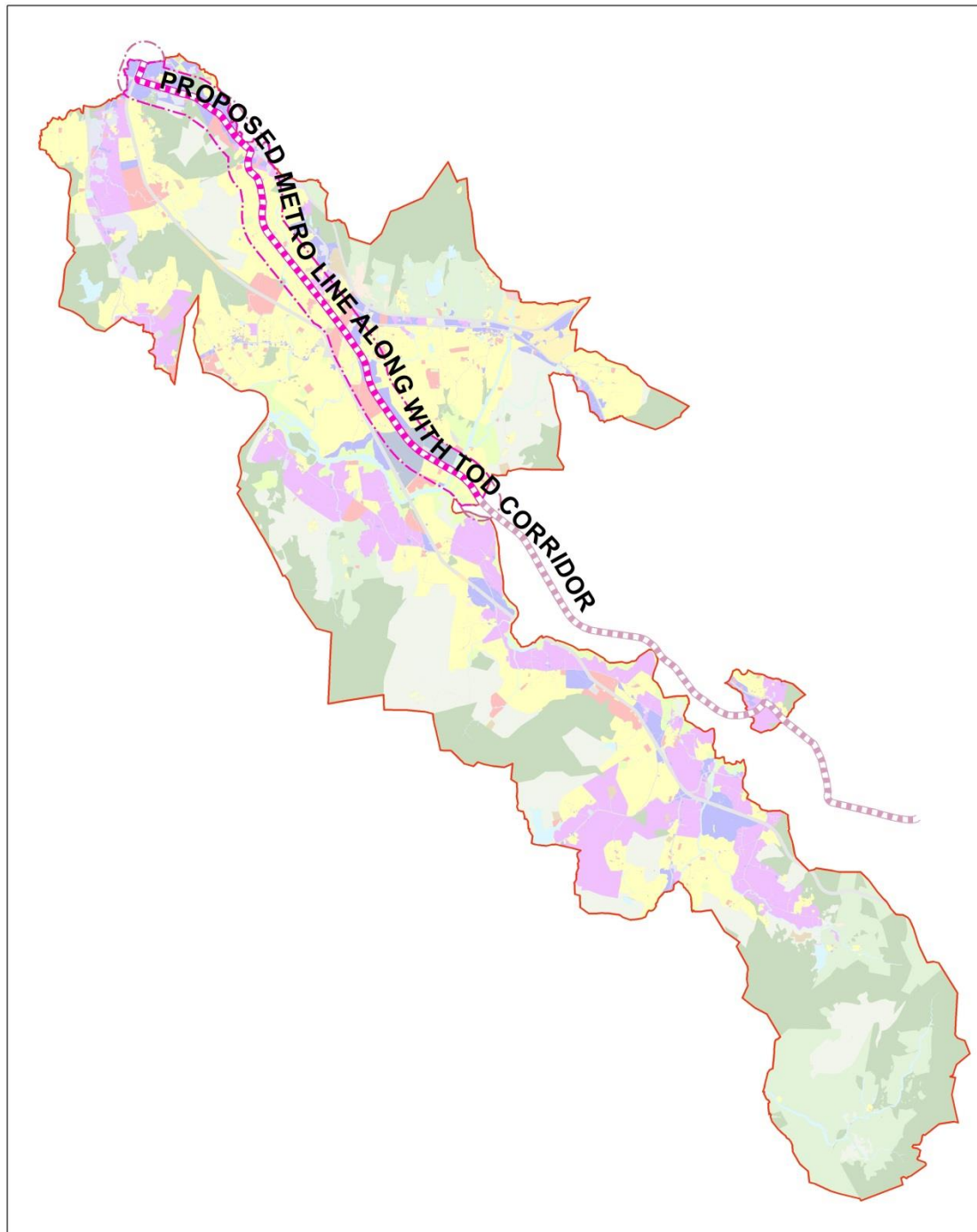


Figure 15-4: Proposed metro line along TOD corridor

15.2.7 BRTS

Good Mass Transport System is the success factor for a sustainable City. However, initial capital expenditure on the same and the Gestation period for the returns is normally high. Therefore, having a High capacity Bus Rapid Transit (HCBRT) System is a relatively low-cost, flexible solution for a mass transportation system that typically has an initial investment cost of only some 2% that of a Metro system. It can serve a much larger area than a rail-based system. Keeping in view of this and the projected population of 5.25 lakhs (2031). A total of 46 km of BRT system is proposed along North-South and East-West of the entire SPA area. This BRTS system is generally proposed on state highways which initially may cater as a non BRT corridor (expected to be widened upto 45m) and as the travel demand grows the same can be converted as a BRT corridor. This BRT corridor takes off in the North from the Vasai Virar Multi Modal Corridor, traverses along the Industrial and Logistics zones on the Western side of the MSRDC SPA and crosses Mumbai Pune Expressway near Rees and eventually runs along the NH4 and destines at Chowk Railway Station. Another line of the BRTS corridor starts from the Chowk Railway Station traverses along the CBD area at Asroti / Tembhari, crosses Mumbai Pune Expressway and connects to Rasayani Industrial Complex. Above two BRTS lines majorly serve as East-West connecting corridors. The North-South connecting corridor takes off near Vashivali and traverses towards the South crossing MPEW at four locations and finally terminates near Savroli.

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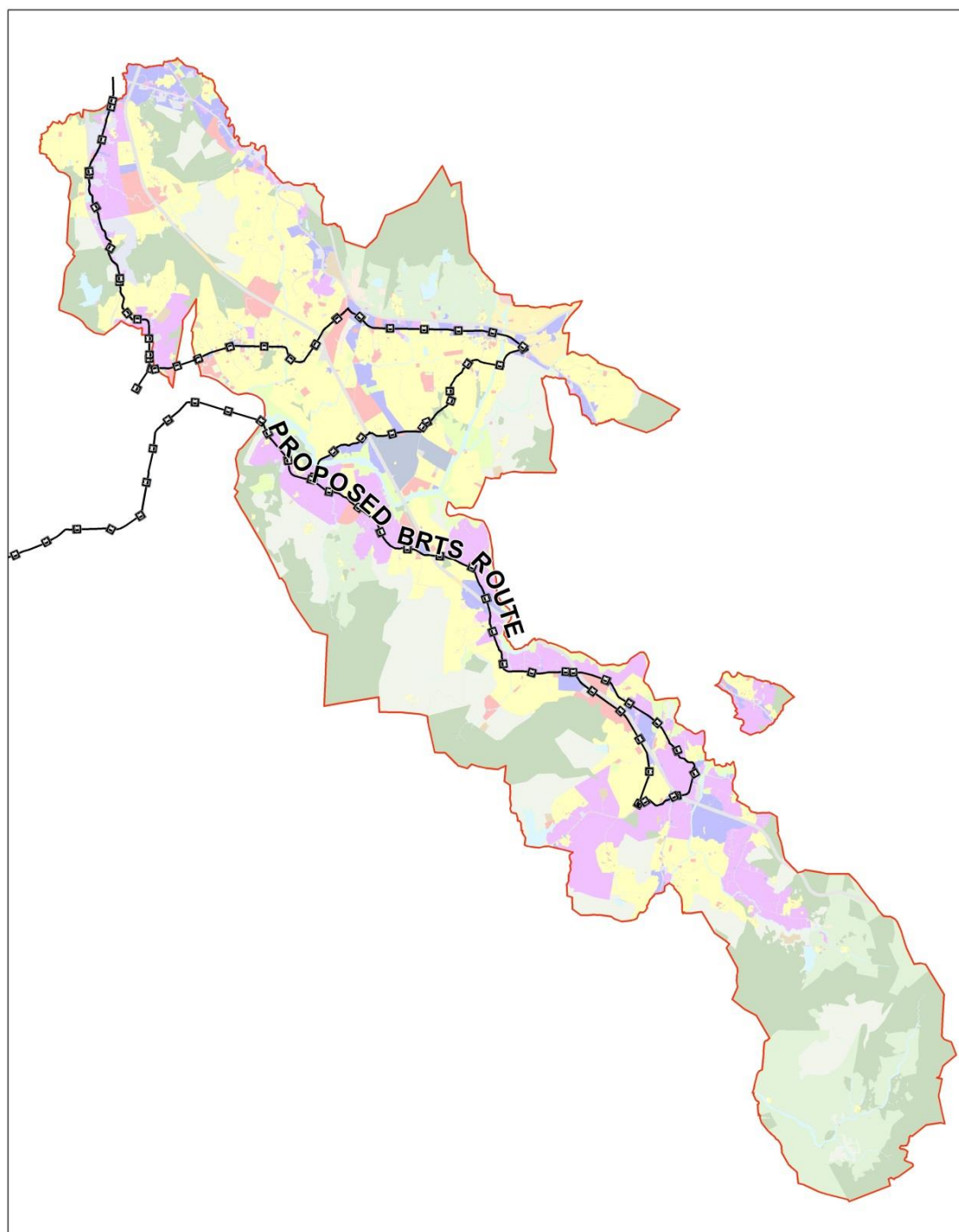


Figure 15-5: Proposed BRTS route

15.2.8 SERVICE ROADS

Service road on either side of Mumbai Pune Expressway: The Mumbai Pune Expressway is an access controlled road and has created lot of potential for development owing to proximity to two major metro cities. However, this potential could not be tapped because of the areas not having access to the corridor. In order to exploit the potential of the Expressway that it generates towards economic development, 30 m wide service road on either side of the Expressway starting from Ariwali and terminating near Dheku is proposed in the Development Plan. The Arterial roads (18 m to 30m) which are proposed in grid iron form generally meets these service roads along the Expressway from both sides. These service roads will eventually meet the Expressway at appropriate locations providing connectivity to Expressway.

15.2.9 INCORPORATION OF MISSING LINK

Incorporation of missing link / augmentation of Mumbai-Pune Expressway as per the sanctioned modification of the alignment: The UDD of Government of Maharashtra has sanctioned a modification to the alignment of the Mumbai Pune Expressway for the length of the corridor where NH48 and MPEW are the same. The modified alignment now traverses towards the western side of the MPEW with viaducts and tunnels and a small portion of this alignment passes through MSRDC SPA area (1.92 km) and the cognizance of the same has been taken into the draft Development Plan.

15.2.10 WIDENING OF NATIONAL HIGHWAYS AND STATE HIGHWAYS

Widening of National Highways (upto 60 m wide) and state highways (upto 45m wide): As many as 7 state highways with varying widths pass through MSRDC SPA area either longitudinally or transversely crossing MPEW with minor grade separators. All the state highways are proposed to be widened for 45 m ROW and the only National Highway (NH48) is proposed for widening upto 60 m in the draft Development Plan.

15.2.11 ARTERIAL ROADS

Arterial roads with varying width from 18 m to 45 m ensuring connectivity to proposals formulated for IDP I and II by CIDCO NAINA. A total of 552 km of road length is captured through existing land use survey. These include National Highways, state highways, MPEW, major District Roads, other District Roads, village roads and various unclassified roads with varying widths. In order to promote good connectivity with the MSRDC SPA area and also to coordinate with the transport proposals of adjoining planning areas, several existing roads were proposed for widening and a total of 198.49 km of roads is proposed newly with widths ranging from 12m to 130 m. This does not include the railway proposals. The internal roads are generally marked as 18 m with width varying upto 45 m depending upon the road with which it gets connected to or for the purpose for which it is intended. The details of road lengths which are proposed for road widening and those which are newly proposed are tabulated in Table 15-15 below,

Table 15-15: Road lengths of newly proposed and roads proposed for widening

Road Width (In M)	Proposed Road (In Km)	Widened Road (In Km)	Total Length (In Km)
12	5.04	3.18	8.22
15	7.25	1.39	8.64
18	23.79	16.56	40.35
24	22.23	5.94	28.17
30	90.73	15.48	106.21
45	21.61	34.58	56.18
60	25.38	17.56	61.07
90	1.92		31.45
130	0.56		0.56
TOTAL LENGTH (in km)	198.49	94.69	340.85

15.2.12 NON-MOTORIZED TRANSPORT

Encouraging Non-Motorised Transport through cycle tracks and paved pathways: The MSRDC SPA area development plan encourages the use of Non-motorized transport. Leveraging the advantage of the green belt shown between the riverine and the blue line along the Patalganga river and within the 9m buffer of the tributaries of the Patalganga river, cycle track network is proposed to encourage Non-motorized transport.

15.2.13 GRADE SEPARATED INTERCHANGES

The MPEW is an access-controlled facility. As of now, there are nine locations within the MSRDC SPA area where grade separators either in the form of underpasses or over-bridges are existing. These Grade separators are to be widened to 45 m to accommodate the proposed widening of state highways. Further in order to enhance East-West connectivity four more grade separators are proposed along the Expressway.

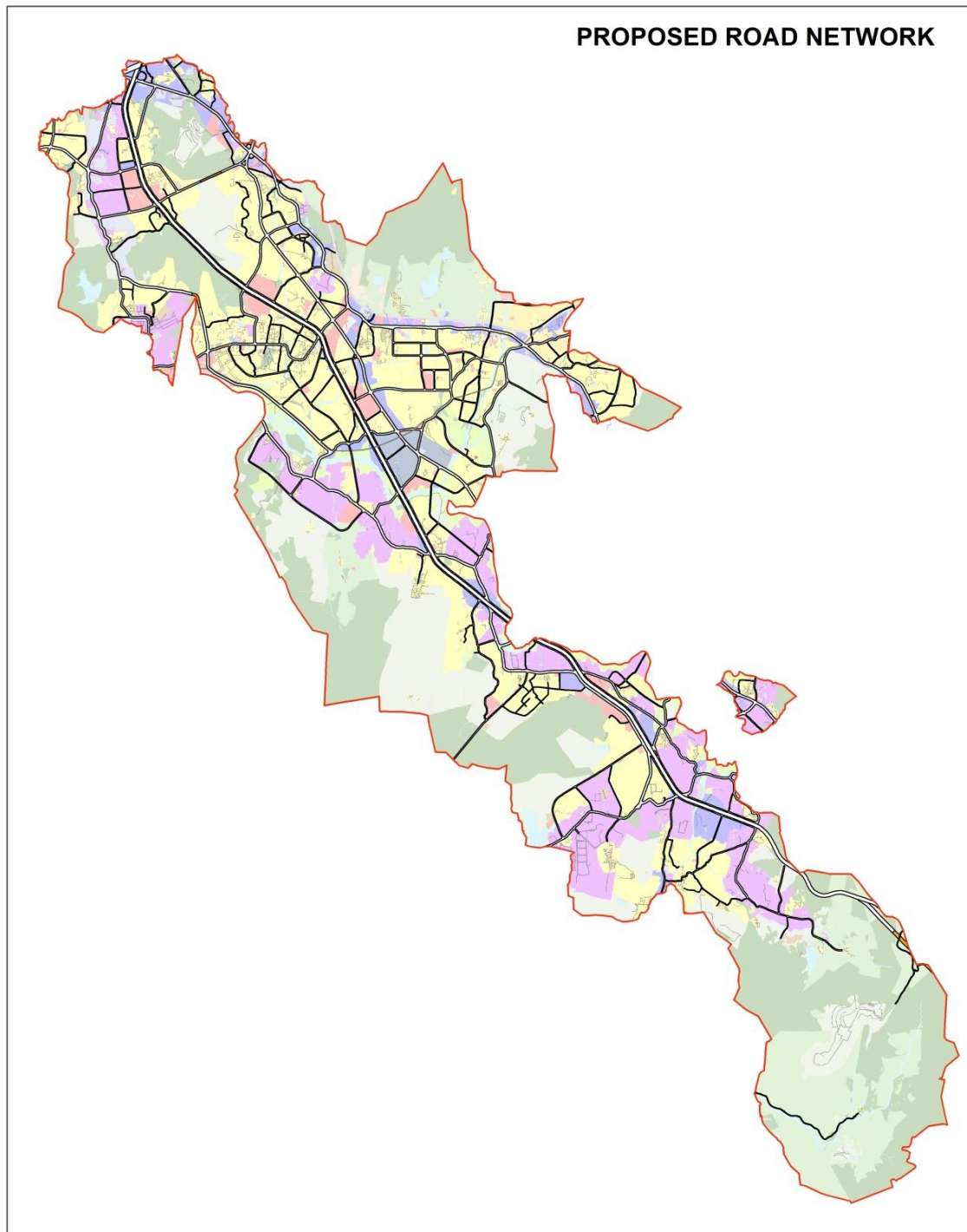


Figure 15-6: Proposed road network

15.2.14 ROAD SPACE ALLOCATIONS AND INTERSECTION GEOMETRY

Complete Street

Based on Maharashtra State Urban Transport Policy (SUTP) 2017, eight major components of complete street have been derived as shown in Figure 15-7.

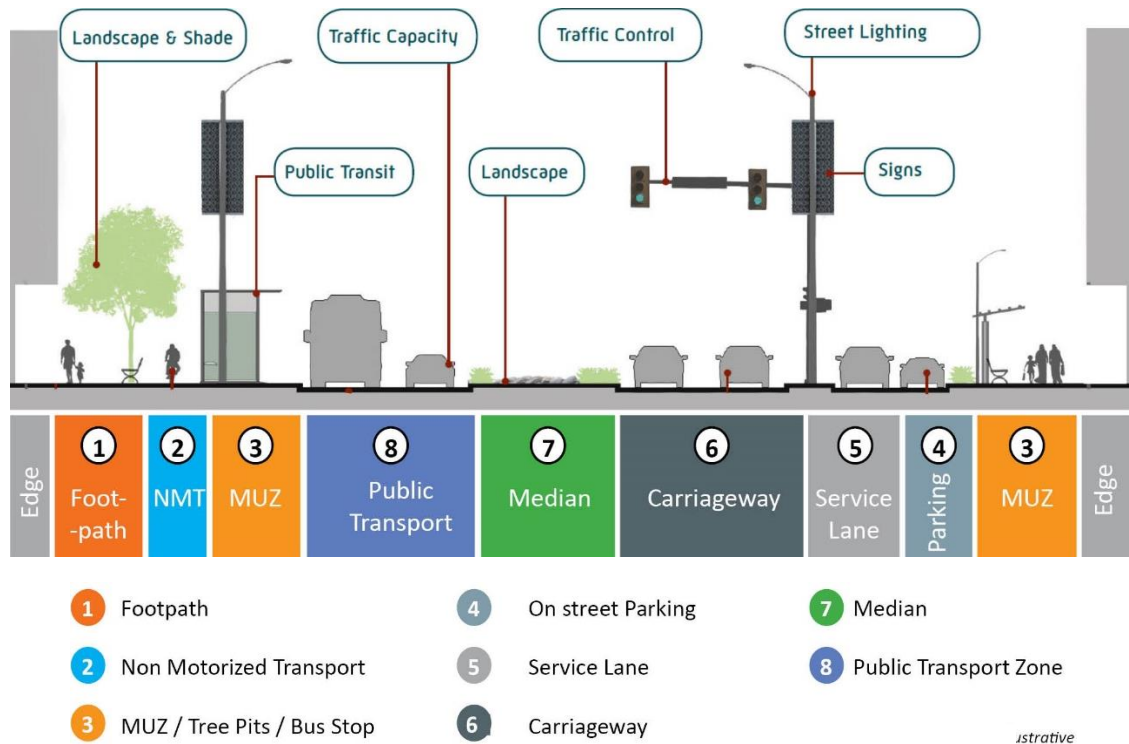


Figure 15-7: Component of Complete Street
Source: Abu Dhabi Urban Street Design Manual

Streetscaping with all components of complete street is as given below.

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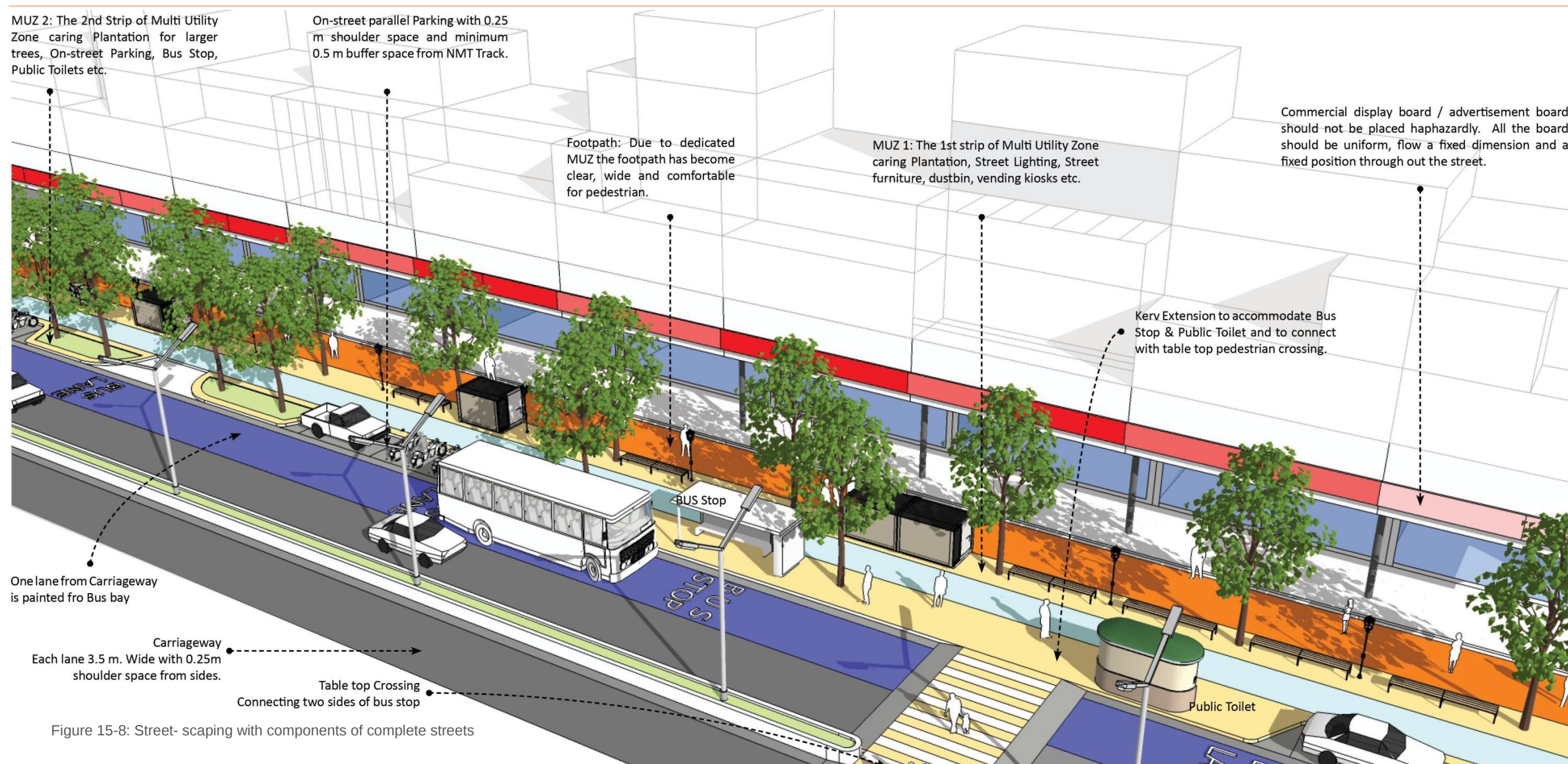


Figure 15-8: Street- scaping with components of complete streets

Table 15-16: Detailed road space allocation of streets with reference to Indian Road Congress

Road Type	ROW (m)	Foot Path in m		MUZ (Vending) (in m)		NMT Lane (in m)		Landscape Buffer I (in m)		On street parking (in m)		Service lane (in m)		Landscape Buffer II (in m)		Carriage way one lane = 3.5 (m)		Bus Lane		Median (viaduct) in m	Total width in m
		LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS		
Arterial	60	3.50	3.50	2.00	2.00	3.00	3.00	1.25	1.25	0.00	0.00	7.50	7.50	3.00	3.00	7.50	7.50	1 painted lane	1 painted lane	4.50	60.00
State highway/ Sub arterial	45	3.00	3.00	0.75	0.75	2.50	2.50	0.50	0.50	0.00	0.00	4.50	4.50	2.00	2.00	7.50	7.50	1 painted lane	1 painted lane	3.50	45.00
	45 (with BRTS)	3.00	3.00	1.50	1.50	2.50	2.50	0.50	0.50	2.50	0.00	0.00	0.00	0.00	0.00	7.50	7.50	4m	4m	4.50	45.00
District Road	30	3.25	3.50	0.00	0.00	2.00	2.00	0.50	0.50	2.50	0.00	0.00	0.00	0.00	0.00	7.50	7.50	1 painted lane	1 painted lane	1.00	30.00
Local Road	24	3.50	3.50	0.00	0.00	2.00	2.00	0.50	1.00	2.50	0.00	0.00	0.00	0.00	0.00	9.00		Nil		0.00	24.00
Neighborhood Road	18	2.5	2.5	0	0	2.5	0	0.5	0.5	2.5	0	0	0	0	0	7		Nil		0.00	18.00

Street Templates

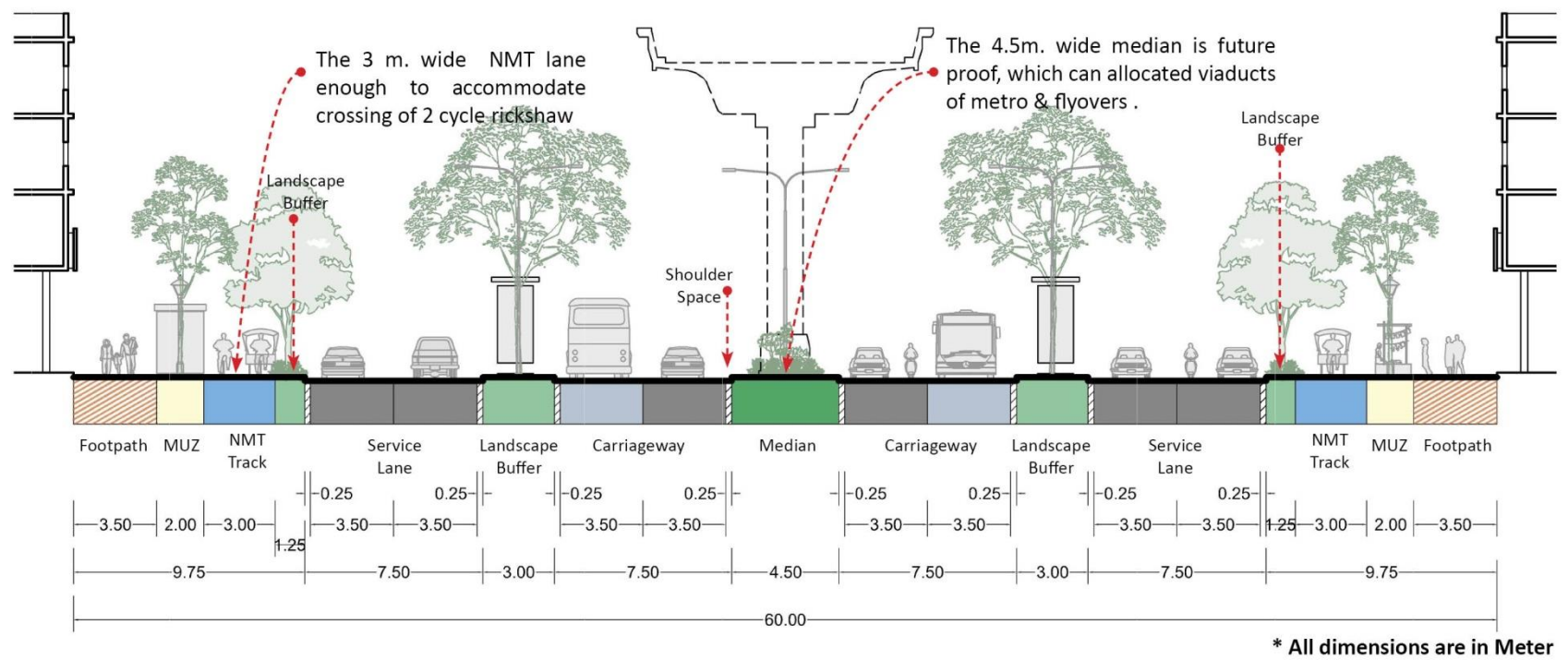


Figure 15-9: Arterial typical road section - 60m ROW

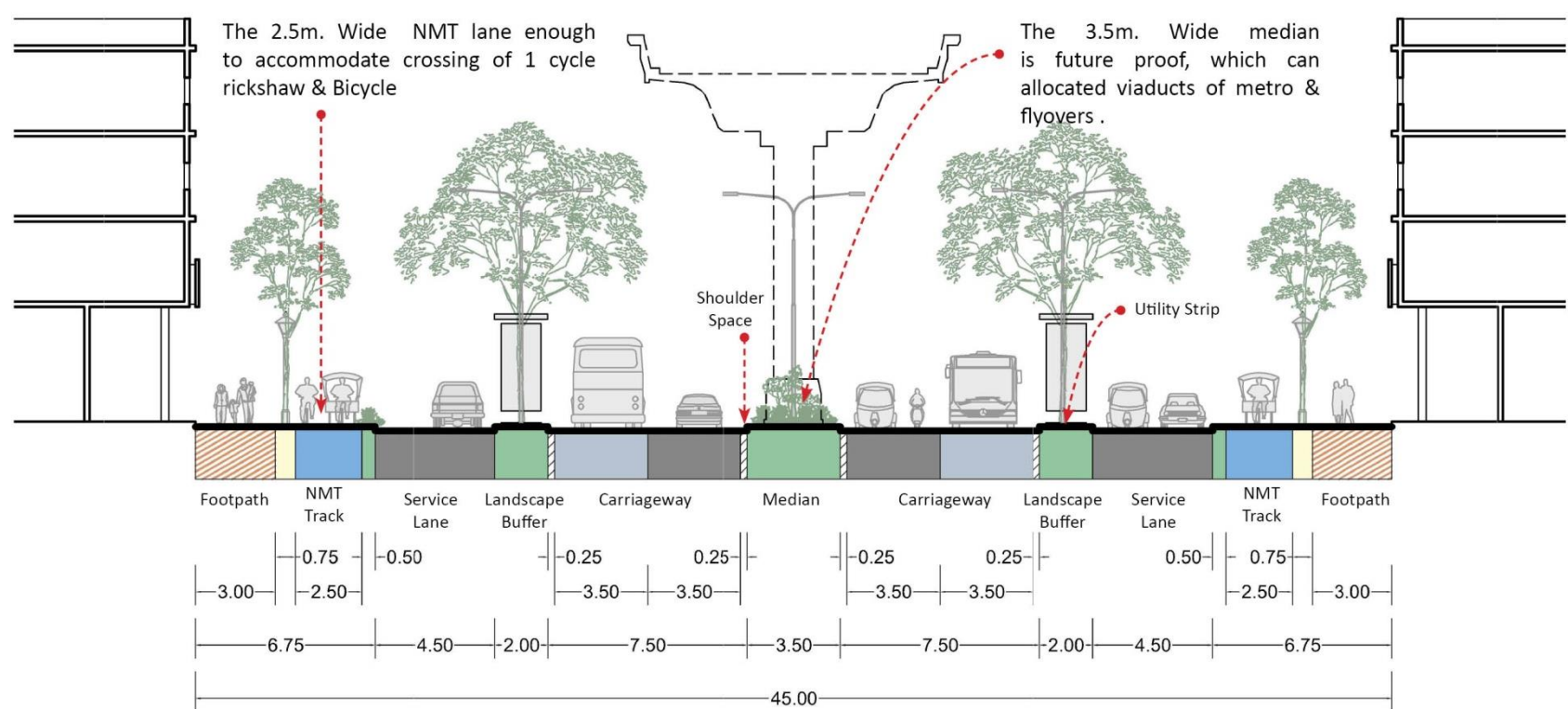


Figure 15-10: Sub Arterial typical road section, 45m ROW

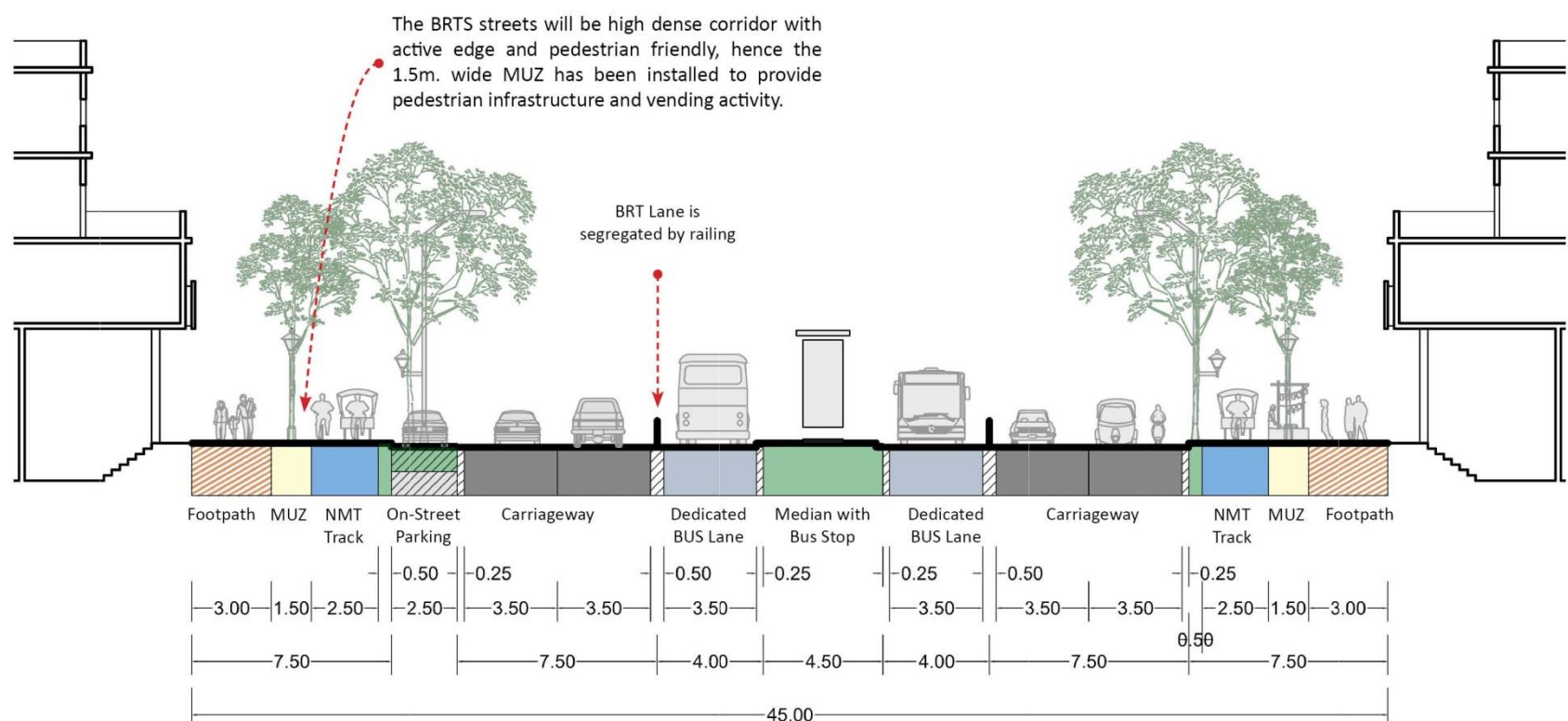


Figure 15-11: Sub arterial typical road section with BRTS, 45m ROW

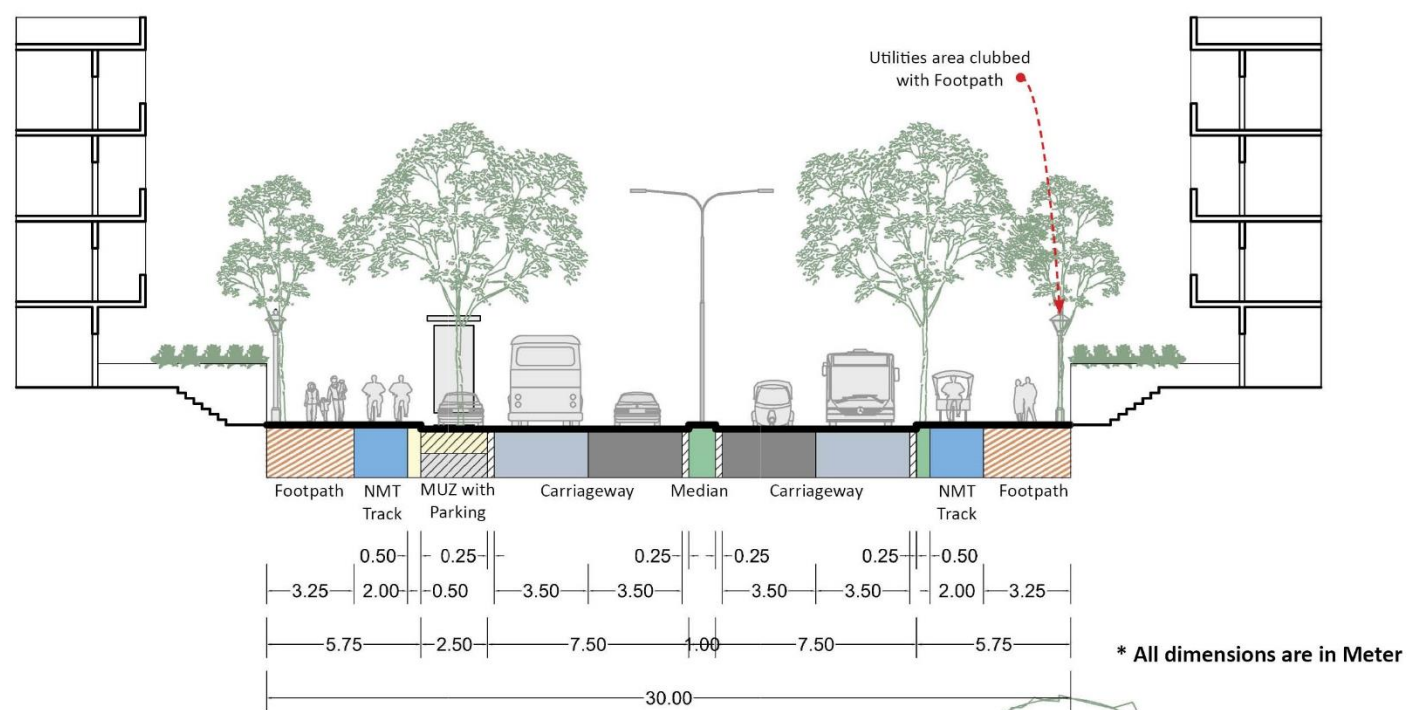


Figure 15-12 : District road typical road section , 30m ROW

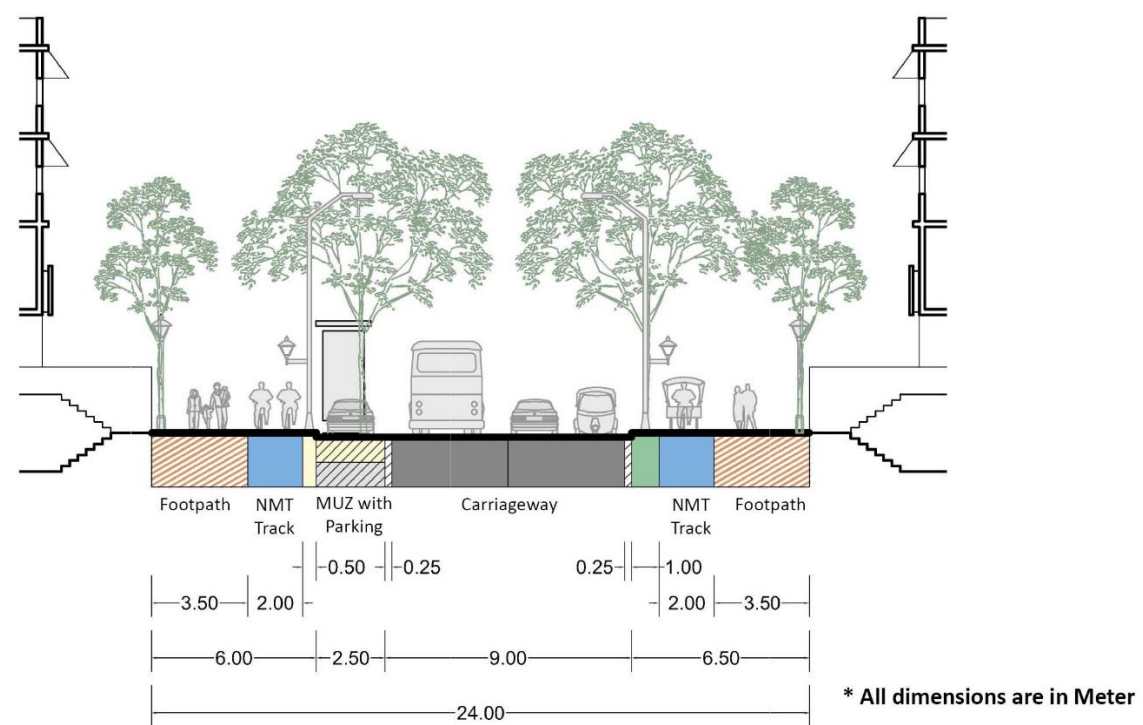


Figure 15-13:Local typical road section, 24m ROW

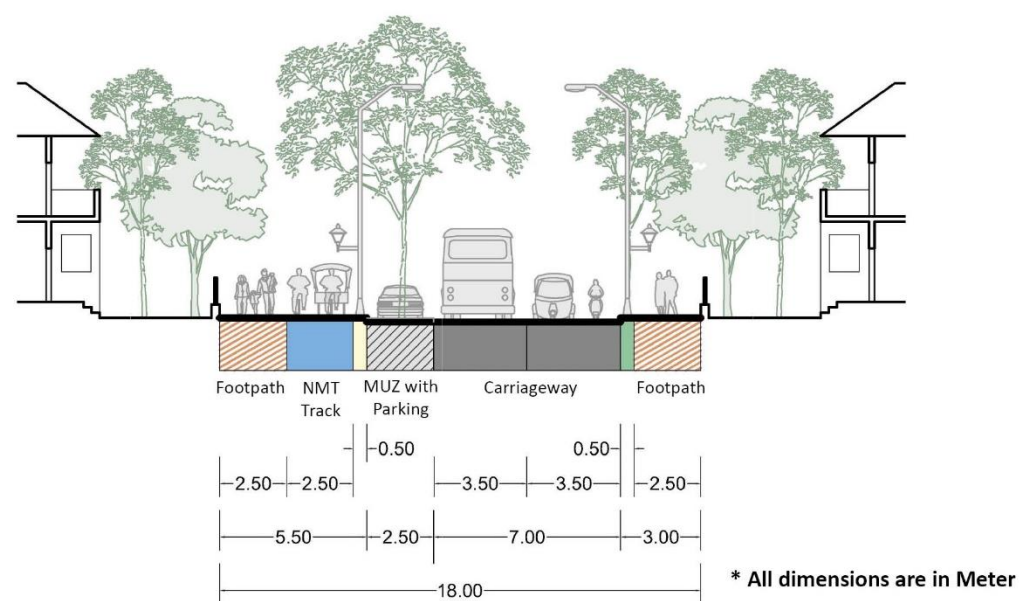


Figure 15-14 : Neighbourhoods road section , 18m ROW

Intersection Templates:

- These are pedestrian priority streets with narrow carriageway caring slow moving local traffic.
- Entering of heavy vehicles should be avoided.

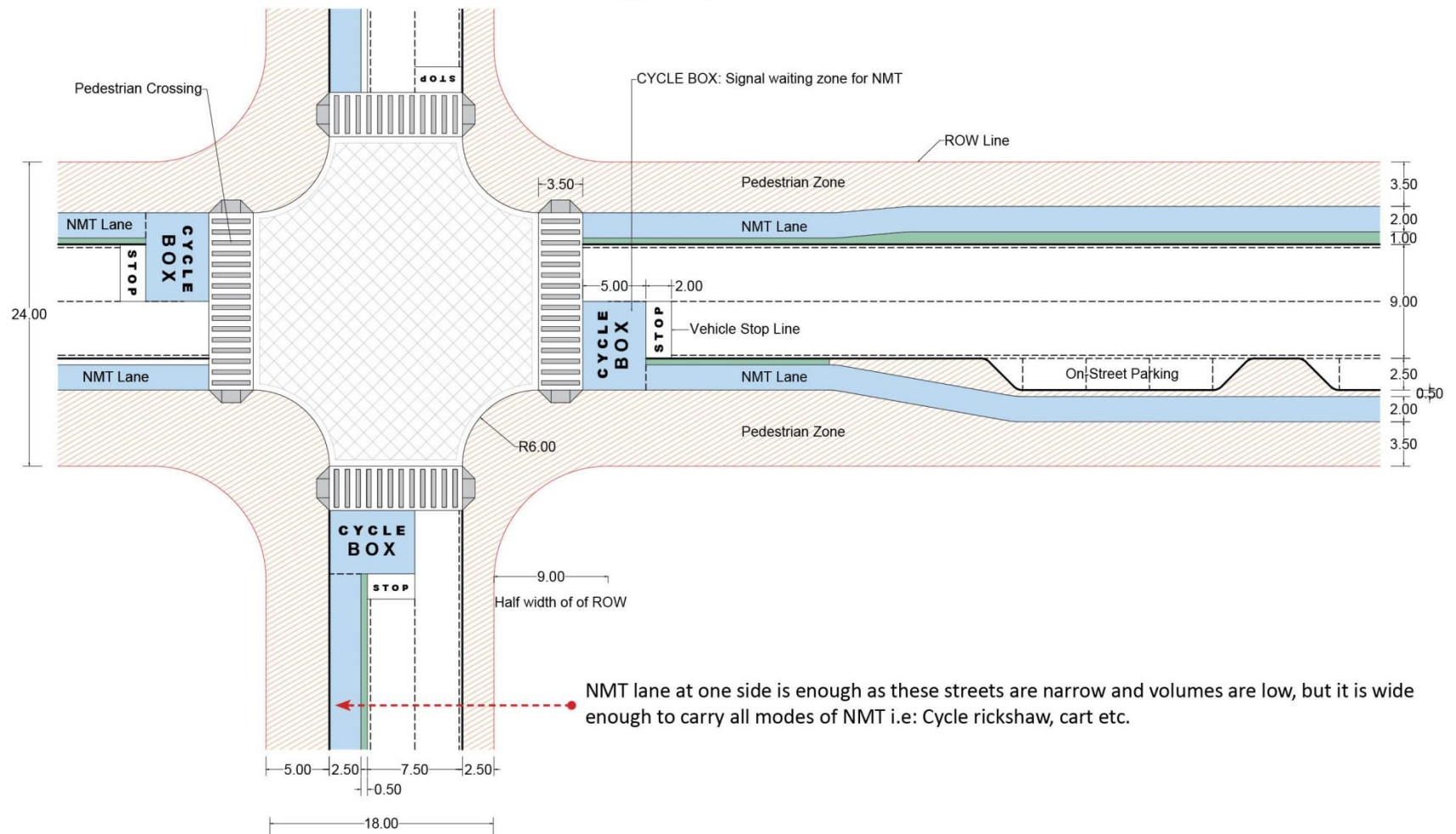


Figure 15-15: Intersections between local streets ,ROW 24m X 18m

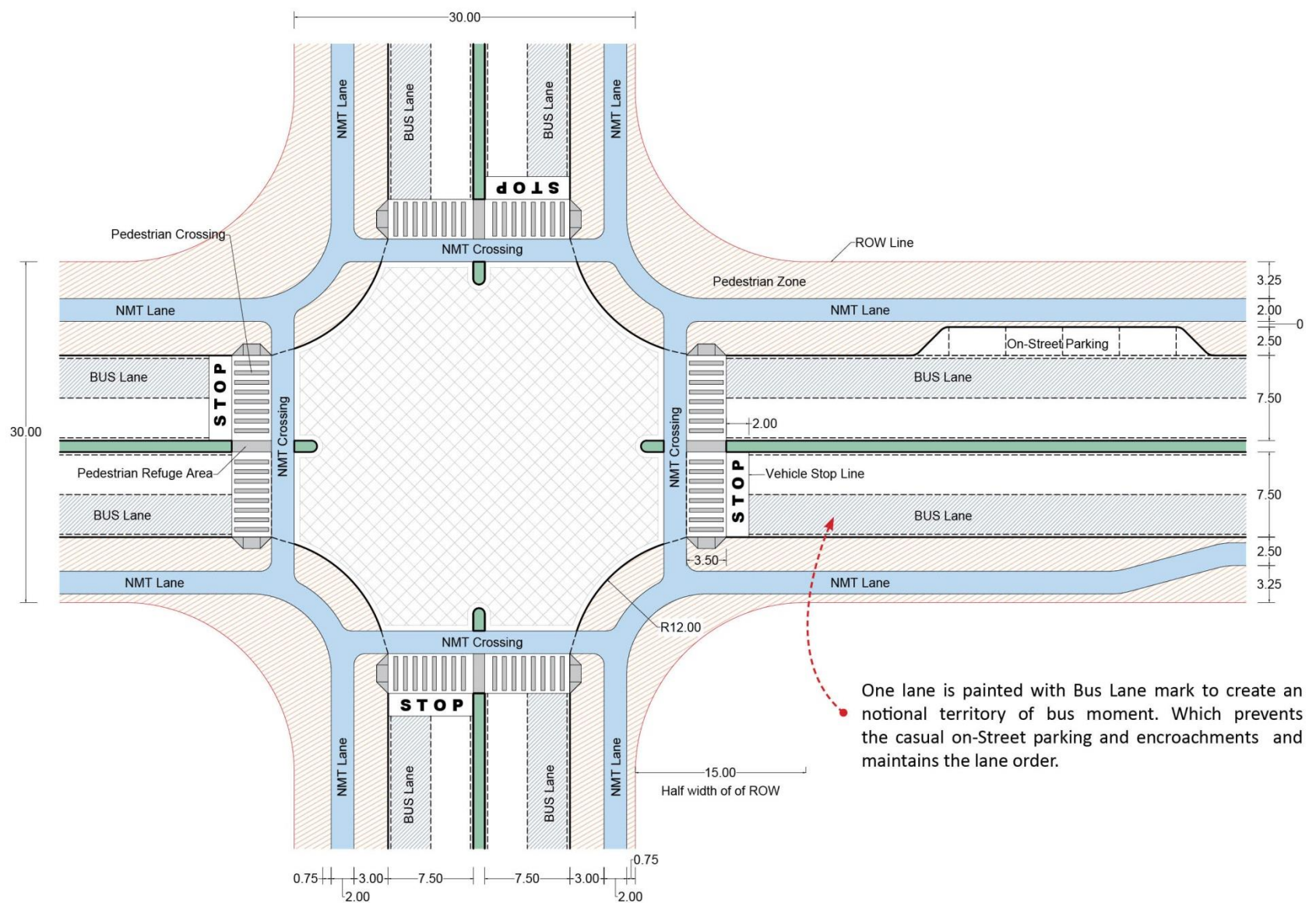


Figure 15-16: Intersections between district streets ,ROW 30m X 30m

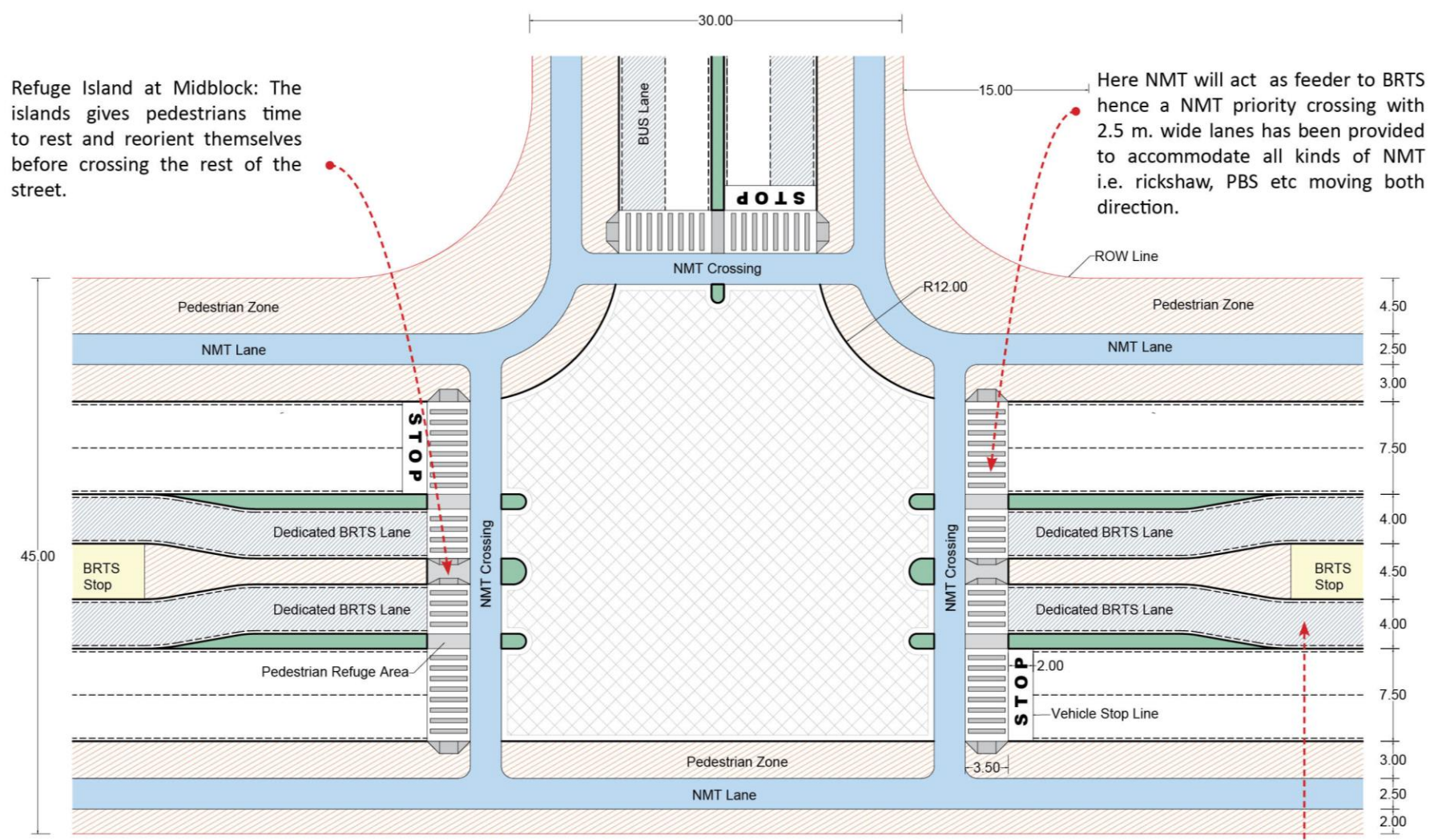


Figure 15-17: Intersections between district streets ,ROW 45m X 30m

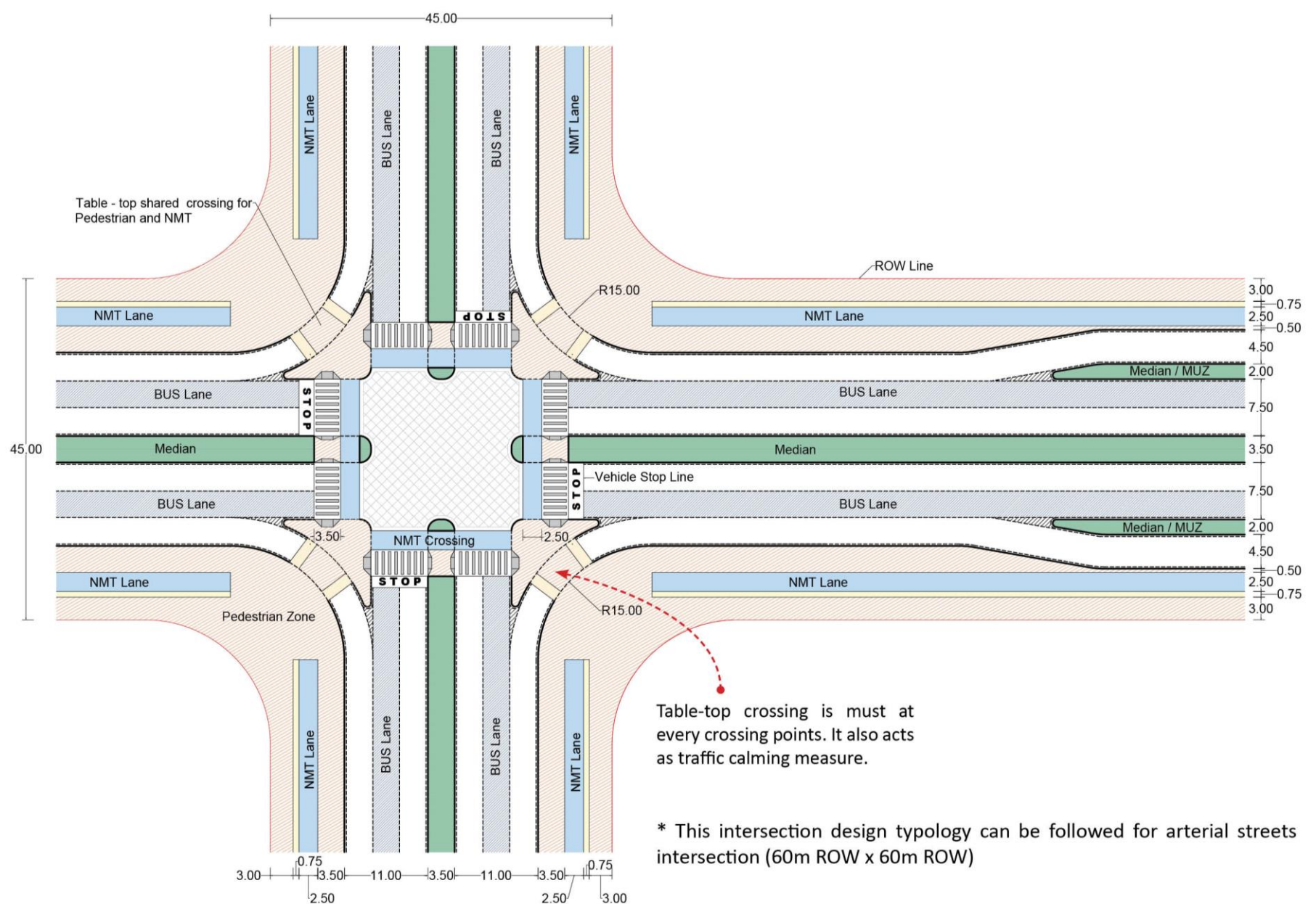


Figure 15-18: Intersections between sub arterial streets ,ROW 45m X 45m

15.2.15 OTHER TRANSPORT FACILITIES

As of now, there are two existing truck terminals on either side of the Expressway catering to the traffic plying on it. Keeping in view of the Industrial zones proposed along the Western side of the MSRDC SPA area, two more truck terminals are proposed. For passenger movement five Bus Terminals are proposed. In addition to above, provision for Parking is also made as per the local requirement.

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16 DEVELOPMENT PLAN COSTS AND FINANCING

16.1 INTRODUCTION

This Chapter deals with the block cost estimates for various components of the Development Plan, the Phasing plan and also likely sources of revenue. The block estimates include the block costs of development for Social Facilities and Reservations, Transportation Infrastructure, Water supply Infrastructure, Sewerage Infrastructure, Storm Water drains and Solid waste management.

16.2 ASSUMPTIONS FOR CALCULATION OF COST

The Annual Schedule of Rates (ASR) of agricultural lands for the year 2018-19 have been considered for arriving at the average cost of acquisition for various calculations. The Ready Reckoner rate for all the villages for the Project Area for the year 2018-19 are as per Table 16-1.

Table 16-1: Ready reckoner rates, 2018-19

Sr No	Village	Agricultural Land Rates in Rs. Per sq.m.	N.A. Land Rates (Per Sq.mt) (2018-19)
PANVEL TALUKA			
1	Ajivali	492	4420
2	Arivali	493	4420
3	Ashte	333	3650
4	Kasalkhand	333	3650
5	Khanavale	493	4420
6	Girvale	333	3650
7	Jatade	333	3650

Sr No	Village	Agricultural Land Rates in Rs. Per sq.m.	N.A. Land Rates (Per Sq.mt) (2018-19)
8	Dahivali	272	3590
9	Dapivali	272	3590
10	Devloli Bk	437	4100
11	Narpoli	437	4100
12	Barwai	493	4420
13	Bhatan	333	3650
14	Bhokarpada	493	4420
15	Shedung	493	4420
16	Savale	272	3590
17	Somtane	437	4100
KHALAPUR TALUKA			
1	Asroti	253	2510
2	Adoshi	231	2410
3	Asare	236	2410
4	Isambe	265	3310
5	Kumbhivali	338	4320
6	Kopari	253	2510
7	Kharsundi	265	3310
8	Chavani	89	1140
9	Chambharli	338	4320
10	Chinchavali Gohe	236	2410
11	Chouk Manivali	338	4320
12	Jambhivali T. Boreti	253	2510
13	Tembhari	338	4320
14	Thanenhave	265	3310
15	Dheku	338	4320
16	Talavali	236	2410
17	Talegaon	265	3310
18	Tambati	236	2410
19	Tupgaon	338	4320
20	Dahivati T. Boreti	338	4320
21	Devnhave	236	2410
22	Dhamni	265	3310
23	Dharni	253	2510
24	Nadhal	338	4320
25	Panshil	142	1580
26	Palikhurd	236	2410
27	Borivali	265	3310

Sr No	Village	Agricultural Land Rates in Rs. Per sq.m.	N.A. Land Rates (Per Sq.mt) (2018-19)
28	Majgaon	236	2410
29	Madap	338	4320
30	Lohop	265	3310
31	Wadgaon	265	3310
32	Vadval	253	2510
33	Vayal	338	4320
34	Vanivali	265	3310
35	Warad	236	2410
36	Vavandhal	338	4320
37	Washivali	265	3310
38	Wasambe	338	4320
39	Sajgaon	236	2410
40	Sarang	338	4320
41	Savroli	265	3310
42	Honad	236	2410
43	Kambe	236	NA
44	Paudh	236	2410

Based on the table 16-1 the average cost of land is considered as Rs.500 per sq.m. and accordingly the cost of acquisition for development of infrastructure comes to 4 times Rs.500 or Rs.2000 per sq.m (as per LARR 2013). The Cost of acquisition for 1 hectare of land is assumed as Rs.2.00 crores per hectare.

16.3 CONSTRUCTION COSTS

The average construction cost for various buildings required to house the physical and social infrastructure are based on the CIDCO Schedule of Rates 2014-15 escalated by 7% year on year. The average building costs are considered as Rs. 17250 per sq.m. The CIDCO SOR is adopted since it is the closest to the Project area. The cost of construction for Residential type of structures is taken as Rs. 13800 per sq.m. Similarly, the CIDCO SOR is also considered for estimating costs of Water supply, sewerage, storm water drainage and solid waste management.

16.3.1 LANDSCAPING AND LAND DEVELOPMENT COSTS

The land development costs are considered based on CIDCO SOR 2014-15 escalated by 7% year on year for current rate. Similarly, the landscaping costs are also based on Garden DSR for 2017-18 and PWD Parks and Garden rates for 2016-17 and CIDCO SOR.

16.3.2 ROAD CONSTRUCTION COSTS

The land development costs are considered based on CIDCO SOR 2014-15 escalated by 7% year on year for current rate. Similarly, the landscaping costs are also based on Garden DSR for 2017-18 and PWD Parks and Garden rates for 2016-17 and CIDCO SOR.

16.4 SUMMARY OF BLOCK COSTS

The total cost of Development comes to Rs. **12099.94** crores and includes the Infrastructure Development costs for the horizon year of 2041 and reservations (Social facilities) Development costs for the horizon year 2031. The highest expenditure shall be on Transportation Infrastructure followed by Sewerage Infrastructure. While the Social Infrastructure is proposed to be completed by 2031 through phases, the Physical Infrastructure is proposed to be completed by 2041 also in phases.

Table 16-2: Summary of block costs

Sr.No.	Item	Block Cost Estimate in Rs. Cr.
1	Social Facilities and Public Amenities	625.46
2	Transportation Infrastructure	9188.61
3	Water Supply Infrastructure	803.12
4	Sewerage Infrastructure	543.00
5	Tertiary Treatment Plant & Distribution	266.80
5	Storm Water Drains and Rainwater Harvesting	472.95
6	Solid Waste Management	200.00
	Total	12099.94

16.5 BLOCK COST FOR SOCIAL AMENITIES AND FACILITIES

The total land area required for social facilities and amenities is 185.5 Hectares. The social facilities and amenities have been mostly located on government land in the proposed land use plan. Therefore, the actual requirement of private land to be acquired is reduced considerably. Accordingly, it is assumed that approximately 90 to 100 Crs will be required for land acquisition (2.4 Cr per Hectare). The cost of development of social facilities as per D.P. reservations is given in Table 16-3.

Table 16-3: Block cost estimate for social facilities and public amenities

Sr. No.	Item	No. to be provided in D.P.	Land Area in Hectares	Constructi on Cost in Rs.Cr	Cost of land in Rs.Cr.	Total Cost in Rs.Cr.
1	School and Playground	22	17.6	169.84	10.56	180.40
2	Dispensary	8	1.2	23.16	0.72	23.88
3	General Hospital	3	1.5	20.7	0.9	21.60
4	Super Specialty	1	2	38.6	1.2	39.80
5	Old Age Home	2	1.6	22.08	0.96	23.04
6	Police Station	10	1.6	22.08	0.96	23.04
7	Library	1	1	19.3	0.6	19.90
8	Multi-Purpose Hall	2	5	96.5	3	99.50
9	Fire Brigade	3	3	28.95	1.8	30.75
10	Sports Complex	3	23	79.35	13.8	93.15
11	Parks and Playground		78	19.5	23.4	42.90
12	City Park	1	50	12.5	15	27.50
	TOTAL		185.5	552.56	72.9	625.46

Note: Land cost is assumed as Rs. 700 / sq.m. For Agricultural land. Land Acquisition rate is 4 times land rate = 2000 / sq.m. or Rs.2.0 cr per hectare

Therefore, the total cost of acquisition and development of social facilities (Reservations) comes to be approximately Rs. 625.46 crores.

16.6 BLOCK COST ESTIMATES FOR TRANSPORTATION INFRASTRUCTURE

The block cost estimates for Transportation Infrastructure includes cost of construction of roads, cost of proposed Freight Corridor Line and Metro including station and also Bus Rapid Transport system. While the construction roads and the BRTS will have to be taken up in the initial years of development the Metro line will be taken up for construction at a later date when the MSRDC SPA has sufficient catchment population.

Table 16-4: Block cost estimate for transportation infrastructure

Sr No	Description	Unit	No	Measurement	Quantity	Rate per Sq.m	Cost in Rs. Cr.	
Proposed Road								
1	Road- 60m width	Sqm	1	60920	60	3655200	8000	2924.16
2	Road- 45m width	Sqm	1	55780	45	2510100	8000	2008.08
3	Road- 30m width	Sqm	1	105260	30	3157800	8000	2526.24
4	Road- 24m width	Sqm	1	27870	24	668880	8000	535.1
5	Road- 18m width	Sqm	1	42710	18	768780	8000	615.02
6	BRTS Line including bus stand	km	1	29		29	200000000	580
Total								9188.61

16.7 BLOCK COST ESTIMATES FOR WATER SUPPLY INFRASTRUCTURE

The total cost estimate for Water Supply infrastructure comes to Rs.803.12 crores and includes Gravity feeder and Clear water reservoirs, rising mains from WTP to OHT, RCC service reservoirs, Trunk distribution system etc.

Table 16-5: Block cost estimate for water supply infrastructure

Sr.No.	Item	Cost in Rs. Cr.
1	Gravity Feeder and Clear Water Reservoir	202.30
2	Rising Main from WTP to OHT	77.58
3	Clear water Pumps and Machinery	20.70
4	RCC Service Reservoirs	134.55
5	Trunk Distribution System	266.97
6	Clear water Pumping Station	2.42
7	Staff Quarters and Office Building	6.05
8	Electrical HT Line and Sub-station	7.50
9	Maintenance Vehicles	1.08
10	Cost of Land	9.00
	Total	728.15
	Add contingencies & Non-core components @10%	74.97
	TOTAL	803.12

16.8 BLOCK COST ESTIMATE FOR SEWERAGE PROPOSALS

The block cost estimate for Sewerage proposals comes to Rs.1466.60 crores and includes costs of Sewage collection system, construction of sewage treatment plants (STPs) and Tertiary Treatment Plant (TTP) including treated water distribution costs. The cost breakup is given in the Table 16-6 and

Table 16-7.

Table 16-6: Block cost estimate for sewage and waste collection network and STP

Sr. No.	Component	Amount in INR millions
A	Land Acquisition	
1	For Sewage Treatment Plant, Tertiary Plant and Rest room cum Store	
	Sub total	180.00
B	Sewage Collection System	
2	Sewage Collection System complete with excavation, providing laying and jointing RCC pipes, Sewage chambers and manhole etc.	
	Sub total	1563.04
C	Sewage Treatment Plant	
1	Sewage Treatment Plants & SPS	1803.08
2	Staff quarters and other buildings with Land Development of complete STP TTP and Staff Quarter area	119.38
	Sub total	1922.46
D	Sewage pumping main and pump sets	
1	Sewage pumping set and SPS	
2	Sewage Rising Main from SPS to higher man hole	
	Sub total	40.83
E	Dedicated express power feeder main	
	From substation to treatment plants and SPS	450.00
F	Maintenance Vehicles	
	One Jeep and one truck and one mini truck	108.00
G	CD work & Sewer Bridges	
	CD Work & Sewer Bridges for Nalas and roads	650.00
	Total	4914.33
	Non-core Components	
7	Non-core Components & Contingencies 10.3%	506.18
	Cost in INR (Non-core Components)	
	Total Project Cost in INR millions	5420.51
	Say Rs in Crores	543.00

Table 16-7 : Tertiary treatment of effluent from STP and recycling system

Tertiary treatment of Effluent from STP and Recycling System		
Sr. No.	Component	Amount in INR Crores
A	Tertiary treatment plant	57.75
B	Treated water Reservoir and Pumping machinery	62.445
C	Recycled water distribution system	121.687
D	Cost for Non-core Components	24.913
	TOTAL	266.795
	Say Rs in Crores	266.8

Total cost of sewerage including tertiary treatment is Rs. 809.80 crores.

16.9 BLOCK COST ESTIMATE FOR STORM WATER DRAINAGE PROPOSALS

The Block cost estimate for storm water drainage also includes rainwater harvesting proposals and the total cost comes to Rs.520.25 crores including Rs.47.29 crores towards rainwater harvesting proposals. The cost breakup is given in the Table 16-8.

Table 16-8: Block cost estimate for storm water drains and rain water harvesting

Block cost estimate for Storm Water Drains					
Sr. No.	Item	Length	Unit	Unit Rate	Cost in Rs.
A	Light Duty Drains (Foot Path)				
		424446	m	6000	2546676000
B	Heavy Duty Drains (crossings, plot entries)				
		181905	m	12000	2182860000
	TOTAL	606351	m		4729536000
		IN CRORES			472.95
	APPROXIMATE - 475 CRORES				

16.10 BLOCK COST ESTIMATE FOR SOLID WASTE MANAGEMENT PROPOSALS

The Block Cost Estimate for Solid Waste management proposals consist of cost of composting of wet waste and land fill development and maintenance costs. The detailed breakup of the same is provided in Table 16-9.

Table 16-9: Block cost estimate for solid waste management

Sr. No.	Item	No.	Unit
A	Land Acquisition Cost		
1	Land Area Requirement	31	Ha
2	Rate	0.6	Cr / Ha
3	Land Cost	18.6	Cr
B	Composting Cost		
1	Volume per day	446	m ³ per day
2	Volume for one year	162790	m ³ per day
3	Rate for composting	300	Rs./ m ³ per year
4	Cost per years	4.88	Cr
5	Cost for 15 years	64.4	Cr
C	Land fill site development Cost		
1	Rate	350	Rs per ton
2	Quantity	3317850	ton
3	Cost	116.12	Rs Cr
D	Total Cost (in Rs Cr = A3+B5+C3)	200	Cr

16.11 INFRASTRUCTURE PHASING

The physical infrastructure is estimated for the horizon year of 2041 to accommodate the population of 11,48,000. Phasing is essential in order to conserve the Infrastructure development costs and at the same time achieve optimal development. Therefore, it is necessary to plan and phase the infrastructure in tune with the development potential in order to

conserve Infrastructure development expenditure. The physical infrastructure can be classified into Trunk Infrastructure and distribution Network. This is applicable in equal measure to water supply, sewerage, storm water management, roads and solid waste management. There is a need to rationalize and phase the development of trunk as well as distribution infrastructure. Based on the development potential of the Project area the same is divided into 4 parts for purposes of Phasing.

16.11.1 PHASE-I

The well-connected areas of the SPA are the areas that will show growth at the outset of the project and the same are to be identified as Phase-I development. Thus the areas falling to the south of NH-4 and falling within Planning unit no-6 is found to be area with the highest potential due to its excellent accessibility, the existing NH-4 and Chouk Railway Station. Similarly, the areas around Narpoli and Somatane villages are high potential areas due to its proximity of JNPT Port and existing logistics development. Therefore, these could also be included in Phase-I development.

16.11.2 PHASE-II

The southern portion of the MSRDC SPA is identified as Phase-II area as it is likely to develop at rate, which is similar to that of Planning Unit 6. This is due to the presence of large number of industries in the area, proximity of the Khalapur toll and easy accessibility to the Mumbai Pune Expressway. During the Phase-II of the development of MSRDC SPA, all the southern area is proposed to be linked to the Northern areas by the service road and also establishment of 60m wide road to the west of Mumbai Pune Expressway as proposed in the Development Plan.

16.11.3 PHASE-III

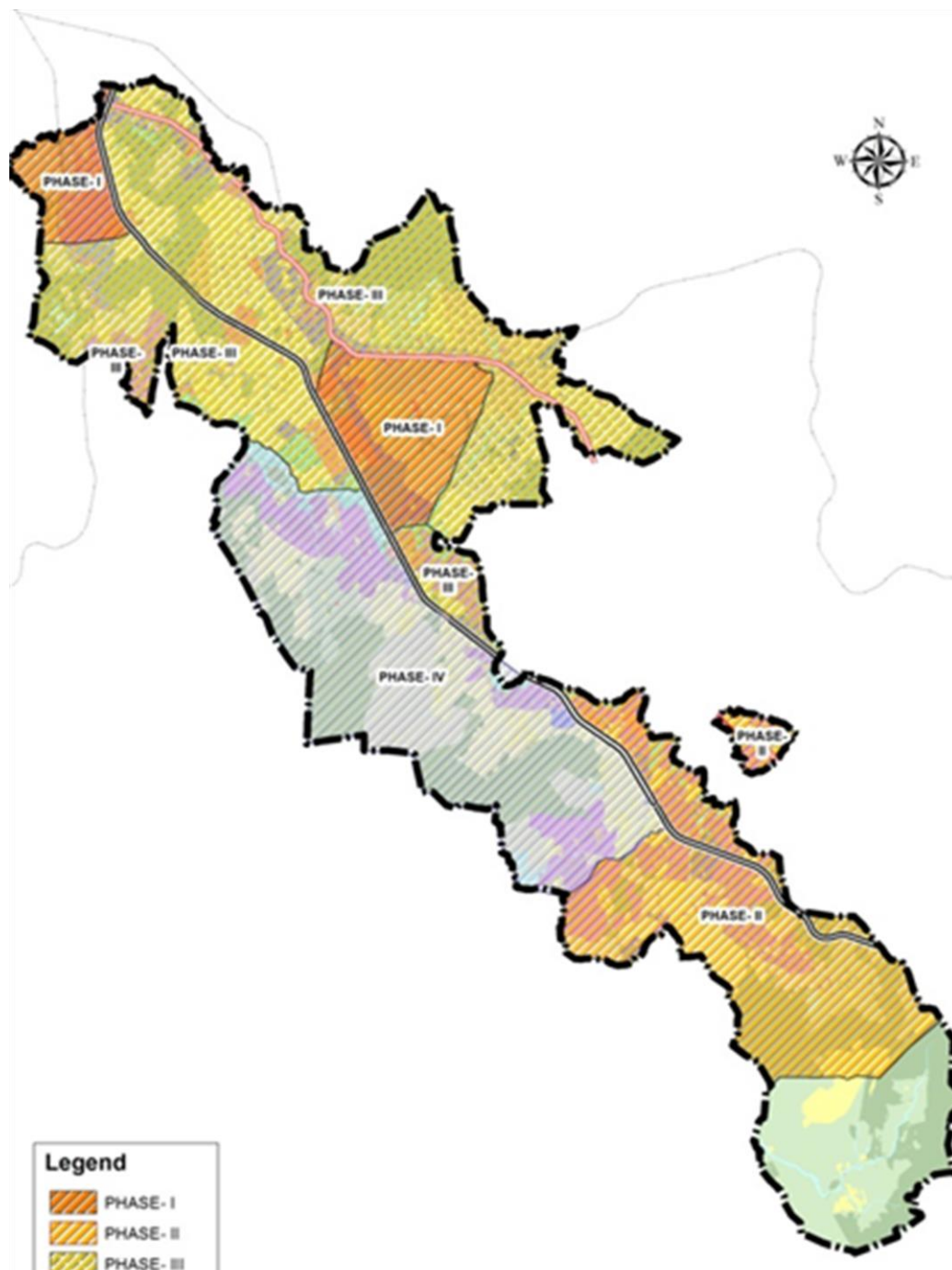
The Phase-III land is located to the North east of the Project area. This area shall be rejuvenated and be made available for development through the construction of proposed four two Railway Stations, Barwai and Lodhivali. Though this area is located closer to Panvel, development is expected to takeoff after substantial development in Phase-I and Phase-II areas. This area is expected to attract Premium development due to its proximity to MMR. The Infrastructure needs of this area are expected to be far less than other areas.

16.11.4 PHASE-IV

This area has been considered in Phase-IV due to its limited accessibility and low development potential. In order to bring this part of the SPA Area into development potential the East-West linkages will have to be established bridging over the Mumbai-Pune Expressway. Also the North South Connectivity will also have to be strengthened. Since initially the resources will have to be diverted to Phase-I and Phase-II areas, resources will subsequently start flowing into Phase-III area for creating these linkages. During the subsequent period any interim development happening in this area will have to take support from existing linkages.

The Phasing of the project area will also determine the prioritization of implementing Town Planning Scheme being recommended for land development, as it is not practical to develop town planning scheme for the entire SPA Area at the outset itself and in one go.

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Map 16-1:Phasing

16.12 PHASING OF SOCIAL FACILITIES (RESERVATIONS)

As mentioned in the chapter of Social Infrastructure, total 138 reservations are required to be developed in MSRDC SPA area. Taking into the consideration of the development trends and the resources available with the planning authority these reservations are proposed to be developed in phased manner as tabulated below.

16.13 FINANCING THE DEVELOPMENT PLAN

16.13.1 REVENUE LIKELY TO ACCRUE TO MSRDC

Sources of revenue for MSRDC SPA shall be from the following:

- **Land Linked Premium:** The prevailing base FSI for villages falling in MMR Area were entitled to base FSI of 0.2 which could be enhanced to 0.5 on payment of premium while on the other hand villages falling in Raigad Regional Plan were having a base FSI of 1.1. In order to normalize a basic permissible FSI to 1.1 across all the villages included in MMR as well as RRP areas it is proposed to levy a land linked premium @ 5% of ASR on the entire land area while granting the development permissions. This will compensate for the revenue that will be lost in MMR villages as well as be one of the sources for generating revenue for Infrastructure development.
- **FSI Linked Premium:** The DCPR proposes a basic permissible FSI with payment of Land Linked Premium as 1.1. This FSI can be enhanced to the permissible Maximum Building potential on plot as per DCPR. This Maximum Building potential on the plot could be achieved with a combination of additional FSI on payment of Premium as also through TDR loading. The premium for the Residential and Industrial land uses is proposed as 40 % of the ASR and for Commercial land use the same is proposed as 50% of the ASR rate. This will generate substantial revenue for MSRDC SPA.
- **Development charges:** As per Section 124A of the MR&TP Act 1966 a Planning Authority is empowered to levy, assess and recover the Development charges that arise due to development of physical and social infrastructure. This development charge is levied on the institution of use or change of use of any land or building, or development of any land or building, for which permission is required under this Act at the rates specified. The development funds generated through the above charges shall be utilised for off- site infrastructure development.
- **Disposal of Social Facility plots in TP Scheme:** Around 5% of the land coming for development under TP scheme is available to the Planning Authority as Social Facility plot. In order to encourage and catalyse development of social facilities and amenities, these plots shall be disposed to the concerned institution/ organization on long term lease as per the Land Disposal Policy 2018 of MSRDC.
- **Monetization of MSRDC owned land parcels:** At around 12 different locations, MSRDC's land parcels admeasuring about 215 hectares are situated in MSRDC SPA area. In this Draft Development Plan, almost all these land parcels have been shown for commercial purpose. Therefore, by monetization of these land parcels, some revenue is expected to be generated.

The total estimated revenue is 14028 crores. The summary of the Estimated Revenues is shown in Table 16-10 below.

Table 16-10: Summary of estimated revenues

Sr.No.	Source of Revenue	Estimated Revenue in Rs.Cr.
1	Land Linked Premium	859.54
2	FSI Linked Premium	2213.22
3	Development Charges	3999.83
4	Sale of 15% plots through T.P.Scheme	6160.78
5	Sale of MSRDC land	794.40
Total Estimated Revenues		14027.77

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17 IMPLEMENTATION OF DEVELOPMENT PLAN

17.1 COST OF DEVELOPMENT PLAN PROPOSALS

The total cost of Development works out approximately to Rs. 12099 crores and includes the Infrastructure Development costs for the horizon year of 2041 and Social Infrastructure Development costs for the horizon year 2031. These development costs can only be met through adopting the correct land development methods for implementation of the Development Plan proposals. Some of the tools that could be adopted by the MSRDC SPA for land development are outlined below along with their relevance to the proposed Development Plan.

17.2 TOWN PLANNING SCHEME

The basic concept of T. P. Scheme is pooling together all the land under different ownerships for a unified planning and thereafter subdividing and redistributing it to original landowners in a properly reconstituted form after deducting the land required for the open spaces, social infrastructure, services, housing for the economically weaker section and road network. The reconstituted developed plots are allotted to the land owners in proportion to the value of their undeveloped land. MSRDC envisages to implement the proposals of Development Plan through enabling provision of Town Planning Schemes which will considerably reduce the liability towards cost of acquisition of land required for social and physical infrastructure.

17.3 TRANSFERABLE DEVELOPMENT RIGHT

Transferable Development Right means a development right to transfer the potential of a plot designated for a public purpose in a Development plan. It is expressed in terms of total permissible built space and is calculated on the basis of Floor Space Index or Floor Area Ratio allowable for that plot which can be utilized by the owner himself or by way of transfer by him to someone else from the present location to a specified area in the plan. This can be used as additional built space over and above the permissible limit in lieu of monetary compensation for the surrender of the concerned plot to the Planning Authority.

By providing incentive TDR through DCPRs provision, MSRDC SPA will be able to acquire the land under the reservations for spine roads and service roads at ease.

17.4 ACCOMMODATION RESERVATION

This tool enables development of Public reservations without land acquisition. In this concept, the Owner whose land is under reservation has to develop certain percentage of land under reservation and surrender it to the Planning Authority. In lieu of this surrendered land, the owner shall be entitled to develop remaining land under reservation for the uses permissible in adjoining zone with full permissible FSI of the entire plot and permissible TDR potential of the entire plot.

17.5 MAHARASHTRA HIGHWAY ACT, 1955

The Maharashtra highway Act was mainly enacted for the restriction of ribbon development along highways, for the prevention and for acquiring land and undertaking development of various categories of roads including state highway, major district road, other district roads and village roads. The act empowers MSRDC to acquire and develop the land for these classified roads in MSRDC- SPA area. Therefore, widening of National Highway and State highway will be implemented through this provision.

17.6 IMPLEMENTATION THROUGH MONETARY COMPENSATION

Any land required or reserved for any of the public purposes specified in the draft Development Plan may be acquired by agreement that is by paying an amount agreed to land owner (by way of private negotiations) or such land may be acquired compulsorily by the Planning Authority under the provisions of LARR Act 2013 by paying monetary compensation.

17.7 PROGRAMMING AND CONCLUSION

In order to implement the Development Plan proposals in an orderly and systematic manner it is essential to adopt tools of Project Management during construction and delivery of Infrastructure projects so that cost overruns and wasteful expenditure are avoided in order to conserve and properly utilize scarce financial resources. As a matter of rule, no project should be taken up for implementation on an ad-hoc basis but be based on programming utilizing Project Management tools and techniques. In other words the successes of implementation of the Development Plan proposals depend on Programming and Project Monitoring.