City and Industrial Development Corporation of Maharashtra Ltd.

MODIFIED DRAFT DEVELOPMENT PLAN
FOR

NAVI MUMBAI AIRPORT INFLUENCE NOTIFIED AREA (NAINA)

REPORT

~~NOVEMBER 2016~~

SEPTEMBER 2017

SPECIAL PLANNING AUTHORITY
NAVI MUMBAI AIRPORT INFLUENCE NOTIFIED AREA
Appointed by Government of Maharashtra under Section 40(1)(b) of MR and TP Act 1966 on 10th January 2013

PREAMBLE

The Government of Maharashtra has decided to develop a site for International Airport at Navi Mumbai. One of the conditions laid down by the Ministry of Environment and Forests (MoEF), Government of India, while granting Environmental Clearance (EC) and Coastal Regulation Zone (CRZ) clearance to the Navi Mumbai International Airport (NMIA) that the Development Plan for Navi Mumbai shall be revised and recast in view of the proposed airport development so as to avoid haphazard development around the airport. City and Industrial Development Corporation of Maharashtra Ltd.(CIDCO) submitted a proposal to the Government vide letter No. CIDCO/PLNG/CP/2012/18 dated 17th January 2012 requesting for its appointment as Special Planning Authority under section 40(l)(b) of the said Act for an area around the proposed International Airport. The Government of Maharashtra, Urban Development Department by its notification No.TPS-1712/475/CR-98/12/UD-12 dated 10th January 2013 notified the Navi Mumbai Airport Influence Notified Area (NAINA) and appointed CIDCO as Special Planning Authority for the notified area under section 40(1)(b) of the Maharashtra Regional and Town Planning Act, 1966. CIDCO acting as Special Planning Authority for NAINA is hereafter referred to as SPA – NAINA.

SPA-NAINA in exercise of powers conferred by Section 40 of Maharashtra Regional and Town Planning Act 1966 and all other powers enabling it in this behalf has prepared and published the Draft Development Plan of NAINA in the said notified area and has prepared Draft Development Plan Report for implementation of the Draft Development Plan.

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List of Abbreviations

AMC	Ambarnath Municipal Council
AKBSNA	Ambarnath, Kulgaon-Badlapur Surrounding Notified Area
CBD	Central Business District
CIDCO	City and Industrial Development Corporation of Maharashtra Ltd
CR	Central Railway
CRZ	Coastal Regulation Zone
CSIA	Chhatrapati Shivaji International Airport
CTS	Comprehensive Transport Study (known as TransForm)
DCR	Development Control Regulations
DEA	Department of Economic Affairs
DFC	Dedicated Freight Corridor
DMICD C	Delhi Mumbai Industrial Corridor Development Corporation
DMRC	Delhi Metro Rail Corporation
DP	Development Plan
DPR	Detailed Project Report
ELU	Existing Land Use
EIA	Environmental Impact Assessment
ES	Environmental Status
FOB	Foot Over Bridge
FSI	Floor Space Index
FY	Financial Year
GA	Growth Area
GIS	Geographical Information Systems
GoI	Government of India
GoM	Government of Maharashtra
GPS	Global Positioning System
HA	Hectare
JNPT	Jawaharlal Nehru Port Trust
KMCL	Karjat Municipal Council
KDMC	Kalyan Dombivli Municipal Corporation

KHMCL	Khopoli Municipal Council
KNTNA	Khopta New Town Notified Area
LDZ	Limited Development Zone
MMC	Multi-Modal Corridor
MMCL	Matheran Municipal Council
MCGM	Municipal Corporation of Greater Mumbai
MIDC	Maharashtra Industrial Development Corporation
MESZ	Matheran Eco-Sensitive Zone
MISEZ	Mumbai Integrated Special Economic Zone
MJP	Maharashtra Jeevan Pradhikaran
MJPRCL	Mumbai-JNPT Port Road Company Limited
Mld	Million Litres/day
MMB	Maharashtra Maritime Board
MMR	Mumbai Metropolitan Region
MMRDA	Mumbai Metropolitan Regional Development Authority
MoEF	Ministry of Environment & Forest
MPC	Metropolitan Planning Committee
MR&TP Act	Maharashtra Regional and Town Planning Act, 1966
MSEDCo	Maharashtra State Electricity Distribution Company Ltd
MSRDC	Maharashtra State Road Development Corporation Limited
MSRTC	Maharashtra State Road Transport Corporation
MTHL	Mumbai Trans Harbour Link
MWSSB	Maharashtra Water Supply and Sewerage Board
MLRC	Maharashtra Land Revenue Code
MRVC	Mumbai Rail Vikas Corporation
MTHL	Mumbai Trans Harbor Link
MUD	Ministry of Urban Development
MUIP	Mumbai Urban Infrastructure Project
MUTP	Mumbai Urban Transport Project
NH	National Highway
NMIA	Navi Mumbai International Airport
NMMC	Navi Mumbai Municipal Corporation
NMSEZ	Navi Mumbai Special Economic Zone

NAINA	Navi Mumbai Airport Influence Notified Area
NSDP	Net State Domestic Product
NSSO	National Sample Survey Organization
NTDA	New Town Development Authority
NUTP	National Urban Transport Policy
O&M	Operations and Maintenance
OD	Origin Destination
PLU	Proposed Land Use
PPP	Public Private Partnership
PAMCL	Panvel Municipal Council
PMCL	Pen Municipal Council
PU	Phase/ Planning Unit
R&R	Resettlement & Rehabilitation
RP	Regional Plan
RTS	Rapid Transit System
SEZ	Special Economic Zone
SH	State Highway
SPA	Special Planning Authority
TBD	Theme Based Development
TBR	Theme Based Reservations
TMC	Thane Municipal Corporation
TPS	Town Planning Scheme
TPD	Tonnes per day
TRB	Transport Board
UMTA	Unified Metropolitan Transportation Authority
ULB	Urban Local Body
WFPR	Work Force Participation Rate

1. INTRODUCTION

1.1 BACKGROUND

CIDCO is in the process of developing Navi Mumbai since 1970 as a counter-magnet to Mumbai. The existing airport at Mumbai, is fast reaching saturation and scope for further enhancement appeared very limited in terms of passenger and cargo handling facilities, aircraft maintenance and city side facilities. The air travel demand forecast indicated that demand will grow from 30 million passengers per annum in the year 2012-13 to over 100 million passengers per annum by the year 2030-31.

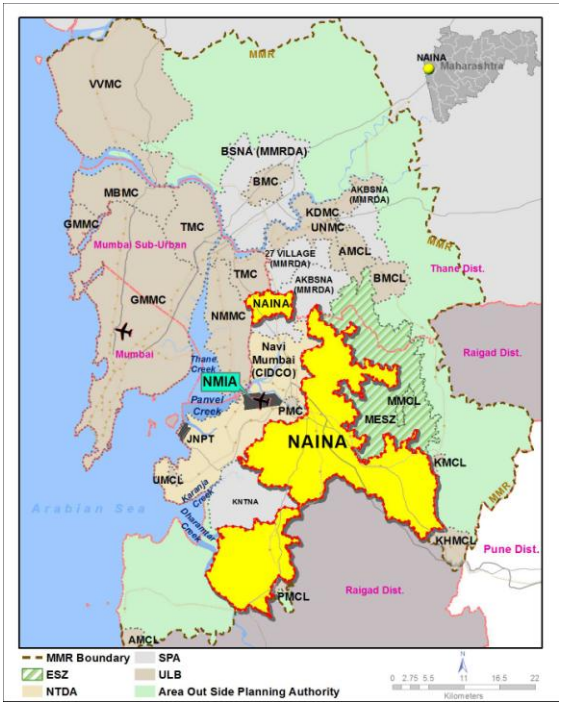

Figure 1-1: Location of NAINA in MMR

It was therefore imperative to build a second Airport in MMR. To meet the growing demands of air travel, following the policy of Greenfield airports, CIDCO initiated studies for locating the airport within Navi Mumbai and selected a location close to the mouth of Panvel Creek. The apprehension about the possibility of haphazard development around proposed airport, if sufficient care is not taken led to the declaration of area around proposed airport as NAINA. Refer **Figure 1-1: Location of NAINA in MMR** for the location of proposed airport and NAINA in MMR

1.2 NAVI MUMBAI AIRPORT INFLUENCE NOTIFIED AREA (NAINA)

CIDCO successfully sought approvals for the proposed International Airport in Navi Mumbai from Government of Maharashtra, Ministry of Civil Aviation and Ministry of Environment, Forest & Climate Change (MoEFCC), Government of India. While granting the Environmental and Coastal Regulations Zone (CRZ) clearances to the proposed Greenfield airport on 22nd November, 2010, Ministry of Environment, Forest & Climate Change (MoEFCC), Government of India, expressed concern about unplanned and haphazard development within 20 km of the Airport. In pursuance of these concerns, Government of Maharashtra identified the area around the proposed airport that was not under any urban governance mechanism (i.e. urban local body (ULB)/ special planning authority/ new town development authority etc.) and notified it as "Navi Mumbai Airport Influence Notified Area (NAINA)" and appointed CIDCO as the Special Planning Authority (SPA) under Section 40(1) (b) of MR&TP Act, 1966 by Govt. Notification No. TPS-1712/475/CR-98/12/UD-12 dated 10th January, 2013. In this notification NAINA comprised total 270 revenue villages from Uran, Panvel, Karjat, Khalapur, and Pen Talukas of Raigad district and Thane Taluka of Thane district of Maharashtra. As per this notification NAINA is approximately 55792 Ha (558 km²). For details of notification refer **Annexure 1-1.** ~~Subsequently due to Notification of Matheran Eco-sensitive zone, by Ministry of Environment and Forests dated 4th February 2003, two villages (Karambali Tarf Taloje and Sangatoli) which were part of NAINA were stood to be part of MESZ.~~ Subsequently, it was observed that, two villages (Karambali Tarf Taloje and Sangatoli) became part of MESZ as per Notification of Matheran Eco-sensitive zone (MESZ), by Ministry of Environment and Forests dated 4th February 2003 and were de-notified from NAINA. Therefore the total numbers of villages in NAINA reduced to 268. Further, by Government of Maharashtra corrigendum notification dated 14th July 2015, Rode village was deleted and Nevali village was added in NAINA.

The process of preparation of Development Plan for NAINA was under progress and Existing Land Use map was prepared and submitted to Government of Maharashtra in November 2015. Meanwhile, Government of Maharashtra, vide its notification No. IDC. 2007/(718)/IND-14 dated 22nd September 2015, appointed MIDC (Maharashtra Industrial Development Corporation) as the Special Planning Authority (SPA) for eight villages in Khalapur Taluka. As per the said notification, three villages (namely Wangni, Kelavali and Kandroli Tarf Boreti) are fully under MIDC jurisdiction whereas five villages are partly in MIDC and NAINA. The fact that notification mentioned name of villages with series of survey numbers, it is assumed that the Gaothans engulfed within the list of survey numbers also fall under MIDC jurisdiction. Refer **Figure 1-2: MIDC and MSRDC area as per Notifications**

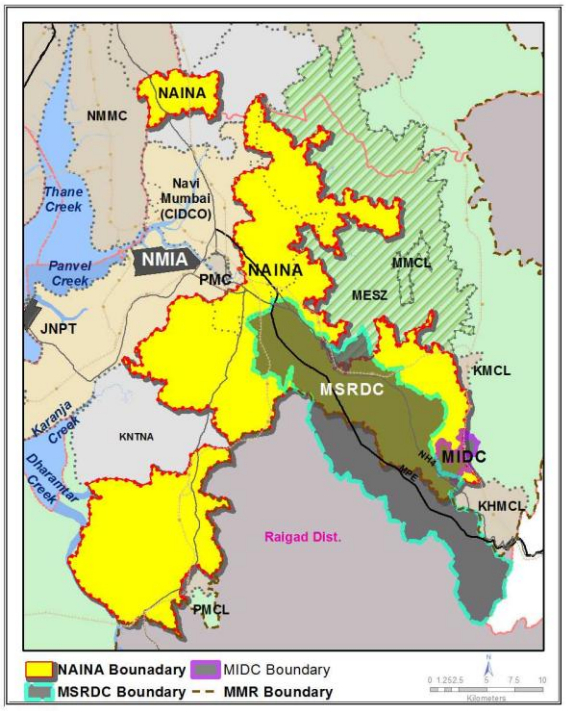

Figure 1-2: MIDC and MSRDC area as per Notifications

Later, Government of Maharashtra vide Notification no. TPS-1815/UOR/78/15/UD-13 dated 17th February 2016, appointed MSRDC as SPA for 84 villages (67 villages from Khalapur Tahsil and 17 villages from Panvel Tahsil). As per the notification MSRDC was SPA for the area between Mumbai-Pune Expressway & Mumbai-Pune old Highway (NH4), and for the land within the two km south-west from Mumbai-Pune Expressway (excluding the area of Pune district and IDP in NAINA). The copy of MIDC and MSRDC notifications are given as **Annexure 1-2** and **Annexure 1-3** respectively. Refer **Figure 1-2: MIDC and MSRDC area as per Notifications**

Due to above mentioned notification, the 11 villages of NAINA which had signed MOU in 'Make in India' week on 17th February 2016, were separated from NAINA and became part of MSRDC area. Due to initiatives and steps already taken for development of Khalapur Smart City (KSC), on request of CIDCO, Government of Maharashtra decided to remove these 11 villages from MSRDC jurisdiction, and issued amended Notification No. TPS-1815/UOR/78/15/UD-13 on 18th March 2016. The revised list comprised of 71 villages. Out of theses 71 Villages, 41 villages are from NAINA. For notification refer **Annexure 1-4**. Refer **Figure 1-3: Final MSRDC area as per amended Notification**.

After considering the areas excluded for MSRDC, MIDC and MESZ, NAINA now comprises of 224 villages with an area of 47409.3 Ha (474 km^2); the final list of 224 villages is given in **Annexure 1-5**.

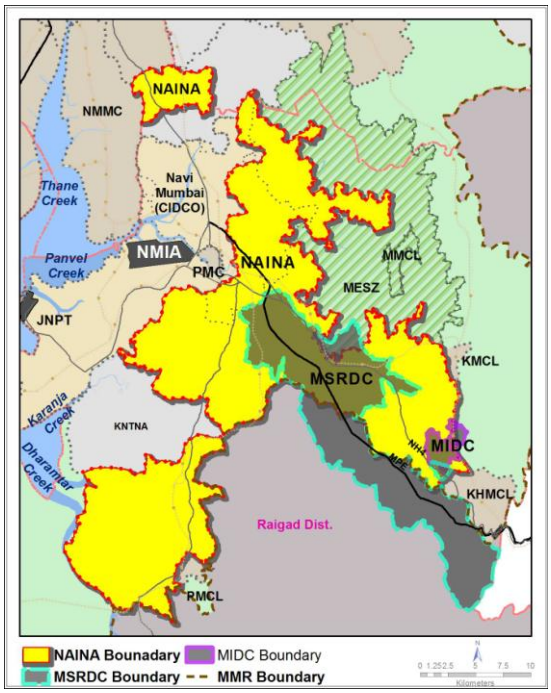

Figure 1-3: Final MSRDC area as per amended Notification

1.3 NEED FOR DEVELOPMENT PLAN

Development Plan indicates the manner in which the use of land shall be regulated, and also indicate the manner in which the development of land shall be carried out. It defines the use of land in term of activities such as residential, commercial, industrial, agricultural, recreational, public utilities, physical and social infrastructure.

For SPA, it is mandatory to prepare Development Plan (DP) within 3 years from the date of its appointment under Section 21 of MR&TP Act, 1966. Given the extensive area of NAINA and the content and procedure of preparing Development Plan as laid down in the MR&TP Act, 1966 the preparation of full-fledged Development Plan requires considerable time.

In addition to above, CIDCO considered the following factors:

Existing Land Use: Preparing an existing landuse survey is the first mandatory step in formulating a Development Plan. Due to vast area considerable time is required to prepare Existing Land Use (ELU) map.

Testing of Innovative Land Development Model: An innovative concept that promotes voluntary land assembly, contributes land for public purposes, finances infrastructure development, has been

developed by CIDCO for NAINA. However, this concept needs to be tested quickly in the real world, with regard to its applicability and acceptability by the landowners and developers in NAINA.

Development Pressure: At present in NAINA, development is guided by provisions of development control regulations of the MMR Regional Plan (RP), which permits limited development around Gaothans. However, due to its proximity to Panvel town, emerging major railway station and the proximity to proposed airport, area around Panvel is experiencing relatively accentuated activity. To manage such development pressures, provisions of MMR RP are not adequate and legal provisions by way of Development Plan (DP) and Development Control and Promotion Regulations (DCPR) are considered to be necessary.

Preparation of Interim Development Plan (IDP): Based on the above considerations, CIDCO decided to prepare an Interim Development Plan (IDP) on priority for an area under pressure of development as per the provisions of section 32 read with section 26 of the MR&TP Act, 1966.

Meanwhile Existing Land Use (ELU) survey was continued for the balance area. ELU was prepared and submitted to Government of Maharashtra in November 2015. Now the DP is prepared and the same is ready for inviting objection and suggestion and then it will be submitted to Government of Maharashtra for approval.

Accordingly, IDP was prepared for 23 villages of NAINA, as per all the procedure as laid down in MRTP Act and submitted to Government for sanction in September, 2015.

Now the DP is prepared for the remaining 201 villages following the procedure laid down in the MRTP Act. The objection and suggestion are invited on the same, after conducting the hearing by Planning Committee and incorporating the report of Planning Committee, the Development Plan will be submitted to Government of Maharashtra for approval.

The detailed timeline of Development Plan as per MRTP Act, 1966 is given in **Table 1-1 : Procedure for preparation of Development Plan as per MR&TP Act 1966**

Table 1-1 : Procedure for preparation of Development Plan as per MR&TP Act 1966

SN	MRTP Act Clause No	Description	Date
			As per Act
1.	40 (1) (b)	Appointment of SPA for Notified Area	DOA
2.	21 (2)	Within 3 years from the date of appointment of SPA.	DOA + 3Y
3.		• Declaration of Intention for preparation of Development Plan	
4.		• Preparation of Development Plan	
5.		• Submission of DP to Government for sanction	
6.	21 (3)	If required, seek Time Extension from Government	Extension Possible - NO LIMIT
7.	23 (1)	Date of Declaration of Intention for preparation of DP	DOI
8.		• By board resolution	
9.		• Before carrying out survey Send copy of resolution with DP boundary to State Govt.	
11.		• Publish in Official Gazette and In Local newspaper (one or more)	
13.		• Invite suggestion/ objection from public minimum for 60 days	DOI + 2 M
14.	23 (2)	Copy of Plan to be made available for public inspection	DOI
15.	24	Appointment of TPO,	DOI

SN	MRTP Act Clause No	Description	Date
			As per Act
16.		• Resolve to appoint TPO by Board Resolution along with declaration of intention for preparation of DP	
17.		• Appoint TPO with prior approval of Government	
18.	25	Carry out survey and Prepare Existing Land Use (ELU)	DOI +6 M
19.		• Within six months from the date of declaration of intention	6M
20.		• If required, extension upto 12 months from Govt.	DOI+6M+1Y
21.	26 (1)	Prepare & Publish Draft DP	DOP
22.		DP to be prepared within 2 yrs from declaration of Intention u/s 23(1)	DOI + 2 Y
23.		• Subject to provisions of Section 21 and	
24.		• Publish a notice in official gazette stating where plan would be available for inspection	
25.		• Make plan available for inspection by public	
26.		• Copy of plan, Report extracts and DCR to be available on sale	
27.		• Invite suggestion/ objection from public minimum for 30 days	DOP + 1 M
28.		If required, extension be taken from Government (6 M maximum)	DOI+2Y+6 M
29.	26 (2)	Publication of Draft Development Plan Notice with following:	
30.		• Copies available on sale	
31.		• Report on ELU and the Survey	
32.		• Maps, charts and Report explaining the provisions of DP	
33.		• Map showing Planning Unit/sector unalterable till revision of DP	
34.		• Report on stages of Development	
35.		• Approximate cost of land acquisition and cost of Works.	
36.	28(1)	Consideration of suggestion objection received by SPA within time limit	DOP + 6 M
37.		• Receiving of Suggestion/ Objection	DOP + 1 M
38.	28(2)	• SPA to constitute Planning Committee (PC)	
39.		• SPA to Forward Suggestion/ Objection to PC	
40.	28(3)	• PC to give hearing & prepare Report and submit to SPA within 2 M	
41.	28(4)	• SPA to incorporate PC Report within 2 M from date of its receipt	
42.	28(4)	• SPA to Publish Modified Draft DP ~~and Submit to Govt. for approval~~	DOP + 6 M
43.	30(1)	Submission of Draft DP to Govt for approval within 6 M from DOP	DOP + 6 M
44.		submission can be extended maximum by 6M	DOP+6M+ 6M

DOA - Date of Appointment of SPA

DOI – Date of Declaration of Intention for preparation of Development Plan U/S 23(1)

DOP - Date of publication of Draft Development Plan U/S 26 (1)

NS - Not Specified

6 M	implies	183 days	

2. EXISTING PROFILE

The chapter presents the existing profile of the project area. It describes its location, regional context and provides details of physiography such as topography, soil conditions, climate, geomorphology and current demographic characteristics. The chapter presents availability of social infrastructure such as education, health, socio-cultural facilities in NAINA etc. Besides, status of existing physical infrastructure has been assessed such as water supply, sewerage, storm water drainage, solid waste management etc. An overview of the key economic activities is also given. The chapter also presents the summary on the socio-economic profile.

Furthermore, existing connectivity of NAINA with MMR has also been presented. Navi Mumbai is one of the vibrant sub-regions in MMR in terms of population and employment growth. MMRDA, CIDCO, MSRDC, etc. have planned number of transportation projects to provide the regional connectivity to Navi Mumbai which is between NAINA and Mumbai. Some of the major projects planned through various past studies which are relevant for the area are also discussed.

2.1 LOCATION

As mentioned in Chapter-1, NAINA comprises 224 villages and admeasures 474 Km². In terms of geographical location, NAINA stretches from 72°58' East to 73°20' East (longitude) and 18°41' North to 19°09' North (latitude). The villages are from Thane Taluka of Thane district and Karjat, Khalapur, Panvel, Pen, and Uran Talukas of Raigad district. Location of NAINA is shown in **Figure 2-1: Geographical Limits of NAINA**

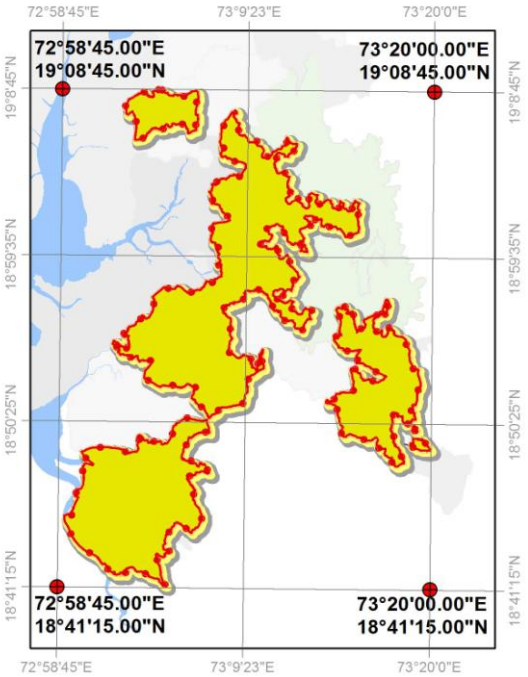

Figure 2-1: Geographical Limits of NAINA

2.2 REGIONAL SETTING

NAINA shares its boundary with Thane Municipal Corporation (TMC) and Ambernath Kulgaon Badlapur Special Notified Area (AKBSNA) in north, Matheran Ecosensitive Zone on east, Khopoli and Kajat Municipal Council, area under MSRDC as SPA, Pen Municipal Council on south and Dharmtar creek, Khopta New Town, Navi Mumbai (CIDCO) and Navi Mumbai Municipal Corporation on west. In terms of geography, NAINA extends from Goteghar, Nitalas, Wangani Tarf Taloje and Maldunge villages in the North to Shirki Chawl, Wave, and Dhawate in the south west side and Shengaon, Mahad and Nimbode to the south-east. The east-west spread is about 30 km from Dighode to Varne. The region is a mix of flat and hilly areas with Kalundre, Kirki, Gadhi, Kalun, and Patal Ganga rivers passing through and other natural water bodies existing within the project area. Refer **Figure 2-2: Regional location of NAINA**

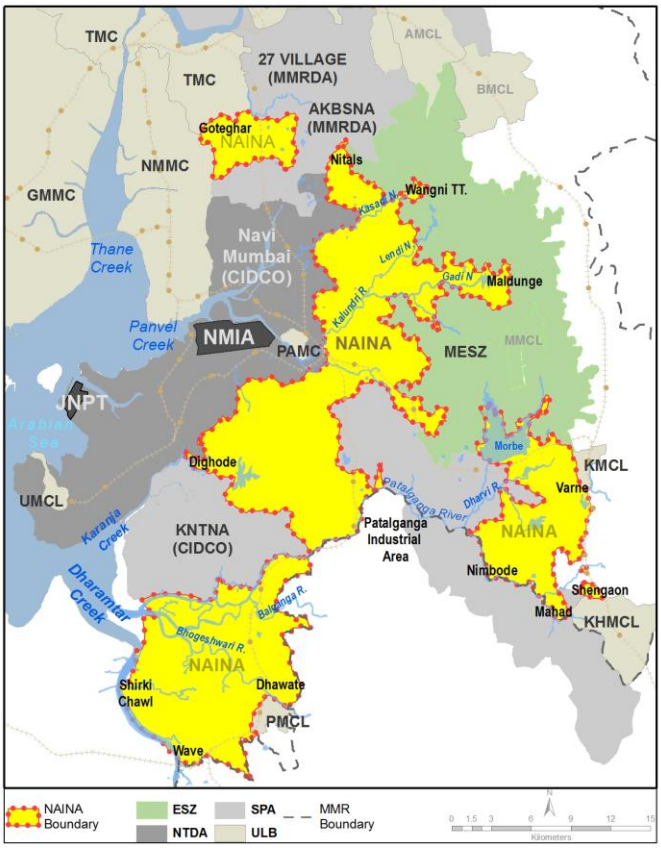

Figure 2-2: Regional location of NAINA

2.2.1 TOPOGRAPHY

NAINA is situated on Western Ghats, a mountain range that runs parallel to the western coast of the Indian peninsula. The location therefore offers number of hills and undulating geography within the project area. The prominent ones are - along Nitalas and Chorambhe; south of Pale Budruk, Valap, Hedutane and Kanpoli; around Chirvat, Chinchavan, Mosare and Patnoli; Karnala fort and hill, Shirdhon and Akulwadi to the west of Project area; around Talegaon and all along eastern side of NAINA along Matheran Eco-Sensitive Zone. In the south east part hills are along Palasdhari, Talavali in Karjat Taluka and Kalote Mokashi, Vavandhal, Vinegaon, Gohdivali etc in Khalapur Taluka. The highest elevation in NAINA is in Palasdhari Village in the southeast part which is around 480 m above MSL. Refer **Annexure 2-1 for Topography of NAINA**

2.2.2 SOIL CONDITIONS

Soils in DP area are formed from the Deccan trap. Depending on the topographical location, various types of soils are grouped as khar or salt, coastal alluvial and lateritic soils. The soil quality here is favourable for the yield of valuable forest products such as teak-wood, Hirda (Myrobalan), Beheda, etc. However, these soils are heavily eroded due to grazing and cutting of the forest trees.

Major part of NAINA is covered by the rice fields, which are loamy in texture; yellowish or reddish-grey in colour, neutral in reaction and almost devoid of lime. They are formed from the

trap rock from Sahayadri ranges under heavy rainfall and humid climatic conditions. The sub-soil water level is around 3 to 5 m deep. The salt contents of the well water are high due to the proximity of the sea; but due to excellent drainage, its use has not produced any deleterious effects.

2.2.3 GEOMORPHOLOGY

Raigad region has predominantly dark volcanic lava flows and laterites. These are spread out in the form of horizontal sheets or beds and constitute the innumerable spurs, hills and hill ranges; bold, flat topped ridges; lofty peaks and plateaus with impressive cliffs. These hill ranges and plateaus form a part of the Western Ghats. In the plains and valleys the lava flows occur below a thin blanket of soil of variable thickness. Because of their dominantly basaltic composition and the tendency to form flat-topped plateau, the lava are termed plateau basalts. Since these basaltic lava flows cover an extensive region in the Deccan and frequently present step-like appearance to the hills and ridges they are commonly termed as "Deccan traps". The traps attain a thickness of nearly 750 to 850 m around Matheran and Raigad plateaus, respectively. In Thane Taluka as well Basalt flows, result in the predominant formation. It is capped by laterite on a few high plateaus.

2.2.4 CLIMATE

The general climatic regime is fairly equitable since seasonal fluctuations of temperature are not significantly large. The moderating effects of the nearby sea and fairly high amount of relative humidity in the atmosphere have restricted the variability. According to Department of Agriculture, Government of Maharashtra, the state is divided into 9 agro-climatic zones. Thane and Raigad Districts form part of the North Konkan agro-climatic zone with following climatic conditions:

Temperature: Average daily temperature varies from 22^0C to 30^0C. Minimum temperature varies from 17^0C to 27^0C. Humidity is 98% in rainy season and 60% in winter.

Rainfall: Majority of the rainfall in the region is from the South–West monsoon between June and September. The average annual rainfall is 2607 mm. Maximum rainfall is received in the month of July.

2.3 DEMOGRAPHIC PROFILE

The demographic profile covers both quantitative and qualitative aspects of human population. Quantitative aspects include composition, density, growth, and qualitative aspects include sociological factors such as education, religion and health.

The demographic profile of any area is the socio-economic characteristics of that area expressed in terms of various factors such as population, age, gender, income levels, sex ratio, literacy rate, employment, religion, caste etc. Only the key aspects are discussed below for which information from the census is available. The planning consultants also carried out a socio-economic survey for about 6613 households. This covered various aspects such as income level, vehicle ownership, type of housing, travel pattern etc. Demographic profile given in the chapter is for entire NAINA i.e. for all 224 villages of NAINA.

2.3.1 POPULATION AND IT'S GROWTH

As per 2011 census, NAINA has a population of 2.8 lakhs with an annual average growth rate (AAGR) of 3.33% for the decade 2001-2011. This AAGR has increased from that of 2.0% in 1991-2001. The population growth as shown in **Figure 2-3** has increased rapidly in previous decades probably due to urban influence.

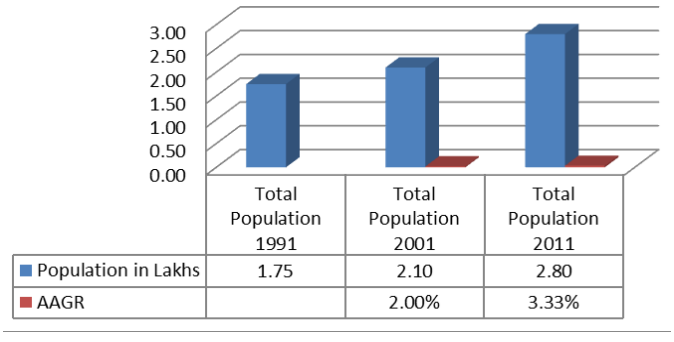

Figure 2-3: Population and Annual Average Growth Rate of Population in NAINA

2.3.2 POPULATION DENSITY

Population distribution within the area varies significantly due to geographical context and provision of infrastructure. The gross density of the NAINA is around 5.8 persons per hectare. Though there are no urban areas within NAINA, there are 2 Census Towns (CT) as per 2011 census, namely Pali Devad (Panvel Taluka, situated in IDP), and Dadar (Pen Taluka). The villages such as Kalave and Shilottar Raichur (in IDP area) are densely populated with population density of 188 and 112 Persons per Hectare (PPH) respectively. Due to fact that IDP is well connected and is relatively in close proximity to Navi Mumbai, the density in general is high in and around IDP area. Village wise Population Density Map is given in **Annexure 2-2.**

2.3.3 SEX RATIO

The average sex ratio of the NAINA is 919 (number of female population per 1000 male population). This is lower than the National average of 933, state average of 929 as well as the Raigad district average of 959. The sex ratio in NAINA ranges from 560 of Dolavali village to 1221 of Kanhoba village. There are 51 villages with sex ratio of 1000 or more and 158 villages with sex ratio less than 1000, excluding 15 uninhabited villages. The sex ratio in Kanhoba, Shiravali tarf boreti, Wangani tarf taloje, Mohope, Shitole and Pohi villages is remarkably high i.e 1221, 1148, 1124, 1121, 1120 and 1105 respectively.

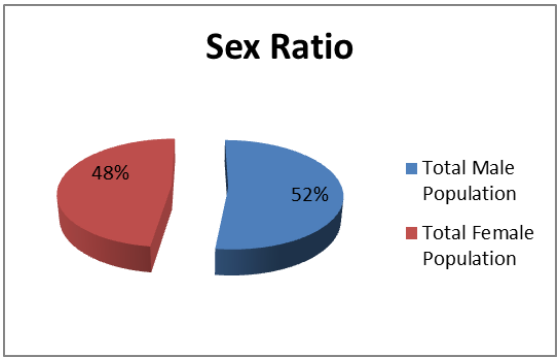

Figure 2-4: Sex Ratio

2.3.4 SC & ST POPULATION

The share of Scheduled Castes (SCs) and Scheduled Tribes (STs) population account for 4.15% and 14.54% respectively. Amongst all villages, Pali Devad in Panvel Taluka has the highest share of SC population 1142 persons (12 % of that village's population), followed by Vichumbe with 1012 persons (16 % of that village's population). There are about 93 villages without any SC population.

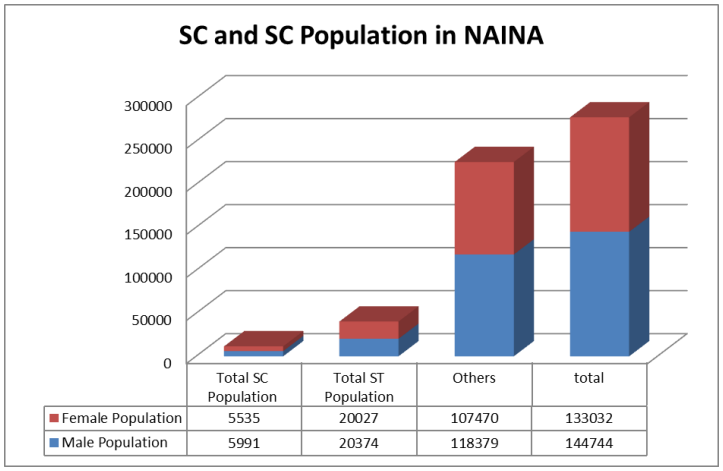

Figure 2-5 SC and ST Population

Amongst STs, Dhodani village in Panvel Taluka has the highest share 1644 persons (99 % of village's population) followed by Waredi in Pen Taluka with 1335 persons (64 % of that village's population). Further there are 57 villages with no ST population.

2.3.5 LITERACY RATE

NAINA has an average literacy rate of 68.7 %, which is less than the State and higher than National average literacy rates of 72% and 64.8% respectively as per 2011census. Among all villages, Pohi in Uran Taluka has highest literacy rate of 95 % followed by Odhangi in Pen Taluka at 92.3%. The villages with lowest literacy rates are Pali Budruk in Panvel Taluka at 24.77% and Wangni in Khalapur Taluka at 25.75%.

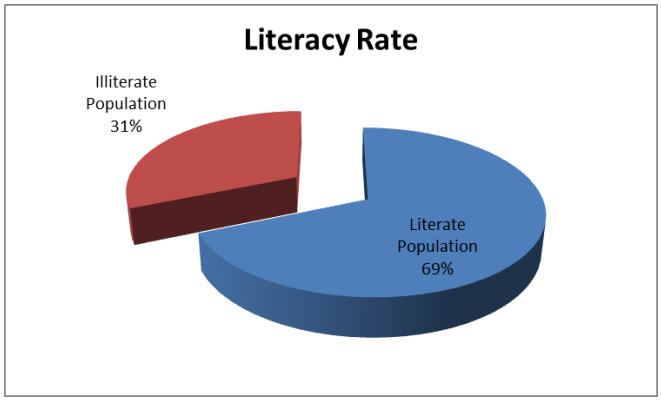

Figure 2-6: Literacy Rate in NAINA

2.3.6 ECONOMIC BASE

The villages located near Panvel area and along NH-17 and NH-4, have some service and manufacturing industries. This section presents brief information on major economic activities, occupational structure, workforce participation rate and employment pattern of villages in NAINA as observed during site visits and also as per census 2011.

Figure 2-7: People engaged in agriculture and allied activities

2.3.7 MAJOR ECONOMIC ACTIVITES

Jawaharlal Nehru Port Trust, the highest container handling port of India, is in proximity of the NAINA, This port and the major transportation networks (NH-17, NH-04, MPE, Diva-Panvel rail line, Panvel – Karjat rail link and Panvel – Goa rail link etc.) passing through NAINA have created opportunities for development of non-agricultural economic activities. The major non-agricultural economic activities in the area are logistic hubs, warehousing, industries, service industries and commercial activities such as hotels, restaurants and resorts.

Restaurants, hotels, banks, brick kilns have developed on either side of the Panvel-Matheran road near Palidevad and Shilottar Raichur villages. A number of resorts have developed along the NH-17 near the Karnala Wildlife Sanctuary, along NH-4 (for example Ayush Resort at Bhingarwadi) and few hotels and lodges near Wadkhal in Pen Taluka and Mahad in Khalapur Taluka.

Part of Rasayani, Rees and Lodhivali were important industrial area within NAINA, but now it is under MSRDC jurisdiction. Only part of Rasayani is in NAINA. Rasayani has two major industries namely Hindustan Organic Chemicals (HOCL) and Hindustan Insecticides Limited (HIL). These are Government of India Undertaking. HOCL has closed down and HIL is still functional. The villages of Washi, Shinganvat, Masad Budruk of Pen Taluka , have salt pans. However as informed by the locals, salt yield has reduced drastically in the recent years.

Pen Taluka is famous for household and agro industries such as, rice mills, poha and papad making. Pen Taluka is also famous for Ganpati Idol making. The main market for Ganesh Idol is Mumbai and surrounding. The villages of Hamrapur, Tambadshet, Dhondepada, Johe etc have large number of idol making workshops.

Khopoli and Pen Municipal Councils do not form part of NAINA however they are located adjoining NAINA. Khopoli has a few medium and large manufacturing industries such as Enpac India Pvt. Ltd., Hercules Hoists Ltd., Innovassynth Technologies, Kamani Oil Industries, Tata Hydro Power Station, Zenith Steel Industries Limited, Wartsila, Alta Labs etc.

Ganpati Idol Making, Hamrapur Village

Rice mill at Mothe Bhal

Figure 2-8: Small scale and agro industries in Pen Taluka, NAINA

Taloja Industrial Estate is adjoining to the northern part of NAINA. Due to its influence, some industries have come up in the vicinity of this industrial estate. Adjoining to NAINA boundary in Pen Taluka, JSW steel plant is located in Dolvi village. The jetty being used by JSW steel plant is situated in Wave village within NAINA. The areas close to JNPT have warehousing and logistics use. Most of the container yards are located along the NH-17 around villages such as Palaspe, Shirdhon etc.

Figure 2-9: Industries/Warehousing along NH -17

The above described activities provide economic base and employment for the villages in NAINA.

2.3.8 OCUPATIONAL STRUCTURE AND WPR

The Workforce Participation Rate (WPR) in NAINA is nearly 41% with a total of 1,13,648 workers as per 2011 census.

Masad Khurd and Masad Beli villages in Pen Taluka have the highest WPR at 79% and 75% respectively. Lowest WPR is seen in Borgaon Bk and Wajapur villages in Khalapur and Panvel Taluka with 26% and 27% respectively as per 2011 census.

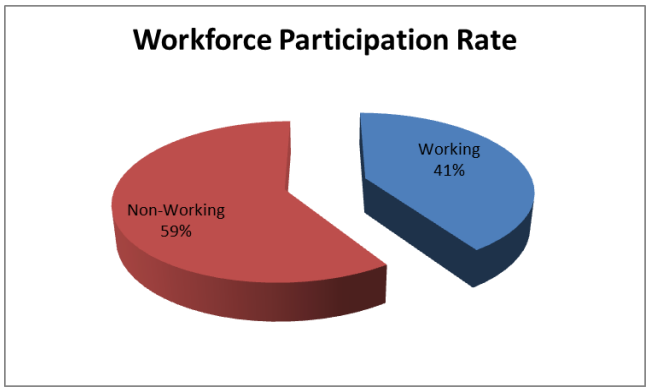

Figure 2-10: Workforce participation in NAINA

Among the total workers, 76% are main workers and remaining 24% are marginal workers.

2.3.9 EMPLOYMENT PATTERN

Of the total workers of 1,13,648 in NAINA, 17 % of workers are engaged in cultivation, 9 % of workers are agricultural labourers, 2.6 % are household workers and 48 % are others. The 2011 census has detailed classification of workers into agriculture (including hunting and forestry), fishing, mining & quarrying, manufacturing & repairs, wholesale & retail trade, etc numbering up to 17 categories.

2.4 EXISTING TRANSPORTATION NETWORK

2.4.1 REGIONAL ROAD NETWORK

The area is well connected by inter-city roads (NHs, SHs, MDRs/ ODRs) with various Municipal Corporations/Councils and villages located within MMR. Existing road network of NAINA and connectivity with MMR is shown in **Figure 2-12**. National Highways, State Highways provide fast transport connectivity within the DP Area. Mumbai-Pune Expressway provides fast transport connectivity with Pune and Mumbai.

NAINA has about 93 km of major road network which constitute NH-4 and NH-17 and nine State highways traversing through it. In addition, Mumbai-Pune Expressway also passes through the area. Thus the area has good regional connectivity with Greater Mumbai, Pune and rest of MMR.

The Mumbai-Pune Expressway, NH-4 and NH-17 are very good maintained major regional roads. The State Highways are fairly maintained. However, the most important state highway within NAINA is Panvel – Sukhapur Road (SH-103) which is narrow and inconsistently maintained. The other state highway i.e. Kon – Savla road (SH-105) connecting Rasayani, Rees Lodhivali area is well maintained but has few encroachments. The list of State Highways traversing through the area is given below:

SH 76 : Khopoli – Pen Road

SH 93 : Khopoli Road

SH 103 : Panvel – Sukhapur – Matheran Road

MSH 104: Chirner to Mankul

SH 105 : Kon – Savla Road

SH107 : Apta – Dand Phata Road

SH 79 : Karjat – Kopri Road

SH 85 : Panvel – Nitalas Road

SH 88 : Pen – Alibag Road

Of the total road network, National Highways (NH-4 and NH-17) together constitute nearly 36 km (6.3%) while State Highways make up for about 57 km (10%) of the total length. Mumbai-Pune Expressway accounts for 0.88 km (0.2%). Major District roads constitute for 76.79 km (13.5 %), Other district roads measure 29.89 km (5.2%) and other roads aggregating to a length of about 369.92 km (64.8%). A detailed breakup of the transportation network is presented in **Table 2-1.**

Table 2-1: Major Road Network Details in NAINA (excluding IDP)

Road Category	Length of Road in km	% of Total road length
Expressway	0.88	0.2%
National Highway	36.06	6.3%
State Highway	57.01	10.0%
Major District Road	76.79	13.5%
Other District Road	29.89	5.2%
Other Road/ Village Roads	369.92	64.8%
Grand Total	**570.56**	**100.0%**

Existing Condition of Mumbai-Pune Expressway

Existing Condition of NH - 04

Figure 2-11: Existing Road Condition in NAINA

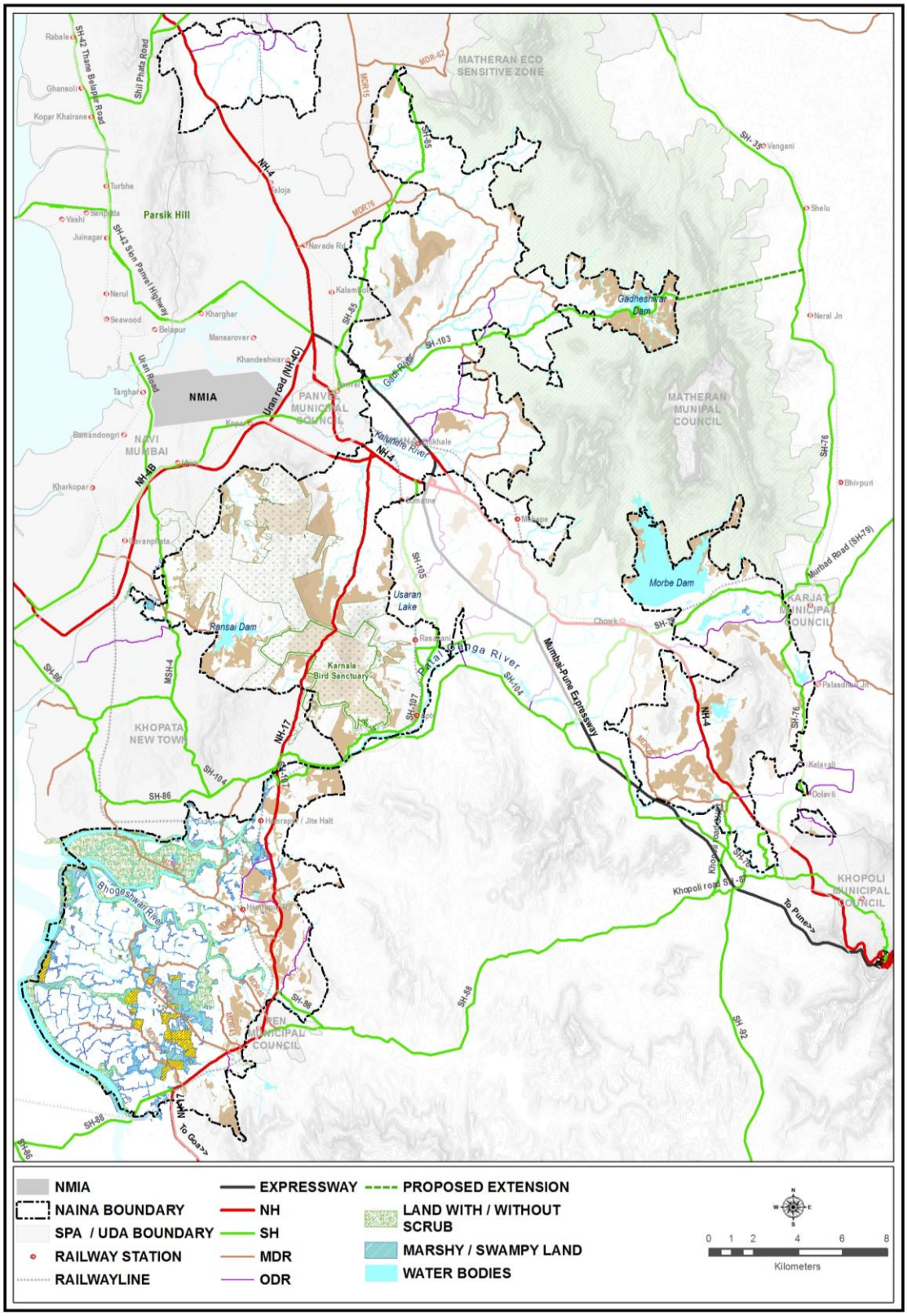

Figure 2-12: Existing Road Network in NAINA

2.4.2 REGIONAL AND SUBURBAN RAIL NETWORK

The rail network of Central Railway connecting Mumbai Goa and Mumbai –Pune via Panvel passes through NAINA. In addition to this Panvel Diva line also passes through 14 villages of Thane district within NAINA. The railway stations within NAINA are Chikale, Mohape, Rasayani, Apte, Hamrapur halt, Hamrapur.

NAINA does not have direct connectivity with suburban network of Central Railway. Central Railway provides suburban services between Mumbai and Navi Mumbai through harbour line. Panvel is the terminal station for suburban services to Mumbai CST and Thane.

Total length of railway traversing through the area is about 48.3 km. The existing Panvel-Karjat line is about 14.4 km, Diva-Panvel line measuring 2.9 km, Panvel-Wadkhal line is about 29.9 km, and Wadkhal to Goa line is about 1 km. Thus NAINA is served by very limited suburban railway network (see **Figure 2-13**).

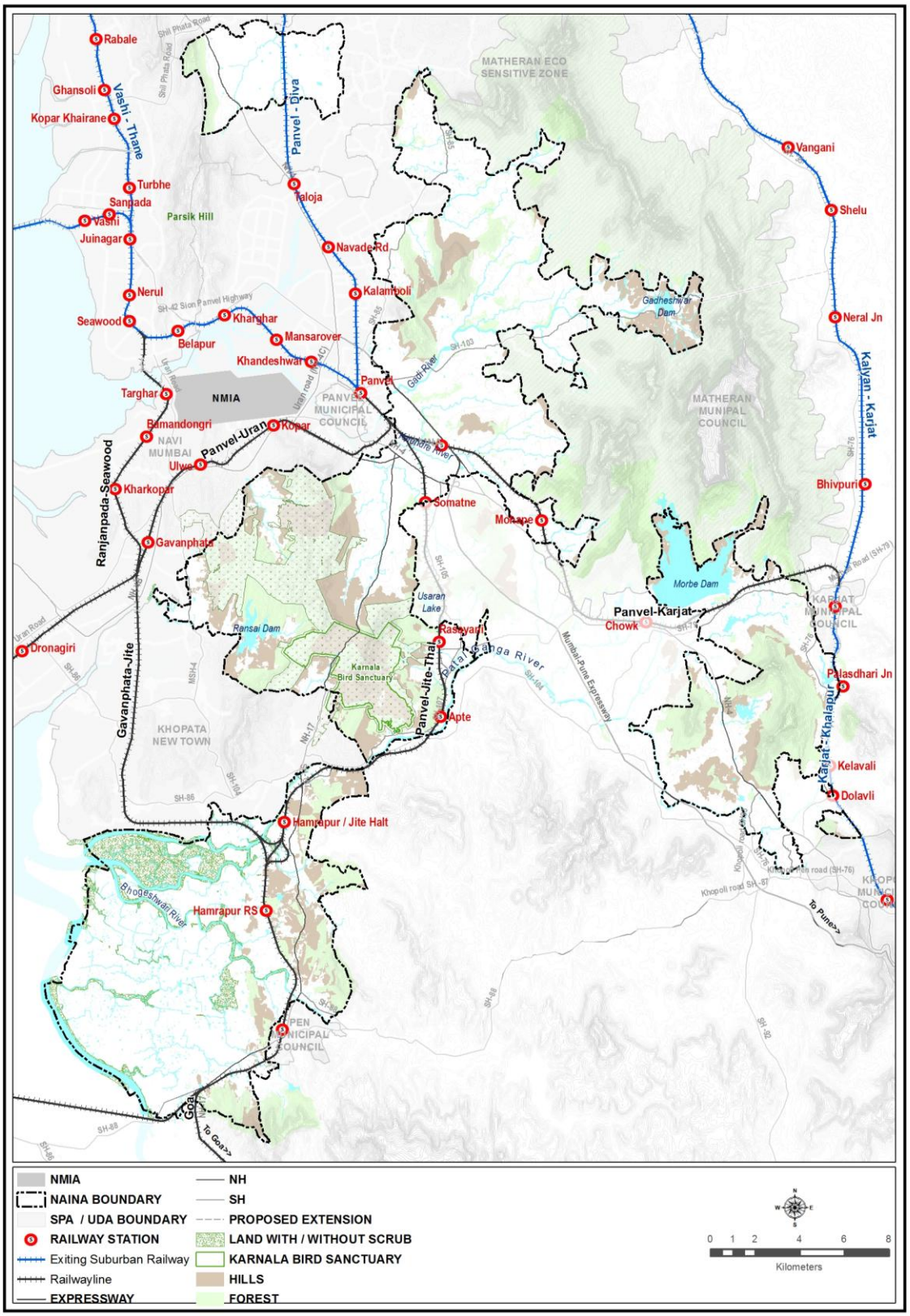

Figure 2-13: Existing Railway Network within DP Area

2.4.3 REGIONAL CONNECTIVITY UNDER ACTIVE CONSIDERATION

Following are the important proposed/ committed transport projects which would directly impact NAINA (see **Figure 2-14: Proposed Regional Network in NAINA**).

Proposed Road Network: NAINA will have an enhanced regional road network connecting several parts of MMR and beyond with the following proposed/ committed road network;

- Mumbai-Vadodara spur: The alignment of Mumbai-Vadodara spur in MMR is under implementation by NHAI which starts in Virar and ends in Panvel. This corridor has been planned for fast movement of port related inter-city traffic (JNPT);
- Multi-Modal Corridor (MMC): One of the major recommendations of Comprehensive Transport Study of MMR was development of MMC in MMR starting from Virar and terminating at Alibag. MMRDA has taken up implementation of MMC (about 140 km). Part of the MMC traverses through NAINA and it will provide good regional connectivity to NMIA as well as other parts of MMR.

Proposed Transit (Suburban and Metro) Network

- **Metro Rail:** Presently, there is no Metro line operational in the area. Metro lines proposed in Navi Mumbai will impact the growth and connectivity of NAINA. CIDCO has undertaken construction of the first Metro line in Navi Mumbai from Belapur to Pendhar which is proposed to be extended southwards up to NMIA. Also additional metro corridor between Mankhurd and Ghatkopar has been proposed which will be extended up to Panvel via NMIA, thus providing a fast metro connectivity between eastern suburbs of Mumbai and Panvel.
- **Suburban Rail Connectivity:** Existing Diva-Panvel line and Panvel-Ka rjat-Khopoli line are proposed to have regular suburban commuter service as part of priority projects by MRVC. Anticipating huge population and employment growth in Navi Mumbai and surrounding areas and upcoming NMIA, MRVC has carried out detailed techno-economic feasibility for suburban operations from Vasai to Diva and Diva to Panvel. In addition to above, MRVC has carried out in-house technical feasibility study for the operation of suburban rail services from Panvel to Karjat. In the long run, suburban services are expected to be available on Panvel – Pen route after completion of doubling and electrification of the line.

Proposed MTHL: The proposed Mumbai Trans Harbour Link (MTHL), which connects Sewri (in Island city of Mumbai) to Nhava Sheva (Main land) is planned with the basic objective of (a) development of land across creek and reducing pressure on Mumbai City; and (b) facilitate decongestion efforts by improving connectivity between Island city and land across creek . MTHL along with Eastern Freeway would provide fast connectivity to NMIA and NAINA from Mumbai.

Proposed NMIA: Potential catchment of the NMIA is expected to be mainly MMR and areas neighbouring MMR. The pressure on Mumbai airport is not likely to reduce in the coming years and Pune and Nagpur airports have very limited international flights. Thus the inflow of passengers to the NMIA is expected to be high and as a result the surrounding areas will have increased potential for development.

DFC: Government of India (GoI) envisages developing dedicated freight corridor (DFC) between Delhi and Mumbai (originating from JNPT). DFC is passing through NAINA (14 Villages in Thane Taluka)

Proposed Mumbai – Sawantwadi Coastal Road: The existing State Highway from Chirner to Dadar will be upgraded to Major State Highway-104 and extended to Mankul from Dadar via Sonkhar as a new road. This will be further extended to Sawantwadi as a coastal road.

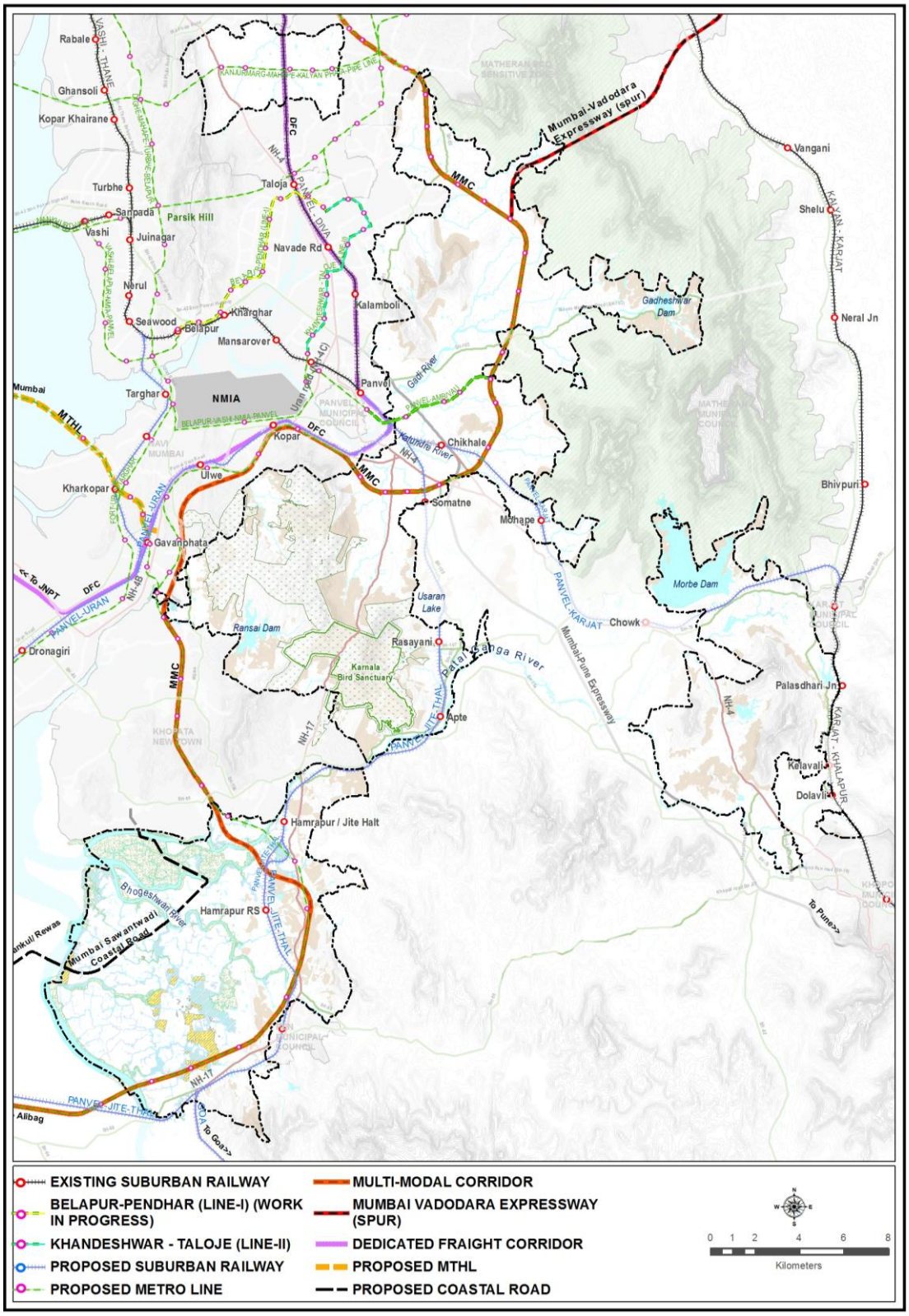

Figure 2-14: Proposed Regional Network in NAINA

2.4.4 LOCAL ROAD NETWORK

Figure 2-15: Existing Condition of village roads in NAINA

The local road network is primarily formed by the village roads that connect the existing Gaothan settlements to each other. These roads are not more than 6 m wide in most cases. Within the settlements, vehicular roads are minimal and pedestrian pathways form the network. Village level road network is shown in **Annexure 2-3.**

Figure 2-16: Existing Condition of village roads in the interiors

Some village roads, in the intensely developed areas near the major regional roads are well-developed and well-maintained. Village roads that are in the interior areas away from major regional roads are mostly narrow kuccha/pucca roads. In Pen taluka the accessibility of *padas* and smaller hamlets is difficult in rainy season due to water logging and marshy conditions.

2.4.5 BUS SYSTEM

The bus service is provided by Maharashtra State Road Transport Corporation (MSRTC). MSRTC has prime responsibility to ensure connectivity of village settlements with nearby Taluka head quarter. The level of bus service required to facilitate transit movement like an urban area is missing. MSRTC has bus depots in Panvel, Pen and Khopoli all outside but close to NAINA. These depots serve the long-distance bus routes as well as inter-village routes.

However, the area near to Panvel is relatively more urbanised and uses bus service from Panvel Bus Depot and NMMT for commuting to Navi Mumbai/ Mumbai.

Palaspe Phata Bus Stop in Kolkhe village is a major location for bus services within NAINA. The services from Palaspe Phata Bus stop provide connectivity for Kolkhe and Kon villages along

NH-4 and Palaspe along NH-17. The bus services from New Panvel provide services to some villages along Panvel Matheran Road Such as Shilottar Raichur, Palidevad, Koproli and Nere.

The Khopoli Municipal Transport runs a few buses between Khopoli and Vashi, Navi Mumbai.

Some of the large companies such as JSW, Reliance etc have their own bus service for their employees which pass through NAINA.

MSRTC Bus

JSW Employee Bus

Figure 2-17: Bus transport in NAINA

2.4.6 LOCAL SUBURBAN RAILWAY NETWORK

The existing railway lines do not provide suburban rail services within NAINA. Suburban rail services are proposed along Panvel-Karjat and Panvel- Apte lines.

2.4.7 OTHER MEANS OF TRANSPORT

The six-seater rickshaws are the most favoured means of Intermediate Public Transport (IPT) between villages. These have a fixed area of service and run on per seat basis. The villages of Dadar, Sonkhar, Kaleshri etc are interspersed with creeks. Small jetties constructed on the creeks are used by fishing boats as well as means of transport in absence of bridges over the creeks. Refer **Figure 2-18** for other means of transport.

Six-seater rickshaw serving as IPT

Jetty in Pen Taluka

Figure 2-18: Other means of transport

2.4.8 PARKING FACILITIES

There are no formal public parking spaces in NAINA. Private vehicles such as cars and two-wheelers are parked within private plots of the owners, And during the vehicles being used, these are parked on roads adding to congestion. Privately owned/ maintained truck parking facilities available in Palaspe and Kolkhe villages. The JSW at Beneghat has its own truck parking and bus parking.

Localised parking areas within villages

Two wheelers parked in crematorium

Figure 2-19: Parking facilities

2.4.9 SUMMARY

It is expected that, once the Navi Mumbai International Airport is developed, which is going to trigger the growth of the area, the traffic characteristics are expected to undergo a major change. In addition, the development within the area would need further development of transport network and enhanced regional transport connectivity through suburban rail expansion, metro corridors, and highway corridors.

2.5 SOCIAL INFRASTRUCTURE

2.5.1 EDUCATIONAL FACILITIES

The information available from census 2011 on various educational facilities such as pre-primary schools, primary schools, middle schools, senior secondary schools, colleges and vocational training institutes are assessed. It is observed that the area is fairly well served as far as schools up to middle and secondary level are concerned. It also shows that few of these facilities are provided by the private sector.

Zilla Parishad Secondary School in Vitthalwadi Village

Zilla Parishad Primary School in Dadar Village

Figure 2-20: Schools in villages

Facilities for higher education such as colleges, engineering, medical and management institutes are not available in the area and the people are dependent on nearby urban centres of Panvel, Thane, Khopoli, Uran and Pen for these facilities. Number of educational facilities available within DP Area is given in Table 2-2.

Table 2-2: Educational facilities available NAINA

Sr. No.	Educational Facility	Government owned (Nos.)	Private (Nos.)
1	Pre - Primary School (Nursery/LKG/UKG)	390	0
2	Primary School	356	10
3	Middle School	117	7
4	Secondary School	42	12
5	Senior Secondary School	13	1
6	Arts and Science Degree College	0	0
7	Engineering College	0	0
8	Medical College	0	0
9	Management Institute	0	0
19	Polytechnic	0	1
11	Vocational Training School/ ITI	0	0

Sr. No.	Educational Facility	Government owned (Nos.)	Private (Nos.)
12	Non - formal training center	0	0
13	School for disabled	0	0
15	Others	0	54

Source: Compiled from District Census Handbook Raigad and Thane, 2011.

2.5.2 HEALTH FACILITIES

Assessment has been carried out with respect to health facilities such as dispensaries, primary health sub-centres; primary health centres (PHCs) and hospitals. Health facilities have been assessed with an intention to understand the adequacy of health facilities for 2011 population. The analysis is based on the information collected from Census 2011.

PHC at Chowk Village

Private Clinic at Vadkhal Village

Figure 2-21: Health facilities in villages

There are 6 PHCs and 36 PH Sub-centres located in NAINA. As far as higher order health facilities are concerned there are 6 hospitals. Several private clinics are located, apart from the 7 government dispensaries. The nearby urban areas have both private and government hospitals. Number of available health facilities is given in **Table 2-3**.

Table 2-3: Health facilities in NAINA

Sr. No.	Category	Numbers
1	Community Health Centre	0
2	Primary Health Centre	6
3	Primary Health Sub-centre	36
4	Maternity & Child Welfare Centre	6
5	TB Clinic	6
6	Hospital Allopathic	6
7	Hospital Alternative Medicine	0
8	Dispensary	7
9	Veterinary Hospital	5

Sr. No.	Category	Numbers
10	Mobile Health Clinic	1
11	Family Welfare Centre	6
12	Non-government facilities Out patients	99
13	Non-government facilities In and Out Patients	4
14	Non-government medicine shops	19

Source: District Census Handbook Raigad and Thane, 2011.

2.5.3 COMMERCIAL FACILITIES

Small scale commercial establishments selling commodities of daily consumption are present in almost all the villages. Commercial establishments such as grocery shops, medical shops, flour mills, vegetable shops are observed in villages. Apart from these, the major commercial activities such as banks, hotels, resorts and restaurants are located along the National and State Highways. Vendors selling vegetables, fruits, fish and other such necessities are seen along the NH – 17 at some locations, at junction of major roads and on internal roads within villages. There are no designated markets.

Local shops at Adai village

Local shop at Shinganwat Village

Figure 2-22: Commercial facilities in villages

2.5.4 SOCIO-CULTURAL FACILITIES

Socio-cultural facilities such as cinema theatres, sports complexes, and clubs are not observed within the villages of NAINA. However, other socio-cultural facilities such as community halls, school playgrounds, gymnasium etc. are available. Panvel, Khopoli and Uran are the nearest destination for major cultural activities.

Gymnasium in Kolave village

Community Recreational space in front of temple in Vihighar village

Figure 2-23: Socio-cultural facilities in villages

2.5.5 RECREATIONAL FACILITIES

Recreational areas such as neighbourhood parks and city scale parks are not located within this area. However, the major open spaces are school grounds. Some of the Zilla Parishad schools and private schools have playgrounds attached. Some of the residential colonies, societies and housing complexes maintain their own parks and play grounds within their premises.

Private School and Playground, Vadkhal Village

Lack of organized open spaces, people using crematorium as sit out space, Dadar Village

Figure 2-24: Status of recreational facilities

2.5.6 SUMMARY

NAINA being rural in nature does not have a well-developed social infrastructure. Though the facilities seem to be sufficient for 2011 census population, there is need to improve the social facilities in view of the anticipated growth in population due to planned urban development.

2.6 PHYSICAL INFRASTRUCTURE

2.6.1 WATER SUPPLY

There are 176 villages have tap water as source which is either treated or untreated. 94 villages have treated tap water source, 82 villages have untreated tap water and 16 villages have both. The other sources of water are covered well, uncovered well, tube wells/ boreholes, untreated tap water, hand pumps, tanks/ponds/lake, river/canal and springs. The details of drinking water source are given in **Table 2-4.** It is observed that nearly 44% villages have treated tap water and 30 % have untreated tap water as source. But the Taluka wise distribution is skewed as most villages having tap water as source are in Panvel Taluka followed by Pen and Khalapur.

Table 2-4: Drinking Water Source

No.	Water Source	Karjat	Khalapur	Panvel	Pen	Thane	Uran	Total
1	Tap Water-Treated	1	9	50	32	1	1	94
	Percentage to total no. of villages	0.6%	5.1%	28.4%	18.0%	0.6%	0.6%	53.4%
2	Tap Water Untreated	1	18	22	39	0	2	82
	Percentage to total no. of villages	0.6%	10.2%	12.5%	22.2%	0.0%	1.1%	46.6%

Source: District Census Handbook Raigad and Thane, 2011.

WATER: News in Times of India dated 19th December 2015

The villagers of Borze, Pen Taluka have set up a water ATM to dispense purified drinking water at Rs. 10 for 20 litres. The Grampanchayat has tied up with private company Mascot solutions which uses the water from a local pond and supplies it to villager through the water dispenser after purifying it. This is the first time in the district that a local gram panchayat has set up such a hi-tech gizmo and also distributed more than 400 electromagnetic ATW cards, which look like regular ATM swipe cards.

Figure 2-25: A woman of Borze village shows her electromagnetic 'ATW' card.

2.6.2 SEWERAGE

NAINA is rural in character. Census 2011 indicates that 127 villages (i.e. 56%) have open drains. The data further states that 83 villages have sewerage treatment plants (Thane – 6, Uran – 2,

Panvel – 36 Karjat – 5, Khalapur-17 and Pen 17). In other villages there is no sewerage system, generally, the toilets are connected to individual septic tanks and the effluent is disposed-off in the nearby drains, waterbodies or open areas.

2.6.3 STORM WATER DRAINAGE

The drainage in NAINA has not been a major issue, due to the peculiar location. It has hills on one side where the rain fall received is drained with high speed of water flowing through rivulets, nallas, valleys, and rivers into the sea, falling on the other side of the area.

After development, the area would be susceptible for flooding because the area receives very heavy rain fall. Chitale committee report ("Fact Finding Committee Report on Mumbai Floods") explains that the annual rainfall of the meteorological sub division of Konkan and Goa (2,980 mm) is heavy. There have been instances when as much as half of the annual rainfall was recorded in a single day. It can be understood that NAINA will be prone to flooding after development if adequate measures are not taken in advance. Urban flooding is fundamentally different from rural flooding, as catchments area gets flooded in a short time. CIDCO has appointed engineering consultants to study the area and propose engineering details for water supply, sewerage, solid waste management and storm water management.

2.6.4 SOLID WASTE MANAGEMENT

In India we have poor solid waste management system in urban area and it is almost absent in rural area. NAINA is predominantly rural and follows the same national trend. As observed during site visits, there is no systematic solid waste management system in villages. The waste generated in the rural area is disposed-off/ dumped along the roads, near waterbodies and open areas in the vicinity. The census 2011 also records that there is no organized waste collection system in the area and the solid waste is dumped along roads and streets. However, with urbanization, the scale of waste generation is likely to increase and this issue cannot be left unattended.

Figure 2-26: Unorganized solid waste dumping

2.7 SOCIO-ECONOMIC SURVEY

A socio-economic survey for NAINA was carried out during the period Dec 2014 – Jul 2015. The total number of households in NAINA is 62829. 10% of 62829 households is 6283. A total of 6613 Households of NAINA were surveyed for various parameters such as income range, house type, house ownership, vehicle ownership, caste, religion etc. The questionnaire for socio-economic survey is enclosed as **Annexure 2-4**.

The sample size contains 10% of the households; the population can be divided into two districts; hence 10% of the households from each district were selected at random. The districts are further divided into talukas; the sample chosen from each district was taken from each of these talukas.

The lowest heterogeneous group is village/pada for rural area. Accordingly 10% of the households were selected randomly from each of these units i.e. pada / village. Every 10th household in a village was surveyed. The results are presented below:

2.7.1 HOUSING

The various aspects covered included housing type, type of construction, period of residence and ownership.

Housing Type: The various options provided in the survey were Apartment/ flat, Independent house, Chawls, Slum type and Wadi. This was based on the general housing typologies found in the Raigad district of Konkan Region close to Mumbai. The survey reveals that 92% of the people stay in independent houses, followed by 4% in Chawls, 4 % in flats and 1 % in Wadi. Refer **Table 2-5**

Table 2-5: Housing type

Taluka	Apartment / flat		Independent House		Chawls		Slums Type		Wadi		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	0	0%	70	86%	0	0%	0	0%	11	14%	81	1%
Khalapur	11	2%	532	87%	60	10%	0	0%	8	1%	611	9%
Panvel	208	6%	2958	89%	151	5%	3	0%	10	0%	3330	50%
Pen	14	1%	2013	97%	19	1%	1	0%	39	2%	2086	32%
Thane	6	1%	405	99%	0	0%	0	0%	0	0%	411	6%
Uran	2	2%	89	95%	3	3%	0	0%	0	0%	94	1%
Total	241	4%	6067	92%	233	4%	4	0%	68	1%	6613	100%

Source: Socio-Economic Survey

House ownership: Three options were provided in the survey for house ownership – owned, rented and employer provided. 91% respondents stay in their owned house, 9% in rented housing and 1% in employer provided housing. Employer provided housing is observed in Khalapur and Panvel Taluka. Maximum rented accommodation of 15% is observed in Panvel Taluka. Karjat and Thane Taluka have 100% owned accommodation. Refer **Table 2-6**

Table 2-6: House ownership

Taluka	Owned		Rented		Employer Provided		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	81	100%	0	0%	0	0%	81	100%
Khalapur	577	94%	11	2%	23	4%	611	100%
Panvel	2804	84%	509	15%	17	1%	3330	100%
Pen	2043	98%	41	2%	2	0%	2086	100%
Thane	411	100%		0%		0%	411	100%
Uran	88	94%	4	4%	2	2%	94	100%
Total	6004	91%	565	9%	44	1%	6613	100%

Source: Socio-Economic Survey

Type of Construction: The options provided in the survey for type of construction were – *pucca*, *semi-pucca*, *kutcha* and others. The survey shows that 81% of the houses are *pucca*, *semi-pucca* is 13% and *kutcha* is 5% other is only 1%. Maximum 35% of *semi-pucca* houses are observed in Karjat Taluka and maximum 14% of kutcha houses are observed in Khalapur Taluka. Thane has maximum *pucca* houses 90%.

Table 2-7: Type of house construction

Taluka	Pucca		Semi Pucca		Kutcha		Other		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	45	56%	28	35%	8	10%	0	0%	81	**100%**
Khalapur	395	65%	109	18%	87	14%	20	3%	611	**100%**
Panvel	2898	87%	330	10%	88	3%	14	0%	3330	**100%**
Pen	1603	77%	359	17%	109	5%	15	1%	2086	**100%**
Thane	371	90%	38	9%	2	0%	0	0%	411	**100%**
Uran	55	59%	27	29%	11	12%	1	1%	94	**100%**
Total	5367	81%	891	13%	305	5%	50	1%	6613	**100%**

Source: Socio-Economic Survey

Household size: The average household size as per the survey is 4.3 and as per census 2011 the average household size is 4.4.

Number of rooms: The average number of rooms per household in NAINA is 2.6. Maximum number of rooms (2.8) is found in Thane Taluka and minimum number of rooms at 2.3 is found in Khalapur Taluka.

Table 2-8: Talukawise Number of rooms

Taluka	Avg. No. of Rooms
Karjat	2.4
Khalapur	2.3
Panvel	2.8
Pen	2.4
Thane	2.8
Uran	2.4
Average	2.6

Source: Socio-Economic Survey

Duration of stay: The categories for duration of stay in years were 1-20, 21-40, 41-60, 61-80, 81-100 and 100+. The survey reveals that most people have been staying for more than 20 years which is 92% of the households. There are 8% households which have shifted in last 20 years. It varies across talukas. In this category, Panvel has maximum i.e. 14%. It can therefore be summarized that there has been in-migration in PanvelTalukas. This could be due to availability of employment in the nearby urban areas of Navi Mumbai/ Mumbai near Panvel Taluka.

Table 2-9: Duration of stay in house

Taluka	1-20		21-40		41-60		61-80		81-100		100+		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	0	0%	30	37%	39	48%	12	15%	0	0%	0	0%	81	100%
Khalapur	24	4%	268	44%	236	39%	79	13%	4	1%	0	0%	611	100%
Panvel	455	14%	1285	39%	1280	38%	296	9%	14	0%	0	0%	3330	100%
Pen	38	2%	684	33%	909	44%	421	20%	33	2%	1	0%	2086	100%
Thane	3	1%	194	47%	174	42%	35	9%	5	1%	0	0%	411	100%
Uran	5	5%	41	44%	37	39%	11	12%	0	0%	0	0%	94	100%
Total	525	8%	2502	38%	2675	40%	854	13%	56	1%	1	0%	6613	100%

Source: Socio-Economic Survey

2.7.2 INFRASTRUCTURE

The infrastructure details covered few basic aspects such as availability of toilets, water source, availability of electricity etc.

Toilet Facility: The survey shows 71% households have toilets within the house, 19 % use open land, and 10 % use public toilet. Panvel Taluka has maximum household having toilets within house (75%) and Karjat has the lowest in the same category at (57%). Public toilets are used maximum in Uran Taluka at (15%) and minimum in Panvel Taluka (2%). Maximum number of households in Thane, Karjat and Khalapur Taluka use open land at 30% each and minimum number for the same is Uran Taluka 14%.

Table 2-10: Availability of toilet facility

Taluka	Within House		Public Toilet		Open Land		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	46	57%	11	14%	24	30%	81	100%
Khalapur	368	60%	58	9%	185	30%	611	100%
Panvel	2501	75%	326	10%	503	15%	3330	100%
Pen	1435	69%	234	11%	417	20%	2086	100%
Thane	277	67%	9	2%	125	30%	411	100%
Uran	67	71%	14	15%	13	14%	94	100%
Total	4694	71%	652	10%	1267	19%	6613	100%

Source: Socio-Economic Survey

Water Source for Domestic Consumption: The main source for water is tap connection for 61% households, followed by bore-well 23% and well 8%. Tap is seen maximum in Uran Taluka 72%. Maximum well (22%) and bore-well (68%) are used in Thane taluka.

Table 2-11: Water source for domestic consumption

Taluka		Karjat	Khalapur	Panvel	Pen	Thane	Uran	Total
Tap	HH No.	19	387	2077	1441	12	68	4004
	%	23%	63%	62%	69%	3%	72%	61%
Stand Post	HH No.	2	10	12	10	10	0	44
	%	2%	2%	0%	0%	2%	0%	1%
Well	HH No.	7	89	89	208	89	20	502
	%	9%	15%	3%	10%	22%	21%	8%
Hand pump	HH No.	1	12	40	13	20	5	91
	%	1%	2%	1%	1%	5%	5%	1%
Bore well	HH No.	43	67	1048	107	278	1	1544
	%	53%	11%	31%	5%	68%	1%	23%
Pond	HH No.	3	14	10	20	0	0	47
	%	4%	2%	0%	1%	0%	0%	1%
River	HH No.		1	4	20	1	0	26
	%	0%	0%	0%	1%	0%	0%	0%

Taluka		Karjat	Khalapur	Panvel	Pen	Thane	Uran	Total
Others	HH No.	6	31	50	267	1	0	355
	%	7%	5%	2%	13%	0%	0%	5%
Total HH	HH No.	81	611	3330	2086	411	94	6613
Total %	%	100%	100%	100%	100%	100%	100%	100%

Source: Socio-Economic Survey

Electricity connection: The area is well served in terms of electric connection where 92% households have an electric connection. Households in Thane and Pen Taluka have maximum electricity connections with 98% and 94% respectively. Khalapur Taluka has the maximum number of households without power supply 25% followed by Karjat 9%.

Table 2-12: Availability of electricity connection

Taluka	With Electric Connection		Without Electric Connection		Total No. of HHs	Total %
	(HH No)	%	(HH No)	%		
Karjat	74	91%	7	9%	81	100%
Khalapur	458	75%	153	25%	611	100%
Panvel	3098	93%	232	7%	3330	100%
Pen	1971	94%	115	6%	2086	100%
Thane	401	98%	10	2%	411	100%
Uran	84	89%	10	11%	94	100%
Total	6086	92%	527	8%	6613	100%

Source: Socio-Economic Survey

2.7.3 ECONOMIC STANDARD

The standard of living was judged from the factors such as income range, asset ownership, vehicle ownership and use of cooking fuel.

Income level: People are often reluctant to divulge information on income, hence instead of asking a direct figure different ranges for income were provided in the questionnaire. Certain other aspects such as number of persons employed by the household, number of earning members, expenditure and asset ownership were collected to get an idea of the standard of living of the residents.It is evident from the survey that 2% of the households refused to reply this question and 97% of the households earn less than Rs 25001/- per month. 1% of the households earn between 25,001 to 40,000 per month. The maximum number of households (40%) has income in the range Rs. 8001 – 16000 followed by 32% the range of Rs. 5001 – 8000 at 32%. The highest range of income category is Rs. 40001 – 60000 which is observed only in 0.2 % of is only 0.2% of the total households.

Table 2-13: Household Income

Income Range in Rs./Month	HH No. & %	Taluka						
		Karjat	Khalapur	Panvel	Pen	Thane	Uran	Total
A Upto 5,000	(HH No.)	27	151	453	524	51	21	1227
	%	33%	25%	14%	25%	12%	22%	19%
B 5,001-8,000	(HH No.)	37	160	985	762	153	44	2141
	%	46%	26%	30%	37%	37%	47%	32%
C 8,001-16,000	(HH No.)	14	223	1556	633	165	27	2618
	%	17%	36%	47%	30%	40%	29%	40%
D 16,001-25,000	(HH No.)	2	61	199	84	24	1	371
	%	2%	10%	6%	4%	6%	1%	6%
E 25,001-40,000	(HH No.)	1	13	47	8	10	0	79
	%	1%	2%	1%	0%	2%	0%	1%
F 40,001-60,000	(HH No.)	0	1	8	3	3	0	15
	%	0%	0%	0%	0%	1%	0%	0%
G 60,001-80,000	(HH No.)	0	0	1	0	0	0	1
	%	0%	0%	0%	0%	0%	0%	0%
H 80,001-1 lakh	(HH No.)	0	0	0	0	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%
I (Above 1 lakh)	(HH No.)	0	0	0	0	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%
No Response	(HH No.)	0	2	81	72	5	1	161
	%	0%	0%	2%	3%	1%	1%	2%
Total No. of HHs		**81**	**611**	**3330**	**2086**	**411**	**94**	**6613**
Total %		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Socio-Economic Survey

Expenditure pattern: An attempt was made to assess the expenditure pattern of the households in NAINA. The total expenditure under each head was grouped and the expenditure for each head was then worked out for each household. Maximum expenditure is on food at Rs. 3335 per household, followed by clothing at Rs.1477 and maintenance at Rs.1031. Maintenance includes utility bills, property tax etc mainly related to property.

Table 2-14: Expenditure pattern of households

	Average expenditure per HH in Rs
Education	651
Food	3335
Maintenance	1031
Phone	245
Clothing	1477
Entertainment	181
Instalment	107
Medical	761
Transport	1002
Others	206
Savings	36
Average	9032
Source: Socio-Economic Survey	

Earners in household: Maximum number of household (84%) have single earner, 11% households have two earners and 3% . Uran Taluka is having maximum single earner 98%. Among two earners in a household, maximum (16%) of households are in Karjat. Khalapur, Pen and Panvel Taluka all have two earners at about 12% of households

Table 2-15: Number of earners in household

Taluka	Number of Earners in Household												Total No. of HHs
	0		1		2		3		4		More than 4		
	HH No.	%	HH No.	%	HH No.	%	HH No.	%	HH No.	%	HH No.	%	
Karjat	0	0%	66	81%	13	16%	2	2%	0	0%	0	0%	81
Khalapur	1	0%	522	85%	76	12%	12	2%	0	0%	0	0%	611
Panvel	39	1%	2810	84%	377	11%	88	3%	9	0%	7	0%	3330
Pen	23	1%	1718	82%	249	12%	82	4%	9	0%	5	0%	2086
Thane	14	3%	362	88%	28	7%	6	1%	1	0%	0	0%	411
Uran	0	0%	92	98%	2	2%	0	0%	0	0%	0	0%	94
Total	77	1%	5570	84%	745	11%	190	3%	19	0%	12	0%	6613

Source: Socio-Economic Survey

Predominant Cooking Fuel: Most of the households (68%) use gas for cooking, followed by wood (27%). Coal and Kerosene are used by negligible 2 % and 3% households. Among households using gas as cooking fuel, the number is highest in Panvel and Pen Taluka at 70% and is lowest in Khalapur Taluka at 52%. Among the number of households using wood as cooking fuel the percentage is maximum in Khalapur at 38%, folloed by 35% in Karjat and Thane Taluka each and lowest (23%) in Panvel Taluka.

Table 2-16: Predominant cooking fuel

Taluka	Wood		Coal		Kerosene		Gas		Gobar Gas		Others		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	28	35%	6	7%	1	1%	45	56%	1	1%	0	0%	81	100%
Khalapur	235	38%	28	5%	15	2%	316	52%	1	0%	16	3%	611	100%
Panvel	757	23%	66	2%	155	5%	2336	70%	2	0%	14	0%	3330	100%
Pen	565	27%	23	1%	26	1%	1464	70%	3	0%	5	0%	2086	100%
Thane	145	35%	5	1%	5	1%	256	62%	0	0%	0	0%	411	100%
Uran	31	33%	0	0%	0	0%	55	59%	0	0%	8	9%	94	100%
Total	1761	27%	128	2%	202	3%	4472	68%	7	0%	43	1%	6613	100%

Source: Socio-Economic Survey

Vehicle ownership: In NAINA 66% of the households do not own vehicle. Among 34% HHs owning vehicle majority i.e. 85% own one vehicle and only 15% own more than one vehicle. Among vehicle owners 83% own two wheelers and 11% own car. 2% own Bicycle 4% own other type of vehicles like Tractor, Bullock cart etc.

Table 2-17: Vehicle ownership

Type	No. & %	Taluka						
		Karjat	Khalapur	Panvel	Pen	Thane	Uran	Total
Cars/Vans	No.	1	10	217	19	35	0	282
	%	13%	5%	12%	6%	12%	0%	11%
2 -wheelers	No.	7	184	1444	263	235	12	2145
	%	88%	94%	81%	88%	83%	100%	83%
Bicycles	No.	0	1	37	6	0	0	44
	%	0%	1%	2%	2%	0%	0%	2%
Other	No.	0	1	84	12	13	0	110
	%	0%	1%	5%	4%	5%	0%	4%
Total No. of Vehicles		8	196	1782	300	283	12	2581
HH not owning vehicles	No.	75	436	1818	1817	166	82	4394
	%	93%	71%	55%	87%	40%	87%	66%
HH owning at least one Vehicles	No.	6	175	1512	269	245	12	2219
	%	7%	29%	45%	13%	60%	13%	34%
Total HH	No.	81	611	3330	2086	411	94	6613
HH owning more than one vehicles	No.	2	25	233	27	37	0	324
	%	2%	4%	7%	1%	9%	0%	5%

Source: Socio-Economic Survey

Parking availability: Almost all the vehicles have parking within premises; only 4% vehicles are parked outside the premises.

Table 2-18: Availability of parking

Taluka	Parking within Premises								Parking Outside							
	Cars/Vans		2-wheelers		Others		Total		Cars/Vans		2-wheelers		Others		Total	
	No.	%	No.	%	No.	%	No.	%	N.	%	No.	%	No.	%	No.	%
Karjat	1	13%	7	88 %	0	0%	8	100%	0	0%	0	0%	0	0%	0	0%
Khalapur	10	5%	184	94 %	2	1%	196	100%	1	50%	1	50%	0	0%	2	100 %
Panvel	241	14%	1370	81 %	90	5%	1701	100%	10	14%	41	56%	22	30%	73	100 %
Pen	22	8%	245	88 %	13	5%	280	100%	1	6%	10	59%	6	35%	17	100 %
Thane	39	14%	231	83 %	10	4%	280	100%	0	0%	1	100 %	0	0%	1	100 %
Uran	0	0%	10	83 %	2	17%	12	100%	0	0%	0	0%	0	0%	0	0%
Total	313	13%	2047	83 %	117	5%	2477	100%	12	13%	53	57%	28	30%	93	100 %

Source: Socio-Economic Survey

Assets in Household: Television is the maximum owned asset with 44% families having it followed by mobile phone 36%. Landline phone is now out of the fashion as only 1% Households own Land line. Amongst Talukas, Thane has lowest TV ownership with 39% and Pen has the highest with 48%. Mobile ownership is maximum in Karjat Taluka at 39% and lowest in Thane Taluka at 32%.

Table 2-19: Asset ownership

Taluka	TV		Refrigerator		Mobile		Landline		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	66	47%	20	14%	55	39%	0	0%	81	100%
Khalapur	433	43%	205	20%	355	35%	10	1%	611	100%
Panvel	2970	43%	1448	21%	2477	36%	71	1%	3330	100%
Pen	1866	48%	524	14%	1459	38%	31	1%	2086	100%
Thane	389	39%	287	29%	320	32%	1	0%	411	100%
Uran	54	45%	19	16%	45	38%	1	1%	94	100%
Total	5778	44%	2503	19%	4711	36%	114	1%	6613	100%

Source: Socio-Economic Survey

2.7.4 CASTE AND RELIGION

The Other Backward Classes (OBC) constitutes a major stratum of the area with 50% of population. General category is next at 16%. The others category includes people who either do not know their caste or do not fall under any of the specified categories. The scheduled Caste and Schedule Tribes are 3% and 5% respectively. Vimukata Jati (de-notified tribes) and Nomadic Tribes (VJNT) are 1%. Amongst the Talukas Uran has the highest population of general category at 76%, OBC are maximum in Thane Taluka at 73% followed by Pen at 55%. Scheduled Tribes are highest in Khalapur Taluka at 8% and Scheduled Castes are highest in Panvel and Karjat Taluka at 5%. VJ & NT are highest in Karjat at 2%.

Table 2-20: Caste in NAINA

Taluka	General		OBC		SC		ST		VJ & NT		Others		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	28	35%	9	11%	4	5%	2	2%	2	2%	36	44%	81	100%
Khalapur	179	29%	179	29%	13	2%	50	8%	1	0%	189	31%	611	100%
Panvel	426	13%	1667	50%	161	5%	221	7%	45	1%	810	24%	3330	100%
Pen	273	13%	1143	55%	14	1%	14	1%	0	0%	642	31%	2086	100%
Thane	57	14%	299	73%	10	2%	27	7%	0	0%	18	4%	411	100%
Uran	71	76%	12	13%	0	0%	2	2%	0	0%	9	10%	94	100%
Total	1034	16%	3309	50%	202	3%	316	5%	48	1%	1704	26%	6613	100%

Source: Socio-Economic Survey

As far as religion is concerned 93% are Hindus followed by Muslims 5% and rest as Christians and others. Muslim and Christian population is high in Uran Taluka at 23% and 31% respectively.

Table 2-21: Religion in NAINA

Taluka	Hindu		Muslim		Christian		Others		Total No. of HHs	Total %
	(HH No.)	%	(HH No.)	%	(HH No.)	%	(HH No.)	%		
Karjat	77	95%	4	5%	0	0%	0	0%	81	100%
Khalapur	602	99%	8	1%	0	0%	1	0%	611	100%
Panvel	3147	95%	136	4%	20	1%	27	1%	3330	100%
Pen	1890	91%	167	8%	2	0%	27	1%	2086	100%
Thane	406	99%	5	1%	0	0%	0	0%	411	100%
Uran	43	46%	22	23%	29	31%	0	0%	94	100%
Total	6165	93%	342	5%	51	1%	55	1%	6613	100%

Source: Socio-Economic Survey

Summary: The various factors of the survey indicate that Karjat area is most rural as it has maximum *wadi* type housing, maximum household size of 4.9, no employer provided housing. In this aspect, Khalapur, Uran and Panvel are trending towards urbanization with maximum number of housing type as flats, small household size 4.3 and smaller average number of rooms of 2.6.

As regards standard of living Karjat is lowest on most counts such as least number of households having toilets within the house, least number having electricity connection, income level between Rs. 5000 – 8000, low ownership of vehicles and household assets. Highest income levels of Rs. 16001 – Rs. 25000, highest vehicle ownership and maximum tap connections are seen in Panvel and Khalapur Taluka. The other Talukas of Pen, Uran and Thane situate in between Karjat and Panvel &Khalapur.

3. EXISTING LANDUSE

The Existing Land Use (ELU) is a basis for preparation of development plan, which is also mandatory as per section 25 of MR&TP Act, 1966 for the preparation of Development Plan. This chapter presents NAINA ELU and its survey methodology.

In order to expedite the Existing Land Use Survey work, NAINA was divided into two parts and separate survey agencies were appointed for each part. At the end of the work, survey agencies submitted final report documenting activities of their scope of work and detailing out various aspect of the survey. This chapter briefly explains the methodology adopted by the survey agencies. Detailed information is available in the reports submitted by each survey agency to CIDCO.

3.1 SURVEY METHODOLOGY

The methodology in short has three parts. The first part is procurement of satellite images, its processing, landuse classification and digitisation. The second part is Lidar survey i.e. capturing details by Laser scanning, processing and topographic feature extraction. Third part is cadastral mapping which includes procurement of village maps, scanning, geo-referencing and digitisation. The flow chart of methodology is given in **Figure 3-1**.

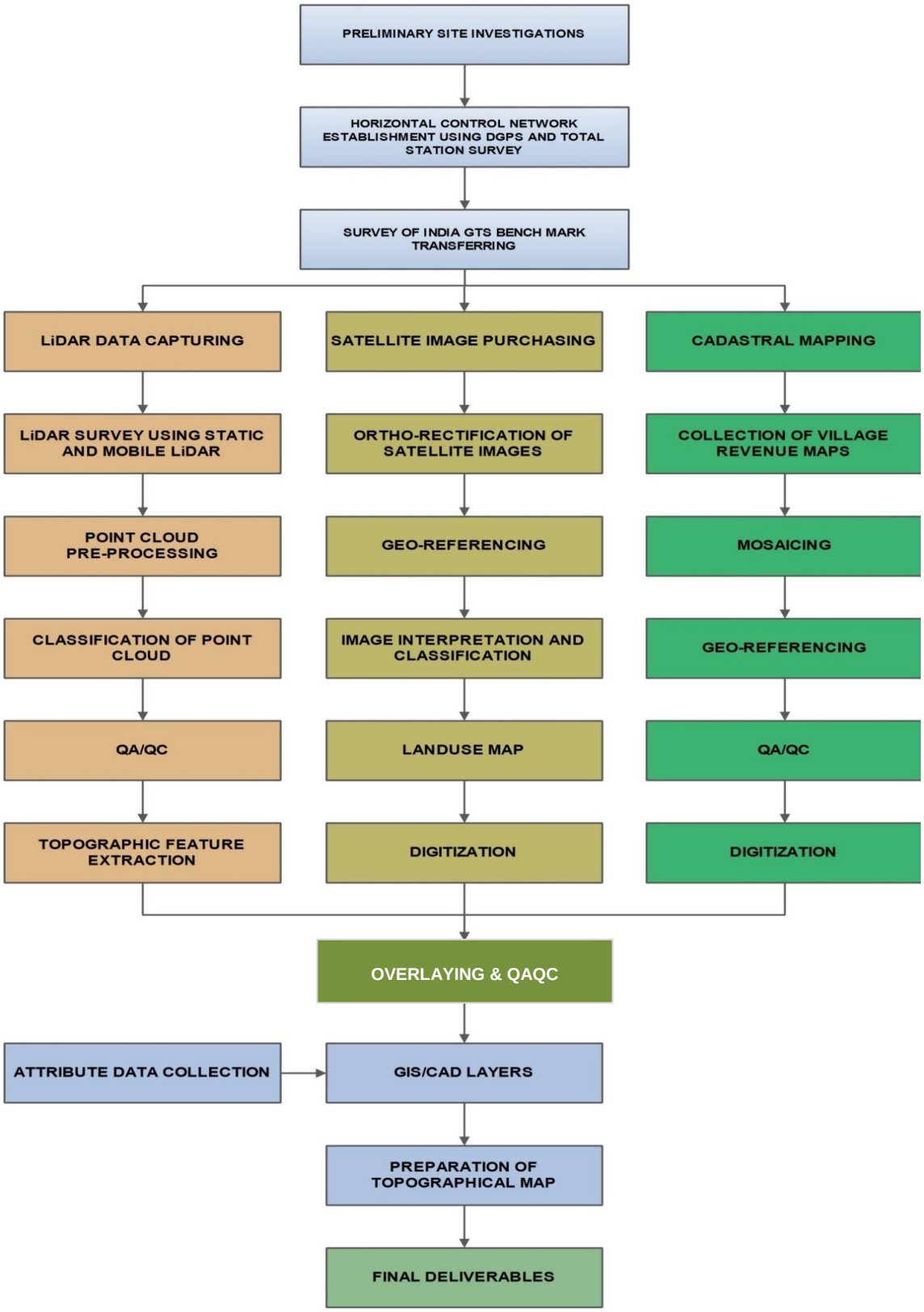

Figure 3-1: Methodology of Topographic and Existing Land Use Survey for NAINA

3.1.1 DATA COLLECTION

For the purpose of preparation of Development Plan, CIDCO procured satellite imagery and provided the same to survey agencies. CIDCO collected forest land information from MMRDA, which was compiled by MMRDA and ratified by Forest department at the time of revision of first Regional Plan for Mumbai Metropolitan Region. Later CIDCO also procured forest land information directly from Forest Department and the same was incorporated.

The data of development permission was collected from ADTP Thane/ Raigad. The information regarding Government land was downloaded from the website of Government of Maharashtra and also procured from Collector Raigad and Thane. The Survey Agencies procured cadastral maps (village revenue maps) from the office of DILR/ TILR.

3.1.2 BENCH MARK SURVEY

CIDCO provided Temporary Bench Mark (TBM) Point to survey agencies. This TBM is located near a well in front of Rakhumai Temple, Kalundre (about 500 meters from ONGC Kalundre bus stop towards west). Taking this as a reference location, survey agencies established their Bench Mark (BM) points for survey.

3.1.3 GCP COLLECTION

The survey was carried out in two phases by two survey agencies. The first survey agency carried out field work for Part -1 from March 2014 to July 2014 and for Part - 2 the second survey agency carried out field work from January 2015 to June 2015. Areas covered by individual survey agencies and grid structure for NAINA is given in **Figure 3-3: Area under Survey agencies and Grid Structure for NAINA**). For integration, it was necessary to follow the same coordinate system over whole of NAINA. It was achieved by establishing three Horizontal Control Points (HCP-1, HCP-2 and HCP-3) over Part –1 and Part –2 area. These three control points' coordinates were obtained from Part -1 area surveyed agency and the same control coordinates were used to establish the Part -2 area control network. The Part -2 team carried out observation at all three HCPs and post processing results were compared with Part -1 team results. The coordinate comparison of HCPs between Part 1 & 2 survey agencies are mentioned in **Table 3-1: Verification of coordinate system adopted by survey agencies**.

Table 3-1: Verification of coordinate system adopted by survey agencies

Base Line	Distance by Survey Agency-1	Distance by Survey Agency-2	Diff (D)	Accuracy	Order
HCP 1 - HCP 2	14611.299	14611.329	-0.030	1 : 478112	1-Class
HCP 2 - HCP 3	15487.429	15487.396	0.033	1:466796	1-Class
HCP 3 - HCP 1	12597.898	12597.945	-0.0473	1:266277	1-Class

Ground Control Points were collected at several locations of NAINA, to accurately find out the coordinate of physical features. Such features include road intersections, corners of open field or boundary etc.

3.1.3.1 BASE STATION

Two DGPS receivers were deployed as base station by each survey agencies. Initially observation was made for about 8 to 10 hours to get the precise coordinates of the base stations. Thereafter, these precisely known locations were used as base stations and were used during the daily field operation.

3.1.3.2 ROVER

DGPS receivers were deployed as rover. It was set up on or nearby planned location for 30 to 35 minutes to acquire GPS signals. The base station receiver calculates its position based on satellite signals and compares this location to the precisely known location. The difference is applied to the GPS data recorded by the roving GPS receiver to improve the accuracy.

3.1.3.3 GCP DATA PROCESSING

The recorded DGPS observations were post processed and network adjustment was performed. The network adjusted geo-coordinates were provided in UTM projection system with WGS 84 spheroid and WGS 84 datum.

3.1.4 IMAGE PROCESSING

The unprocessed ortho ready satellite images were provided by CIDCO to survey agencies. The data validation and image processing was carried out by survey agencies to ensure the completeness and quality of data. Multi spectral imagery of 2 meter spatial resolution and Panchromatic of 0.5 meter resolution were fused to generate a colour composite imagery at the spatial resolution of PAN imagery (0.5 m). Geo-referencing of satellite imagery was carried out with reference of GCP.

The details of satellite image are given below:

- Imagery date - 3rd Nov 2012, 3rd Dec 2012, 29th Jan 2013
- Product - Panchromatic (black and white) AND Multi spectral
- Bit depth - 16 bit
- Ground sample distance (Resolution) – 0.5 m (Panchromatic & Pan sharpened)
- Spatial reference system
    - Projection - UTM Zone 43N
    - Datum - WGS 84
    - Units - Meter

3.1.5 DIGITIZATION AND DATA PROCESSING

CIDCO provided a map showing the extent of area to be covered in survey along-with list of villages. CIDCO also provided satellite imagery and administrative boundaries. Survey Agencies procured the cadastral (village revenue) maps from DILR/TILR office. The revenue village maps were digitised and geo-referenced using about 5 ground control points per village. Administrative boundaries received from CIDCO were geo-referenced by the survey agencies. Basic digitization is carried out and the information is classified into different layers. Thereafter, field surveys were conducted. See **Figure 3-2: Map showing digitized features on satellite imagery**.

Figure 3-2: Map showing digitized features on satellite imagery

3.1.6 METHOD OF FIELD SURVEYS

Field surveys were carried out by the survey agencies to verify the existing land use and base map on ground. The entire area was divided into grids of 1:1600 scale. The surveyors were deployed in field to capture the attribute details.

For each structure/ building foot print, the land use category was classified and at the same time the geographical features such as water bodies, hills and vegetation were observed and marked on the map. Addition/ deletion of features such as roads, buildings were carried out. All the attributes were marked in a separate code on the satellite imagery and detail information was then plotted into the attribute sheet. After completion of field surveys the digitization/ drafting of all corrections were carried out.

Geo-database structure was prepared by planning consultants in consultation with CIDCO. This was used by the survey agencies.

3.1.7 CADASTRAL DATA PROCESSING

The cadastral map prescribes land parcel numbers, classification of land category, the boundaries and ownerships of land parcels. The survey agencies have collected cadastral map from land record department of Thane / Raigad district. The cadastral maps were scanned. Satellite images were geo-rectified and the projection was set to Universal Transverse Mercator (UTM) projection system, zone 43N. The nearest neighbourhood Re-sampling technique was used to re-sample the cadastral map into a pixel size of quick-bird image during the image-to-map registration. Scanned revenue maps were geo-referenced using satellite imagery. All land parcels were digitized.

3.1.8 LIDAR DATA PROCESSING

Contour lines are the most common method of showing relief and elevation on a standard topographic map. A contour line represents an imaginary line on the ground, above or below mean sea level. All points on the contour line are at the same elevation. The elevation represented by contour lines is the vertical distance above or below mean sea level. Digital Elevation Model (DEM) has been generated based on the filtered and edited LiDAR data / (bare earth) incorporating streams and break lines and points. The contours at 1 meter, 2 meter and 5 meter interval have been derived from the DEM.

Cartographically, the intermediate contours and every fifth contour have been drawn with different thickness and contour values at appropriate distances to enhance contour readability and indicating the index contour. Starting at zero elevation or mean sea level, every fifth contour line is a heavier line. Each index contour line is numbered at its centroid indicating the elevation of that line. This number is the elevation of that contour line.

3.1.9 QA AND QC PROCESS ADOPTED

The QA and QC process adopted by survey agencies includes manual checks as well as automated routines. Automated process includes the verification of no duplication of lines or symbols, no object with more than one unique identifier, no breaks in graphic connectivity. All graphic files were checked manually with reference to original source map.

3.1.10 GRID FORMULATION

The entire surveyed area has been divided into grids for easy referencing and coordination of survey. The grids are numbered alphabetically from A to V on vertical axis and 1 to 13 on horizontal axis. The typical grid references are a combination of vertical and horizontal reference nos i.e. A4, H13 etc. A village may fall in one or more grid. For example Village Vichumbe, Taluka Panvel falls in one grid H6 and Village Koproli Taluka- Pen falls in four grids namely S3, S4, T3, T4. Grid Structure is shown in **Figure 3-3**.

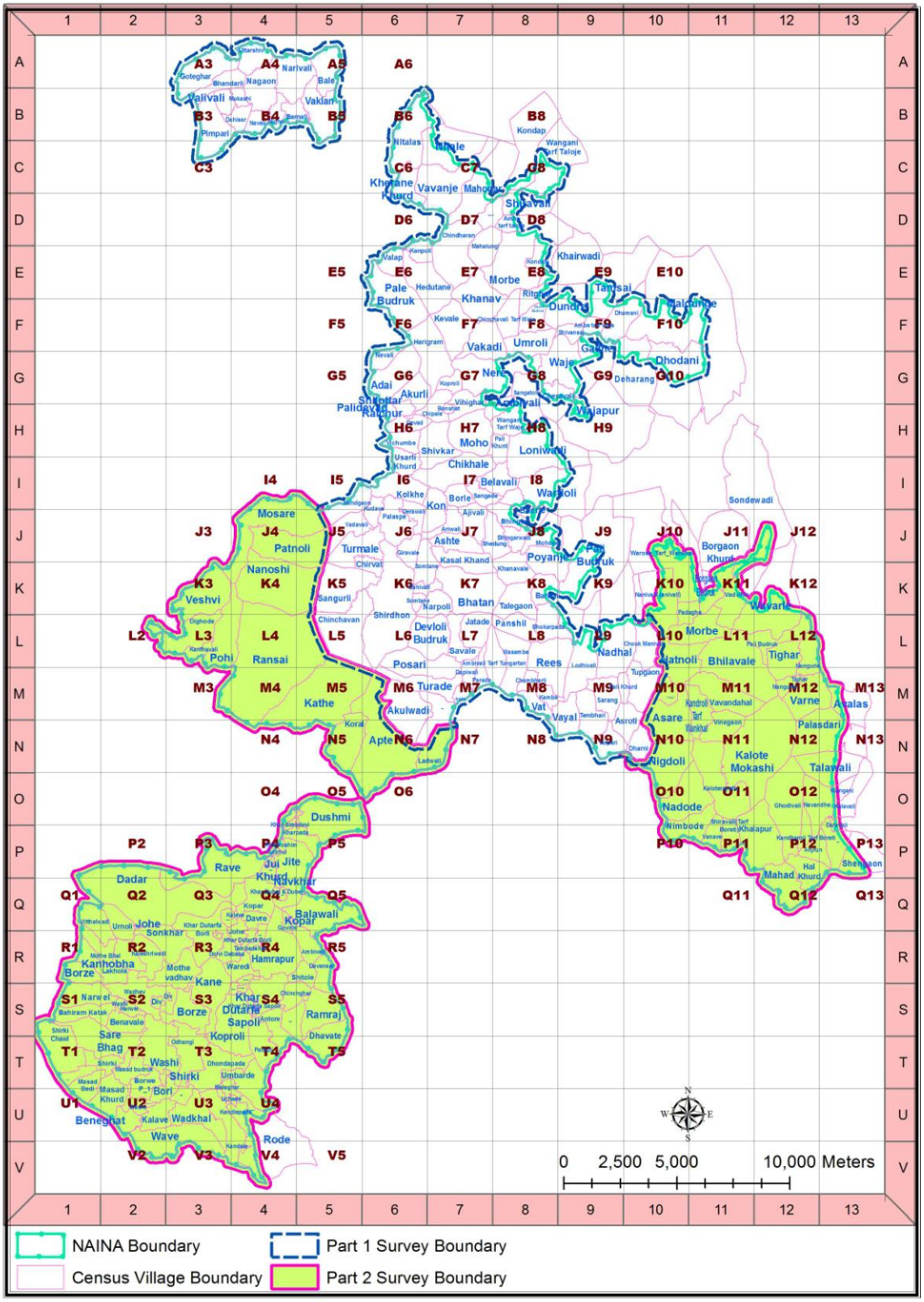

Figure 3-3: Area under Survey agencies and Grid Structure for NAINA

3.2 EXISTING LAND USE

The existing land use study given in this chapter is limited to DP area i.e. NAINA excluding IDP. The total area therefore refers to total area of NAINA excluding the area of IDP. The area is predominantly rural in nature intermitted with settlements mostly within Gaothans and Padas. However the settlements are also seen sometimes on the out skirt of Gaothans/Padas and along existing roads. The existing developed area is around 7% of the total area (NAINA excluding IDP), this developed area constitutes residential, commercial, industrial, mix use, transport, public & semi- public, public utility, recreational, farmhouses and vegetated areas etc. The major land use is agriculture (43%) followed by forest (20.7 %). For existing land uses refer **Table 3-2: Existing Land use**.

3.2.1 ENVIRONMENTALLY SIGNIFICANT AND NON-DEVELOPABLE AREAS

Forest, water bodies, hills, wetlands and salt-pans are the environmentally significant areas. It constitutes 46.2% of the total area. This high percentage of environmentally significant area emphasises the need of environmental considerations in Planning of DP area. The environmentally significant areas are discussed below:

3.2.1.1 FORESTS

DP area is falling in foothill of Sahyadri range. The area witnesses the presence of protected, reserved and few unclassified forests. Forest lies in Balance Phase-I as well as in Phase-II. The forest area in balance phase-I is 1094 and in phase-II it is 7965 Ha. Hence a total area of 9059 Ha is under forests, which is 20.7% of DP area.

3.2.1.2 WATER BODIES

Total area of water bodies including area under revenue water bodies and water bodies within forests constitutes about 3096 Ha (approximately 7.1%) which includes rivers, creeks, lakes, ponds and perennial streams and area under revenue water bodies and within forests. The major rivers flowing through NAINA are Kalundre, Gadhi, Kirki and part of Patalganga. There are several creeklets penetrating into land in Pen Taluka.

3.2.1.3 HILLS

Hills are classified as non-developable. The hill areas with slope greater than 1:5 are considered steep and hence non-developable. The hills in DP area constitute 5305 Ha which is about 12.1% of the total area.

3.2.1.4 MARSHY/SHRUBS AREA

Wetlands are lands observed to be saturated with water at the time of survey. Wetlands are found only in villages of Pen Taluka near creek. As classified above area under marshy/shrubs is 2402 Ha which is about 5.5 % of the total area. These are not wetlands as stipulated in the MoEFCC notification of November 2010.

3.2.1.5 SALT PANS

Salt production is noticed only in villages of Pen Taluka. The area under salt pans is 320 Ha which is about 0.7 % of the total area. Some of the villages that have salt pans area are Vashi, Shinganvat, Bori Fata and Kolave. Salt production is on decline and this activity may be discontinued in future.

3.2.2 EXISTING BUILT-UP AREAS (REDEVELOPABLE LAND)

There are certain areas within DP area which are already developed. The existing settlements and structure in the form of residential, commercial, industrial and warehousing, mixed use, public and semi-public amenities, public utilities, transportation, vegetated and farm houses came up organically in the past. However majority of such built-up areas are not in very good condition or not optimally designed. These areas therefore can be redeveloped efficiently. These areas are discussed further in detail.

3.2.2.1 RESIDENTIAL LAND USE

The dense residential areas are located within and sometimes around the Gaothans. The developments prominently located outside of Gaothans are observed in villages close to New Panvel. In other parts of DP, residential area mainly consists of Gaothans, Padas and sometimes ribbon development along existing roads. The areas developing/ developed under Special Township Policy and Rental Housing Schemes have been accounted in residential development. The area under residential land use is about 1403 Ha (approximately 3.2%) of the total area.

3.2.2.2 COMMERCIAL LAND USE

Commercial activities are concentrated along Highways NH-4 & 17 and SH 79 & 105. The major activities noticed are showrooms, hotels, eating houses, auto repair/ service stations, fuel filling stations etc. Few commercial uses were also observed along Panvel-Matheran State Highway. The total land under commercial use is 131 Ha (0.3%) of the total area.

3.2.2.3 INDUSTRIAL AND WAREHOUSING LAND USE

DP area has very limited industrial activity. This is also evident from the industrial/warehousing landuse which accounts for 648 Ha (1.5%) only. Villages in Pen Taluka have Ganpati Idol making workshops. Villages have brick kilns on their outskirts and these area are included in industrial landuse.

The only Industrial Estate which was falling within DP is Rasayani. It is spread over Posari, Turade, Savale and Wasambe village. However, major part of this industrial estate is now under jurisdiction of another special planning authority i.e. MSRDC.

Taloja Industrial Estate is adjoining to the northern part of NAINA. Due to its influence, some industries have come up in the vicinity of this industrial estate. Few industrial developments have also been noticed along Highways i.e. NH-4, NH-17, and SH-105.

Adjoining to DP boundary, JSW steel plant is located in Dolvi village. The jetty being used by JSW steel plant is situated in Wave village within NAINA.

Jawaharlal Nehru Port Trust which is the highest container handling port of India, it is in proximity of NAINA. This proximity of JNPT has led to development of warehousing and logistics activities in NAINA. Most of these activities are observed along transport corridors i.e. mainly along NH-17 around villages Palaspe, Shirdhon, Chinvat, along NH-4 around villages Kolkhe, Derawali, (although major part of NH4 and surrounding area is now under MSRDC, but indirect impact of industrial and economic activities can be observed in NAINA) and along SH-82 in village Kasalkhand etc. Due to its prominence as economic activity, this use has been categorized separately.

3.2.2.4 MIXED LAND USE

The mixed land use includes the combination of residential and commercial activities or residential and household industry. Land under such use aggregates to 27 Ha which is 0.1% of DP area.

3.2.2.5 PUBLIC AND SEMI-PUBLIC UTILITIES AND AMENITIES

The public and semi-public land use includes educational, health, socio-cultural facilities and religious places. The total land under these uses aggregates to 180 Ha which is approximately 0.4% of total DP area.

3.2.2.6 TRANSPORTATION LAND USE

The transportation network in the area includes the road network and railway network. The total area under transportation land use is 528 Ha, which is approximately 1.2% of the area.

3.2.2.7 VEGETATED AREAS

These are areas where there is substantial green cover either naturally or through plantations. Such areas admeasure 83 Ha and are about 0.2% of the total area.

3.2.2.8 FARM HOUSE

These are few farm houses also within DP area. Areas under Farm houses admeasure 67 Ha and are about 0.2% of the total area.

3.2.2.9 RECREATIONAL LAND USE

The area of land under recreational use such as playgrounds, parks, gardens, water parks, tot lots etc aggregates to 76 Ha, which amounts to 0.2 % of the area.

3.2.3 LAND AVAILABLE FOR DEVELOPMENT

The other land uses which would be available for development are agricultural, vacant lands, vegetated areas, recreational and quarries. These are described below:

3.2.3.1 AGRICULTURAL LAND USE

Agricultural land use is predominant and area aggregates to about 18809 (43%). The agriculture land use is present in almost all villages. Crop lands, fallow lands, plantations, poultry farms/ cattle sheds, nurseries and fish farms are the sub-categories considered under agricultural land use.

3.2.3.2 VACANT LANDS

Vacant land is classified where no particular activities is noticed/ taking place during the site visit. The area has fairly large parcels of land under this category i.e. 1526 Ha, which amounts to 3.5 % of the area.

3.2.3.3 QUARRY

Area under quarries is approximately 67 Ha, which is about 0.2% of DP area.

Refer **Table 3-2: Existing Land use** for Existing Landuse chart and **Figure 3-4: Existing Land Use Distribution in DP area** .

Refer **Figure 3-5: Existing Land Use Distribution in DP Area, 2014-15** for Existing Land Use Map of DP

Table 3-2: Existing Land use in DP area

Existing Land Use					
Sl. No.	**Land Use Category**	**Bal Phase-I (Ha)**	**Phase-II (Ha)**	**Total**	**% of Total Area**
A	**Area not available for development**				
1	Forest	1094	7965	9059	20.7%
2	Waterbody (Within Forest)	5	53	58	0.1%
3	Waterbody	161	2485	2646	6.1%
4	Waterbody (Revenue)	69	323	392	0.9%
5	Hills (slope more then 1:5)	174	5131	5305	12.1%
6	Marshy/Shrubs	3	2398	2402	5.5%
7	Salt pan	0	320	320	0.7%
A	**Sub-Total**	**1507**	**18675**	**20181**	**46.2%**
B	**Existing Built-up Area (Redevelopable Lands)**				
7	Residential	302	1101	1403	3.2%
8	Commercial	37	94	131	0.3%
9	Industrial and Warehousing	119	528	648	1.5%
10	Mixed Use	5	22	27	0.1%
11	Public and Semi-Public Utilities and Amenities	51	129	180	0.4%
12	Transport Network	139	389	528	1.2%
13	Vegetated	2	81	83	0.2%
14	Farm House	16	50	67	0.2%
15	Recreational	47	28	76	0.2%
B	**Sub-Total**	**718**	**2424**	**3142**	**7.2%**
C	**Total Non-Developable Land (A+B)**	**2225**	**21098**	**23323**	**53.3%**
D	**Lands available for development**				
16	Agricultural	3975	14834	18809	43.0%
17	Vacant Land	493	1033	1526	3.5%
18	Quarry	24	43	67	0.2%
D	**Sub-Total (Developable)**	**4493**	**15910**	**20403**	**46.7%**
E	**Total Area (A+B+D)**	**6718**	**37008**	**43726**	**100.0%**

Legend used for showing existing land use is shown in **Annexure 3-1**.

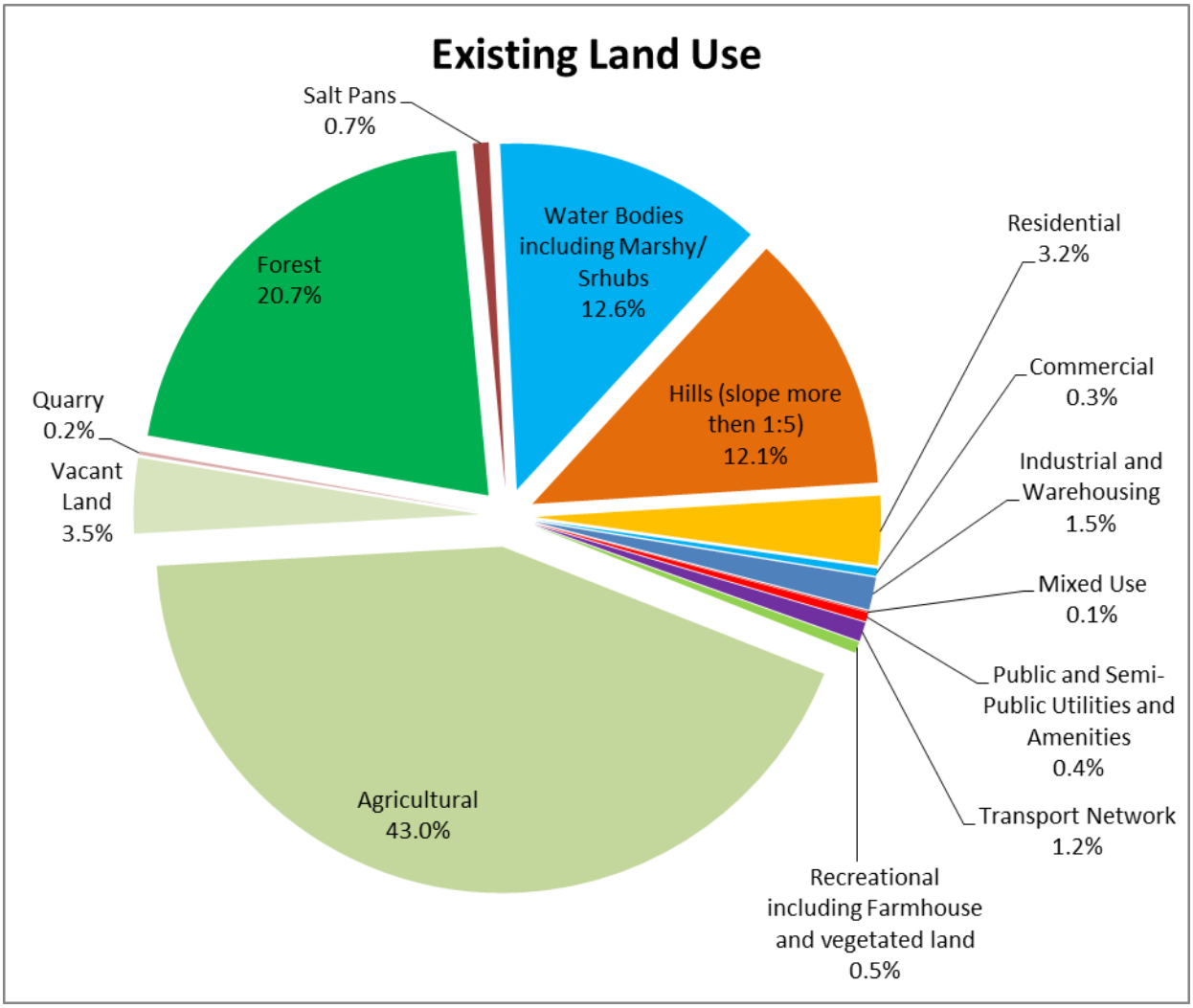

Figure 3-4: Existing Land Use Distribution in DP area

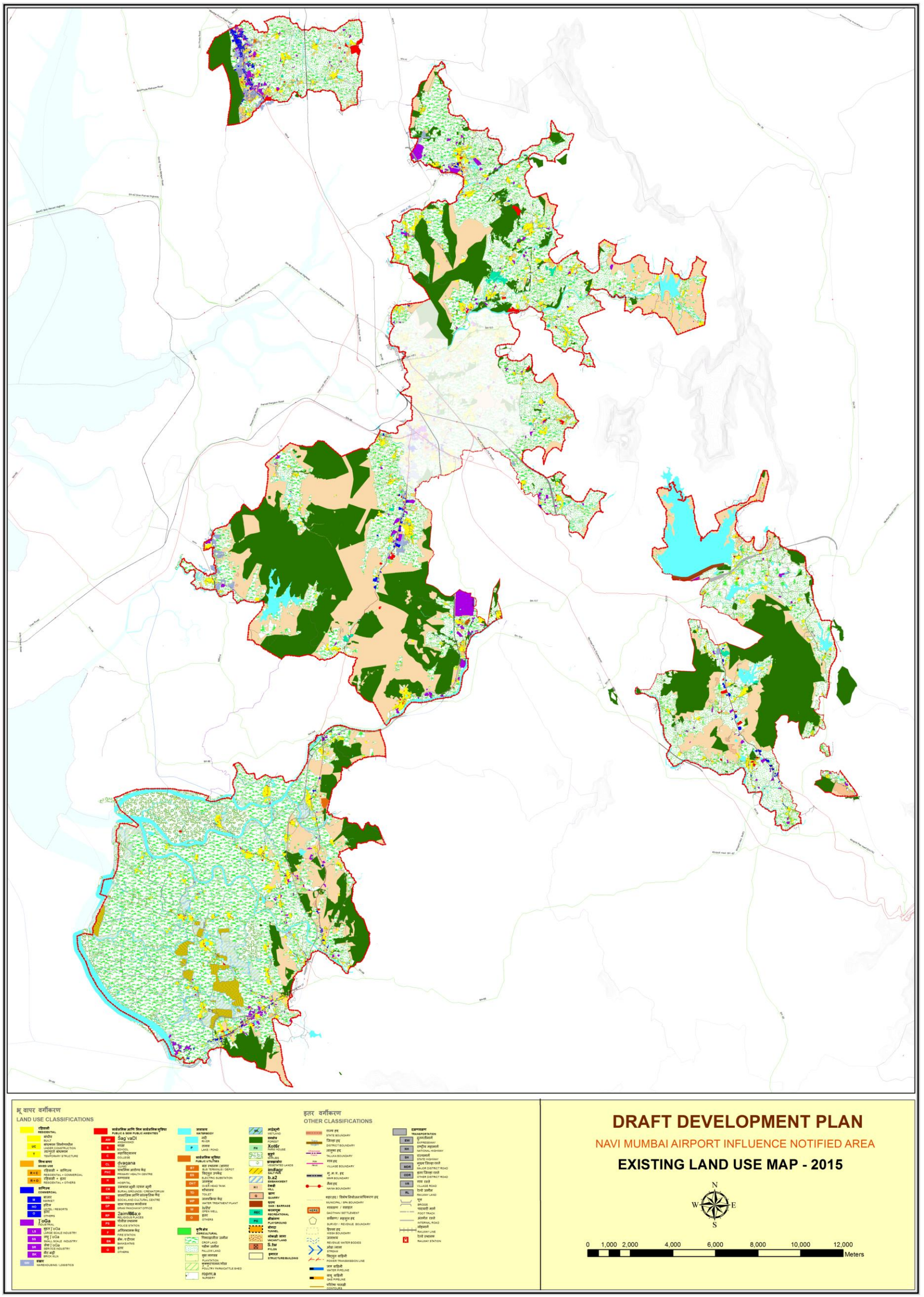

Figure 3-5: Existing Land Use Distribution in DP Area, 2014-15

3.3 ECO-SENSITIVE ZONE AROUND KARNALA SANCTUARY

The Ministry of Environment, Forests and Climate Change by its notification S.O. 230(E) dated 22nd January 2016 has identified an Eco-Sensitive Zone (ESZ) ranging from 0 - 8 km around the Karnala Wildlife Sanctuary. It includes 18 villages from Panvel and Uran Taluka.

The area of KESZ (including Karnala Bird Sanctury) is about 12.10 sq.km. as per MoEFCC notification dated 22 June, 2015. This is considered as area not available for development. Existing uses in KSEZ will be continued and have been considered in already developed areas. Karnala ESZ constitutes mostly forest and hills (gradient >1:5).

As per the notification, a Monitoring Committee to monitor compliance of the notification has been constituted under the chairmanship of Collector Raigad District and representative of SPA NAINA as one of the members of the committee.

3.4 WESTERN GHATS ECO-SENSITIVE ZONE

The Ministry of Environment, Forests and Climate Change by its notification S.O. 733(E) dated 10th March 2014 has identified Eco-Sensitive Zones (ESZ) in the Western Ghats hills in the states of Gujarat, Maharashtra, Goa, Karnataka and Tamil Nadu. Raigad District is one of the districts in Maharashtra which has some villages in the ESZ. The said notification gives the list of villages which are wholly or partly included in the ESZ along with the latitude and longitude of the external boundary of ESZ.

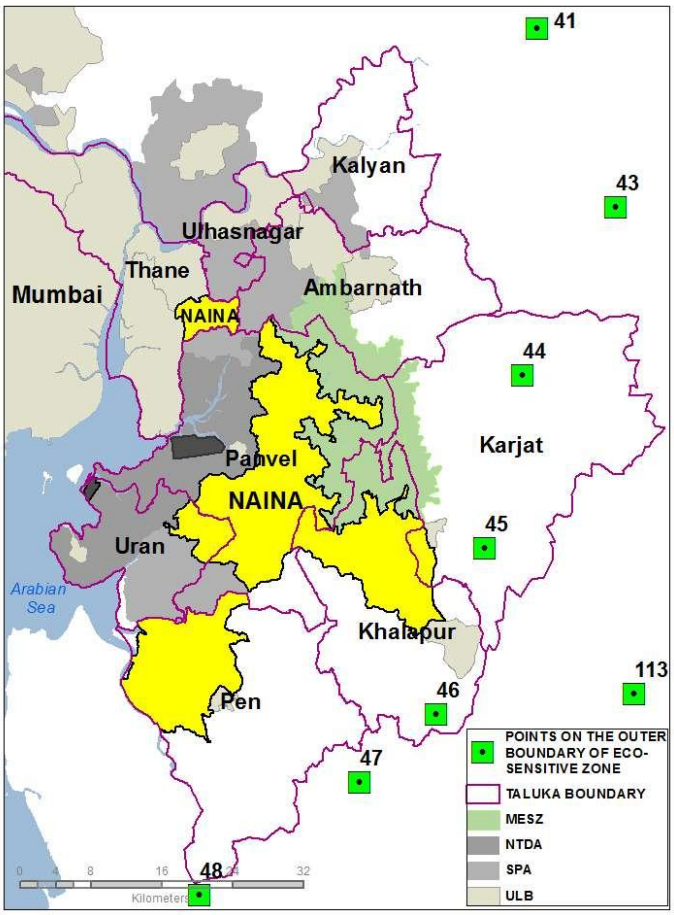

Figure 3-6: Reference points on outer boundary of Western Ghat ESZ

As far as NAINA is concerned certain villages appear in the ESZ list as given in **Table 3-3: Villages and Reference points** . However the latitude – longitude of the external boundary of villages when transferred on map show different locations than those cited in the table and the villages of NAINA at these coordinates do not appear in the list of ESZ notification. Thus there is a discrepancy in the boundary of ESZ and this issue is required to be sorted out with MoEFCC. It is subjected to the final notification by MoEF, which after publishing will be applicable in DP area. The **Figure 3-6: Reference points on outer** boundary of Western Ghat ESZ shows the map with location of outer boundary marked as per lat-long of reference point given in the notification (shown in **Table 3-3: Villages and Reference points**).

Table 3-3: Villages and Reference points

Sr. No	Taluka	Village	Reference point in Notification	Latitude - Longitude
1	Karjat	Palasdari	41	73.4258, 19.4225
2	Karjat	Talawli	43	73.5123, 19.2406
3	Khalapur	Sondewadi	44	73.4137, 19.068
4	Khalapur	Warose T. Wankhal	45	73.3746, 18.8911
5	Khalapur	Nadhal	46	73.3242, 18.7207
6	Khalapur	Kalote Mokashi	47	73.2432, 18.6505
7	Khalapur	Nigdoli	48	73.0729, 18.534
8	Khalapur	Kalote Rayati	113	73.5363, 18.7441

3.5 IDENTIFICATION OF POTENTIAL DEVELOPABLE AREAS

The main purpose of the existing land use preparation is to know the extent of area already developed and to estimate the land available for development.

Environmentally significant areas such as water bodies, forests (including KESZ), salt pans and wetlands areas are excluded from developable lands. Physically undevelopable areas such as hills with steep slope (greater than 1:5) are also excluded from developable areas. Land under existing transportation network, existing built-up areas are excluded from the developable lands. Refer **Table 3-4: Summary of developable area.**

The agricultural and vacant lands are predominant areas available for new developments and they can be considered as "areas available for development". Large share of government lands is also available in these areas. Altogether, the land available for development in DP area is approximately 20461 Ha that is 46.8% of NAINA excluding IDP. For developable and non-developable land Refer **Figure 3-7: Lands available for development in DP area**.

Table 3-4: Summary of developable area

Sr. No	Description	Area in Ha	% to total area
A	Total Area of DP (NAINA excluding IDP)	43726	100%
B	Not available for development	20181	46.2%
C	Already Developed (Existing Built-up Area : Re-developable)	3142	7.2%
D	**Lands available for development [A-(B+C)]**	**20403**	**46.7%**

Source: Analysis of the ELU map

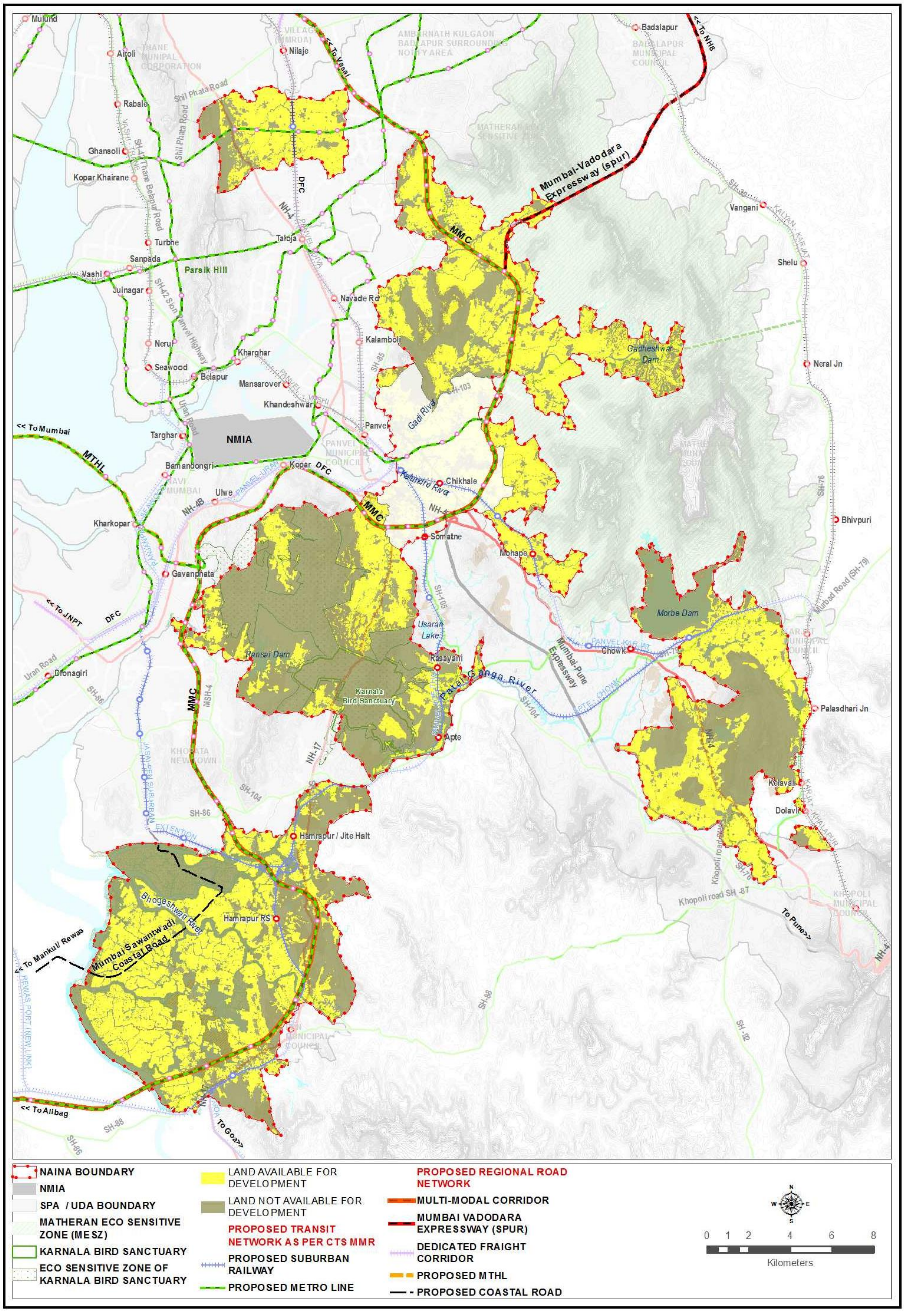

Figure 3-7: Lands available for development in DP area

4. VISION AND STRATEGY

This chapter briefly explains the vision for the development of NAINA and the strategy to attain the same. Chapter also discusses the identified focal areas to bring strategy into action.

4.1 VISION FOR NAVI MUMBAI AIRPORT INFLUENCE NOTIFIED AREA

Navi Mumbai Airport Influence Notified Area (NAINA) depends upon the economic base provided by proposed Navi Mumbai International Airport near Panvel, Taloja Industrial Area and Jawaharlal Nehru Port Trust. However, all the three are outside of NAINA limits, having their own immediate hinterlands to capture the growth impulses of these economic hubs. New economic opportunities will attract people from different areas and backgrounds. These socio-economic activities will also result in the expansion of housing market of Mumbai and Navi Mumbai towards NAINA. NAINA will have to acquire a competitive edge over other areas in Mumbai Metropolitan Region (MMR) to attract the economic impulse and housing market.

The vision for NAINA is:

4.2 STRATEGY

The key focal areas to attain the perceived vision as stated above are Phasing, Land Development Model, and Raising Finances for development of infrastructure, Transport Network and Environmental Sustainability. The five dimensional strategies is indicated in **Figure 4-1: Development Strategy for NAINA**

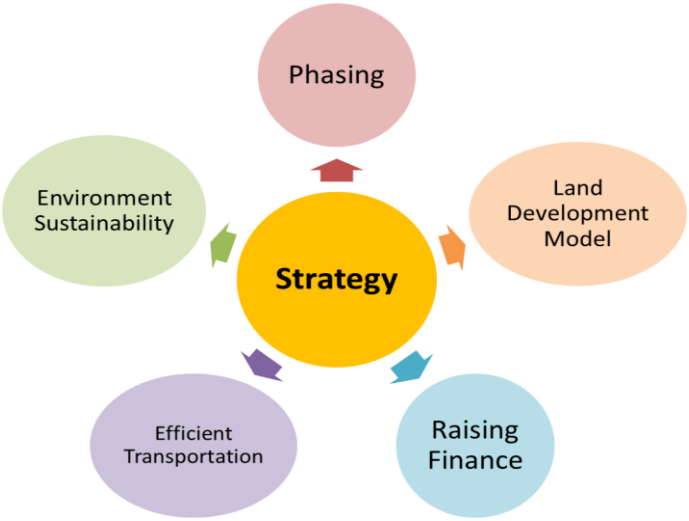

Figure 4-1: Development Strategy for NAINA

4.2.1 PHASING:

NAINA is spread over 474 km^2. To understand the scale of urbanization involved, it could be compared with the city of Mumbai which is spread over 438 km^2 and that of Navi Mumbai which is spread over 344 km^2. While Mumbai has been developing over the past century, it took about half a century for Navi Mumbai – a planned greenfield city to get developed and populated. NAINA in terms of area is considerably more than Navi Mumbai. Therefore NAINA is too big an area to be urbanised in the plan period of next 20 years. It will neither be possible nor advisable to plan and provide infrastructure for whole of NAINA uniformly. Hence it is considered appropriate to take up development in a focused way for selected area where development pressure is more. The focus of infrastructure will be on this selected area on priority. This area is termed as Phase-I. Remaining area is termed as Phase-II. Refer **Figure 4-2: Phasing of NAINA.**

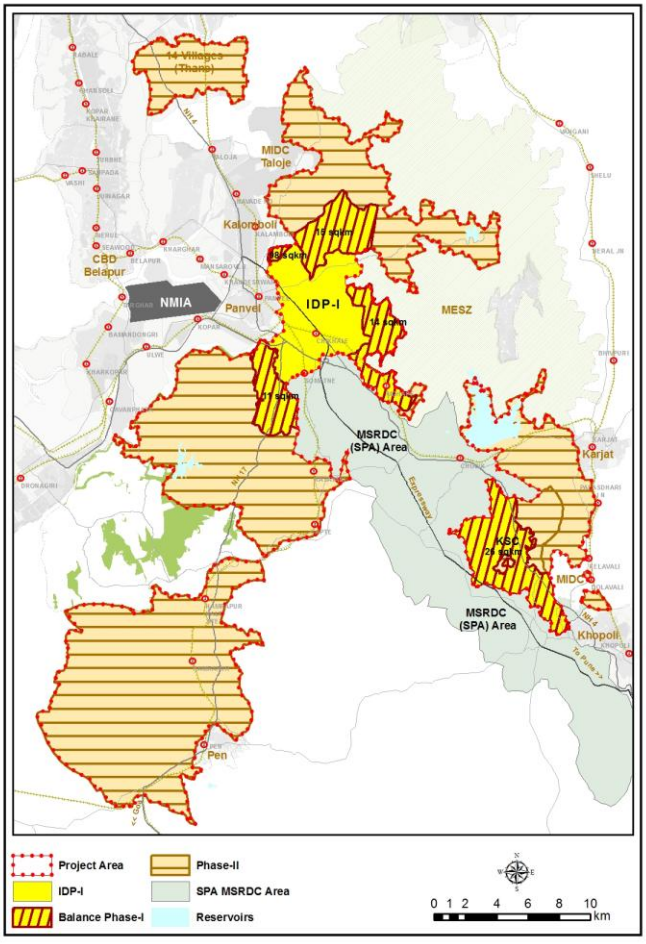

Figure 4-2: Phasing of NAINA

Furthermore development is dynamic and cannot be frozen in a 20 year plan, thus while a detailed land use plan will be prepared for the Phase –I, and the areas which are likely to be urbanized beyond plan period are marked as Phase-II. The idea is to review the plan after sometime (5 – 10 years), assess the development potential and needs and if required modify the plan suitably, more specifically for 14 villages of Thane District and the area surrounding Wadkhal Naka, Taluka Pen, District Raigad.

4.2.2 DEVELOPMENT MODEL:

Development of NAINA is planned to be holistic and flexible at the same time. In such situation, it becomes challenging to guide the development pattern. Therefore an innovative Land Development Model 'NAINA – a voluntary land pooling scheme' has been adopted.

The essential features of this model are.

a) Land is assembled into a minimum size.
b) 25% of the land is surrendered to the planning authority for provision of roads and infrastructure and 15% of land is surrendered to planning authority towards its land bank.
c) FSI for 60% of land retained by the developing entity is enhanced to compensate for the surrendered land.

Voluntary land pooling primarily responds to the demands of the market. Provision of 'incentives for participation in the scheme, and some disincentives for not participating' are introduced to make the scheme attractive and ensure maximum participation. Retaining land for subsequent sale by planning agency could raise resources for financing the development. The model in detail has been explained in Chapter 10.

The outcome of NAINA Scheme being market dependent is intrinsically uncertain. To overcome the risk and uncertainty of outcome the following strategy is proposed:

a) Flexible Zoning:

SPA intends to promote development in NAINA with major role for developers and other real estate entrepreneurs. It is therefore desirable to promote the concept of zoning with flexibility to promote compatible land uses in different zones.

In each zone compatible land uses are defined under preferred, permitted, and prohibited uses. The concept of flexible zoning is to create an enabling environment for private sector led development that can adapt to changing economic scenario. This process will ultimately result into integrated and holistic development of NAINA.

If reasonably large land is coming for development, which is capable of developing infrastructure on its own, such development is permitted even in Phase-II. For such development the minimum size of land assembly is more than ~~25~~20 Ha.

b) Selective reservations in DP:

Promoting large scale development through private sector also implies that some of the facilities will come up by private sector along the development. Two main criteria of provision for facilities are:

Considering the possibility and willingness of development by private sector, the estimated amenities for year 2034 have been categorized in three groups.

- Group I – 100% provision of reservations in DP
- Group II – 50% reservations in DP and 50% through NAINA Scheme
- Group III – Not shown in DP, expected from large developments

The details are given in Chapter-6.

4.2.3 RAISING FINANCES:

The land required for infrastructure would become available under NAINA model free of cost. The finances required for developing city-level infrastructure will be raised from development charges, as leviable under the MRTP Act, 1966. The prescribed development charges are enhanced to facilitate funding. The second source of revenue is disposal of 15 % land reserved as growth centre in Development Plan. For those who are not participating in NAINA scheme, FSI linked premium will be applicable to have parity in contribution for development of infrastructure, Details of the same are given in DCPR.

4.2.4 TRANSPORT:

Transport network is backbone of cities. Though other reservations have not been shown in detail beyond Phase-I, the road network has been planned for entire NAINA. Appropriate RoW has been worked out, planned and reserved for entire NAINA. Around the proposed sub urban stations adequate land has been reserved for circulation, integration of public transport and parking. Following parameters have been taken into considerations while planning Transport Oriented Development for NAINA, refer **Figure 4-3: Transport Oriented Development in NAINA**

- Walk: Developing neighbourhoods that promote walking by providing neighbourhood facilities and public transport at walkable distance
- Cycle: Promoting and encouraging Non-motorized transport system by providing cycle and pedestrian lanes
- Connections: Creating networks of streets and roads, proposing roads in loops to provide choice of mobility
- Transit: High potential development along major transport connectivity
- Mixed activities: Planning for mixed use, controlled by DCPR
- Dense and compact development: Optimizing density and transit capacity. Creating regions with short commutes
- Shift: Increasing mobility by regulating land use (providing parking) and facilities (transport oriented facilities) near transport nodes.

Figure 4-3: Transport Oriented Development in NAINA

4.2.5 ENVIRONMENT SUSTAINABILITY:

NAINA is partially located in the hilly terrain of Western Ghats, which has sensitive areas of natural and ecological importance. Protecting these natural areas is important for regional ecological balance of MMR and Western Ghats. The Eco-sensitive zones have been protected to retain the natural ecology and environment in NAINA. Balance between nature and Smart urban development has been evolved.

Environmental sustainability is an important aspect for any plan. The environmental conditions of an area influence the quality of life of its inhabitants. NAINA being a Greenfield development, environmental sustainability becomes more significant. Environment conservation in the DP includes both the built and natural heritage. While it is difficult to address all the conservation issues in a DP, attempt has been made to minimise the adverse impact of urbanization on environment through land use proposals and the Development Control and Promotion Regulations (DCPRs).The same are discussed in detail in Chapter - 12.

Figure 4-4: Evolving balance between Nature and Smart Urban Development

5. DEMOGRAPHIC PROJECTIONS

NAINA is almost a green field development. The traditional methods of population projection used in Development Plans for existing cities are not relevant in the instant case. This chapter describes the selection of appropriate methodology and the working of projected population of NAINA for the horizon year 2034.

5.1. POPULATION FORECAST - NAINA

5.1.1. METHODOLOGY

The conventional methods of population projection of given city essentially use time series data. Based on such data, regression analysis is carried out on the relation between population as dependent variable and time as independent variable. The functional form could be linear (arithmetic) or non-linear (geometric). For projecting the population in future the past relation between 'population' and 'time' is assumed to hold good even in future. The basic limitation of this method is that it does not take into account the changes occurring in the external context such as reduction in general fertility rate, changing migration patterns, focused economic growth etc. Furthermore, in the absence of detailed migration and age-group specific birth and death data a more sophisticated trend analysis by '**cohort survival**' method is also not possible. In addition, where slowing of growth rate is in its nascent stage (as in case of Greater Mumbai where peri-urban areas are growing at faster rate) or where a new economic input is expected to trigger urban growth, trend projection based on historical time series data of the concerned area is not relevant. In such circumstances a different approach to population forecast is adopted. This is called "**ratio**" or "**shift and share**" method. Such methods were adopted by D'Souza Committee while reviewing the Development Plan of Greater Mumbai in 1988, by Mumbai Metropolitan Region Development Authority (MMRDA) in Regional Plan 1996-2011 and also in draft Development Plan 2034 of Municipal Corporation of Greater Mumbai (MCGM).

Shift and Share method adopts approach of '**from whole to the part**'. Population of a city is a share of overall urban population of higher order spatial entity (e.g. region or state). However, such share is not constant and past data suggest the 'shifts' in the share. Such shifts are then moderated for the future either based on the trend or based on the judgment about the impacts of new economic inputs. This method is used in step down manner. At the highest order, the national or state demographic forecasts are considered. At the national level the contribution of net migration is very small. Projecting population is therefore less uncertain. After 2001 Census, Registrar General Census operations, Government of India, had provided population forecasts for India and States with Urban Rural division up to 2026.

Population growth of NAINA is likely to occur on account of new economic inputs like NMIA, expansion of JNPT, emerging rail links at Panvel, warehousing activities at Kalamboli and expanding housing market of Mumbai/ Navi Mumbai aided by infrastructure provisions by CIDCO. NAINA is likely to grow in the regional context of Mumbai Metropolitan Region. Therefore, **"Shift and Share"** method has been used to forecast the population for horizon year 2034.

Since NAINA is integral part of Urban Mumbai Metropolitan Region, the 'step down' approach uses Maharashtra Urban, Mumbai Metropolitan Region (MMR) Urban, Greater Mumbai Urban Agglomeration (GMUA) + Bhiwandi Nizampur Municipal Corporation + Vasai Virar Municipal Corporation + Navi Mumbai (CIDCO), NAINA and Khopta New Town Notified Area (KNTNA) as administrative units. The data compiled for the application of the method and the outcomes are described in succeeding paragraphs.

5.1.2. POPULATION DISTRIBUTION WITHIN DIFFERENT JURISDICTIONS

The available population from Census data was compiled (shown in **Table 5.1)** to be used for population estimation of NAINA. **Table 5.1** shows the population within various administrative zones in MMR and Maharashtra. In 2011 out of 508 lakhs population of Maharashtra's urban, 228 lakhs population was of Mumbai Metropolitan Region alone. Similarly, population within different jurisdiction within MMR is also shown in **Table 5.1**. Navi Mumbai shows considerable growth with Average Annual Growth Rate (AAGR) to be more than 10% (for year 2001 to 2011). NAINA in 1991 had 1.75 lakh of population, which grew to 2.78 lakhs in 2011, with AAGR of 3% in two decades (2.1% AAGR in 1991 to 2001, and 3.3% AAGR in 2001 to 2011). Refer **Table 5-1** for Urban Population within MMR and Maharashtra.

Table 5-1: Urban Population within MMR and Maharashtra

Description	Census Population in Lakhs				
	1971	1981	1991	2001	2011
Maharashtra Total	**504.1**	**627.8**	**789.4**	**968.8**	**1,123.7**
Maharashtra Urban	**157.1**	**219.9**	**305.4**	**411.0**	**508.2**
Mumbai Metropolitan Region (MMR)	**77.9**	**110.9**	**145.3**	**188.2**	**228.0**
MMR Urban	**68.3**	**101.2**	**135.2**	**181.8**	**213.8**
GMUA + BNMC+ VVSR+CIDCO	**66.9**	**99.2**	**131.6**	**174.7**	**204.6**
GMUA	**64.6**	**95.7**	**124.8**	**161.3**	**179.7**
Greater Mumbai Municipal Corporation	59.7	82.4	99.3	119.8	124.4
Thane Municipal Corporation	1.7	4.7	8.0	12.6	18.4
Kalyan- Dombivali Municipal Corporation	1.5	5.8	8.2	11.9	12.5
Ulhasnagar Municipal Corporation	1.7	2.7	3.7	4.7	5.1
Navi Mumbai Municipal Corporation	-	-	3.9	7.0	11.2
Mira-Bhayandar Municipal Corporation	-	-	1.8	5.2	8.1
AREAS NEARBY Greater Mumbai Urban Agglomeration (GMUA)	**2.3**	**3.5**	**6.7**	**13.4**	**24.9**
Bhiwandi-Nizampur Municipal Corporation	0.8	1.2	3.8	6.0	7.1
Vasai Virar City Municipal Corporation	0.3	0.4	2.2	4.7	12.2
Navi Mumbai (CIDCO)	1.2	2.0	0.7	2.7	5.6
OTHER URBAN LOCAL BODIES	**1.4**	**2.1**	**3.6**	**5.7**	**8.0**
Ambarnath Municipal Council	0.6	0.9	1.3	2.0	2.5
Kulgaon-Badalapur Municipal Council	-	-	0.5	1.0	1.7
Panvel Municipal Council	0.3	0.4	0.6	1.0	1.8
Pen Municipal Council	0.1	0.2	0.2	0.3	0.4
Khopoli Municipal Council	0.2	0.3	0.5	0.6	0.7
Karjat Municipal Council	-	-	0.2	0.3	0.3
Matheran Municipal Council	0.0	0.0	0.0	0.1	0.0
Alibag Municipal Council	0.1	0.1	0.2	0.2	0.2
Uran Municipal Council	0.1	0.2	0.2	0.2	0.3
CENSUS TOWNS	-	-	-	1.4	1.1
NAINA			**1.73**	**2.09**	**2.78**

Source: Census of India 1971, 1981, 1991, 2001 and 2011

For Population estimation, the share of population of a jurisdiction within its subsequent higher hierarchy of jurisdiction was calculated. The share of Maharashtra urban population to Maharashtra's total population was 39%, 42% and 45% in the years 1991, 2001 and 2011 respectively. **Table 5-2** shows the 'shift in share' in urban population of Maharashtra, MMR, NAINA etc. This trend shows that the share of Maharashtra urban population within Maharashtra is increasing consistently. On the other hand, the share of MMR urban population in Maharashtra urban population decreased from 46% to 42% in last three decades. Decrease in share of MMR urban population in Maharashtra's urban population indicates that urban areas outside MMR are growing at faster pace.

Greater Mumbai Urban Agglomeration (GMUA) constitutes municipal corporations of Greater Mumbai, Thane, Kalyan-Dombivali, Ulhasnagar, Navi Mumbai and Mira-Bhayandar. Areas such as Bhiwandi-Nizampur (MC), Vasai-Virar (MC) and Navi Mumbai (CIDCO) are outside of GMUA. However to consider single urban entity adjoining to the area of interest i.e. NAINA, Bhiwandi-Nizampur (MC), Vasai-Virar (MC) and Navi Mumbai (CIDCO) have been clubbed with GMUA.

As shown in the **Table 5-2** given below, share of population of Greater Mumbai Urban Agglomeration including Bhiwandi Nizampur Municipal Corporation, Vasai Virar Municipal Corporation and Navi Mumbai – CIDCO within MMR urban in the years 1991, 2001 and 2011 was 97.3%, 96.1% and 95.7% respectively. It is evident that shift in the share of population continued to be negative during past three decades. NAINA during two decades i.e. from 1991 to 2011) shows no significant deviation from natural growth. Please refer **Table 5-2** for share and shift in share from 1971 to 2011.

Table 5-2: Share and Shift in urban population of MMR in Maharashtra from 1971 to 2011

Description	Share of population					Shift in Share			
	1971	1981	1991	2001	2011	1971-1981	1981-1991	1991-2001	2001-2011
Maharashtra Urban in Maharashtra Total	31.2%	35.0%	38.7%	42.4%	45.2%	3.9%	3.7%	3.7%	2.8%
MMR Urban in Maharashtra Total	13.5%	16.1%	17.1%	18.8%	19.1%	2.6%	1.0%	1.6%	0.3%
MMR Urban in Maharashtra Urban	43.5%	46.0%	44.3%	44.2%	42.1%	2.6%	-1.8%	- 0.0%	-2.2%
GMUA + BNMC+ VVSR+CIDCO in MMR Urban	97.9%	97.9%	97.3%	96.1%	95.7%	0.0%	-0.6%	-1.2%	-0.4%
NAINA in MMR URBAN			**1.28%**	**1.15%**	**1.30%**			**-0.14%**	**0.15%**

Source: Census of India 1971, 1981, 1991, 2001 and 2011

5.1.3. NAINA'S POPULATION FORECAST BY SHIFT AND SHARE METHOD

Shift and share method follows the approach of **'whole to part'**. It implies that the population in higher order spatial entity will define the lower order spatial entity population with the help of percentage share within the larger spatial hierarchy. Therefore the elementary task was to estimate the population growth of highest hierarchy related to the study area i.e. Maharashtra State.

Maharashtra's Population Projection:

National Commission on population has projected the urban and rural population of India and states from the year 2002 to 2026. This document was prepared by Registrar General, Census Operations, Government of India (RGI). This population projection was done in 2006 and it is available for all states from the year 2002 to 2026. Now census data for the year 2011 is also available. Hence the census data was used to assess the deviation from the projection by RGI. For the year 2011, the population projected by the RGI in 2006 is 1126.6 lacs whereas the census 2011 shows 1123.7 lacs. It implies that the difference between the estimated population and census population-2011 is approximately 3 lacs i.e. 0.25%. The estimated population by RGI is slightly on higher side. This fact was taken care of while using the population projection of RGI.

The availability of census 2011 population and projections done by RGI provided supplementary information to study the trend and estimate population growth till 2034. The average annual growth rate of the past decades was analyzed and the deviation from RGI projection was observed. On the basis of this observation, the AAGR for 2021 and 2031 was assumed and the projections were carried out. The same is shown in the **Table 5-3**

Table 5-3: POPULATION PROJECTION (MAHARASHTRA TOTAL) Pop in Lacs

Description\ Year		1971	1981	1991	2001	2011	2021	2031
Population (Maharashtra Total)	Census Data (Actual Population)	504.1	627.8	789.4	968.8	1123.7		-
	RGI PROJECTION					1126.6	1270.8	
	PROJECTED POPULATION						**1258.2**	**1372.8**
Comparison	Difference with RGI Projection (in Lacs)					-2.9	-12.6	
	Difference with RGI Projection (in Percentage)					-0.25%	-0.99%	
Analysis								
Decades			71-81	81-91	91-01	01-11	11-21	21-31
AAGR			2.5%	2.6%	2.3%	1.6%	1.2%	0.9%
DIFF IN AAGR				0.1	-0.3	-0.7	-0.4	-0.3

The projected total population of Maharashtra for the year 2021 is 1258.2 lacs which is about 12.6 lacs more than the population projected by RGI. Considering the fact that projected population by RGI was on higher side by about 3 lacs in the year 2011. If the same trend continues, the population gap is expected to increase in 2021. Therefore the population estimated for the year 2021 which was 1258 i.e. less by 12.6 lacs of RGI's population estimation, was considered appropriate and the trend was continued till 2034.

Maharashtra Urban and MMR Urban Population Projection:

Subsequently the population projections of required areas within Maharashtra were estimated on the basis of shift and share method. The share of Maharashtra Urban population in Maharashtra's total population was 31%, 35%, 38.7%, 42.4% and 45.2% in 1971, 1981, 1991, 2001 and 2011 respectively. The shift in the share was observed for past decades (3.9%, 3.7%, 3.7% and 2.8% in consecutive decades), and based on past trend shifts in urban population share for the future were assumed (2.6% for 2021 and 2.3% for 2031). Accordingly, total urban population of Maharashtra was estimated. Please refer **Table 5.4** for details.

Similarly the trend of share and its shift was observed for MMR urban population with Maharashtra urban population for last four decades. Based on the past trend, the shift was assumed. And the share of MMR urban population in Maharashtra urban was worked out. And thus MMR urban population was projected. Following the step down approach the shifts and shares of NAINA was estimated as detailed in subsequent paragraphs.

Population Projection for NAINA:

The three critical scenarios possible for the growth of NAINA are:

Low growth scenario: The natural growth phenomenon where neither any infrastructure provisions nor economic activities are induced due to which the population grows at slow and natural pace. This is the trend if area is allowed to grow on its own with provision of infrastructure as and when the need arises. This was the trend till appointment of CIDCO as SPA.

Medium growth scenario: The growth in population is expected due to induced external forces which are basically provision of infrastructures like water supply, sewerage, drainage, roads, schools, hospitals etc. Further, induced population is due to planned activities within the zone. Infrastructure and economic activities on one hand induce or attract population to in-migrate but also control the phenomenon by the planned and controlled approach.

High growth scenario: It is the result of uncontrolled and unplanned growth due to economic activity in nearby area. Population growth in this scenario is due to the inflow of heavy economic activities. In such situation, the zone attracts people from different areas including adjoining ones.

To be rational in terms of efficient and planned development the medium growth population growth scenario has been taken into consideration. The Shift and Share assumptions in **Table 5-4** are therefore considered as per medium growth scenario.

While envisaging share of NAINA population in MMR urban population, induced growth was assumed. The induced growth was assumed due to provision of infrastructure (social and physical), economic activities, efficient connectivity and better quality of life. These factors will attract people from other areas to NAINA. Thereafter induced shift in the share of population of NAINA were assumed and shares from MMR urban were derived (Refer **Table 5-4**). It is expected that the population of NAINA would be approximately 14.02 lakhs by the year 2034. **Table 5-4** shows the population projection through shift and share method.

Table 5-4: Population Projection of NAINA through Shift and Share method

Description	Spatial Entity \ Year	Existing Population					Population Projection - Shift and Share method (Medium Growth Scenario)		
		1971	1981	1991	2001	2011	2021	2031	2034
Population	Maharashtra Total	504.1	627.8	789.4	968.8	1,123.7	1,258.2	1,372.8	-
	Maharashtra Urban	157.1	219.9	305.4	411.0	508.2	601.7	688.1	710.7
	MMR URBAN	68.3	101.2	135.2	181.8	213.8	242.3	264.7	269.6
	GMUA + BNMC+ VVSR+CIDCO	66.9	99.2	131.6	174.7	204.6	225.9	238.8	240.8
	NAINA	-	-	1.7	2.1	2.8	4.97	11.38	14.02
Share	Maharashtra Urban in Maharashtra	31.2%	35.0%	38.7%	42.4%	45.2%	47.8%	50.1%	
	MMR Urban in MH Urban	43.5%	46.0%	44.3%	44.2%	42.1%	40.3%	38.5%	37.9%
	GMUA + BNMC+ VVSR+CIDCO in MMR Urban	97.9%	97.9%	97.3%	96.1%	95.7%	93.2%	90.2%	89.3%
	NAINA in MMR Urban			1.3%	1.1%	1.3%	2.0%	4.3%	5.2%
Shift in Share	Maharashtra Urban in Maharashtra		3.9%	3.7%	3.7%	2.8%	2.6%	2.3%	
	MMR Urban in MH Urban		2.6%	-1.8%	0.0%	-2.2%	-1.8%	-1.8%	-0.5%
	GMUA + BNMC+ VVSR+CIDCO in MMR Urban			-0.6%	-1.2%	-0.4%	-2.5%	-3.0%	-0.9%
	NAINA				-0.1%	0.2%	0.8%	2.3%	0.9%
								Assumptions	

5.1.4. POPULATION ESTIMATION WITHIN NAINA

After projecting NAINA's total population for the year 2034, further step is to estimate the distribution of this population within NAINA where development would be taking in various phases. As phasing will define the level of infrastructure provision and location will define connectivity, geography and other factors, therefore it is important to consider the internal dynamics of NAINA while distributing the projected population within NAINA. Therefore the population estimation of IDP, Balance Phase-I and Phase-II (Refer **Figure 5-1: Map showing Phasing of NAINA**) needs to be done separately.

As a matter of fact, the shift and share method will not be very appropriate method now to further distribute the projected population in relatively smaller areas. Since the area is small people prefer to commute to the place of work instead of migrating. Therefore Annual Average Growth Rate (AAGR) method has been applied to calculate population projection within NAINA – Phase-I, Balance -Phase-I and Phase-II. This population estimation will depend on the time, level of infrastructure provisions and economic development etc.

The basic assumptions regarding development pattern in various phases and parts of NAINA are as following:

- **Population Projection for IDP** – Due to fact that the area is in Phase-I, the provision of infrastructure development will be faster as compared to other parts of NAINA. Also, it is well connected and relatively affordable to reside. The growth trend will therefore continue rising till one more decade. This area has highest potential to develop in the immediate future, comparatively faster to other areas. Accordingly, the annual growth rate is expected to rise up to about 20%. As part of it is already developed and hence it is likely to saturate before other areas. It will gradually reach its saturation in terms of population growth rate. After that the growth rate will reduce and will continue with almost consistent population growth rate till the plan period.

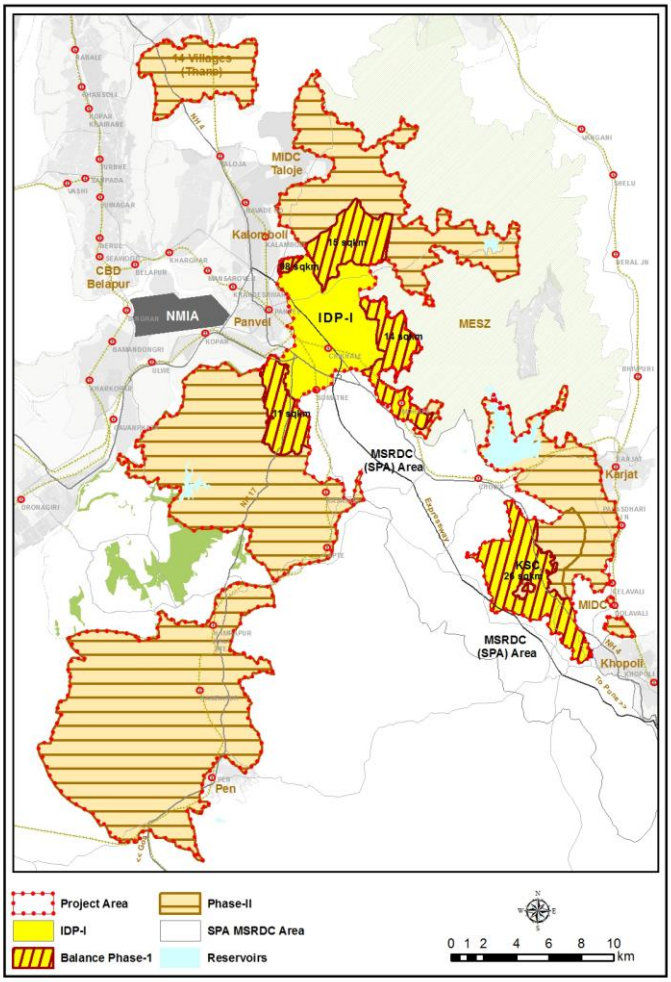

Figure 5-1: Map showing Phasing of NAINA

- **Balance Phase-I** – This area comprises of areas adjoining IDP and Khalapur Smart City area. This area is less developed as compared to IDP. Hence it offers opportunity for providing better infrastructure. Commutable distances and scope to plan developable areas efficiently makes this zone favorable for high growth. This part of NAINA is also expected to grow as fast as IDP. The Annual growth rate in this area also is expected to rise up to about 25%. It will continue to grow at high rate for the rest of Plan period. The population growth therefore will be high, after a decade it will become consistent but at higher rate than IDP.

- **Phase-II** - This part of NAINA is outside of Phase-I, CIDCO does not plan to provide urban infrastructure in this area in the Plan Period. It means that the infrastructure provision will take place after 2034. This area is relatively far and transportation commuting facilities are also not very efficient. The area is assumed to have low population growth. The growth in terms of AAGR increases up to 6%, and continues to be around 5% till planned period.

Detailed Annual Assumptions for the Growth Rate from 2011 onwards are given in the **Table 5-5: Population Projection of Parts of NAINA**:

The final Population projection **Table 5-5** as per the assumed Annual Growth Rate within NAINA is given below.

Table 5-5: Population Projection of Parts of NAINA

Year	Average Annual Growth Rate (AAGR)			Population in Lacs			
	IDP	Balance Phase I	Phase-II	IDP	Balance Phase I	Phase-II	Total NAINA
	As per Census						
1991				0.23	0.29	1.20	1.72
2001	6.7%	1.8%	1.3%	0.39	0.34	1.36	2.09
2011	6.9%	1.4%	2.8%	0.65	0.39	1.74	2.78
	AAGR Assumptions			Population Estimation			
2016	2.9%	2.7%	1.1%	0.75	0.44	1.84	3.02
2021	20.1%	10.9%	2.7%	1.50	0.68	2.09	4.27
2031	21.2%	26.2%	6.3%	4.67	2.47	3.40	10.55
2034	11.0%	18.7%	5.3%	6.22	3.86	3.94	14.02

Therefore the Estimated Population for the year 2034 will be:

- IDP – Total projected population - 6.2 lakhs
- Balance Phase-I – Total projected population - 3.86 lakhs
- Phase-II – Total projected population – 3.94 lakhs

Total population of NAINA is therefore expected to be 14.02 lakhs by the year 2034.

5.1.5. Density in DP Area

The development strategy adopted is optimal in terms of infrastructure provision and population growth. Area under Phase-I is planned to grow first and therefore priority of infrastructure provision is given to Phase-I of NAINA. DP area comprises of Balance Phase-I and Phase-II. Description of area, population and density in Balance Phase-I and Phase-II are given in **Table 5-6: Density in DP Area.** Gross density is calculated on total area and net density is calculated on developable area in corresponding phase. Gross density in Balance Phase-I is 57 persons per hectare (PPH) and in Phase-II is 11 PPH, whereas net density attained in Balance Phase-I and Phase-II is 85 PPH and 25 PPH respectively. Projected gross density in entire DP area is 18 PPH and net density is 38 PPH

Table 5-6: Density in DP Area

Description	Balance Phase-I	Phase-II	Grand Total
Developable Area (Ha)	**4525**	**15936**	**20461**
Redevelopable Area (Ha)	684	2366	3050
Non-Developable Area (Ha)	1509	18706	20215
Total Area (Ha)	**6718**	**37008**	**43726**
Projected Population (lacs)	**3.86**	**3.94**	**7.8**
Gross Density (PPH)	**57**	**11**	**18**
Net Density (PPH)	**85**	**25**	**38**

6. REQUIREMENT OF PUBLIC AMENITIES

One of the main functions of Development Plan (DP) is to designate land for public purpose. Transport, education, healthcare and recreational open spaces are the principal components of public purpose for which land has to be designated in DP. Traditionally planning norms/standards in terms of area required per thousand or per lac of populations have been used for this purpose. However in case of DP, the land development model puts an upper limit of 40% of developable area for such facilities (10% is used for roads, 15% is for growth centre, 10% is for open spaces and 5% is for social facilities). This chapter explains norms relevant for NAINA and their provisions in DP area.

6.1. PLANNING NORMS

The public services and facilities in the urban environment have significant impact on the quality of life of the people residing in urban areas. Good quality of physical and social infrastructure such as transport, water supply, sewerage, education, health care and community facilities are essential elements for healthy and sustainable urban life.

For assessing requirement of social and physical infrastructure for estimated population, the spatial norms have been laid down in various documents by different agencies. To adopt most appropriate norms for NAINA, the requirement of facilities in the form of norms, standards and guidelines were referred from various sources i.e. Government Resolution 1979 of Government of Maharashtra, UDPFI guidelines -1996 and revised URDPFI -2014 (final version of URDPFI Guidelines). In addition, CIDCO has also adopted a set of norms for planning of Navi Mumbai and for preparation of development plan for Waluj. A comparative statement of these norms and standards is given in **Annexure 6-1**. Based on this range of norms and standards, appropriate one for NAINA has been arrived at. These are given in **Table 6-1: Standards adopted for provision of public facilities in NAINA**.

Table 6-1: Standards adopted for provision of public facilities in NAINA

Type of Facility	Facility	Standards	
		1 for Population	Area(Ha)
Educational Facilities	Balwadi/ Creche	12000	0.05
	Primary & Secondary School building (S)	10000	0.40
	School Play Grounds (SPG)	10000	0.60
	Colleges (C)	125000	1.00
	Professional Colleges/ Technical College	125000	2.00
Health Facilities	Clinic	10000	0.06
	Dispensary/Primary Health Centre (PHC)	25000	0.15
	General Hospital (GH)	100000	0.50
	Super Speciality Hospital	250000	2.00
Social And Cultural Facilities	Library	10000	0.05
	Multipurpose Hall	10000	0.20
	Health Club & Gymnasium	10000	0.10
	Community Centre (CC)	100000	0.20
	Religious	10000	0.15
	Working Women's Hostel	100000	0.30
Market / Daily Bazaar	Market / Daily Bazaar (DB) It includes: Vegetable/Fish/Meat Market Rationing / Kirana/ Retail Shops/Flour mills Milk Booths, Personal Service Establishments, Post Office etc.	10000	0.10
Public Facilities	Fire Brigade and Allied services (FS)	200000	1.00
	Burial/Cremation Ground (BG/C)	500000	4.00
	Police Station (PS)	100000	1.00
Open Spaces/Park	Parks (P)	10000	3.00
	Playgrounds (PG)	10000	4.00
	City Park (CP)	500000	50.00

6.2. DISTRIBUTION OF SOCIAL FACILITIES AND PUBLIC AMENITIES

Entire DP is too big an area to be urbanised in the plan period of 20 years. It will neither be possible nor advisable to plan and provide infrastructure for whole of DP area in one go. Hence it is considered appropriate to take up development in phases. The development of infrastructure should be provided for selected area where development pressure is more or eminent in near future. The focus of infrastructure therefore will be on selected area, termed as Balance Phase-I.

Also, it is important to mention that distribution of above estimated facilities would defer due to developments of layouts and facilities coming up in NAINA scheme etc. Considering this, the estimated amenities for year 2034 have been categorised in three groups given in the **Table 6-2: Group-wise Amenities & Utilities shown in Balance Phase-I of DP area.**

Table 6-2: Group-wise Amenities & Utilities shown in Balance Phase-I of DP area

Group	Distribution	Social Amenities	Public Utilities	Parks and Play Grounds
Group I	100% designated in DP	• Dispensary/Primary Health Centre • General Hospital • Community Centre	• Police station • Fire station • Burial Ground	• Parks • Play grounds • City Level Park
Group II	50% designated in DP and 50% expected by developers through NAINA Schemes	• Market / Daily Bazaar • Schools • College		• School play grounds
Group III	Mandatory Amenities expected from large development.			• Open space requirement as Described in DCPRs
	Optional Amenities in NAINA Schemes	• Clinics • Balwadi/ Creche Religious • Health Club & Gymnasium		

a) **Group I-100% reservations shown in DP:** The public utilities and major social facilities like parks & playgrounds, crematorium/ burial grounds, police station, fire station and general hospital are included in this group. Most of these are unlikely to be developed through the market. Hence the entire requirement estimated from the norms adopted for DP is provided in the plan.

b) **Group II-50% reservations in DP and 50% through NAINA Scheme:** Certain amenities can get developed through the market as these facilities are commercially viable. Yet 50% of such amenities are shows as reservations in DP to be developed by CIDCO. This is a fall-back arrangement, if NAINA Scheme does not succeed. The balance 50% amenities are expected from NAINA Scheme through layout regulations governing development of NAINA Schemes.

c) **Group III-Not shown in DP Amenities, expected from large Development/ NAINA Scheme:** This is an indicative list of amenities that, a developer would provide in response to demand and also as a marketing strategy to attract customers and investors.

All identified social facilities have been divided across various levels. Some facilities cater to the needs at city level and some cater to the needs at peripheral & sector level. Accordingly, facility distribution has been worked out. Abbreviations as well as colour code used while spatially locating required social infrastructure facilities is given in **Table 6-3: Abbreviations, Color Coding and Division of Social Amenities across City/ Peripheral/ Sector Level.**

In addition to the above mentioned reservations, DP proposed Growth Centre (GC) as one of the required reservation. Growth centre zone will be exclusively developed by SPA-NAINA and will have predominantly commercial, business, residential activity or any other activity which CEO, SPA-NAINA deems fit. GC is shown as reservation in development plan.

Village and sector wise list of all the reservations are given in **Annexure 6-2**

Table 6-3: Abbreviations, Color Coding and Division of Social Amenities across City/ Peripheral/ Sector Level

Category of facilities	Facility description	Abbreviation used	City Level	Peripheral Level	Sector Level
EDUCATIONAL	School	S			√
	College	C	√		
MEDICAL	Primary Health Centre	PHC			√
	General Hospital	GH	√		
MARKETS	Market / Daily Bazaar	DB			√
COMMUNITY SERVICES	Fire Station	FS	√		
	Police Station	PS		√	
	Community Centre	CC			√
	Burial / Cremation Ground	BG/C	√		
PARKS & PLAY GROUNDS	Park	P			√
	Play Ground	PG			√
	School Play Ground	SPG			√
	City Park	CP	√		
PUBLIC UTILITIES	33KV Electric Substation	ESS			√
	220 KV Receiving Station	RS	√		
	Clear Water reservoir	CWR	√		
	Elevated Service Reservoir/ Ground Service Reservoir	ESR/GSR		√	
	Sewage Treatment Plant	STP	√		
	Public Utilities	PU	√		

6.3. POPULATION DISTRIBUTION AND ESTIMATION OF RESERVATIONS

Total population projected for NAINA is 14.02 Lacs for the year 2034. Considering that development is to be focused on Phase-I area only, the population estimated for Balance Phase –I (excluding IDP) is about 3.86 Lacs. The requirements of facilities have been worked out as per standards adopted for Phase-I population of 3.9 lacs only.

The social facilities are required to cater to the needs of population. The hierarchy of facilities (for example primary school, high school, college) is defined on the basis of population it has to serve. There is also threshold (minimum) population to run or maintain the facility. **Table 6-4** shows the total facilities required for 3.9 lacs of population. In case of allocating higher order facilities which serve more than one sector such as General Hospital, Police Station, Fire Station, City Parks, Colleges and Burial Ground, spatial distribution is given due consideration. But for micro level or neighbourhood level facilities, sector wise population estimation is required to spatially distribute the facilities according to the threshold and the catchment of the population.

6.4. SECTOR WISE ESTIMATION OF RESERVATION

Balance Phase-I area is divided into 25 sectors; in which 17 sectors are around IDP and remaining 8 are in Khalapur smart city area. The development plan promotes mixed land use by permitting residential activity in most of the proposed zones.

The residential factors used for estimation of residential population within respective land uses are - 90% for R-1 (Predominantly Residential), 20% for developments in Growth Centre, 50% for R-2 (Mix Use) and 90% for R-3 (Urban Village). The residential factors when multiplied by area of respective zones (the R-1, R-2, R-3 zones and Growth Centers) in which residential activity was assumed gave the net residential use in each sector.

Proposed landuse was considered for estimation of sector level population. The estimated area under residential use through proposed landuses was calculated in each sector. Projected population was distributed on the basis of proportion of residential activity in each sector. Further the facilities were provided on the basis of estimated population in each sector.

6.5. PROVISION OF FACILITIES IN BALANCE PHASE-I

This section presents estimated demand of proposed social infrastructure facilities such as educational, health facilities, open spaces and other amenities. It includes estimated demand and its area requirement for the facilities required by the population of 3.9 lacs for the horizon year 2034. Refer **Table 6-4** for total number of facilities required in Balance Phase-I in sectors

Table 6-4: Standards considered for Provision of Facilities in balance Phase-I

Description							
Type of Facility	**Facility**	**Group**	**Standards**		**Facilities Required for 3.9 lac Population**		**To be Designated**
			1 for Population	**Area (Ha)**	**No.**	**Area**	**%**
Educational Facilities	Balwadi/Creche	III	12000	0.05	0.0	0.0	NIL
	Primary & Secondary School (building) (S)	II	10000	0.40	19.5	7.8	50%
	School Play Grounds (SPG)	II	10000	0.60	19.5	11.7	50%
	Colleges (C)	II	125000	1.00	1.6	1.6	50%
	Professional Colleges/ Technical College	III	125000	2.00	0.0	0.0	NIL
Health Facilities	Clinic	III	10000	0.06	0.0	0.0	NIL
	Dispensary (PHC)	I	25000	0.15	15.6	2.3	100%
	General Hospital (GH)	I	100000	0.50	3.9	2.0	100%
	Super Speciality Hospital	III	250000	2.00	0.0	0.0	NIL
Social And Cultural Facilities	Library	III	10000	0.05	0.0	0.0	NIL
	Multipurpose Hall	III	10000	0.20	0.0	0.0	NIL
	Health Club & Gymnasium	III	10000	0.10	0.0	0.0	NIL
	Community Center (CC)	I	100000	0.20	3.9	0.8	100%
	Religious	III	10000	0.15	0.0	0.0	NIL
	Working Womens Hostel	III	100000	0.30	0.0	0.0	NIL

Description							
Type of Facility	**Facility**	**Group**	**Standards**		**Facilities Required for 3.9 lac Population**		**To be Designated**
			1 for Population	**Area (Ha)**	**No.**	**Area**	**%**
Market / Daily Bazaar	Market / Daily Bazaar (DB): Includes Vegetable, Fish/Meat Market Rationing / Kirana/ Retail Shops Flour mills, Milk Booths, Personal Service, Post Office etc.	II	10000	0.1	19.5	2.0	50%
Public Facilities	Fire Brigade and Allied services (FS)	I	200000	1.00	2.0	2.0	100%
	Burial/Cremation Ground (BG/C)	I	500000	4.00	0.8	3.1	100%
	Police Station (PS)	I	100000	1.00	3.9	3.9	100%
Open Spaces/Park	Parks (P)	I	10000	3.00	39.0	117	100%
	Playgrounds (PG)		10000	4.00	39.0	156	100%
	City Park (CP)	I	500000	50.00	0.8	39.0	100%

In balance phase-I the population density is low and due to low density, the spatial distribution becomes sparse. Further, the area is also spread in 4 major pockets. For some reservations (Fire station, Police station, Health etc.) the distance also plays a vital. Taking these factors into account some of the reservations have been proposed more than the population norm requirement. The individual facility on the basis of their type is given below in detail:

6.5.1. EDUCATIONAL FACILITIES

Demand estimation was carried out for educational facilities which include balwadi/ creche, primary & secondary schools, colleges and professional institution/ technical colleges. It is estimated that, by the year 2034, about 20 schools would be needed to cater to the basic educational requirement. Similarly about 2 Colleges would be needed by the year 2034. Estimated demand and area requirement for educational facilities along with standards considered for the same is given in **Table 6-5**. The actual provision of educational facilities in Balance Phase-I have been allocated on the basis of groups these are classified into (as per **Table 6-2**). 26 Schools, 27 School Play Grounds and 3 Colleges have been provided in Development Plan.

Table 6-5: Estimated demand and area requirement of Educational Facilities, 2034

Type of Facility	**Facility**	**Standards**		**Requirement for 3.9 lacs Population**		**Provision as per Group**	**Designated in DP**	
		1 unit for Population	**Area (Ha)**	**No.**	**Area (Ha)**		**No.**	**Area (Ha)**
Educational Facilities	Balwadi/Creche	12000	0.05	0.0	0.0	Nil	0	0
	Primary & Secondary School (building) (S)	10000	0.40	19.5	7.8	50%	26	10.3
	School Play Grounds (PG)	10000	0.60	19.5	11.7	50%	27	17.2
	Colleges (C)	125000	1.00	1.6	1.6	50%	3	3.2
	Professional Colleges/ Technical College	125000	2.00	0.0	0.0	Nil	0	0

Note: As per education trend observed in Navi Mumbai, it is suggested to have integrated/ composite schools (from pre-primary to higher secondary).

6.5.2. HEALTH FACILITIES

As far as the health infrastructure is concerned, 4 general hospitals and 16 Primary Health Centres would be needed to cater to the needs of population by the year 2034. This would facilitate the city level medical needs. Dispensaries (PHC) of about 0.15 ha each would cater to the local health facility requirement at sector. The Estimated demand of health facilities and area requirement along with standards considered for the same is given in **Table 6-6**. The actual provision of health facilities in Phase-I have been allocated on the basis of groups these are classified into (as per **Table 6-2**). Total 20 PHCs and 7 General Hospitals have been provided in DP.

Table 6-6: Estimated demand and area requirement of Health Facilities, 2034

Type of Facility	Facility	Standards		Requirement for 3.9 Lacs Population		Provision as per Group	Designated in DP	
		1 unit for Population	Area(Ha)	No.	Area (Ha)		No.	Area (Ha)
Health Facilities	Clinic	10000	0.06	0.0	0.0	Nil	0	0
	Dispensary/Primary Health Centre (PHC)	25000	0.15	15.6	2.3	100%	20	3.2
	General Hospital (GH)	100000	0.50	3.9	2.0	100%	7	4.1
	Super Speciality Hospital	250000	2.00	0.0	0.0	Nil	0	0

6.5.3. SOCIAL AND CULTURAL FACILITIES AND MARKET / DAILY BAZAAR

The social and cultural facilities include religious facilities, library, multipurpose hall, health club and gymnasium, community centre, religious facility and working women hostels. Market / Daily Bazaar/ market complexes include Vegetable Market, Fish/Meat Market, Rationing / Kirana/ Shops Services, Flour mills, Milk Booths, Personal Service Establishments, Post Office etc. As per the adopted norms, 20 daily bazar complexes would be needed. 4 Community Centre reservations would be required. Requirement of all social and cultural facilities is given in **Table 6-7**. The actual provision of community centres and daily bazaars in Balance Phase-I have been allocated on the basis of groups these are classified into (as per **Table 6-2**). 7 community centres and 27 daily bazaars have been provided in DP.

Table 6-7: Estimated demand and area requirement of Social and Cultural Facilities and Market / Daily Bazaars, 2034

Type of Facility	Facility	Standards		Requirement for 3.9 Lacs Population		Provision as per Group	Designated in DP	
		1 unit for Population	Area (Ha)	No.	Area (Ha)		No.	Area (Ha)
Social And Cultural Facilities	Library	10000	0.05	0.0	0.0	Nil	0	0
	Multipurpose Hall	10000	0.20	0.0	0.0	Nil	0	0
	Health Club & Gymnasium	10000	0.10	0.0	0.0	Nil	0	0
	Community Centre (CC)	100000	0.20	3.9	0.8	100%	7	2.0
	Religious	10000	0.15	0.0	0.0	Nil	0	0
	Working Women's Hostel	100000	0.30	0.0	0.0	Nil	0	0
Market / Daily Bazaar	Vegetable Market Fish/Meat Market Rationing / Kirana/ Shops Services Flour mills Milk Booths, Personal Services, Post Office	10000	0.1	19.5	2.0	50%	27	3.0

Some city level or larger scale facilities which are mandatorily to be provided have been shown in DP. Facilities which are expected 50% by developers through NAINA Schemes are shown in DP to the extent of 50% of the requirement.

6.5.4. PUBLIC UTILITIES

Requirement of public utilities such as fire stations, police stations and burial grounds has been worked out. These include 4 Police stations, 2 Fire stations of 1 Ha each; along with 1 Burial/ Cremation ground. Requirement of all utilities is given in **Table 6-8**. The actual provision of public utilities in Balance Phase-I have been allocated on the basis of groups these are classified into (as per **Table 6-2**). 4 Fire stations, 5 Burial/ Cremation grounds and 7 Police stations have been provided in DP.

Table 6-8: Estimated demand and area requirement of Public Utilities, 2034

Type of Facility	Facility	Standards		Requirement for 3.9 Lacs Population		Provision as per Group	Designated in DP	
		1 unit for Population	Area (Ha)	No.	Area (Ha)		No.	Area (Ha)
Public Facilities	Fire Brigade and Allied services (FS)	200000	1.00	2.0	2.0	100%	4	4.0
	Burial/Cremation Ground (BG/C)	500000	4.00	0.8	3.1	100%	5	8.9
	Police Station (PS)	100000	1.00	3.9	3.9	100%	7	7.0

6.5.5. PARKS AND PLAY GROUNDS

Parks and Play grounds are essential facilities. It is estimated that 39 Parks of 3 Ha each, 39 Playgrounds of 4 Ha each and 1 city level parks of 39 Ha will be needed for the horizon year population. (Refer **Table 6-9: Estimated demand and area requirement of parks and play grounds, 2034**). 36 Parks, 47 Playgrounds and 2 City parks have been provided in DP. As Balance Phase-I is divided into two locations (one around IDP and another in KSC). Therefore instead of one park of 39 Ha, two city parks with smaller areas totalling to 55.4 Ha have been provided. Moreover these city parks are identified close to forest lands to facilitate creation of large green spaces.

Table 6-9: Estimated demand and area requirement of parks and play grounds, 2034

Type of Facility	Facility	Standards		Requirement for 3.9 Lacs Population		Provision as per Group	Designated in DP	
		1 for Population	Area (Ha)	No.	Area (Ha)		No.	Area (Ha)
Open Spaces/Park	Parks (P)	10000	3.00	39.0	117.0	100%	36	139.5
	Play grounds (PG)	10000	4.00	39.0	156.0	100%	47	147.8
	City Park (CP)	500000	50.00	0.8	39.0	100%	2	55.4

6.5.6. PROVISION OF INFRASTRUCTURE IN PHASE-II

Although the provisions of facilities have been committed only in Balance Phase-I of DP area, but few mandatory facilities have been provided in Phase-II area also. Facilities such as schools, playgrounds, and parks have been provided in phase-II area of DP. Facilities provided in Phase-II area are mostly on government land, no private land has been used for reservations except mandatory reservation near station area (Station Area Facility) and other transport related reservations (Bus Depot, Terminals and Roads).

In Phase-II the population based norms were not applied. Hence it was not possible to assess the exact requirements of reservation at this stage in Phase-II. To accommodate the social and physical infrastructure need in Phase-II, some of the government lands have been reserved as Public Purpose Utilities (PPU). Depending upon the need as and when it appears, the PPU can be developed by SPA/appropriate authority.

7. TRANSPORT

This chapter deals with the proposed transport network incorporated in development plan, taking regional connectivity into account and integrating it with DP's transport network. The parameters and strategy considered while planning the transport network have been described in this chapter. It also discusses the type of road network and Right of Way (RoW) adopted and measures taken for enabling Non-Motorised and Public Transportation systems.

7.1 APPROACH AND STRATEGY

Following are the approach and strategies, considered and applied while planning transport infrastructure for Development Plan:

- **Integration with Regional transport network:** The airport and the Sea Port (JNPT) are the two traffic generating centre with national significance. The regional connectivity therefore becomes a major consideration in planning transport infrastructure. Accordingly the regional, inter state and national level of roads have been considered and incorporated in the proposed transport network. Refer **Figure 7-1** for regional road network. Few of them are listed below:
    - **Virar-Alibag Multi Modal Corridor (MMC):** Proposed Virar-Alibag MMC is planned as a regional corridor connecting Alibag to virar via JNPT, passing through DP area from north to south. This multimodal corridor will provide public transport and road based connectivity. Service roads will be provided along the MMC on both sides to provide local access for the proposed development. The RoW proposed for the MMC is approximately 100m to accommodate metro, regional road, and service roads on both sides. To merge MMC & Mumbai Vadodara (MV) spur, Right of Way prescribed for combined corridor in DP area is 126 m. The combined corridor will have 4+4 lanes of MMC & spur carriageway on either side. Approximately 36.47 km of length of MMC passes through DP area. The alignment of MMC within DP area has been incorporated is as provided by MMRDA
    - **Integration of Mumbai – Vadodara spur**: This highway is proposed by NHAI. It connects NH-8 (near Virar) to JNPT, which is passing through DP area. MV spur has been integrated with MMC to avoid passing of two 100m wide roads bifurcating the DP. MV spur will join MMC and instead of 100 m RoW for each (MMC and MV Spur) the width of the MMC corridor will be increased to 126 m. This increased width will accommodate the carriage way of MV spur as well. In this way instead of two 100 m roads, one 126 m road is proposed saving valuable land.
    - **Proposed Interchanges on Mumbai-Pune expressway:** The express-way enters in NAINA through Adai village (in IDP area). An interchange is proposed in IDP area, in Devad village.

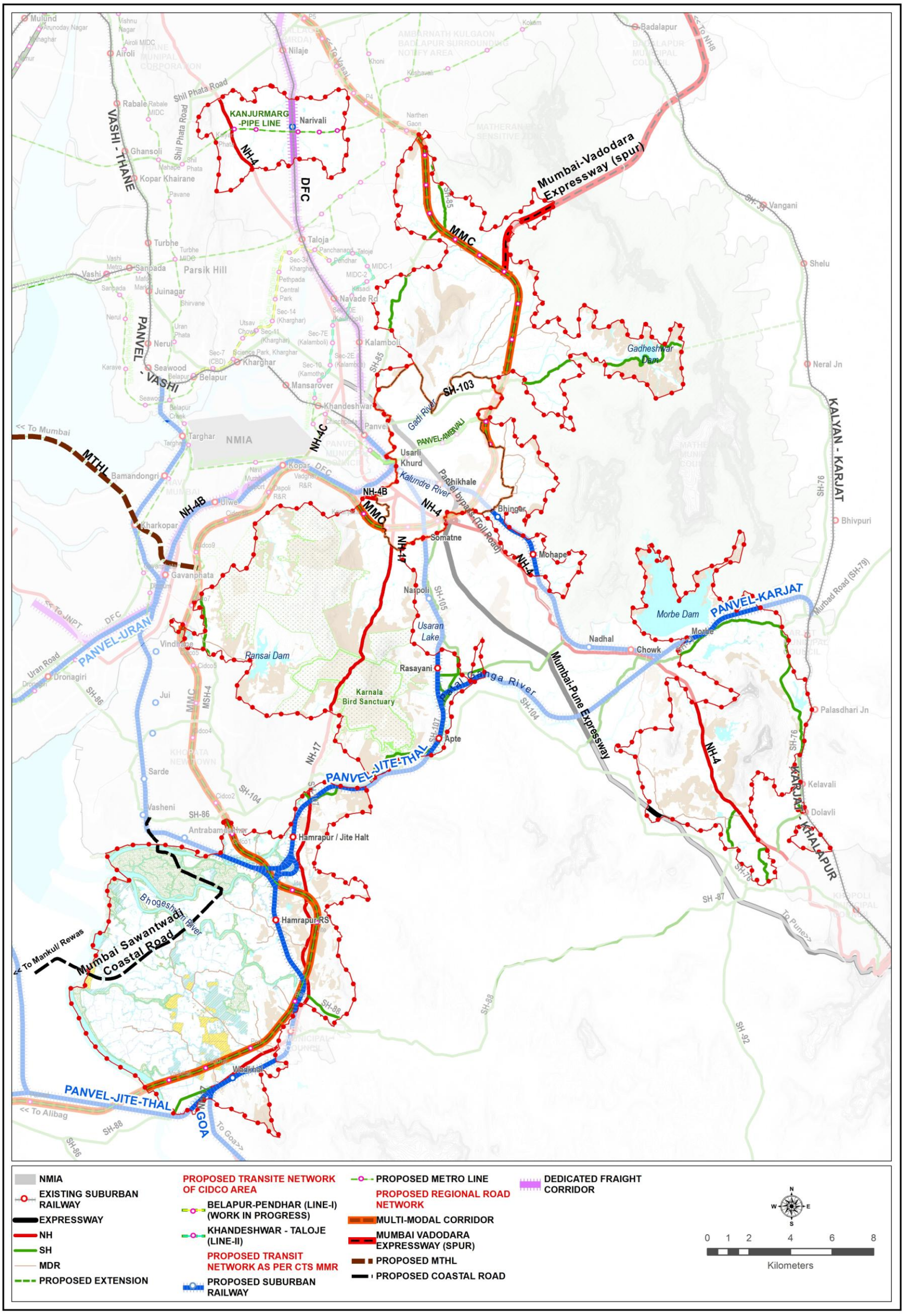

Figure 7-1: Regional Connectivity in DP area

- **Extending connectivity from IDP:** As planning for part of NAINA (IDP) is already completed; the road network of IDP is taken into consideration. Proposed road network in IDP is extended and integrated with DP area road network. The guideline from the Urban Development Department, Government of Maharashtra on road width was not available at the time of plan preparation for IDP, hence right of way of roads within IDP and DP area are different. For the sake of RoW continuity from IDP the right of way of roads from IDP is continued till the nearest road junction. Not only the macro level connectivity and options for different directions are provided, but also micro level connections are worked out in detail.

- **Incorporating Existing Roads and Settlements:** While planning transport network for DP, the existing villages, population and the existing roads are crucial to determine the proposed road network. The road network proposed by other government agencies i.e. PWD and Zila Parishad is taken into account and suitably incorporated. Whenever these roads pass through dense settlements (Gaothans or Pada), a diversion/ bye pass is proposed to avoid demolition of existing structures. The existing roads are utilised to the maximum extent possible for widening and also to reduce the acquisitions and constructions cost towards developing these roads from a scratch. Priority is given to connect existing population and villages as they would act as catalyst for development of NAINA. The existing roads indicated in DP are as observed on site . These are not necessarily authorised means of access.

- **Metro Network:** There is an extensive metro network proposed to connect Navi Mumbai and other suburban towns to main economic centres in Mumbai. The proposed metro network in the adjoining areas of NAINA connects CBD Belapur, Kharghar, Taloja MIDC Industrial Area, NMIA, JNPT, Uran, Panvel. Some of these important proposed metro corridors with respect to the Project Area are as follows:

    i. Mankhurd-Vashi-Narthen Gaon (Line No.-M17, 23 kms)
    ii. Vashi-Belapur-NMIA-Panvel (Line No.-M18, 18 kms)
    iii. Targhar-Kharkopar-Nhava Sheva-Dronagiri (Line No.-M19, 18 kms)
    iv. Kharkopar-Dhutum-Pirkone-Shirkhi-Vadkal (Line No.-M20, 31 kms)
    v. Dronagiri-Pirkone-Jite (Line No.-M21, 17 kms)
    vi. Shirki-Washi-Jite (Line No.-M22, 13 kms)

  It is planned to extend the proposed metro up to Panvel in IDP up to MMC to enable Transit Oriented Development (TOD).

  Separate metro link proposed in northern part of DP area (14 villages in Thane area) is about 6.4 kms in length. Refer **Figure 7-2** for proposed metro network in DP. The total length of proposed metro network is about 43.03 kms within DP area. Metro Depot has also been proposed in DP area near Wangani tarf waje village.

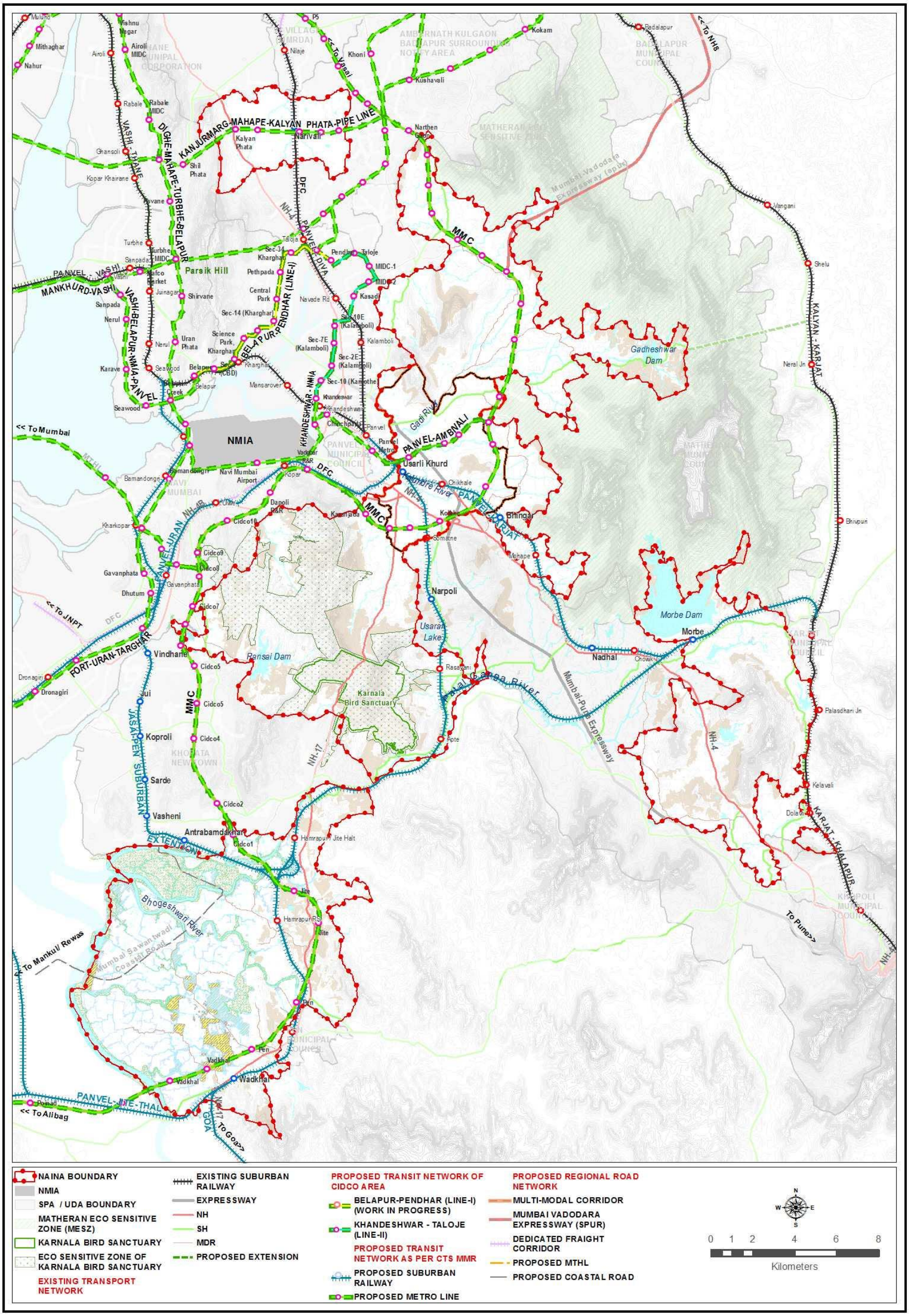

Figure 7-2: Metro and Suburban rail network in DP area

- **Suburban Rail Network:** As described in **Chapter 2** there is no suburban rail service in NAINA, although a rail network exists, it is mainly used by through trains and shuttle services. However suburban rail transit plays an important role for commuting working population from fringe areas to urban centres. The railways are planning to run suburban services on the rail lines passing through DP area, assuming these services would be operational in the near future, stations are proposed at suitable locations depending on the proposed land use and development potential. These are in addition to the existing stations. The details of the rail corridors and stations are as follows:

  i. ***Diva- Panvel Corridor:*** A small stretch passes through 14 villages of Thane Taluka, there is no existing station in this stretch, and hence a station is proposed at Narivali.

  ii. ***Panvel-Karjat Corridor:*** There are three existing stations on this line namely Chikhale, Mohope and Chowk. Additional three stations are proposed in Usarli Khurd, Bhingar and Morbe.. Proposal of doubling the corridor is under active consideration by MRVC

  iii. ***Panvel-Roha Corridor along Konkan Railway:*** There are six existing stations located on this line namely Somtane, Rasayani, Apte, Hamrapur/Jite Halt, Hamrapur and Pen which is outside of NAINA. Additional two station at Wadkhal has been proposed.

  Usrali Khurd and Wadkhal would be junctions. The Panvel –Karjat and Panvel – Pen railway bifurcates at Usarli Khurd and the Panvel – Thal and Panvel – Roha railway bifurcates at Wadkhal.

  The suburban railway lines have been incorporated in development plan as it is from the network of Draft Regional Plan published by MMRDA. The RoW for the same will needed to finalized by MMRDA in consultation with Indian Railway and hence it is not marked on DP. The proposed lines by MMRDA within development plans are as following:

  Panvel-Karjat Suburban rail corridor and Panvel – Roha suburban corridor are likely to accelerate development within the DP area. One suburban network is proposed from Jasai-Pen-Apte through Khopta New Town area. One more is proposed from Apte to Chowk Refer **Figure 7-2** for proposed sub-urban rail network. As mentioned in chapter -2, there exist approximately 48 kms of railway network in DP area. Suburban railway service is proposed on existing lines of Diva-Panvel, Panvel-Jite-Thal and Panvel-Karjat, and on new line proposed from Gavanphata to Jite (5.4 kms). The total length of proposed suburban network therefore is about 45.11 km within NAINA.

- **Non-Motorised Transportation (NMT) provisions:** Vehicles operating on the fossil fuels are the major source of pollution. In view of the goal of sustainable development it is necessary to minimise use of non-renewable fossil fuels. In this context public transport, non-motorized transport and walkable city are the key concept in transport strategy. The places to be connected by cycle network are suburban stations, metro stations, other public transport nodes and roads of intermodal connectivity.

The roads with cycle track and radial distance to 1 km and 2 km (cycle able distances) are shown below in **Figure 7-3**. It covers almost 64% of DP area if 2 km of distance is considered as a catchment area by cycle tracks, (refer **Table 7-1**). The left out areas are mostly forest, hills and other non-developable land.

Table 7-1: NMT Coverage

Radial Distance	Area Coverage	Percentage area of NAINA
1 km	150	32%
2 km	304	64%

- In addition to above, social facilities have been provided at approachable distances through NMT modes. This will not only reduce pollution (air, sound etc.) but will enhance the quality of life.

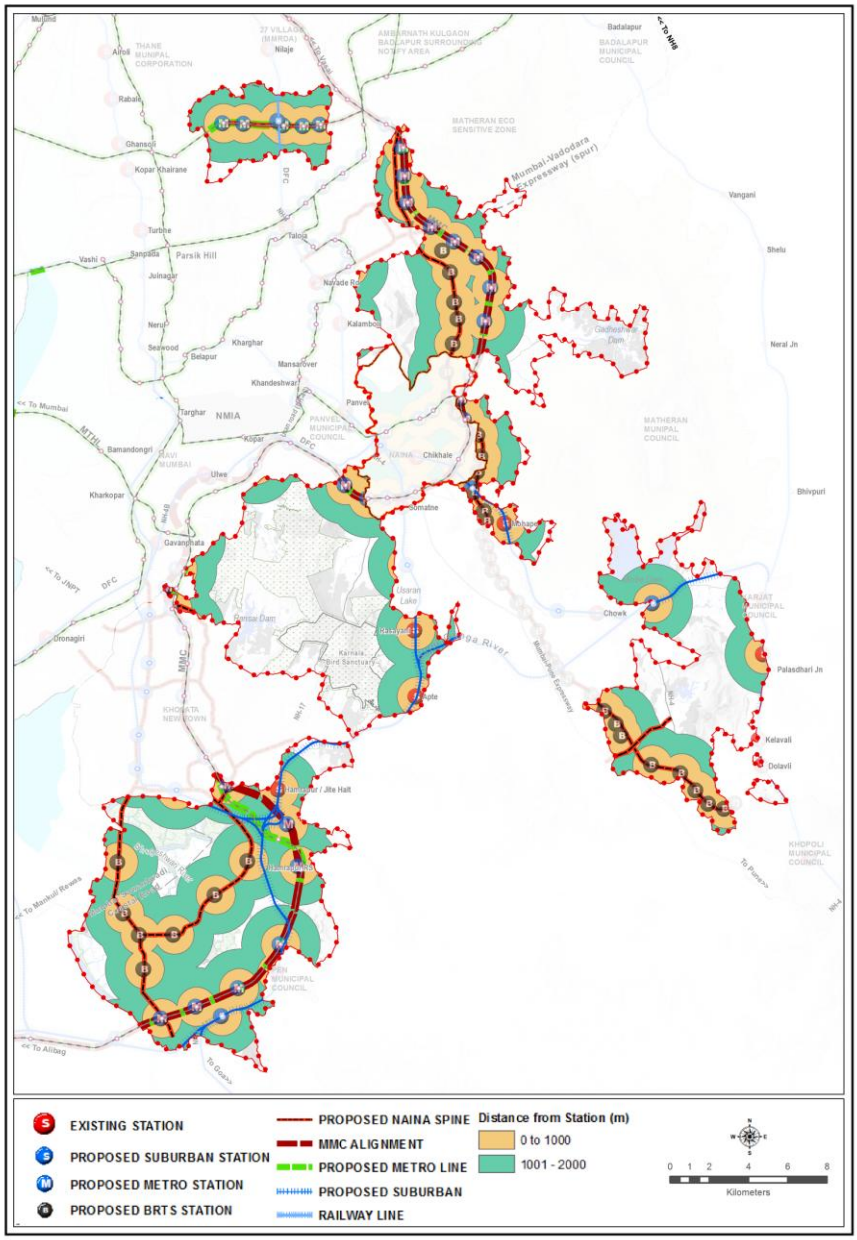

Figure 7-3: NMT coverage within DP area

- **Freeway and Arterial Road Network:** A number of freeways and arterial roads linking DP area are proposed in CTS and further studies, which are of regional importance and these have been incorporated in the transport network.

- **PWD perspective plan considered:** One of the important road within DP area is Sawantwadi coastal road. PWD, Government of Maharashtra is planning and working on its implementation. The RoW and its alignment is taken from PWD and incorporated in transport network. Other roads as proposed and planned by PWD are obtained from PWD office Thane and Raigad and incorporated in road networks of DP.

- **Other Important Links relevant to DP:** Among the other proposals in CTS and other studies, the important transport links of the DP are Mumbai Trans Harbour Link (MTHL), and NMIA. These transport links will trigger the development within DP area.

7.2 TRANSIT ORIENTED DEVELOPMENT (TOD)

Transit Oriented Development is an integrated approach of transport and land use planning leading to compact, high density developments located around public transit nodes such as metro stations, railway stations or multimodal transit hubs. The development has a rich mix of land uses including commercial, residential, and institutional; designed to maximize the access to transit and non-motorized transport. The term transit includes variety of modes including Metro rail, suburban rail, light rail, road based public transport etc. and a mix of all these gives rise to a variety of land use patterns around the transit corridors and nodes. The proposed growth centres are located along the transit route in the form of TOD.

CTS carved out a vision for MMR's future transport as a seamless, integrated system for safe and convenient commuter travel throughout the region with a strong emphasis on public transport. In order to support the anticipated economic development in MMR and subsequent inter-related transport challenges given by population and employment growth, 'Transit First' was considered as a guiding principle in preparation of the transport plan for MMR.

With this vision, the CTS identified major Transport Networks for MMR to serve multiple growth centres identified within the region. Other important aspects of the Plan are capacity enhancement of existing suburban and development of metro corridors; connecting major existing and planned activity centres of the region providing exclusive bus lanes to reinforce rail-based transit with a higher order road based public transport systems.

During the CTS Study, DP area was not envisaged as a region of intensive urban development. Therefore, in light of delineation of DP area as a separate region under influence of NMIA and new urban development strategies being devised for the region, calls for augmenting the transit network proposed under CTS.

Based on Mumbai and Navi Mumbai experience and also other international regional planning practices, economic growth of the region is maximized by effective public transit connectivity. Given that the major economic drivers of DP area include NMIA, JNPT and Industries (Taloja MIDC, Kalamboli) actually lie outside the region, it is very critical to integrate these economic and employment centres through public transport.

Thus, promoting TOD is the key aspect of the transport and land use of DP NAINA. To encourage Transport Oriented Development, higher FSI of 3.00 is allowed upto 500m distance on either side of 60m spine (as marked on DP). It is proposed to have mass transit system on this road and therefore walkable distance which is about 500m with respect to spine are considered as part of TOD.

7.3 DETAILED ROAD NETWORK PLAN OF NAINA

Taking into account the aforesaid transport existing and proposed network, the planning for transport network for DP is worked out as follows:

- **60 meters (RoW) spine for inter-nodal connectivity:** Spine is an arterial road running through DP in north-south direction providing connectivity to intermediate areas on either side of it. It is also proposed to have mass rapid transit system on spine. Depending upon the traffic load it may be Bus Rapid Transit System (BRTS) or Metro, provision for both the services has been taken into consideration. The RoW proposed for the Spine is 60m. The spine starts near village Bhandarli as 60m wide road connecting NH4 and MMC. Through MMC it connects 14 villages of Thane district to entire DP area, which are part of DP but physically separated by Ambernath Kulgaon Badlapur Special Notified Area (AKBSNA). The spine then originates near Chorambhe and Nitalas village in the north of DP and runs towards the south of DP. The spine meets MMC near Pali Khurd village. The spine continues towards south crossing Panvel- Karjat railway line (passing through MSRDC area). A suburban station is proposed in Bhingar village on the intersection to facilitate changeover of passengers between MRTS Station on spine and suburban station. The spine crosses NH-4 near Khanawale village in MSRDC area and runs parallel to Mumbai-Pune Expressway between MPE and NH-4 in MSRDC area. It traverses again through DP near Nigdoli village in Khalapur smart city area. The spine terminates at NH-4 near Mahad Village.

- **Hierarchical Road Network:** A hierarchical road network is proposed to provide access into various parts of the DP. Provision of optimal Right of Way (RoW) as per Urban Development Department, Government of Maharashtra, has been adopted. with road network having RoWs for Sub-Arterials as 60m and 45m, sector roads and local access roads as 36 m and 24 m respectively. The hierarchy of proposed roads with RoW and length of the same is given in **Table 7-2**. Proposed Hierarchical Road Network in DP is presented in . Combined proposed road and transit network are shown in .

- **Roads Type, length and Rows:** Proposed road network is classified into two types of roads-
    - A. Proposed Regional roads
    - B. Proposed roads in DP

  Regional roads in the form of MMC and Mumbai-Vadodara spur occupy about 2.3% of total developable area in DP. Other proposed roads varying from 60 m to 9 m of RoW account for about 9.3% of the total developable area. Approximately 550 km of road network is proposed in DP area which occupies about 11.6% of developable area of DP area; refer **Table 7-2** for the length of proposed roads with their RoW. As per Urban and Regional Plans Formulation and Implementation (URDPFI) Guidelines, 2014 issued by the Ministry of Urban Development, proposed share of landuse under Transport & Communication for Small to Medium size cities is 10% to 12% of the developed area and for Large Cities, Metropolitan Cities and Megapolis it is 12% to 14% developed area. In DP (which comes under Metropolitan City), the area proposed under roads itself is about 11.6% and considering the area under proposed metro, suburban corridors, bus terminals, bus depots, inter-city bus terminals, truck terminals, etc., the area under transport (approximately 2377 Ha of roads and 142 Ha of reservations) would be about 12.35% of the developable area. It is within the range of 12% to 14% of developable area as prescribed by URDPFI Guidelines.

Table 7-2: Length of Proposed Roads with RoW in Balance Phase-I and Phase-II of DP area

Sl. No.	Types of Roads	Right of Way (ROW)	Phase-I			Phase-II		Total Area under Roads in DP	% of Develo pable Land in DP
			Length in mts	Area in Ha	% of Develo pable land in Bal Ph-I	Length in mts	Area in Ha		
A	Proposed Regional Corridor								
1	MMC 126 m	126	6,057	76.3	1.7%	22,126	279	355.1	1.7%
2	MMC 100 m	100	0	0.0	0.0%	8,289	83	82.9	0.4%
3	Mumbai-Vadodara spur	100	0	0.0	0.0%	3,927	39	39.3	0.2%
	Sub Total (A)		**6,057**	**76.3**	**1.7%**	**34343**	**401**	**477**	**2.3%**
B	Proposed Roads in DP								
4	Road 60 m	60	~~21,172~~ 21,748.19	~~127.0~~ 130.46	~~2.8%~~ 2.90%	~~40,694~~ 46628.53	~~244~~ 279.6	~~371.2~~ 410.26	~~1.8%~~ 2.01%
5	Road 45 m	45	14,950	67.3	1.5%	~~1,14,077~~ 1,11,190.11	513	~~580.6~~ 580.27	2.8%
6	Road 36 m	36	~~61,476~~ 61,507.17	~~221.3~~ 221.41	~~4.9%~~ 4.93%	~~92,480~~ 97,478.65	~~333~~ 350.99	~~554.2~~ 572.31	~~2.7%~~ 2.81%
7	Road 35 m	35	741	2.6	0.1%	0	0	2.6	0.0%
8	Road 30 m	30	0	0.0	0.0%	180	1	0.5	0.0%
9	Road 27 m	27	1,716	4.6	0.1%	0	0	4.6	0.0%
10	Road 24 m	24	~~37,621~~ 37,980.75	~~90.3~~ 91.16	~~2.0%~~ 2.03%	~~1,20,781~~ 1,21,374.58	~~290~~ 291.42	~~380.2~~ 382.49	~~1.9%~~ 1.87%
11	Road 20 m	20	1,589	3.2	0.1%	0	0	3.2	0.0%
12	Road 15 m	15	369	0.6	0.0%	0	0	0.6	0.0%
13	Road 12 m	12	1,460	1.8	0.0%	~~0~~ 548.06	0	~~1.8~~ 2.46	0.0%
	Sub Total (B)		**~~1,41,095~~ 1,42,061.11**	**~~518.6~~ 523.13**	**~~11.5%~~ 11.64 %**	**~~3,68,212~~ 3,77,399.93**	**~~1,381~~ 1,436.34**	**~~1,899.5~~ 1,959.29**	**~~9.3%~~ 9.60%**
	Total		**~~1,47,152~~ 1,48,118.11**	**~~594.9~~ 599.43**	**~~13.2%~~ 13.34 %**	**~~4,02,555~~ 4,11,742.93**	**~~1,781.8~~ 1,837.34**	**~~2,376.8~~ 2,436.29**	**~~11.6%~~ 11.94%**

Total Developable Area in Bal Ph-I	**4493**
Total Developable Area in Ph-II	**15910**
Total Developable in DP Area	**20403**

- **Areas identified for Depots for Metro/ BRTS/ Bus and Areas identified for Inter-city bus terminals and Truck terminals:** Proposed metro corridors/ BRTS and bus system needs adequate depots for maintenance of coaches/ fleet. With time inter-city travel is expected to increase and there is a need for development of inter-city bus terminals. As part of the study, areas have been identified and demarcated for depots for Metro/ BRTS/ Bus and Inter-city bus terminals. The details are presented in **Table 7-3** and shown in

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Table 7-3: Details of Reservations for Depots for Metro/ BRTS/ Bus and Areas identified for Inter-city bus terminals and Truck terminals

S. No.	Reservation	Total number	Total Area (Ha)
1	Bus Depot	4.0	~~57.9~~ 31.73
2	Bus Terminal	16.0	~~15.6~~ 16
3	Metro Depot	1.0	17.6
4	Station Area Facility	18.0	32.7
5	Truck Terminal	1.0	18.6
Grand Total		40.0	142.4

- **Principle for providing type of grade separation/ at-grade traffic control measures at major intersections:**

  General criteria applied for selecting appropriate type of grade separation/ at-grade traffic control measures at major intersections are given in **Table 7-4**. Adequate area for development of rotary or grade separation facility has been identified and demarcated in the plan. It is suggested that, at the development of grade separation facilities and rotaries, IRC guidelines needs to be followed. All the minor intersections shall be uncontrolled to begin with and as traffic increases they need to be provided with traffic signals for effective and smooth traffic operations.

Table 7-4: Type of Intersections and Junctions provided

Type of roads	Proposed Traffic Control Facility
60m with MMC	Full/ Partial Clover leaf/ Trumpet
60m with Expressway	Full/partial Clover leaf/ Trumpet
60m with NH	Full/ Partial Clover leaf/ Trumpet
60m with 60m	Full/ Partial Clover leaf/ Trumpet
60m with 45m	Rotary (with or without traffic signal)
45m with 45m	Rotary (with or without traffic signal)
45m with 36m	Rotary (with or without traffic signal)
36m with 36m	Rotary (with or without traffic signal)

Typical cross sections of all major roads are given in **Figure 7-7**.

- **Coastal Road within DP area:** The existing State Highway from Chirner to Dadar will be upgraded to Major State Highway 4 and extended to Mankul from Dadar via Sonkhar as a new road. This will be further extended to Sawantwadi as a coastal road. To enhance the connectivity in DP with such an important link, a 60 m road has been proposed starting near Wave and running straight along the coast line to connect MTHL (via Vitthalwadi, Vasheni, Jui and Vindhane).

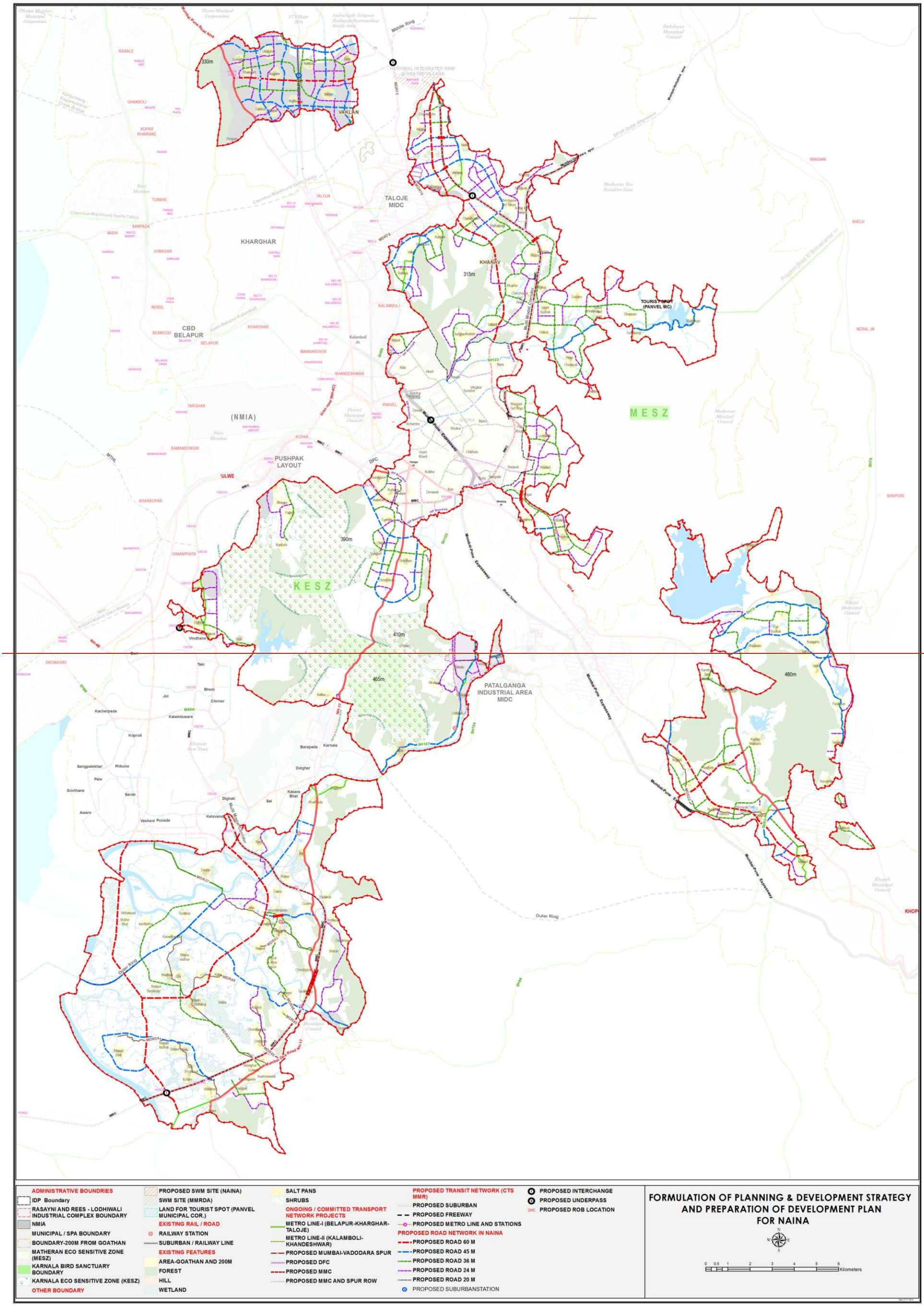
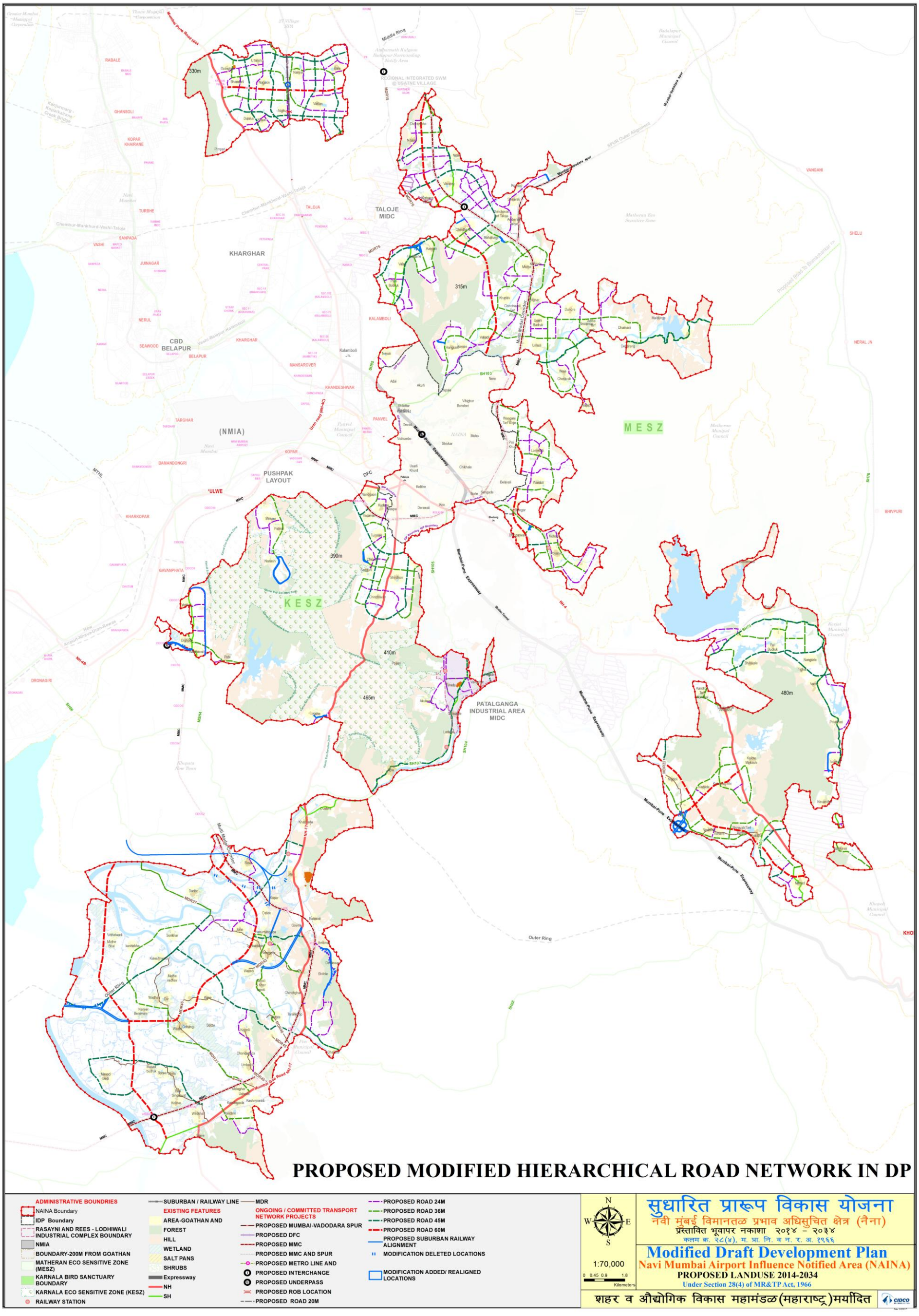
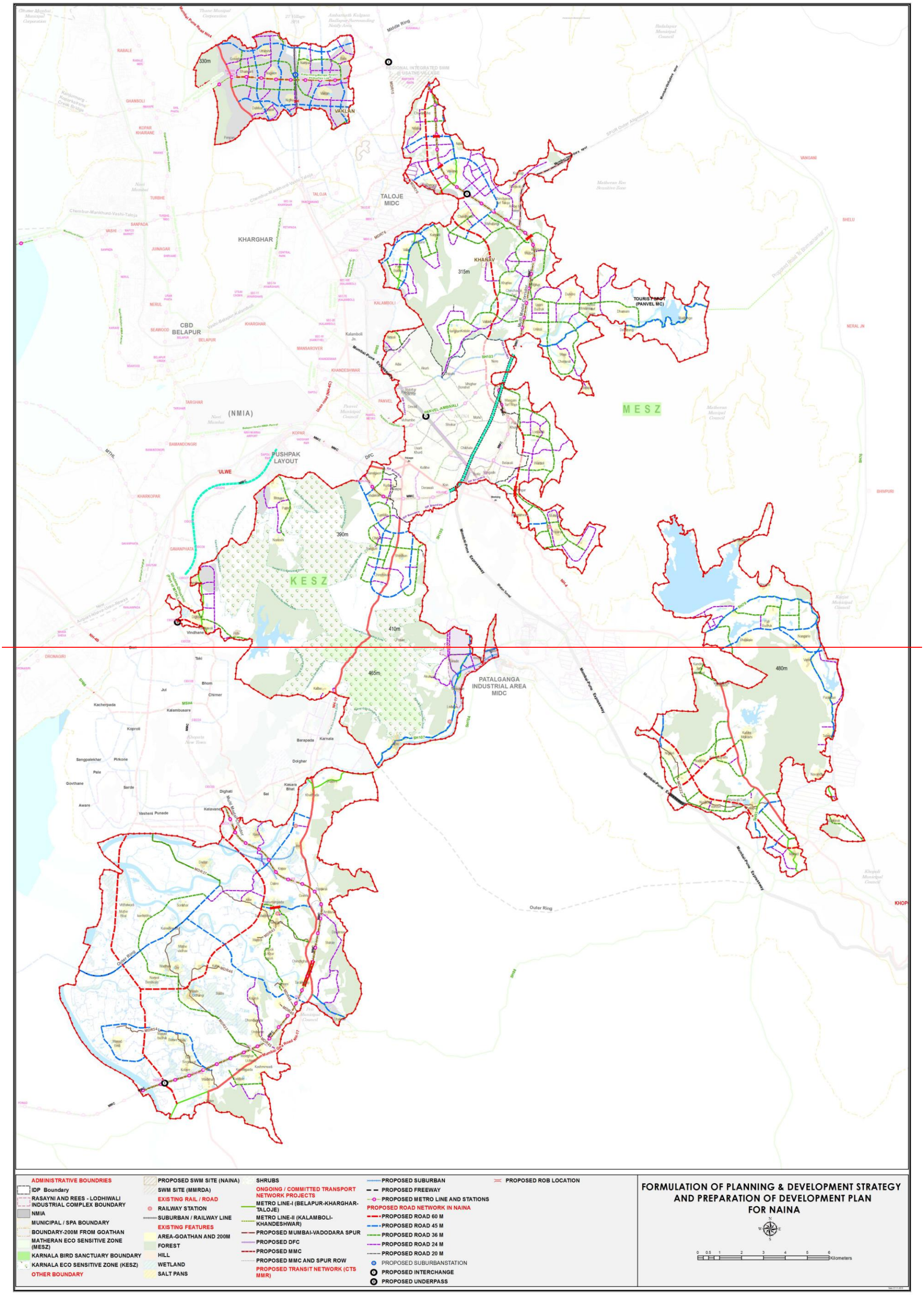


Figure 7-4: Proposed Hierarchical Road Network in DP



PROPOSED MODIFIED HIERARCHICAL ROAD NETWORK IN DP

Figure 7-4: Proposed Modified Hierarchical Road Network in DP



~~Figure 7-5: Proposed Road and Transit Network in DP~~

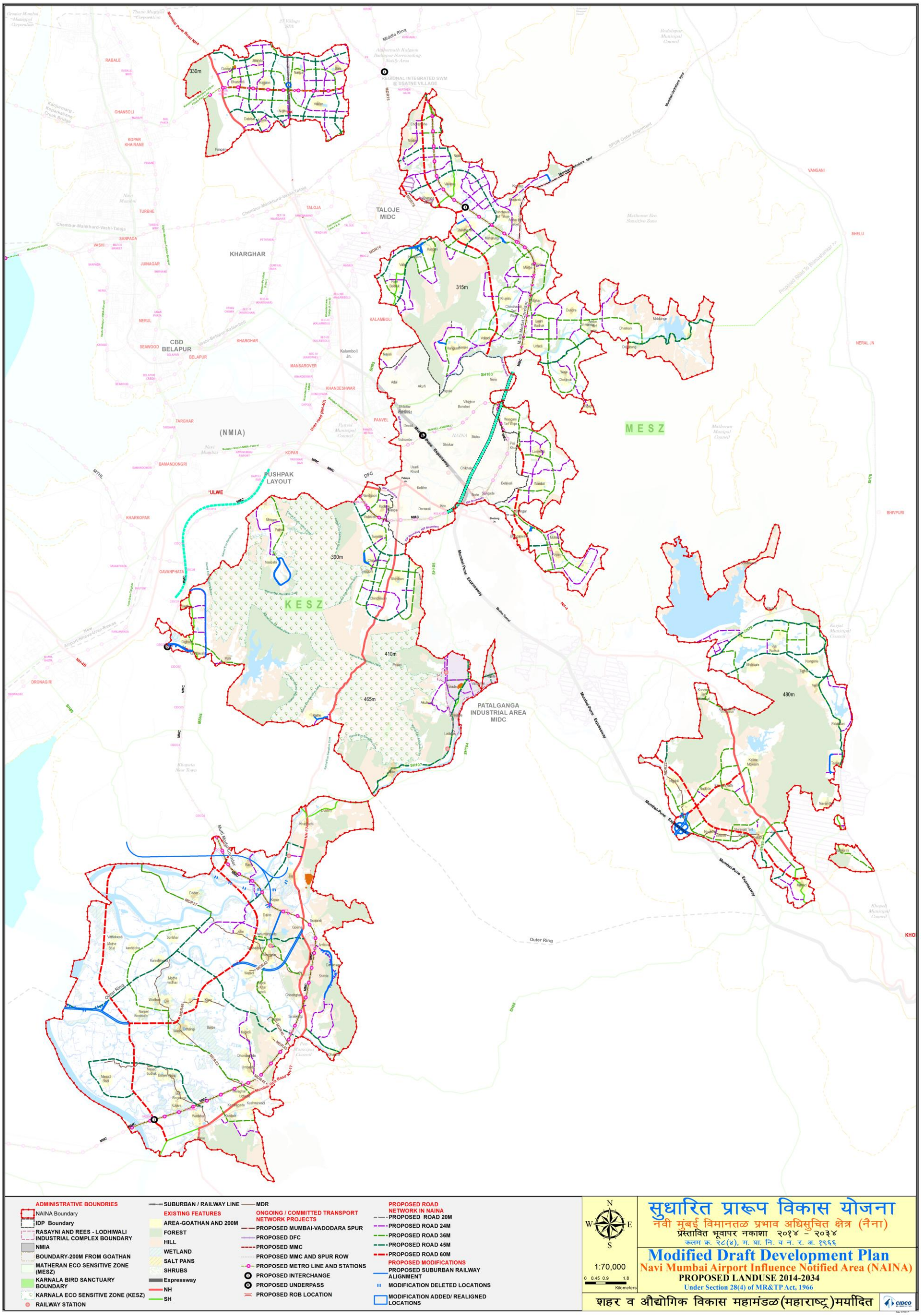
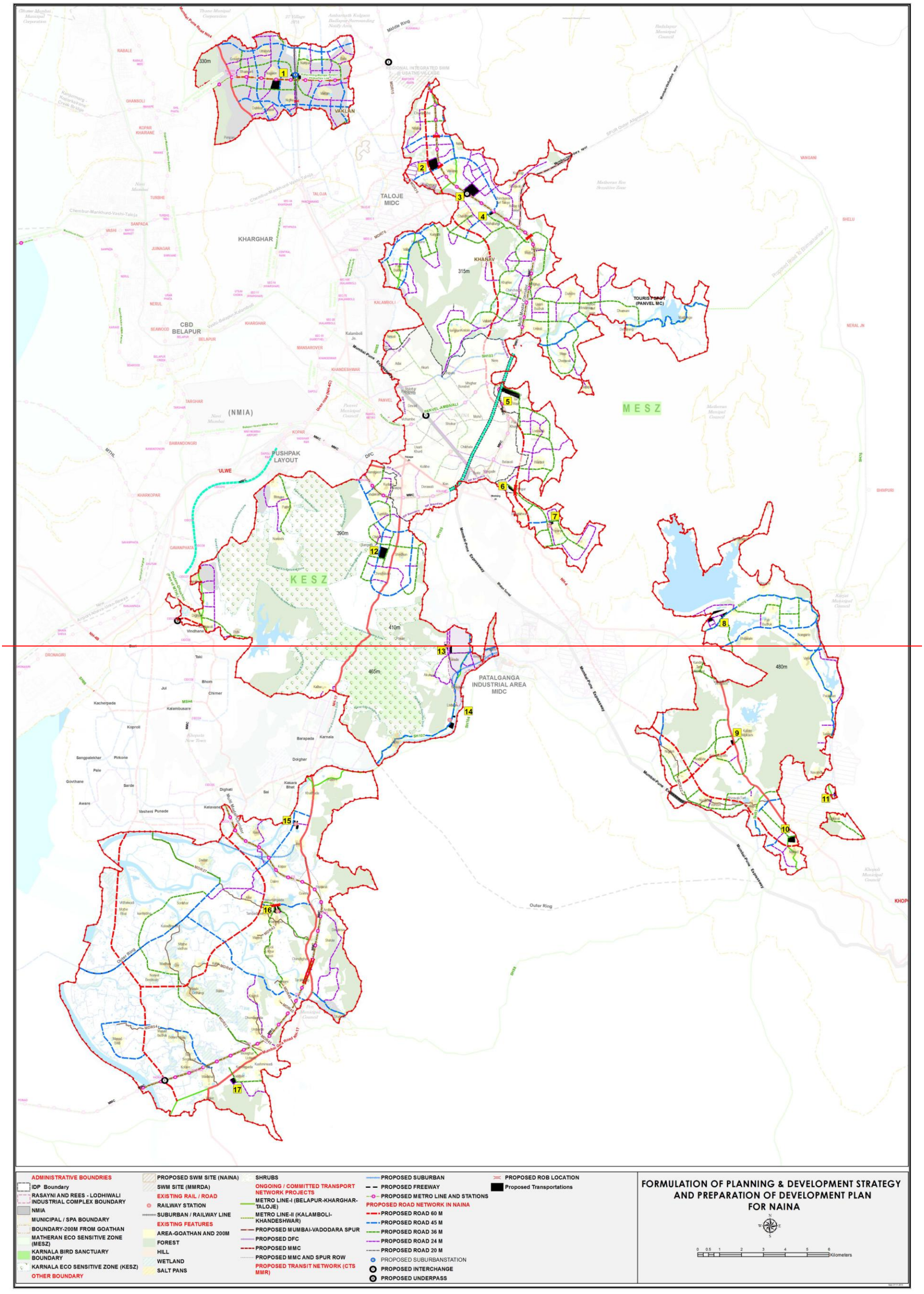


Figure 7-5: Modified Proposed Road and Transit Network in DP



~~Figure 7-6: Identified areas for Depots for Metro/ BRTS/ Bus and Areas identified for Inter-city bus terminals and Truck terminals~~

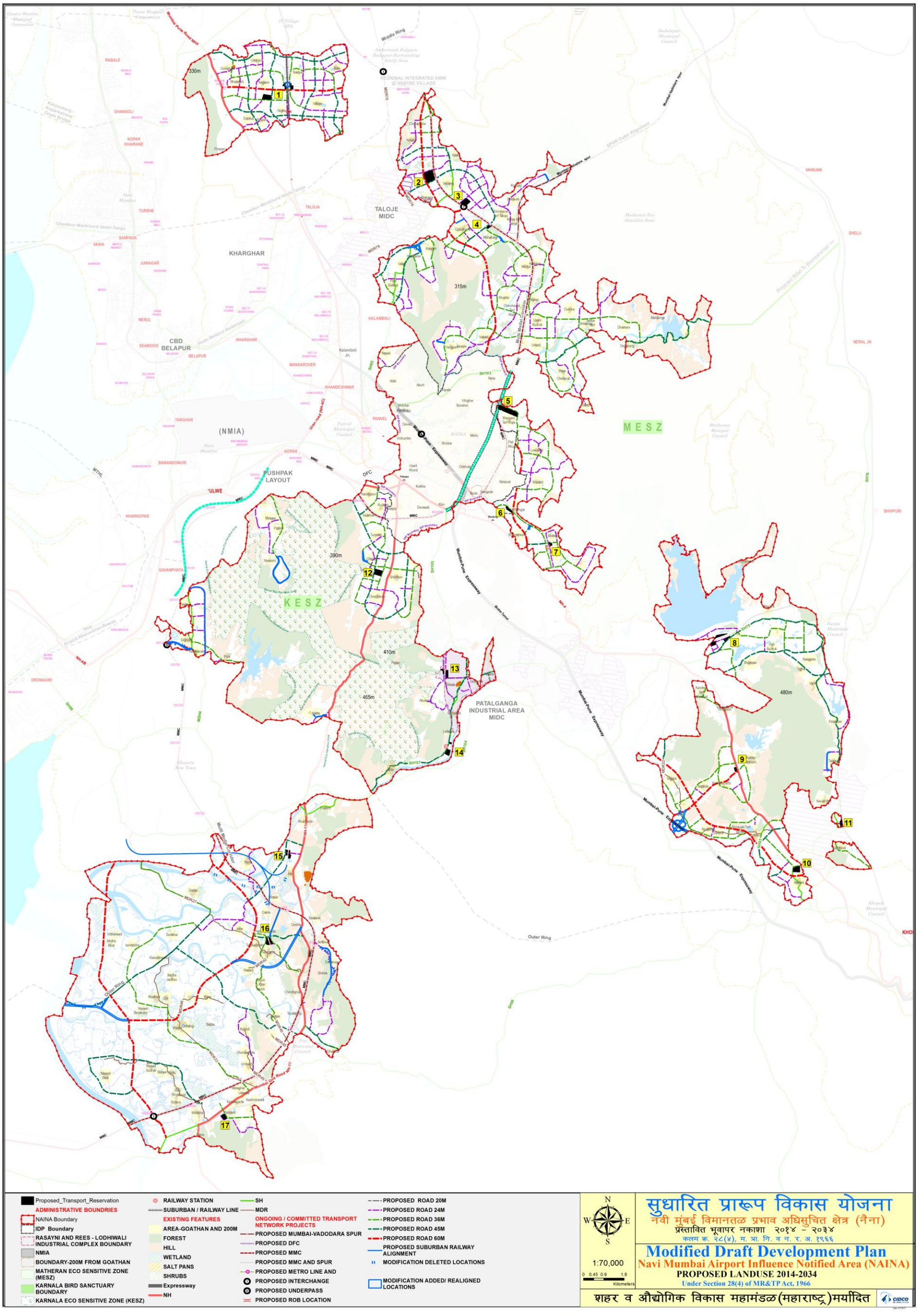
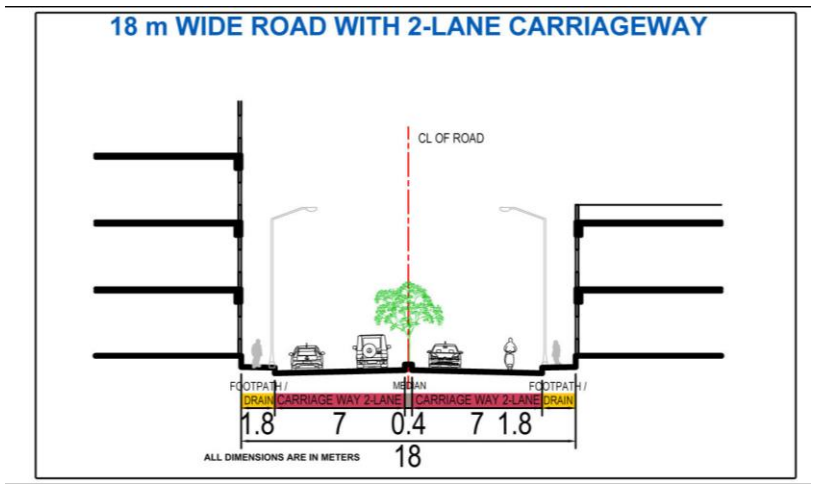
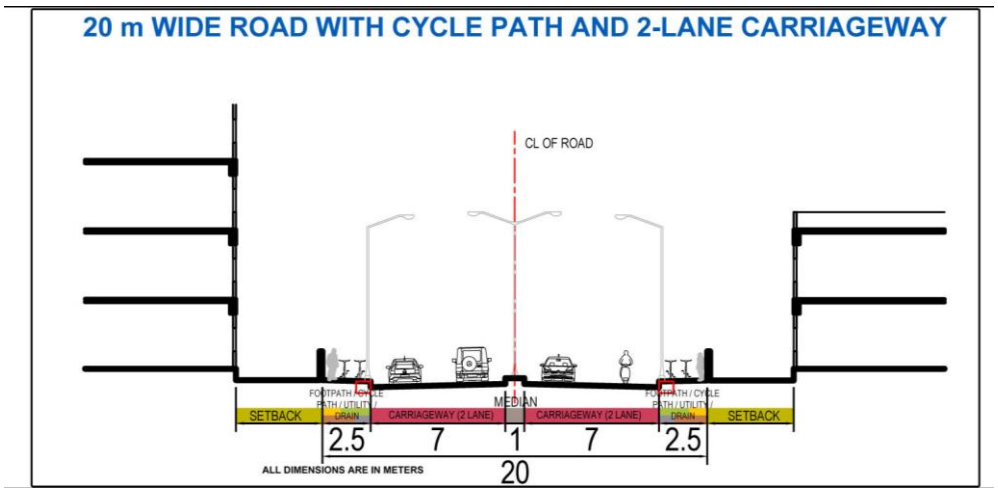
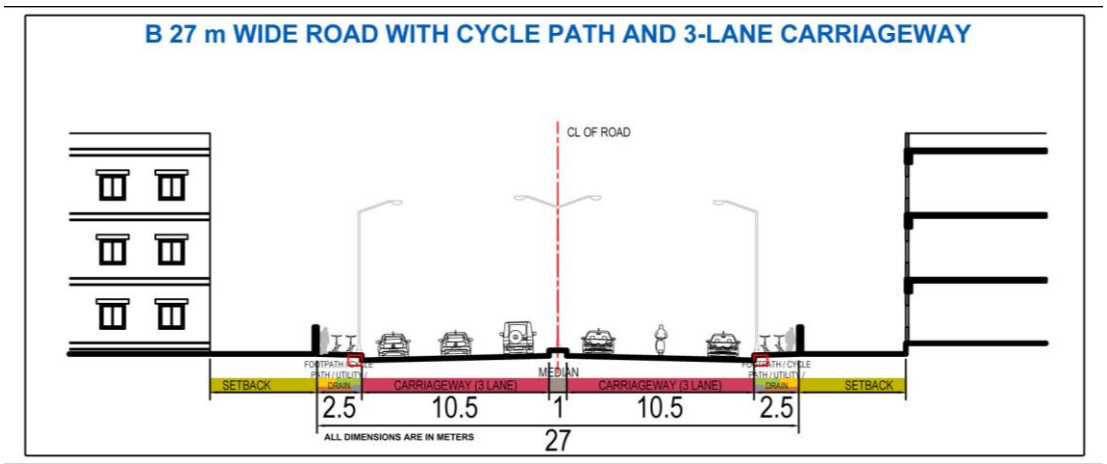
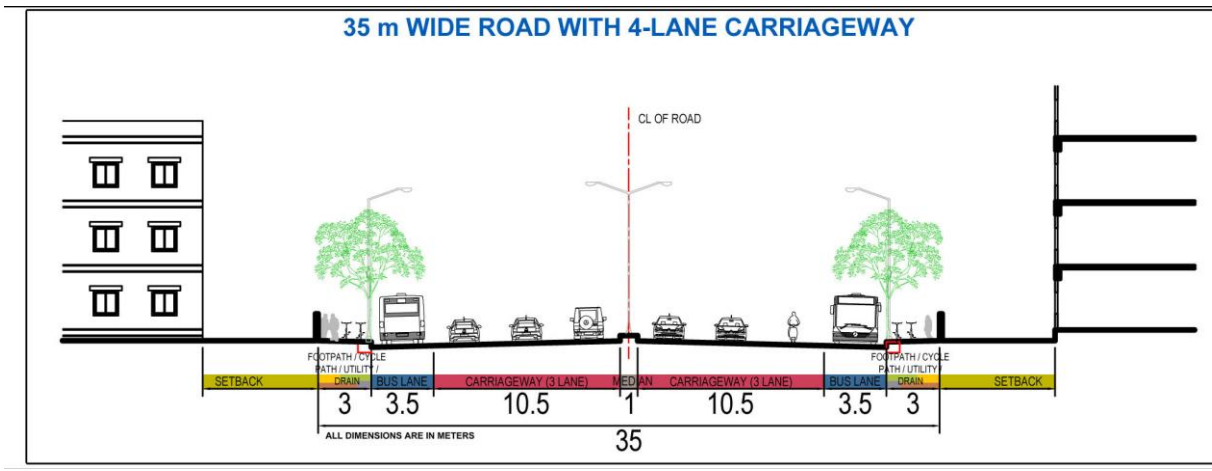


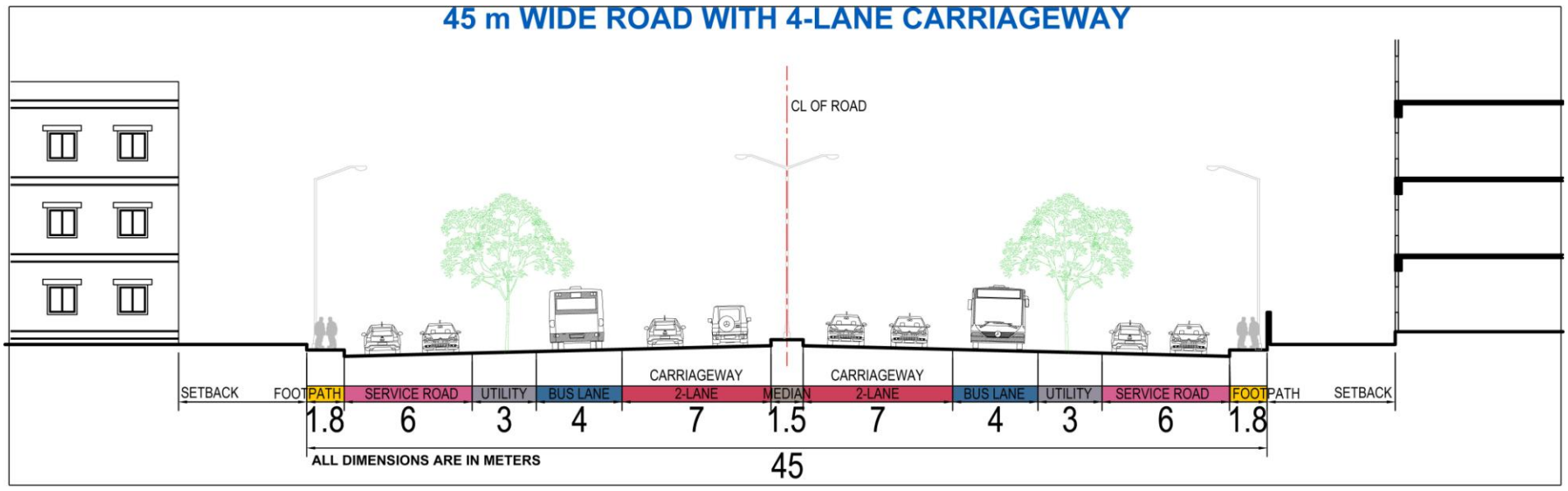
Figure 7-6: Modified Identified areas for Depots for Metro/ BRTS/ Bus and Areas identified for Inter-city bus terminals and Truck terminals











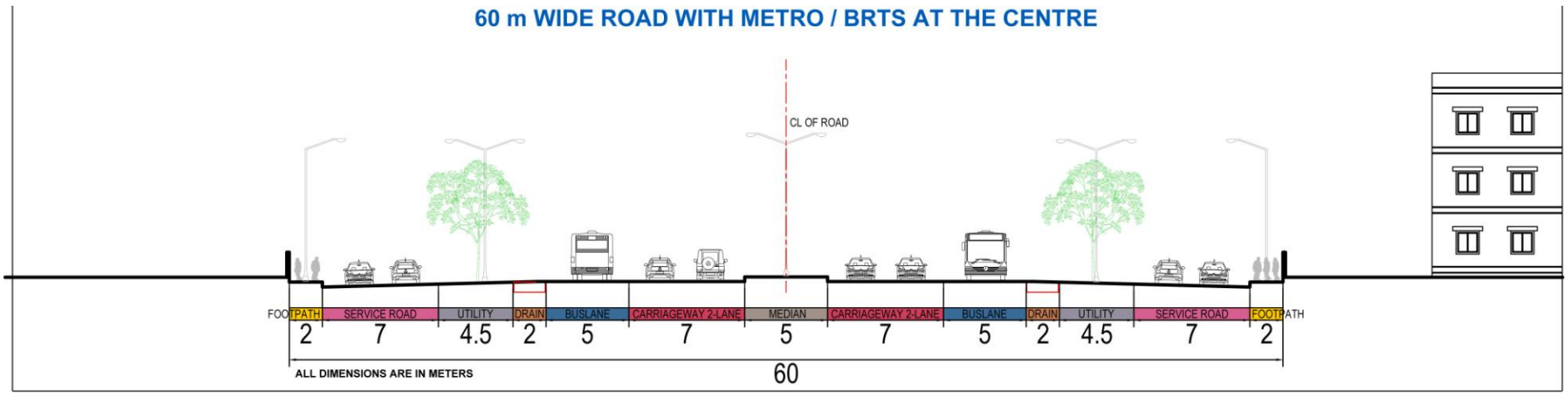


Figure 7-7: Typical Cross Sections for Major Roads proposed in DP

8. PROPOSED MODIFIED LAND USE

This chapter describes the manner in which proposed land use of Development Plan is derived. The major considerations for proposed landuse plan are existing land use, terrain, estimated population, existing and proposed transport network. The proposed landuse plan also includes designation of land for public purposes as indicated in Chapter-6.

8.1 IMPORTANT CONSIDERATIONS

Following are a few relevant factors, which are considered while defining land use pattern of DP area.

8.1.1 ECONOMIC NODES IN AND AROUND DP AREA

Development Plan area is located in the proximity of important existing and proposed economic nodes. Leveraging these economic nodes to structure the land use pattern is important to ensure successful Development Plan. The major economic nodes are as follows:

- Navi Mumbai International Airport at Panvel (the basis reason for notification of NAINA)
- An emerging rail hub at Panvel
- Warehousing activities at Kalamboli
- Taloja Industrial Area
- Expansion of Jawahar Lal Nehru Port Trust (JNPT)
- Khalapur Smart City area along with MIDC area

Provision of supporting activities and transition zones to connect these economic nodes from DP area is very important. Efficient transport network, particularly public transport and high quality infrastructure would help DP to capture the growth impulses of these economic opportunities.

8.1.2 CONCEPTUAL DEVELOPMENT STRUCTURE

The land use pattern proposed in DP is the detailing of the structure plan for the area. The Structure Plan for the Project Area is based on the following principles.

- Regional transport network
- Leveraging existing and proposed economic nodes in and around DP area
- Protecting natural areas of DP
- Identify available land for development

- Utilizing project area which is in promixity to navi mumbai
- Proposed transportation network
- Flexible zoning
- Integrating gaothan (urban villages) in the urban structure
- Concept of sub-cities and broad zoning

In additions to these principles, the Structure Plan is configured through delineation of three sub-cities or urban centres. These sub-cities are based on following major considerations:

- Proximity of existing and proposed economic nodes (JNPT, NMIA, CBD of Navi Mumbai, Taloja MIDC Industrial Area);
- Proximity to Navi Mumbai for urban contiguity and indications of ongoing development in these locations hence demand for land;
- Good existing and proposed transport connectivity;
- Land Availability for Development, etc.

A brief description of the four sub-cities is given in the following sections. Refer Figure 8-1.

- Sub-City I: CENTRAL DP (Aero City)

Sub City I is delineated around IDP-I. This part of the Project Area is already receiving significant spill over development from adjoining areas of Panvel and development along the regional transport corridors. In addition to this, a number of Special Township Projects are coming up here. The location of Sub City-I also provides opportunity for leveraging upcoming NMIA, existing infrastructure in Panvel, and existing regional connectivity with respect to NH-4, Mumbai-Pune Expressway and Panvel-Matheran road. Further, Panvel-Karjat regional rail link is also coming up to serve as a Suburban Rail service which will also enhance public transport connectivity.

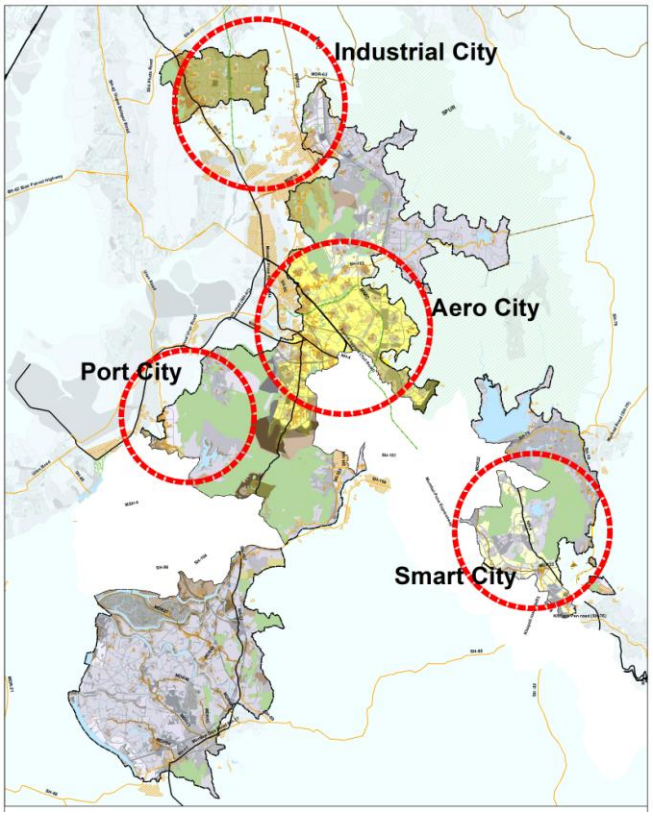


Figure 8-1: Conceptual Development Structure

- Sub-City II: WEST DP Area (Port City)

Sub City –II i.e. West DP area is located very close to Jawaherlal Nehru Port Trust (JNPT). JNPT is currently handling 8.75 Million TEUs. JNU is expanding its logistics handling capacity to 16.32 Million TEUs by 2020. It is doubling its handling capacity which will provide opportunity for more logistic and value addition industrial activities to the adjoining area of DP. Already there are number of container handling units, warehousing units, and other related activities in west DP area.

- Sub-City III: NORTHERN DP Area (Industrial City)

This part of the Project Area is northern most pocket of DP. It is adjoining Taloja MIDC Industrial Area and Kharghar residential township. The current connectivity to the area is from NH-4 but this area is strategically surrounded by Navi Mumbai, Kalyan-Dombivali townships, Ambernath Kulgaon Badlapur Special Notified Area. Hence the area has good potential for development.

The sub-city can provide scope for expansion of Taloja MIDC Industrial Area, leverage economic activities in CBD and other social infrastructure in Navi Mumbai. The proposed connectivity to this area is very good due to existing National Highways, rail line with suburban services and proposed road, MMC and metro network. There are number of Special Township Projects and other projects that are coming up in this area to indicate that there is demand for land for urban development.

- Sub-City IV: SOUTHERN DP Area (Smart City)

This part of DP comprising of Khalapur and surrounding areas has immense locational advantages. Due to presence of NH-4 and Mumbai-Pune expressway it is very well connected at regional level. 60 m spine provides strong linkage to rest of the DP. Tourism locations such as Mahad temple and other natural surroundings (hills and waterbodies) attract weekend floating population. To the east of Khalapur area is MIDC industrial area and west side has number of economic and industrial activities at present.

To leverage and enhance this local potential, some of the identified area can be developed as Phase-I. Infrastructure support can further enhance the possibility of generating economic activities. This in turn will support the sustainable development of entire development Plan.

8.1.3 INTEGRATION OF EXISTING LAND USE

The existing land use is classified in three categories, these are:

1. Non-Developable Areas,
2. Developed Areas (Redevelopable) and
3. Developable Areas

Each category has its own character and significance in the given context. These are discussed below:

Non-Developable Areas: This consists of land use zones which are environmentally significant. The land falling under non-developable areas are Forests, Water Bodies, Hills (slope more then 1:5), Marshy land/Shrubs, Salt pans, Area under Revenue Waterbodies, KESZ and Coastal Regulatory Zones. Areas coming under these zones are conserved in their natural form. The detailed way of conserving and integrating environmentally sensitive areas are discussed in Chapter 12

Developed Areas: Developed areas comprises of two major classifications, Gaothans (existing village settlements) and other built-up areas.

> **Gaothans:** To achieve holistic urban development, integration of Gaothans with scope for their expansion is necessary. No disturbance in the form of redevelopment is proposed within the inhabited Gaothans. The provision of growth and expansion of Gaothans is addressed in the form of 200 meters expansion area around inhabited Gaothan. This 200m of expansion area is termed as Urban Village. Provision of road network, social and physical infrastructure has been made to establish healthy connection among existing and expected development. Such a strategy would enable integration of the village settlements to the proposed urban development of DP area, hence leading to an inclusive, holistic, healthy and planned urban development.

Other Built-up Areas: Built-up areas and structures out of the expansion area around Gaothans are approached in different manner. The basic criterion is to retain the built structure to the extent possible. For example, while proposing connectivity or improvement to any existing social facility, the minimum disturbances to the existing built-up areas are done.

Developable Areas: This category consists of land use zones which are vacant or available for development. This category consists of Agriculture, Vacant and Quarry areas. Proposal focuses over developable areas for proposed land use. The chapter discusses proposed land use in subsequent paragraphs.

8.2 FLEXIBLE, INTEGRATED AND HOLISTIC LAND USE PLANNING

The Developable land after excluding Non-developable areas and developed areas in DP amounts to be 20461 Ha (as mentioned in Chapter 3: Existing Landuse). The proposed land use considers the existing features and integrates the same in a holistic manner.

Though the concept of zoning is important, rigid land use zoning concepts are gradually becoming an obsolete idea in urban planning and more so in the context of promoting private developers in urban development. Hence, it is desirable to promote the concept of flexible zoning to permit compatible land uses in various zones. Such a concept is all the more necessary when the SPA intends to develop common infrastructure and social facilities in DP with major role from developers and other real estate entrepreneurs in the form of NAINA Scheme.

The concept of flexible zoning is evolved for land use plan of DP area. In each zone compatible land uses are defined under permitted, permitted with conditions, and prohibited uses. The concept of flexible zoning is to encourage flexible environment for private sector led development and to tap market demand with changing economic scenario.

DP is delineated into six major zones namely ~~R1~~N1, ~~R2~~N3, ~~R3~~N4, ~~R4~~N5, ~~I~~N6 and ~~LDZ~~ N7 (limited development zone). The allocation of these zones also depends on the phases in which DP area is divided. There are certain zones which are proposed only in Phase-I, few other zones area only in Phase-II and some zones are shown in both the Phases. Relation of Phasing and the provision of zones are given below:

Phase - I: Proposal for Phase-I of DP comprises of all the defined zones, with reservations (as explained in chapter-5 of this report) and Growth Centres. Phase-I predominantly contains following zones:

- ~~R1~~-N1: Predominantly Residential
- ~~R2~~N3: Mixed Use Zone
- DP Reservations (Growth Centres, Public facilities and Utilities)

Phase-II: Proposal for Phase-II comprises mainly of broad zoning of G-1 and G-2 zones of sanctioned Regional Plan of MMR. The detailed proposal consists of following zones:

- ~~R4~~N5: Recreational Zone
- ~~I~~N6: Industrial and warehousing Zone (IWZ)
- ~~LDZ~~N7: Limited Development Zone (LDZ)
- Theme Based Development (TBD) and
- Theme Based Reservations (TBR)

In addition to this, transportation related reservation such as bus terminus, truck terminus parking are earmarked. Also the broad network required for the area is proposed along with city level facilities like land fill sites Facilities around villages earmarked on government land etc. Theme based development reservation is earmarked in this area

In both the Phases: Since Gaothans are spread over entire DP area, the 200m area around such Gaothans namely urban villages are shown in both the phases. Part of Rasayani plan is adopted with minor changes and hence although it is in Phase-II, it contains following zones:

- ~~R1~~N1: Predominantly Residential
- ~~R3~~N4: Urban Village
- ~~I~~-N6: Industrial and warehousing Zone (IWZ)
- DP Reservations: Transport Reservation and Public Purpose Utilities

8.3 PROPOSED MODIFIED LAND USE

The gross area of DP is 437.26 km^2, out of which the area available for development is about 204.03 km^2. The understanding of context and allocation of landuses is a complex but important exercise. It depends on macro and micro level contexts, including physical, social and economic factors. List of activities permissible under these land use zones are given in detail in DCPRs. Apart from the land use zones, reservations have been earmarked on Development Plan. Map showing proposed land use zoning is given as **Figure 8-2**.

8.3.1 ALLOCATION OF LAND USES

The distribution of Land uses is done on the basis of the activities anticipated. After understanding the context in macro and micro level, the land is allocated the best suitable land use. While providing landuse to any area, the surrounding landuses (in the form of both existing and proposed) are also considered to attain integrated and holistic planning.

Following are the major landuses with broad criteria for provision of the same; refer Table 8-1 for area under proposed land use and **Figure 8-2: Proposed Land Use Distribution in Modified DP.**

~~R1~~N1: Predominantly Residential: The zone is aimed at promoting residential development and supporting social infrastructure. Functions compatible to residential development are permitted in ~~R1~~N1. The developable areas with 'inward planning approach' to ascertain safety to residents with all required social infrastructure is main motive behind this approach. Residential areas are located at adequate distance to any major transport connectivity, to avoid any direct disturbance but at the same time efforts have been to have easy access. The total area under Residential Landuse is approximately ~~2449~~2425.14 Ha in Balance Phase-I, occupying ~~54.4~~53.84% of developable land in Balance Phase-I and 6 Ha (in Rasayni part) in Phase-II, and comprises of ~~12~~11.89 % of the total developable land in DP.

~~R2~~N3: Mixed Use Zone: This zone comprises of mix of different landuses such as residential, commercial, recreational etc. Mix use also occurs as a result of organic growth taking place since years. Due to market forces of need and supply, such development come into existence in the form of mixed landuse. In such cases the strict land use control is difficult to implement. In addition to this, mix land use development has advantage of optimum utilisation of infrastructure. DP therefore promotes such development and hence these have been retained and extended up to desired limits. The total area under mixed land use is approximately ~~222~~218.39 Ha (only in balance Phase-I), occupying ~~5~~4.86% of developable land in Balance Ph-I and comprises of 1. ~~1~~07% of the total developable land in DP.

~~R3~~N4**: Urban Village:** The MMR Regional Plan 1996-2011 has provision for expansion of existing Gaothans upto 200m from existing inhabited Gaothans. The same concept has been continued and accordingly, demarcated on plans. These areas are termed as Urban Villages. The urban villages will primarily consist of residential use. The total area under urban villages is approximately ~~3199~~3219.69 Ha, and comprises of 15. ~~7~~78% of the total developable land in DP

~~R4~~N5**: Recreational Zone:** The zone is aimed to promote recreational activities and lung spaces within the development.

These are located considering the beauty and protection of environment sensitive areas. Attempt has been to identify potential locations and an aim to develop them as macro level recreational activity. The total area under recreational land use is approximately ~~934~~255.59 Ha (only in Phase-II), and comprises of ~~4.6~~ 1.25% of the developable land in DP.

~~I~~N6**: Industrial and Warehousing Zone (IWZ):** This zone is aimed to promote industrial, warehousing and logistics use to generate economy and employment in DP area. This zone is proposed at the suitable locations for industrial or warehousing activities. In the north of DP area, this zone is proposed near Taloja industrial area. This zone is proposed in DP near JNPT to harness the potential of warehousing activities around port. The existing industrial area in Rasayani has been retained. This activity is also proposed along Dharamtar creek in Pen Taluka for development of jetties and warehousing activities. This is also discussed in subsequent paragraphs. This zone is approximately spread over ~~1321~~1316.81 Ha (only in Phase-II) of land, constituting 6. ~~5~~45% of the total developable area.

Development of Jetties and Warehousing along Dharamtar Creek: According to Regional Plan 1996 – 2011 jetties along with ancillary uses were proposed in few locations along Dharamtar creek. This was as per NOCs then given by Maharashtra Maritime Board (the erstwhile Commissioner of Inland Water Transport) for location clearance to a number of projects involving construction of jetties and warehousing facilities along Dharamtar Creek. Some proposals involved midstream transhipment of chemicals through barges which were to be brought to jetties in the Dharamtar Creek. Near the jetties storage facilities were proposed for these goods. From these warehouses, goods would be distributed to the hinterland by road transport. It was anticipated that these developments will turn Dharamtar Creek into a small port. The road traffic generated will also require significant strengthening of road infrastructure (including construction of new roads). To promote such economic activity in DP area, about 360 Ha of land is devoted to Industrial and warehousing zone where only jetty and ancillary activities will be permitted.

~~LDZ~~N7**: Limited Development Zone (LDZ):** This zone is proposed in Phase-II of DP. As already mentioned DP area is too big to be developed in one go, within the plan period. Therefore this zone identifies the land which is not required for urbanisation as of now and hence development is restricted. In this zone the development is permitted with lower FSI. This zone will not only provide flexibility to the plan but also scope of making modifications as per future requirements. The total area under LDZ is ~~15169~~15930.83 Ha. This is about ~~74.3~~78.08% of total developable land in DP.

Theme Based Development (TBD) :

Theme based development approach help in development of the people, city and country as investors from around the world showcase their interest. Themes can be inspired from any sector like finance, tourism, industries, Medical, Educational etc. It is difficult to predict the types of themes that can come in future. The concept of themes should be left to the imagination and creativity of the people and investors.

Theme based development provide ample opportunities for concept that can prove beneficial as people from different countries will have various options to invest. This will increase employment opportunities, educational facilities, social inclusiveness and quality of life.

Looking into these aspects, theme based developments are permitted in LDZ zone of DP. In DCPR the list of themes are given but it is open ended to ensure not to limit the creativity of the people/ investors.

DP Reservations:

- **In Balance Phase-I:** Detailed plan has been prepared for Phase-I. Apart from general public facilities and utilities in Phase-I, reservation named Growth Centre is also shown in Phase-I area. Predominantly Growth Centre (GC) land is earmarked as CIDCO's land bank. This will be developed by SPA-NAINA and will have predominantly commercial, business and residential activities. As this zone is predominantly commercial, needs visibility and connectivity with major roads, hence as far as possible this is placed along major roads and important transport nodes. The total area under Growth Centres is approximately ~~676~~685.17 Ha, and comprises of 15. ~~1~~25% of the total developable land in balance Phase-I of DP.

- **In Phase-II**: Intensive development is not expected in Phase-II. However, to promote creativity and to promote economic activities concept of Theme Based Reservations has been introduced in Phase-II. Reasonable freedom has been assured for development of Theme Based Reservations. Detailed infrastructure Plan has not been prepared for Phase-II except for transport network and few other mandatory facilities such as schools, playgrounds, and parks. Facilities provided in Phase-II area are mostly on government land, however, in unavoidable circumstances minimal private land has been used for TBR and reservation near station area (Station Area Facility) and other transport related reservations (Bus Depot, Terminals and Roads) etc.

  To accommodate the future social and physical infrastructure need in Green zone, some of the government lands have been reserved as Public Purpose Utilities (PPU). Depending upon the need as and when it appears, the PPU can be developed by SPA/appropriate authority. Refer DCPR for permissible activities in this zone. In addition to this Theme Based Reservations are also marked in Phase-II area. These areas are majorly on government land and are planned to be developed as theme based activities. Certain theme as and when required, will be developed on these sites. SPA NAINA will develop these Theme based reservations to promote economic activities and to mark the identity of the city on global map.

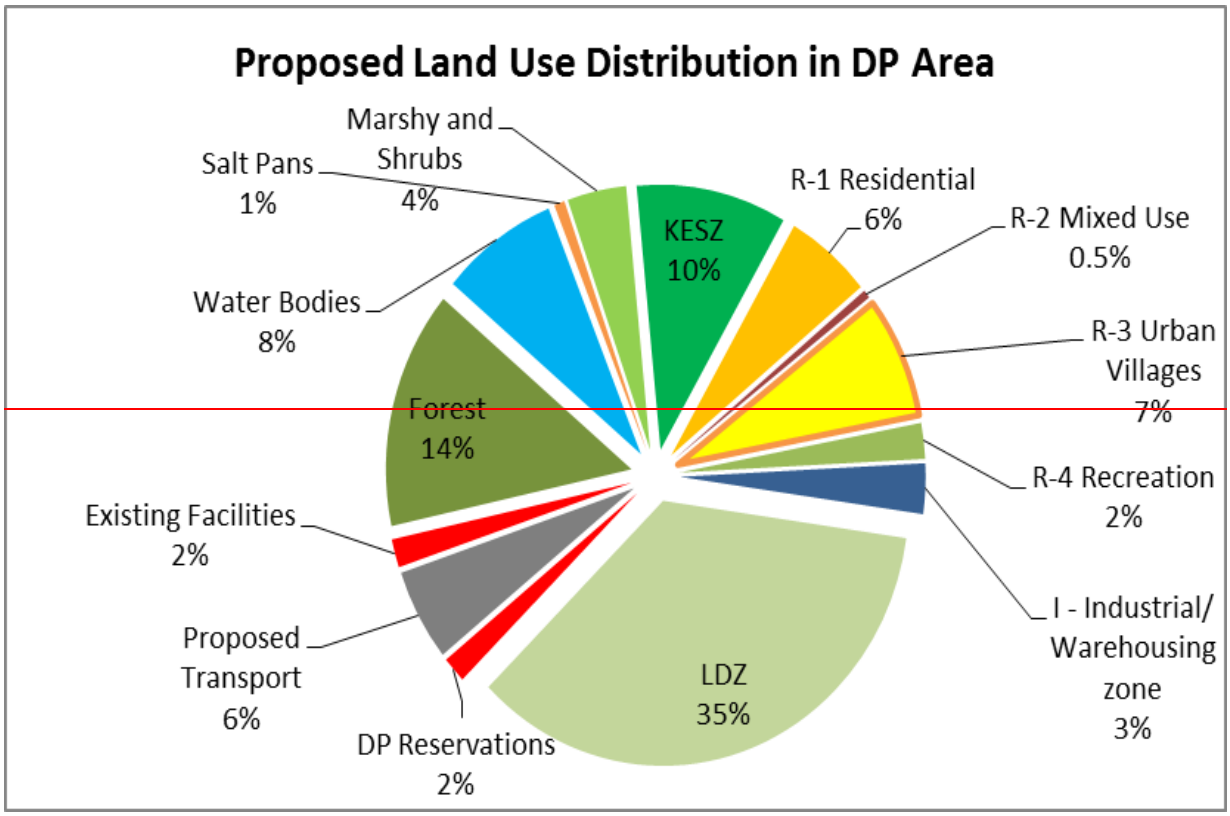
Transport: The total area under proposed transport use is approximately ~~2377~~ 2477.16 Ha, and comprises of ~~11.6~~ 12.14% of the total developable land in DP.

Karnala Eco-Sensitive Zone (KESZ): The boundary of KESZ as per the MoEF&CC notification is shown as KESZ. Any changes in KESZ boundary, in future, the released land shall be included in adjoining landuse zone. No reservations or land uses are shown in this area as the planning and development of the area is governed by the stipulations of the notification. These include; preparing a Zonal Master Plan for the ESZ by the State Government and approval of the same by a Competent Authority in the State Government, list of activities prohibited or regulated within the ESZ and constitution of a Monitoring Committee for effective monitoring of the ESZ.

Table 8-1: Area Statement for Proposed Land Use in Modified DP area

Proposed Modified Land Use								
Sl. No.	**Land Use Category**	**Balance Phase-I**	**% of Developable Area in Bal Ph-I**	**Phase-II**	**% of Developable Area in Bal Ph-II**	**Total**	**% of Total Developable Area in DP**	**% of Total DP Area**
1	~~R-1~~ N1Predominantly Residential	~~2443~~ 2419.14	~~54.4~~ 53.84%	6	~~0.00~~ 0.04%	~~2449~~ 2425.14	~~12.0~~ 11.89%	~~5.60~~ 5.55%
2	~~R-2~~N3 Mixed Use	~~222~~ 218.39	~~4.9~~ 4.86%	0	0.0%	~~222~~ 218.39	~~1.1~~ 1.07%	0.5%
3	~~R-3~~-N4 Urban Villages	~~777~~ 794.29	~~17.3~~ 17.68%	~~2422~~ 2425.40	~~15.20~~ 15.24%	~~3199~~ 3219.69	~~15.7~~ 15.78%	~~7.3~~ 7.36%
4	~~R-4~~-N5 Recreation	0	0.0%	~~934~~ 255.59	~~5.9~~ 1.61%	~~934~~ 255.59	~~4.6~~ 1.25%	~~2.1~~ 0.58%
5	~~I~~–N6- Industrial/ Warehousing zone	0	0.0%	~~1321~~ 1316.81	~~8.3~~ 8.28%	~~1321~~ 1316.81	~~6.5~~ 6.45%	~~3.0~~ 3.01%
6	~~LDZ~~–N7 Limited Development Zone	~~61~~ 52.96	~~1.4~~ 1.18%	~~15108~~ 15877.87	~~95.0~~ 99.80%	~~15169~~ 15930.83	~~74.3~~ 78.08%	~~34.7~~ 36.43%
8	DP Reservations	~~1179~~ 1196.09	~~26.2~~ 26.62%	~~307~~ 288.40	~~1.9~~ 1.81%	~~687~~ 1484.49	~~3.4~~ 7.28%	~~1.6~~ 3.39%
a	Growth Centres	~~676~~ 685.17	~~15.1~~ 15.25%	0	0.0%	~~676~~ 685.17	~~3.3~~ 3.36%	~~1.5~~ 1.57%
b	Parks and Playgrounds	~~358~~ 366.30	~~8.0~~ 8.15%	~~42~~ 42.40	~~0.3~~ 0.27%	~~401~~ 408.69	2.0%	~~0.9~~ 0.93%
c	Utilities, Community, Educational, Health, Markets, Transportation	~~144~~ 137.74	~~3.2~~ 3.07%	~~143~~ 124.00	~~0.9~~ 0.78%	~~287~~ 261.74	~~1.4~~ 1.28%	~~0.7~~ 0.6%
d	TBR - Theme Based Reservation	~~0~~ 6.88	~~0.0~~ 0.15%	122	~~0.8~~ 0.77%	~~122~~ 128.88	~~0.6~~ 0.63%	~~0.3~~ 0.29%
9	Proposed Transport	~~596~~ 603.41	~~13.3~~ 13.43%	~~1823~~ 1873.75	~~11.5~~ 11.78%	~~2419~~ 2477.16	~~11.9~~ 12.14%	~~5.5~~ 5.67%
10	Existing Facilities (Roads, Railways and Public & Semi-public amenities)	~~174~~ 175.90	~~3.9~~ 3.91%	~~570~~ 569.29	~~3.6~~ 3.58%	~~743~~ 745.19	~~3.6~~ 3.65%	1.7%
11	Forest	~~1067~~ 1052.90	~~23.8~~ 23.43%	~~5181~~ 5067.02	~~32.6~~ 31.85%	~~6248~~ 6119.91	~~30.6~~ 30.00%	~~14.3~~ 14.00%
12	Water Bodies	~~200~~ 199.44	~~4.4~~ 4.44%	~~3125~~ 3119.59	~~19.6~~ 19.61%	~~3325~~ 3319.04	~~16.3~~ 16.27%	~~7.6~~ 7.59%
13	Salt Pans	0	0.0%	~~300~~ 298.35	~~1.9~~ 1.88%	~~300~~ 298.35	~~1.5~~ 1.46%	~~0.7~~ 0.68%
14	Marshy and Shrubs	0	0.0%	~~1667~~ 1665.95	~~10.5~~ 10.47%	~~1667~~ 1665.95	~~8.2~~ 8.17%	~~3.8~~ 3.81%
15	KESZ	0	0.0%	4245	~~26.7~~26. 68%	4245	~~20.8~~20.81%	~~9.7~~9.71 %
	Total Area	~~**6718**~~ **6712.51**	~~**150**~~ **149.40%**	~~**37008**~~ **37009.03**	**233%**	~~**43726**~~ **43721.54**	~~**214**~~ **214.29%**	**100.0 %**
	Developable Land	**4493**	**100%**	**15910**	**100%**	**20403**	**100%**	**46.7%**

Refer ~~3~~ Figure 8.3 for proposed land use map~~-~~ of Modified Development Plan.



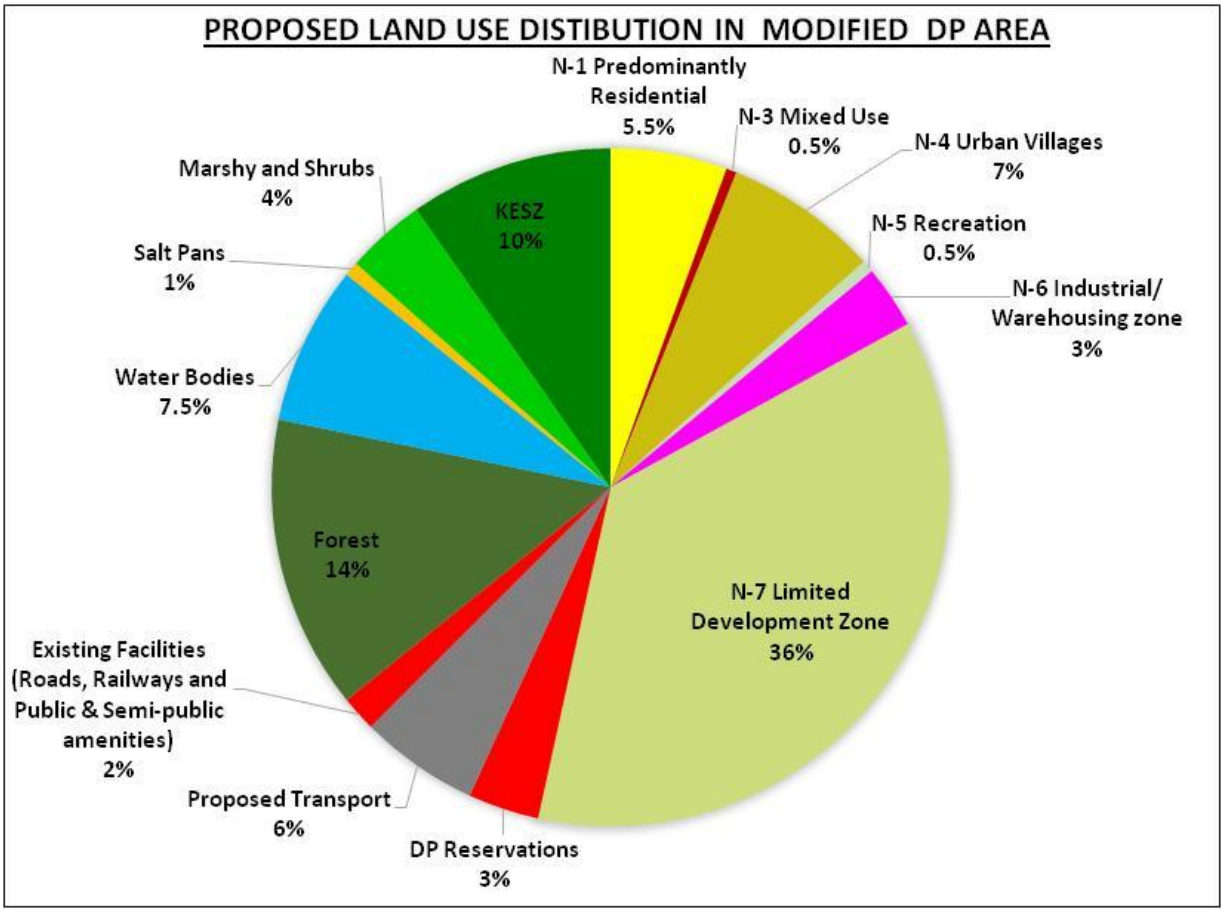


Figure 8-2: Proposed Land Use Distribution in Modified DP

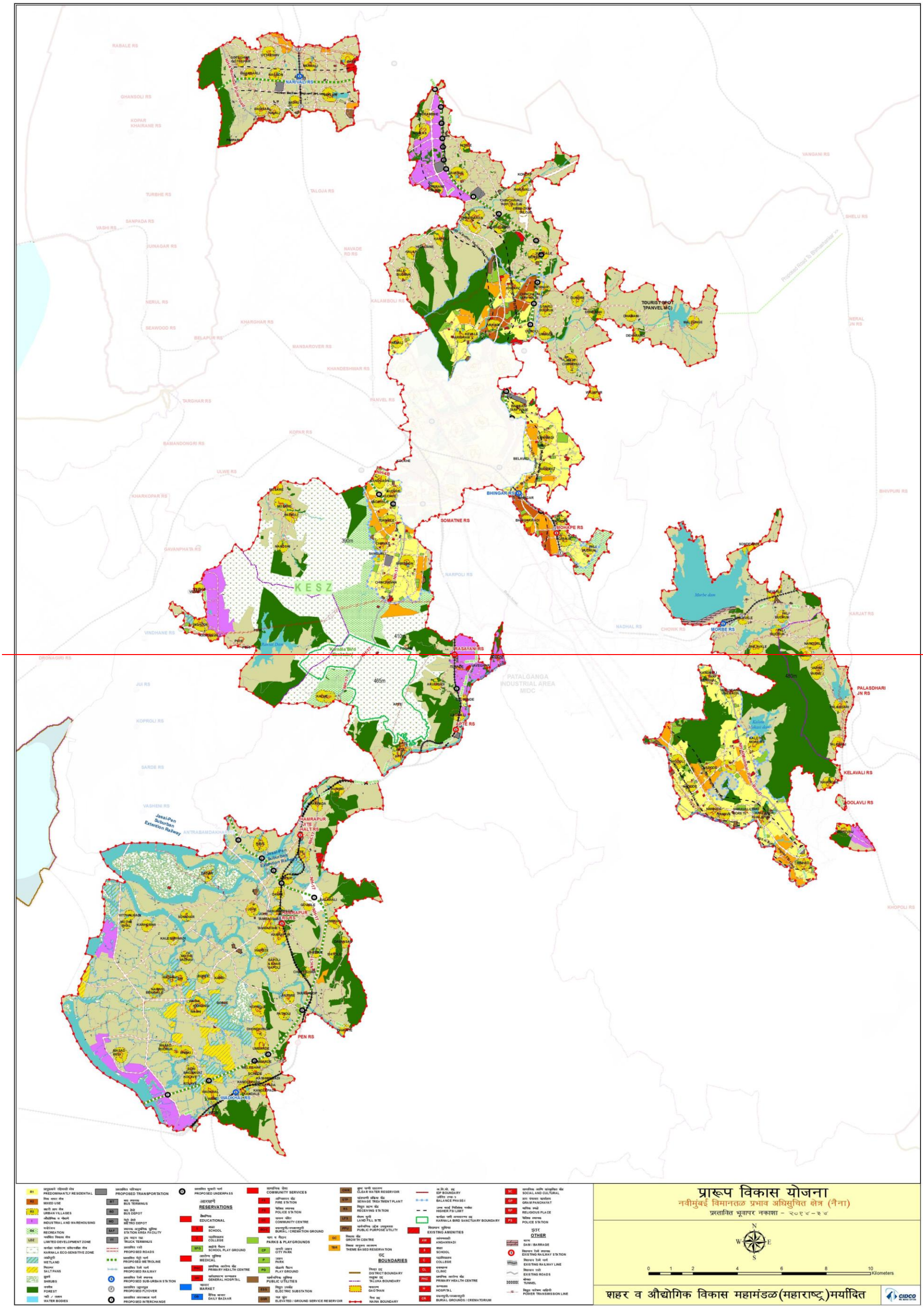


Figure 8-3: Proposed Landuse in Development Plan Area

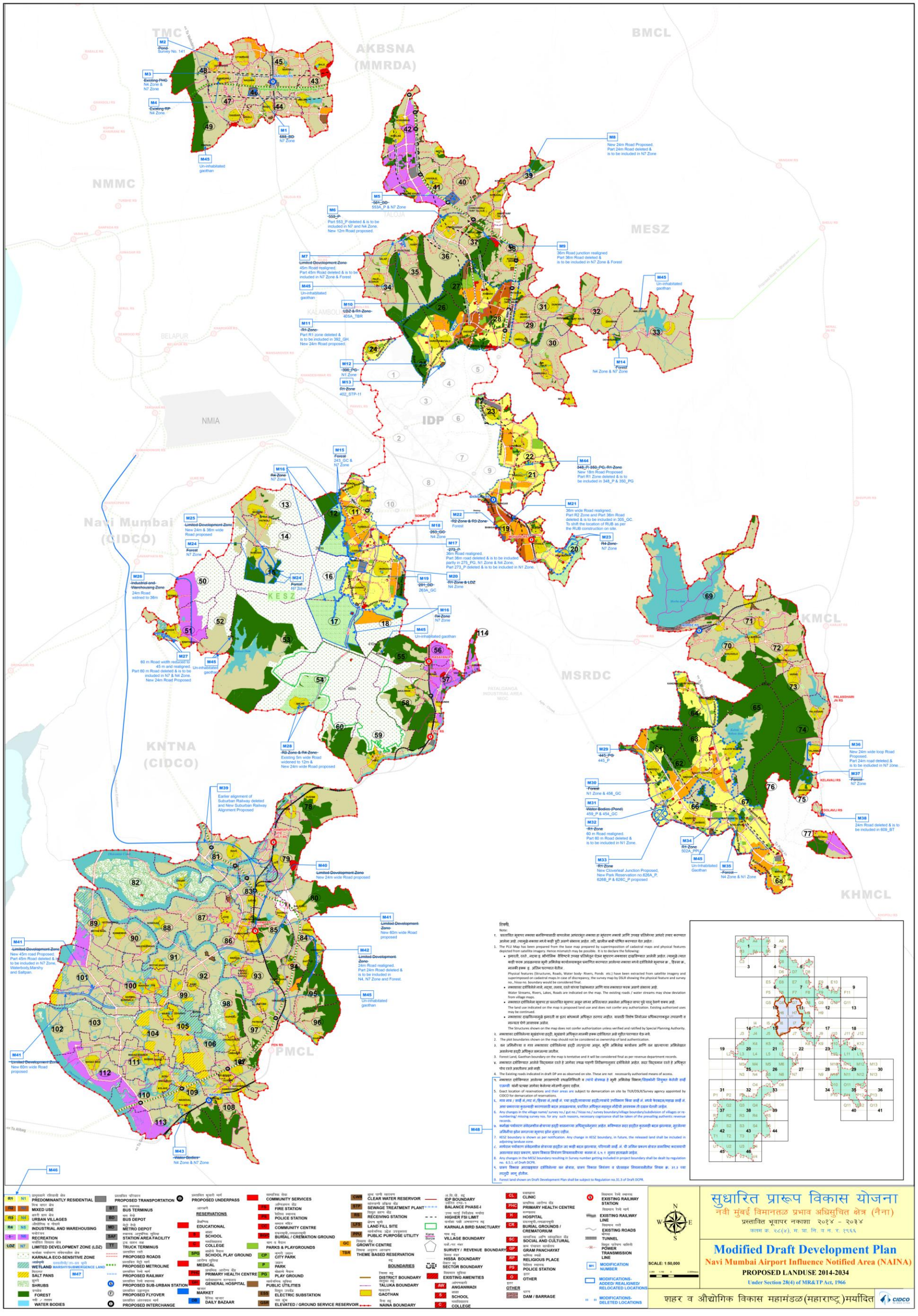


Figure 8-3: Proposed Landuse in Modified Development Plan Area

9. PHYSICAL INFRASTRUCTURE[1]

This Chapter describes the demand assessment and provision of land reservation for Physical infrastructure comprising of Water Supply, Sewerage and recycling, Drainage and river training, Solid Waste Management and Power supply.

9.1 GENERAL

SPA-NAINA has decided to adopt two phases of development Phase-I is the area where SPA-NAINA could extend infrastructure in next 10 years and Phase II where such infrastructure could be provided only after 10 years based on the requirement and development in Phase-II area. This chapter is essentially about Balance Phase-I, excluding IDP area. The demand for infrastructure essentially depends upon the population. The estimated population for various phases is summarised below in **Table 9-1**:

Table 9-1: Estimated Population for various Phases in NAINA

Phase /Zones	Estimated Population in Lakhs	
	2016	2034
IDP	0.75	6.22
Balance Phase-I	0.44	3.86
Phase-II	1.84	3.94
Total	**3.02**	**14.02**

9.2 WATER SUPPLY

Availability of sustainable source of water with related infrastructure facilities is prime necessity for any modern and sustainable development. But prior to exploring for a sustainable source it is utmost necessary that water demand is worked out based on alternate standards, bench marks and acceptable norms. The piped water supply has to be designed to provide adequately for:

- Domestic needs: Including drinking, cooking, bathing, and washing, flushing of toilets, and individual gardening / air conditioning.

[1] Physical Infrastructure includes Roads and Transport also, However given its significance in shaping land use it is dealt separately in chapter 7.

- Demand for the employment in various work places: For Institutional needs.
- Industrial use: For existing and proposed industries.
- Horticulture needs: For public parks and urban greens.
- Fire Fighting needs.
- Unaccounted for Water: Including distribution losses, treatment losses and transmission losses.

The physical infrastructure for water supply is to be designed based on spot to spot demand. Thus for arriving at total water demand, the demand with respect to location of residential, commercial and institutional complexes has been considered. Therefore the proposed land use of complete area has been identified and based on the land use the demand has been worked out and compiled.

9.2.1 ADOPTED NORMS AND STANDARDS

9.2.1.1 NORMS FOR DOMESTIC WATER DEMAND

The quantity of water required in the houses for drinking, cooking, bathing, washing etc. is termed as domestic water demand.

The Environmental Hygiene Committee suggested certain optimum service levels for communities based on different population groups. The code of Basic Requirements of Water Supply, Drainage and Sanitation (BIS: 1172), as well as the National Building Code recommends a minimum of 135 lpcd service level for communities where the residents are provided with full flushing system for excreta disposal. The Manual of Water Supply and Treatment, issued by CPHEEO (Central Public Health and Environmental Engineering Organization), Ministry of Urban Development, and Government of India has recommended the domestic water demand as shown in below in

Table 9-2: .

Table 9-2: Norms for domestic water demand as per CPHEEO manual

Classification of Towns	Recommended Water Supply Levels
Towns provided with piped water supply but without sewerage system	70 litres per capita per day
Cities provided with piped water supply where sewerage system is existing/ contemplated	135 litres per capita per day
Metropolitan and Mega Cities provided with piped water supply where sewerage system is existing/ contemplated	150 litres per capita per day

The URDPFI guidelines, issued by Ministry of Urban Affairs and Employment, Government of India, have also prescribed the same standards as CHEEPO norms. CIDCO has also prescribed the design norms for design of water supply systems, which prescribes a domestic water demand of 180 lpcd. The design population of Balance Phase-1 area (excluding IDP and including Khalapur Smart City area), for plan horizon year is nearly 3.9 lakh. Thus based upon above three guide lines and standards prescribed by CIDCO, the domestic water demand has been worked out taking 180 lpcd service level at consumer end.

9.2.1.2 NORMS FOR EMPLOYMENT POPULATION

The water requirement for the persons working in different commercial establishments, offices, factories and educational institutions have also to be considered while working out water demand. The CPHEEO manual as well as URDPFI guide lines prescribe a service level of 45 lpcd for the employment population. Thus the same has been considered while working out the total water demand.

9.2.1.3 HORTICULTURE WATER DEMAND

Provision has also been kept for horticulture water demand for green parks and urban greens proposed. The demand has been worked out at 67000 litres per hectare, for 60% of proposed green area and 30000 litres per hectare for balance 40% of the green area as per DSIIDC (Delhi State Industrial & Infrastructure Development Corporation Ltd.) norms.

9.2.1.4 FIRE-FIGHTING DEMAND

As per CPHEEO manual the fire-fighting demand is to be taken based on the formula:

Fire-fighting demand in kl/day = 100 x P^0.5

(Where P is the population in thousands)

Thus the same has been worked out as per above standards and added to total demand

9.2.1.5 RECYCLING AND REUSE OF WATER

To reduce the fresh water demand recycling of domestic and industrial waste water is considered. The sewage and sullage generation has been taken as 80% of the water supplied for domestic use, as suggested in the Manual of Sewerage and Sewage Treatment, issued by CPHEEO, Ministry of Housing and Development, Government of India.

The infiltration in conveyance system has been kept as 20% of daily flow as prescribed by CIDCO in their norms looking to intensive rains in the area. Provision has been kept for losses in STP and Tertiary Treatment Plants, while working out availability of water for recycling. The recycled water is proposed to be used to meet the horticulture demand for urban greens; fire fighting and balance water is to be supplied for flushing purposes in residential area.

It is also proposed that as per provision in the DCPR, the sullage from the residential apartments shall be treated by the developer itself at site and recycled for internal usage (horticulture, fire fighting and flushing) and only sewage from the WCs shall be treated in community treatment plants and recycled after tertiary treatment. It is also assumed that 30% of the development may be individual houses or small establishments, which may not be able to treat the sullage at site, thus from such developments whole of the sewage and sullage shall be transported to community treatment plants.

9.2.2 GROSS WATER DEMAND

Based upon the existing and proposed residential, commercial (employment), horticulture and fire fighting demand, the gross water demand for the Balance Phase-1 area (including Khalapur Smart City area) has been estimated.

For working out fresh water demand at consumer end, the quantity of recycled water from Tertiary Treatment Plants after subtracting the losses in the supply system has been deducted from the total demand. For estimating gross water demand 28% losses in distribution and transmission system has been considered as per norms prescribed by CIDCO for design of water supply system.

Based upon above norms the demand for total Balance Phase-1 area (including Khalapur Smart City area) works out as 66.75 mld, and if recycling is not considered the demand of fresh water shall be as high as 120.40 mld. The detailed calculations are shown in **Table 9-3:**

Table 9-3: Water Demand for Balance Phase-1

Water Demand Calculation Balance Phase-I (including KSC) (Considering Recycled Water)									
Particulars of users	**Population / Area in Ha**				**Rate of Supply in lpcd**	**Water Demand in mld**			
	2016	**2021**	**2031**	**2034**		**2016**	**2021**	**2031**	**2034**
Residential	23400	46800	237900	390000	180	4.21	8.42	42.82	70.20
Employment	5850	16380	83265	136500	45	0.26	0.74	3.75	6.14
Fire fighting					100*(P)^0.5	0.48	0.68	1.54	3.89
Urban Greens	26	79	212	265	52200	1.38	4.15	11.06	13.83
					Total	**6.34**	**13.99**	**59.18**	**94.06**
Recycled Water to be used for Urban greens, fire fighting & flushing						2.46	5.03	25.57	41.92
Net Fresh Water Demand at consumer end						3.88	8.96	33.60	52.14
Distribution, Treatment & Transmission losses 28%						1.09	2.51	9.41	14.60
Total Demand at source with recycling						**4.97**	**11.47**	**43.01**	**66.75**
Demand without recycling						**8.12**	**17.91**	**75.75**	**120.4**

Since the Balance Phase-1 (around IDP) area and Khalapur Smart City (KSC) are scattered, thus to judiciously decide the source and required infrastructure, the demand has also been worked out separately for each cluster and is being depicted in **Table 9-4**

Table 9-4: Cluster wise Water Demand for Plan horizon year

Cluster Name	**Demand in MLD considering Recycling**	**Demand in MLD without Recycling**
Western Cluster	15.87	27.33
Eastern Cluster	16.34	29.70
Northern Cluster	12.85	20.87
Khalapur Smart City (KSC)	21.68	42.50
Total	**66.75**	**120.40**

9.2.3 AVAILABLE SOURCES OF WATER

Presently the CIDCO area gets water from Hetawane dam and MJP. The availability from these sources is nearly 265 mld. A project from Balganga dam is under execution, which is likely to be completed by 2020. The availability from this source shall be 350 mld. In the meeting held on 25th August 2015 chaired by MD, CIDCO at Nirmal Bhawan it was informed that about 150 mld of water can be spared from Bal Ganga project for proposed developments in the area. In addition a new source from proposed Kondhane dam is under consideration. CIDCO is expecting to get 250 mld of water from this source.

This way nearly 150 mld of water shall be spared/ available for NAINA and KNTNA from Balganga project onwards from 2020 and additional 250 mld is also expected from Kondane dam in near future for new developments.

Presently CIDCO has planned following four projects to be developed onwards from 2016 for which the water demand is likely to come from 2021 onwards. Their demand for the year 2021, 2031 and 2034 (the plan horizon year) is being given below in **Table 9-5**

Table 9-5: Water Demand for the proposed Projects

S. No	Proposed development projects	Fresh water demand in MLD for the year		
		2021	2031	2034
1.	Interim Development Plan	26.06	63.80	92.59
2.	NAINA Phase-1,	8.33	29.75	45.07
3.	Khopta Area (KNTNA)	25.44	89.60	111.33
	Sub Total	**59.83**	**183.15**	**248.99**
4.	Khalapur Smart City (KSC)	3.50	14.07	21.68
	Total Demand in MLD	**63.33**	**197.22**	**270.67**

From above table it is clear that total demand for first three projects (IDP, balance Phase-I area and Khopta Area for the year 2021 is 59.83 MLD, and by the year 2029 it is likely to be around 150 mld. Thus from available spare water from Bal Ganga, the water demand for above three projects can be met up to 2029, and then after balance 99 mld demand be met from additional 250 Mld water which shall be available from Kondane dam. The Khalapur Smart City (KSC) falls near Kondane Dam. Thus it is proposed that demand for KSC may be met from Kondane dam, its project is also likely to be completed very soon.

9.2.4 PROPOSED WATER SUPPLY SYSTEM

As per proposals of Balganga Water Supply Scheme (350 mld) of CIDCO, the water drawn from Balganga dam is proposed to be treated at Nidhiwali Water Treatment Plant, from where it shall be pumped to a Break Pressure Tank (BPT) near Dighati, and then shall be transferred to Master Balancing Reservoir at VAHAL through 2500 mm diameter Pipe line. It is proposed to draw water from this MBR tank for balance Phase-1 other than KSC. Since KSC area is near to Kondane dam, water demand for KSC is proposed to be met from Kondane dam. The water from Kondane dam is likely to be pumped from dam to a hillock near dam, where it shall be treated and stored in a Master Balancing Reservoir (RL 186 assumed). It is proposed to draw 21.68 mld demand of KSC from this MBR. The site of both these MBR along with proposed route of gravity mains for CWR-1, CWR-2 in NAINA Phase-1

remaining area and to proposed GLSR in KSC is shown in **Figure 9-1: Map showing Balganga WS Project with and proposed tapping from VAHAL MBR and from MBR at hillock near Kondane**

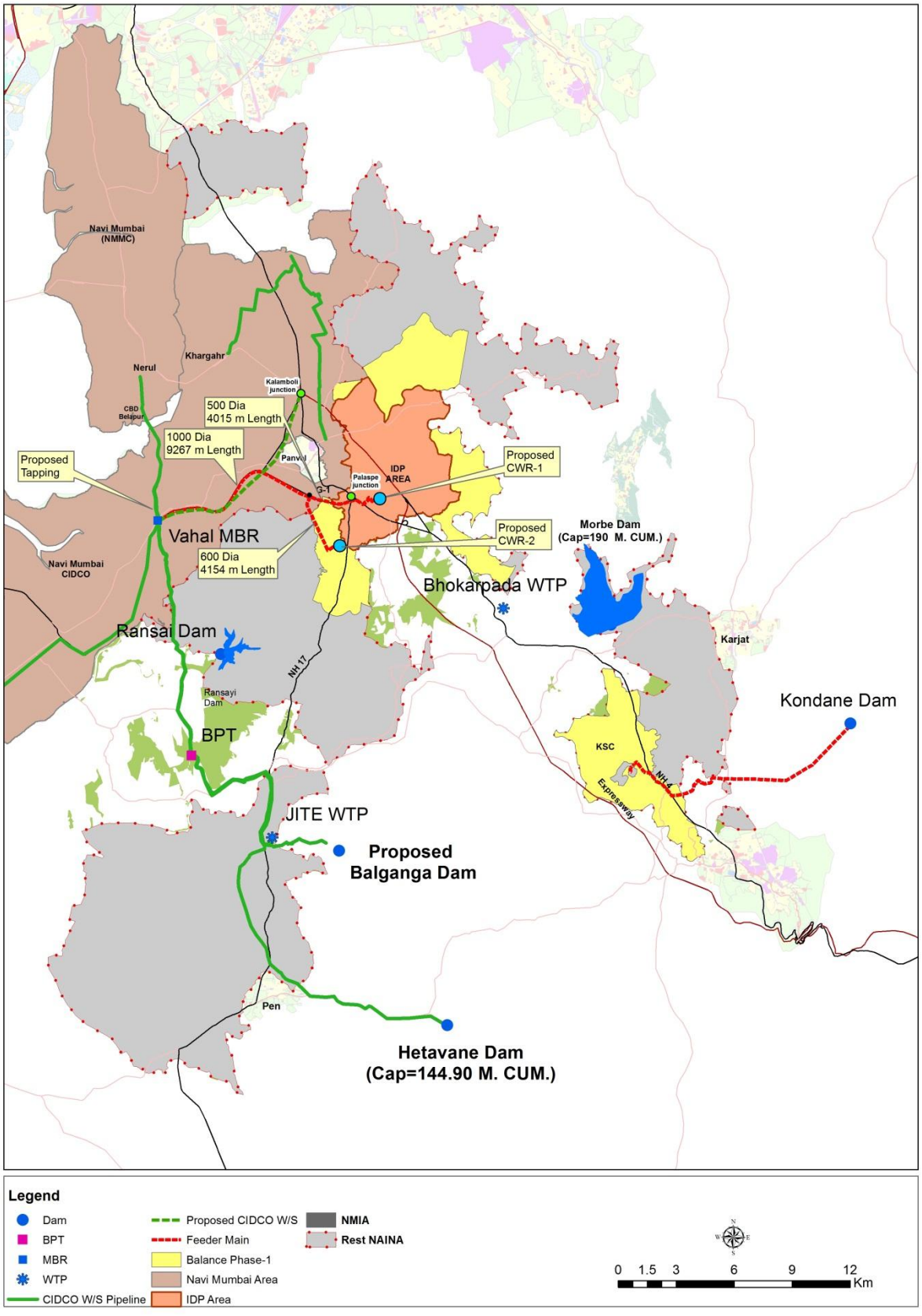


Figure 9-1: Map showing Balganga WS Project with and proposed tapping from VAHAL MBR and from MBR at hillock near Kondane

It is proposed to draw the demand of NAINA Phase-1 (remaining area other than KSC- 45.07 mld) from VAHAL MBR. Nearly 80% area of project area, falls outside South and South-East boundary of IDP, while the rest 20% falls outside its Northern boundary.The total demand is proposed to be drawn from above MBR through a common gravity main. Near village Karanjade a Tee point is proposed, where from the demand for the northern and eastern part is taken to CWR-1 (near proposed CWR of IDP at village Kolke). The demand for South and Eastern part shall be carried to the proposed CWR at village Chirvat. The gravity feeder is proposed to be laid along JNPT road (NH-4B). Based upon the available head at Vahal MBR and RLs of proposed site of CWR-1 and CWR2, gravity feeder has been designed and size of gravity feeders worked out. Accordingly it is proposed to lay DI pipe line class K-9 with internal cement mortar lining 1000 mm diameter 9267 meters long from VAHAL MBR to Node G-1. From Node G-1to CWR-1, the size of pipe line proposed is 600MM diameter DI K-9 (4015m long). Similarly from Node-G1 to CWR-2, 4154 meters long 500 mm diameter DI-K-9 line with cement mortar lining is proposed.

The demand for KSC shall be drawn from MBR at hillock near Kondane dam as shown in above figure. The size of gravity main from this MBR to proposed GLSR in KSC area shall be 600 mm diameter DI K-9 with internal cement mortar lining.

The details regarding demand carried by each line, its length and size are being narrated in **Table 9-6**:

Table 9-6: Details about Gravity Feeder for balance Phase-1 (around IDP & KSC)

Nodes		Demand (MLD)	Pipe Dia	Pipe Material	Length(m)
From	To				
VAHAL MBR	G-1	45.07	1000	DI K-9 with internal cement mortar lining	9267
G-1	CWR-1	29.19	600	DI K-9 with internal cement mortar lining	4015
G-1	CWR-2	15.87	500	DI K-9 with internal cement mortar lining	4154
MBR at hillock near Kondane dam	GLSR-12 in KSC	21.68	600	DI K-9 with internal cement mortar lining	10300

The capacity of CWRs has been kept equivalent to 3 hours storage, based on 22 hours pumping. Accordingly the capacity of CWR-1 is proposed as 4.0 ML & CWR-2 is proposed as 2.20 ML.

As per decision of CIDCO, the distribution of water to consumers shall be by pumping through Variable speed pumps. Thus the complete remaining area (Phase-1) has been sub divided in 10 zones and the KSC area in 4 zones. The details of zones along with capacity of GSRs required are given in **Table 9-7**

Table 9-7: Zonal Demand & Capacity of Service Reservoirs

S No	Cluster	Demand in MLD	Storage Reqd in MLD @ 50%	GSR Zone No	GSR Capacity Required in MLD
1	Western Zone	15.87	8	7	2
				8	2
				9	2
				10	2
2	Eastern Zone	16.34	8	11	2
				12	2
				13	2
				14	2
3	Northern Zone	12.85	6	15	3
				16	3
4	Khalapur Smart City (KSC)	21.68	11	17	3
				18	3
				19	3
				20	2

The Water from the CWR is proposed to be pumped to different Ground Service Reservoirs through network of pumping mains. The size of all pumping main has been derived as per the criterion laid down in CPHEEO manual for Economical design of pumping mains, taking into consideration the capital investment and the capitalized investment for power charges. For working out economical size, per meter cost for seven nearby sizes of pipe has been worked out, considering bare cost of pipe, excavation of trenches, cost of specials / valves, laying and jointing etc and most economical pipe size worked out from them.

The economical size of pipe lines so worked out have been checked for the surge pressure encountered in the system. Even though the system has been checked for surge pressure, provision has been kept for zero velocity valves and air cushion valves for extra safety.

The water from CWR shall be pumped by Centrifugal pumping sets. The pumping sets have been designed keeping in view the criterion laid down in CPHEEO manual. Accordingly it is proposed to install 3 numbers (2W+1SB) pumping sets at CWR-1 and 3 numbers (2W+1SB) at CWR-2) keeping provision of 50% standby pumping set. The duty conditions for proposed pumping sets are being narrated in **Table 9-8**:

Table 9-8: Details of Pumping Machinery

Sr. No.	Pump Description	Discharge (LPS)	Head	Motor Capacity each set (KW)
Pumping Sets at CWR-1				
1	Centrifugal pumping sets coupled with squirrel cage induction motor (2W+1SB)	184.30	80	230 KW- 3 Nos
Pumping Sets at CWR-2				
2	Centrifugal pumping sets coupled with squirrel cage induction motor(2W+1SB)	100.21	75	120 KW- 3 Nos

The location of CWR with pump house and GSRs proposed is shown in **Figure 9- 2** below.

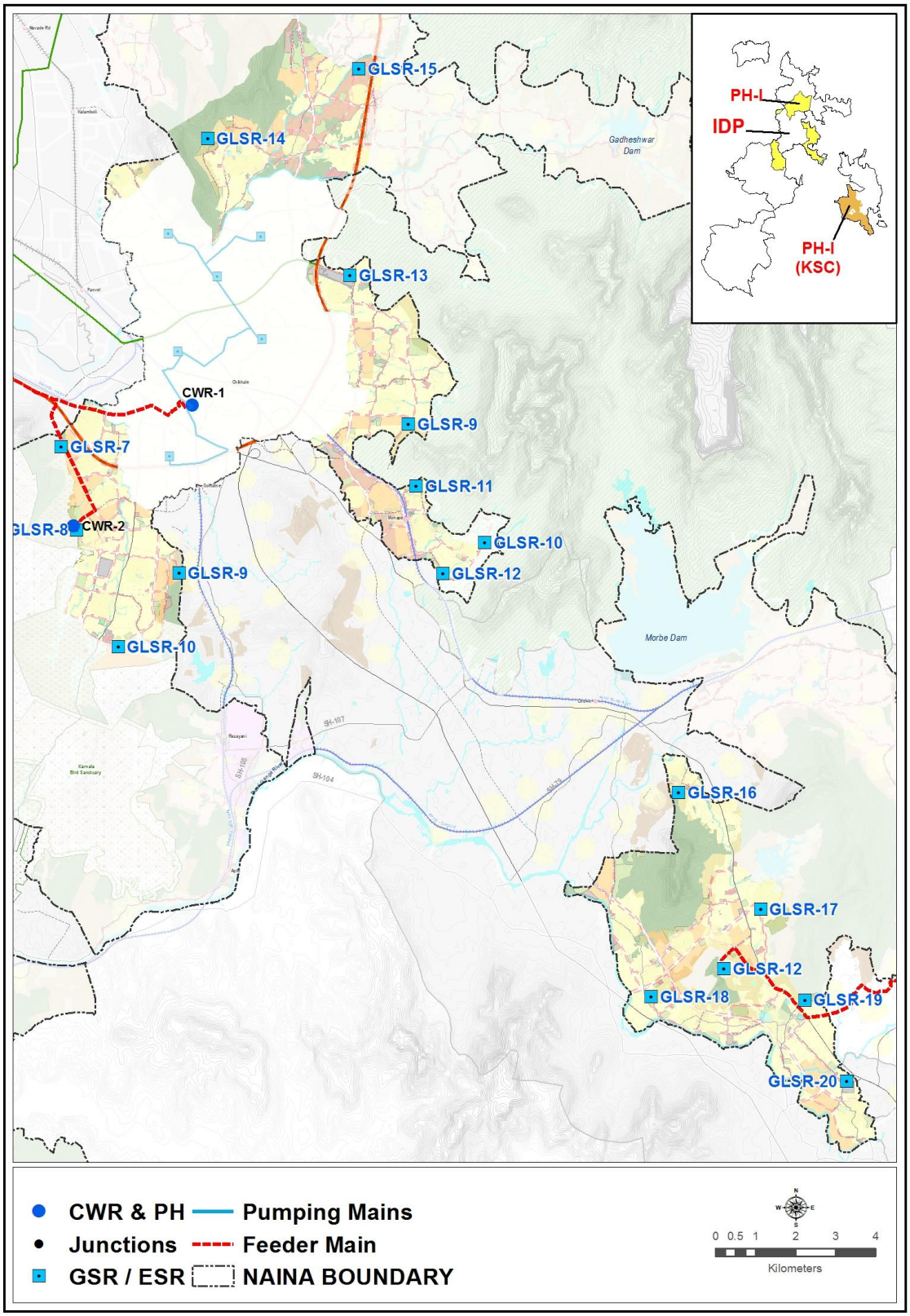


Figure 9-2: Proposed Network of Clear Water Rising Mains

Provision has been kept for HT Power line up to pumping station along with sub-station, electric cabling and metering etc. Provision has also been kept for trunk distribution system on sector level roads only. The internal distribution shall be laid by the developer. It is proposed to lay the distribution system with Ductile Iron pipes class K-7 with internal cement mortar lining. The proposed length of different size of pipe line to be laid in each zone is shown in **Table 9-9**

Table 9-9: Zone wise length of distribution pipe line proposed

Zone wise length of different pipes	Zone-7	Zone-8	Zone-9	Zone-10	Zone-11	Zone-12	Total
150	5712	5537	7312	7034	7934	8319	41848
200	3617	2186	3760	3618	6554	6239	25974
250	2094	1457	2089	2010	4139	4991	16780
300	1904	1311	1880	1809	3104	3744	13752
350	1713	1166	1671	1608	2760	3328	12246
400	1333	1020	1253	1206	2070	2912	9794
450	952	874	1045	1005	1725	2496	8097
500	762	729	836	804	1725	2080	6936
600	571	291	627	603	1380	2080	5552
700	381		418	402	1380	1664	4245
750					1035	1248	2283
800					690	1248	1938
900						832	832
1000						416	416
Total length in zone	**19039**	**14571**	**20891**	**20099**	**34496**	**41597**	**150693**

9.2.5 BLOCK COST ESTIMATE

The Block Cost Estimate has been worked out based on the rates from CIDCO SOR 2012-13. Necessary price escalation has been added to bring the rates at present year level. For the items which are not available in above SOR, present market rates have been considered for preparing the estimate. The estimated cost for source development has been considered based on estimated cost of Balganga project by CIDCO. The abstract of Block cost Estimate is shown in **Table 9-10**

Table 9-10: Abstract of Block Cost Estimate Water Supply including Cost of Source Development

Cost Abstract Water Supply System NAINA Remaining Area		
S No	**Particulars**	**Cost Rs in Millions**
1	Gravity feeder main from VAHAL MBR to CWR-1 & CWR-2 and from Kondawane MBR to KSC GLSR as per detailed estimate and designs	299.91
2	Clear Water Reservoirs at CWR -1 and 2	104.64
3	Pumping mains from CWRs to Service Reservoirs	289.47
4	Clear water Pumping Machinery at both CWR for pumping water to Service Reservoirs	18.90
5	Ground Service Reserviors with Pumping Machinery with Variable Speed Pumps	427.50
6	Trunk Distribution System for all the distribution zones	904.10
7	Clear Water Pumping Stations and Pump house at GSRs	15.78
8	Staff Quarters, Office building, Boundary wall and campus development	19.39
9	Provision for Electric HT Line & Sub Station	25.00
10	Maintenance Vehicles	3.60
11	Cost of Land	6.00
	Total Core Components	**2,114.29**
	Add Non-Core components & Contingencies 10.3 %	217.77
	Total	**2,332.07**
	Say Rs in Crores	**233.0**
	Source Development Cost 2500/350 ie 7.143/ mld	**477.0**
	Total Cost in Crore Rupees	**710.0**

9.3 SEWERAGE COLLECTION, TREATMENT AND RECYCLING SYSTEM

9.3.1 ESTIMATION OF SEWAGE GENERATION

The Sewage Collection and recycling system is planned and designed to collect, treat, and recycle all the domestic sewerage generated from the Balance Phase-1. It is proposed that Sullage will be treated on site by the developer of land and Sewage is carried to City/ community level STPs/ETPs.

As per provision in the DCPR prepared for IDP, the sullage from the residential apartments was proposed to be treated by the developer itself at site and recycled for internal usage (horticulture, fire fighting and flushing) and only sewage from the WCs was to be treated in community treatment plants and recycled after tertiary treatment, by assuming 30% of the development may be individual houses or small establishments, which may not be able to treat the sullage at site, thus from such developments whole of the sewage and sullage was to be transported to community treatment plants. But as decided by CIDCO, now for remaining area of Phase-1 and KSC whole of the sewage and Sullage is to be taken to community treatment plant, thus the same has been adopted in this report.

The sewage and effluent generation has been assumed as prescribed in CPHEEO manual. While working out sizes of collection system and capacity of Sewage Treatment Plant, provision has been kept for 20% infiltration through sewer lines as per guide lines issued by CIDCO. Accordingly the sewage generated, Capacity of STPs and Tertiary Treatment Plants required has been worked out and shown in Table below.

Looking to the topography of the area, pace of development and land use, the balance Phase-1 has been divided into 8 Sewerage Zones. The related Tertiary Treatment Plant is also proposed to be installed on the side of STP. The recycled water shall primarily be used for proposed urban greens as horticulture requirement/ fire fighting and the remaining shall be used for flushing in residential areas. The Capacity of Sewage Treatment Plants and Tertiary Treatment Plants proposed zone wise is being given in Table-11 below:

Table 9-11: Zone wise Capacity of proposed STPs and TTPs

Sewerage Zone	Capacity of STP	Capacity of TTP
Sewerage Zone-6 (Western Cluster)	4.80	3.90
Sewerage Zone-7 (Western Cluster)	3.10	2.50
Sewerage Zone-8 (Western Cluster)	5.10	4.12
Sewerage Zone-9 (Eastern Cluster)	9.00	7.27
Sewerage Zone-10 (Eastern Cluster)	6.20	5.00
Sewerage Zone-11 (North Cluster)	9.10	7.35
Sewerage Zone -12 (KSC)	12.00	9.70
Sewerage Zone -13 (KSC)	12.00	9.70
Total Capacity	**61.3**	**49.54**

A map showing proposed Sewerage zones along with the location of STPs is shown in **Figure 9-3: Proposed Sewerage / Industrial Effluent Zones with location of ETP /STPs**

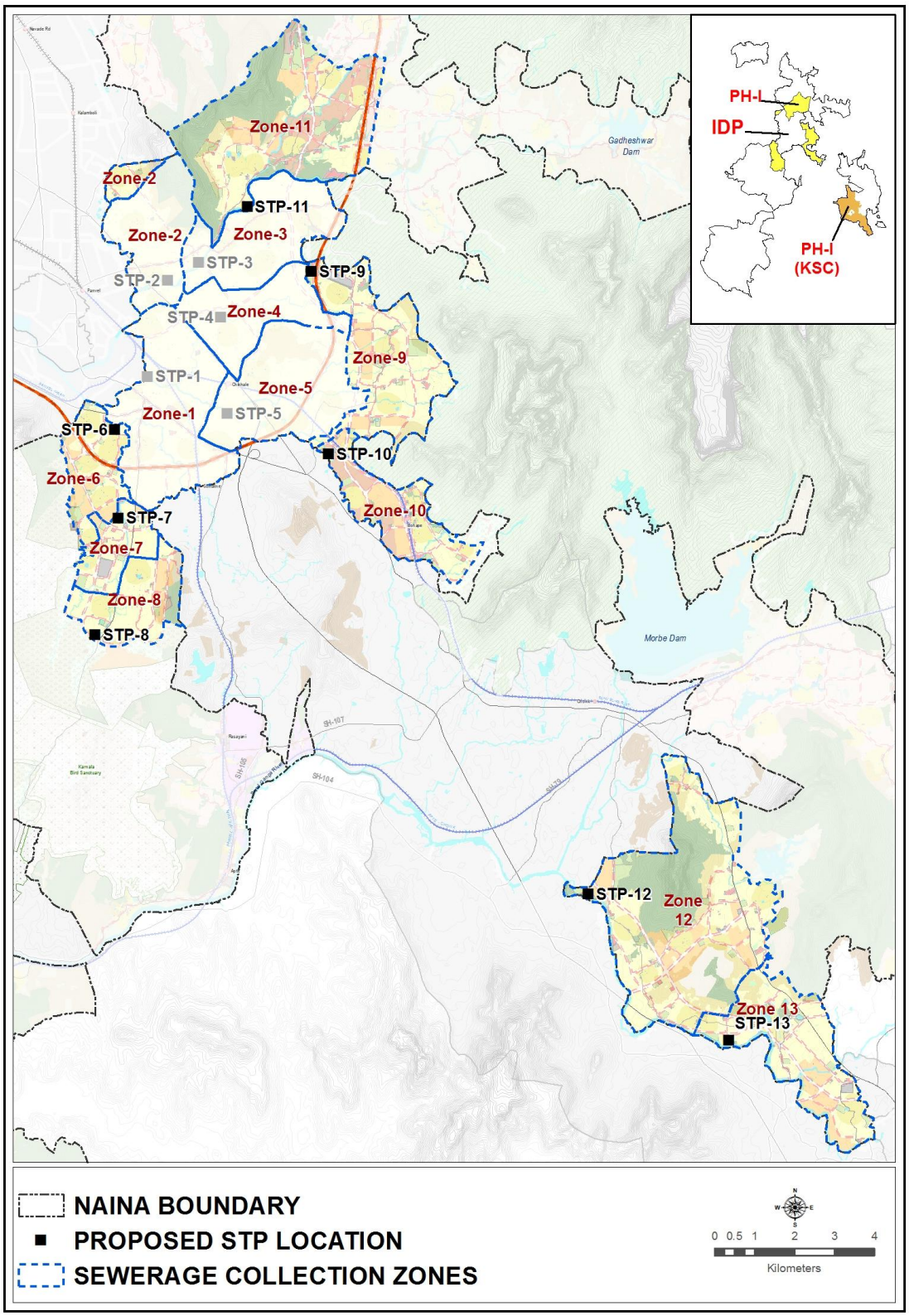


Figure 9-3: Proposed Sewerage / Industrial Effluent Zones with location of ETP /STPs

9.3.2 SEWAGE COLLECTION SYSTEM

The Sewage collection system is provided to collect the domestic sewage from the residential / institutional areas and to convey it to the proposed Sewage Treatment Plant of that zone. The zoning and collection network is proposed in such a way that the flow of sewage follows natural slope and conveys the sewage to treatment plant (located at the lowest elevation) under gravity flow. But for part of sewage pumping shall be required, for which sewage pumping stations are also proposed.

The Sewage Collection system is being proposed at sector level roads only. The internal sewers including laterals shall be provided by the land developers themselves, which shall further be connected to trunk sewerage system. The sewage collection network is based on following parameters, as per the recommendations in the manual of Sewerage and Sewage Treatment issued by CPHEEO, Ministry of Housing Government of India:

Minimum velocity at designed peak flow	: 0.8 meters / sec
Maximum velocity in SW Pipes	: 1.4 meters / sec
Maximum velocity in RCC / HDPE Pipes	: 2.5 meters / sec

Max. depth of flow in sewers at ultimate peak flow:

Up to 400 mm sewer	: half full
400 to 900 mm sewer	: 2 /3rd full
Above 900 mm sewer	: 3/4th full
Minimum size of sewer	: 160 mm

Maximum spacing of Man holes

Up to 300 mm sewer	: 30 meters
Above 300 mm sewer	: 90 meters
Additional manholes	: At every junction, change of alignment/ gradient/ size.

Size of man holes

Up to 1.5 metres depth.	: 900 mm dia.
1.5 to 2.5 mtrs depth	: 1000 mm dia
Above 2.5 mtrs depth	: 1200 at bottom & 900 at top
Formula adopted for design	: Manning's Formula

V = 1 / n X R 2/3 X S 1/2

Here

V = Velocity in meters

R = Hydraulic mean depth = WA / WP

S = Hydraulic slope in M / meter

N = Manning's coefficient

= 0.012 for SW Pipes

= 0.011 for RCC / PSC pipe

Accordingly the different size of pipes proposed for collection system in all the seven zones is being given in **Table 9-12.** The collection system is proposed to be laid in RCC pipes class NP-3:

Table 9-12: Size of Pipes in proposed Collection System

Sewerage Zones--> Pipe Size (mm)	6	7	8	9	10	11	12	Total (m)
250	6218	4033	6554	8403	12091	17247	13865	**68411**
300	1762	1143	1857	2381	3426	4887	5199	**20655**
350	1554	1008	1638	2101	3023	4312	4160	**17796**
400	829	538	874	1120	1612	2300	3466	**10739**
450							2773	**2773**
500							2080	**2080**
600							1040	**1040**
700							693	**693**
800							1387	**1387**
Total	**10363**	**6722**	**10923**	**14005**	**20152**	**28746**		**125574**

9.3.3 SEWAGE TREATMENT AND TERTIARY TREATMENT PLANT

It is proposed to provide conventional Activated Sludge Process / MBBR type of Sewage / Treatment Plant. The plant shall comprise of Coarse screen chamber, Sewage pumping station, Fine screen chamber, Grit chamber, Activated sludge type Aeration Chamber with Fluidized Bed Reactor or Moving Bed Bio-film Reactor, Secondary Sedimentation tank, Air Blowers, Sludge pumps, and Sludge drying mechanism.

The Tertiary Treatment Plant (TTP) shall comprise pre-chlorination chamber, rapid gravity sand filters and post chlorination mechanism. The TTPs are designed to receive an inflow of 85% of Sewage generated assuming 15% losses in STP. The losses in TTP are taken as 5%.

9.3.4 REUSE OF TERTIARY TREATED WATER

The Sewage treated in STP and then the secondary water treated in Tertiary Treatment Plant in each zone shall be collected in individual Clear water reservoir, wherefrom it shall be pumped for horticulture / Fire fighting and for flushing in the same zone. The water shall be collected by individual users in their ground tanks for their use. Provision has been taken for Clear water reservoirs, pumping machinery and distributary rising mains with DI Pipe class K-9 for supplying recycled water.

9.3.5 BLOCK COST ESTIMATE

The Block Cost Estimate has been worked out based on the rates from CIDCO SOR 2012-13. Necessary price escalation has been added to bring the rates at present year level. For the items which are not available in above SOR, present market rates have been considered for preparing the estimate. The abstract of Block cost Estimate is shown in **Table 9-13 and detailed estimates along with related designs are enclosed in Annexure part:**

Table 9-13: Abstract of Block Cost Estimate for Sewerage System, Treatment & Recycling

Abstract of cost estimate for Sewage collection system and Treatment for Balance Phase-I (around IDP and KSC)		
Sl. No	**Component**	**Amount in INR millions**
A	**Land Acquisition**	
1	For Sewage Treatment Plant, Tertiary Treatment Plant and Rest room cum store	41.21
	Sub total	**41.21**
B	**Sewage Collection System**	
2	Sewage Collection System complete with excavation, providing laying and jointing RCC pipes, Sewage chambers and manhole etc.	317.54
	Sub Total	**317.54**
C	**Sewage Treatment Plant**	
1	Sewage Treatment Plants & SPS	622.00
2	Staff quarters and other buildings with Land development of complete STP TTP and Staff Quarter area	27.59
	Sub Total	**649.58**
D	**Sewage pumping main and pump sets**	
1	Sewage pumping set at SPS	2.40
2	Sewage Rising Main from SPS to higher man hole	6.48
	Sub Total	**8.88**
F	**Dedicated express power feeder main**	
	From Substation to treatment plants and SPS	**45.00**
F	**Maintenance Vehicles**	
	One Jeep and one truck and one mini truck	**3.40**
G	**CD Works & Sewer Bridges**	
	CD Works & Sewer Bridges for crossing Nalas and roads	**31.75**
	Total	**1,097.36**
	Non Core Components	
7	Non Core components & Contingencies10. 3%	113.03
	Cost in INR (Non-core Components)	**113.03**
	Total Project Cost in INR millions	**1,210.39**
	Say Rs in Crores	**121.0**

Tertiary treatment of Effluent from STP and Recycling System for Balance Phase-1 – around IDP and KSC		
Sl. No	**Component**	**Amount in INR milllions**
A	**Tertiary Treatment Plant**	
	Tertiary treatment Plant for secondary treated water from STPs	198.00
	Sub Total	**198.00**
B	**Treated water Reservoir and Pumping machinery**	
	Tertiary Treated water reservoir for recycling	54.00
	Pumping Machinery	18.91
	Sub total	**72.91**
B	**Recycled water distribution system**	
	Pipe lines for distribution of recycled water	37.03
	Sub total	**37.03**
	Total Core Components	**307.94**
	Non Core Components	
7	Non Core Component & Contingencies 10.3%	31.72
	Cost for Non-core Components	**31.72**
	Total Recycling Project Cost in INR millions	**339.66**
	Say Rs in Crores	**34.00**
Total Cost for Sewerage System & Recycling in Crores		**155.0**

9.4 RIVERS, STORM WATER DRAINAGE AND FLOOD CONTROL

In general the drainage of the area is from North East (where high hills are seen) towards South West. The details about these rivers are given below:

- Gadhi or Kalundri River: It has two tributaries. On one of the tributaries is Gadheshwar dam at the foot hills. One of the tributary as well as the main river passes through IDP area. The river flows from North East to South West direction. The river originates from the hills on the North East side of NAINA. All drainage from the north east side goes to this river/ its tributaries.
- Kolkhewadi River: This River flows from East to west through southern part of IDP area. The level ranges from 30 m to 8 meters except for the hilly terrain. It meets with the Gadhi River and finally discharges in to the sea.
- Patalganga River: Patalganga River rises in the steep western scarps of the Matheran uplands where it branches off from the main ridge near Khopoli and maintains a general westward flow till it joins the Dharamtar Creek with a wide estuary. The tail-waters of the Khopoli power project are let into the river near Khopoli. The river forms boundary of the NAINA region along Rasayani Industrial Estate and then flows through Khopta to confluence in to the creek. There is no evidence of major flooding in the river catchment areas during monsoon.
- Amba, Bhogeshwari and Balganga rivers: These Rivers traverse the southern part of NAINA in Pen Taluka. Portion of Amba up to Nagothane is navigable but it gets frequently silted and requires dredging. The Amba River forms the southwest boundary of NAINA and only a small portion touches NAINA.

CIDCO has appointed M/s DHI for carrying detailed engineering requirements for water supply, sewerage, and storm water drainage and flood control. Their preliminary study for IDP recommended a 15 m buffer along all natural drainage channels and the same was incorporated in the DCPRs. Similar recommendations when available for entire NAINA could be incorporated in the plan/ DCPRs.

The cost of flood control measures will be part of the detailed engineering exercise and cost of storm water drains is included in the road design.

9.5 SOLID WASTE MANAGEMENT

9.5.1 COMPOSITION OF WASTE

The area being a green-field development, no data on composition of waste is available. Hence standards mentioned in the CPHEEO manual are assumed for composition of waste which is further used for calculating the area required for landfill site. Composition of solid waste is given in **Table 9-14**

Table 9-14: Composition of Solid Waste

Sr. No.	Parameter	% of waste as per CPHEEO Manual
1	Total organic content	44.57
2	Paper	2.91
3	Rubber, leather & synthetics	0.78
4	Glass	0.56
5	Metals	0.33
6	Inert Materials	43.59
Source: CPHEEO Manual For Solid Waste		

9.5.2 SOURCES AND TYPES OF SOLID WASTE GENERATION

Municipal Solid waste: The main sources of Municipal Solid Waste (MSW) generation will be residential areas, commercial areas, hotels, institutional areas, markets and other such areas. Wastes from industries and hospitals are not part of MSW; these are called Industrial or hazardous wastes and Bio-medical wastes respectively. MSW can be classified into four broad categories such as:

- Organic waste: This is biodegradable waste consisting of food, kitchen waste, green waste (vegetables, flowers, leaves, fruits), leaf litter etc
- Recyclable waste: paper, glass, bottles, cans, metals, certain plastics, etc.
- Inert waste: construction and demolition waste, dirt, rocks, street sweeping, drain silt, debris.
- Domestic hazardous waste (also called "household hazardous waste") & toxic waste: medication, e-waste, paints, chemicals, light bulbs, fluorescent tubes, spray cans, fertilizer and pesticide containers, batteries, shoe polish etc.

The Ministry of Environment, Forests and Climate Change (MoEFCC) has separate rules for the management of Municipal Solid Waste, Bio-Medical Waste (BMW), Hazardous Wastes, Electronic waste and Construction and Demolition (C&D) waste.

Construction and Demolition Wastes: The construction and demolition waste mainly consists of earth, stones, concrete, bricks, lumber, roofing materials, plumbing materials, heating systems and electrical wires etc. These wastes are heavy, having high density, often bulky and occupy considerable storage space either on the road or communal waste bin/container.

Details of BMW and HW are mentioned subsequently.

9.5.3 ESTIMATION OF SOLID WASTE GENERATION

Municipal Solid Waste: The population projections made in this report and as per capita waste generation rates (of 600 gm per capita for resident population as per CPHEEO manual on SWM) are used for estimating future waste generation trends. The rate of waste generation throughout the horizon year of 2011-2034 is considered uniform i.e. 600 gm per capita per day. The following table shows the projected quantity of waste generated. As per the projections, the total Phase-I (IDP, Balance Phase-I and Khalapur Smart City area) population in the year 2034 will be 10.08 lakhs hence the quantity of waste generation will be around 604.8 tons per day.

Construction and Demolition Wastes: 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. The Municipal Corporation of Greater Mumbai has issued Construction and Demolition Waste Management Rules 2006. These rules mention different quantities of waste for different wards within the city such as 500 tpd (R – South, R – North, R – Central) 400 tpd (A,B,C,D,E,F,G wards), 350 tpd, (H East & K East) (H West, K West P North & South) 300 tpd and 200 tpd(L,N, M East &West, S,T). The above two standards are considered as base for C &D projection for NAINA. 20% of MSW works out to 121 tpd and the average of C& D waste as per MCGM rules works out to 350 tpd. Considering the fact that entire NAINA will not be developed in the plan period and redevelopment works will less, the C & D waste is assumed to be lower of the two i.e. 121 tpd.

Estimated quantity of solid waste generation is given in **Table 9-15**

Table 9-15: Projected quantity of solid waste generation

Sr. No.	Particulars/year	2021	2031	2034
1	Projected population	2,18,000	7,15,000	10,08,000
2	Solid waste generation tpd	131	429	605
3	Construction and Demolition Waste tpd	26	86	121

9.5.4 STAGES OF WASTE MANAGEMENT

The key stages of solid waste management include collection, transportation, transfer station or storage (if required), treatment and disposal. These are briefly described in the following sections.

9.5.4.1 WASTE COLLECTION

Door-to-door collection: Door-to-door collection of waste is recommended in all the areas. The waste collection shall be carried out using compactors, in gaothan or areas having narrow street widths small compactors or containerised push carts may be used. Each such push cart will have four HDPE (High Density Polyethylene) or LDPE (Low Density Polyethylene) containers of approximately 40 liters of capacity and .45m x .35m x .35m size. The push cart for door to door collection will be provided with a bell so that the residents will be alerted of the arrival of the cart for emptying their waste containers directly into the containers of the cart as shown in. The sanitary workers shall collect the waste from domestic, commercial and other areas in such congested zones. Solid waste should be collected within 24 hours of generation.

40 Ltrs Rickshaw Bin

Capacity : 40 Ltrs with Handle
Dimension : Top OD : 350(L) x 350(B) mm approx.
Top ID : 320(L) x 320(B) mm approx.
Bottom OD : 285(L) x 285 (B) mm approx.
Height : 455 mm approx.
Handle : 08mm Rod and strips are painted with anti corrosive paints.

Raw Material : LLDPE
Process : ROTO Molding
Features : Heavy Duty handle makes it easy to lift. Smooth finish inside and outside – so easy to wipe and clean.

Figure 9-4: Pushcart with containers

Litter Bins: In addition to the door to door collection, litter bins are recommended to be provided in public places such as gardens, bus stops, at regular intervals on streets in commercial and institutional areas. These may be provided at 50 m interval or as per the land use and density of people. The capacity may be around 0.02 cu. M. but may vary depending on the waste generation.

Street Sweeping: Street sweepers shall be assigned with fixed individual beats and 'pinpoint' work according to the density of the area to be swept. The following standards may be considered. The main roads and high-density areas shall be cleaned every day. The low-density areas can be cleaned on alternate days. Drain de-silting will be done on need basis. Norms for street sweeping is given in **Table 9-16**.

Table 9-16: Norms for street sweeping

Sr. No.	Description	Norm (road length/ sweeper)
1	High density areas (commercial, institutional etc.)	250m – 300m
2	Low density area	650m – 700m

Wherever bulk quantity of bio-degradable waste is generated such as vegetable markets, gardens, leaf litter etc. facilities for on-site composting should be explored.

9.5.4.2 SEGREGATION OF WASTE AT SOURCE

At present, the DP area is rural in character, and the system of solid waste management does not exist. Segregation of waste at source shall be implemented, primarily in residential areas, where door to door collection of waste is proposed. Separate collection and storage of the biodegradable and non-biodegradable fraction, dry and wet waste of the waste from households, shops and restaurants shall be carried out by the sanitary workers. For this purpose, the residents would be asked to store the biodegradable and non-biodegradable waste separately. Also, the push-carts/ compactors would be provided with two separate compartments in different colours for collection of the bio-degradable and non-biodegradable waste. Awareness programs should be conducted to train the people about the segregation of waste at household level. It is mandatory to segregate waste into bio-degradable and non-biodegradable as per the Municipal Solid Waste Management (MSW) Rules 2000.

9.5.4.3 TRANSPORTATION

The MSW Rules 2000 stipulate that carrying solid waste in open vehicles is not permissible. Thus mechanical compactors of adequate capacity will be used. These usually have a capacity of 6 to 8 m^3. For congested areas mini-tipper of 1.8 m^3 capacity can be used.

Figure 9-5: Types of Vehicles for Solid Waste transportation

9.5.4.4 TREATMENT AND DISPOSAL

The characteristics and quantity of solid waste generated primarily influence the disposal options. A review of the solid waste analysis results for most Indian towns and cities indicate that nearly 50% of the waste generated is organic in nature, as per CPHEEO Manual it is 40%. In terms of the quantity, this works out to about 242 tpd for the horizon year of 2034. The organic component of the waste (40% of the total waste) will be composted and the rest of the waste will be land filled.

The other technology options will not be suitable, due to the following reasons:

Incineration: Due to low calorific value and high moisture content, this technology is not suitable for Indian Solid waste management. Also capital, O&M costs will be very high.

Pyrolysis and Gasification: This process involves thermal decomposition at high temperature and besides recovering energy from the waste. It will ensure proper destruction of waste. But due to the composition of the waste and high moisture content the application of this process is only limited.

Pelletisation: Making fuel pellets is another option. Low calorific value wastes will not be suitable unless ingredients are added to increase calorific value. While a few Pelletisation plants are operating in India, long periods of project development and establishment are the hindrances in this method.

Bio-Chemical Conversion: This is based on decomposition of organic matter to produce methane Gas. Anaerobic digestion in closed container can produce bio-gas to the tune of 50 to 150 m^3 per tonne of waste. Gas can be used for cooking, heating, or generation of electricity. Several schemes of bio-methanation plants are being planned in India.

Considering the limited experience of above technologies, the daily quantity of waste generated and also as the surrounding areas being predominantly rural, it can be safely presumed that the composting will be suitable and will find a good market within the region.

The proposed disposal strategy for DP is as follows:

- Compost the organic fraction of the waste – 242 tons/day for the terminal year 2034

- Sanitary land filling of inorganic fraction of waste and compost rejects about 20% i.e. (48 tons/day in year 2034)
- Encouraging local level aerobic composting and
- Educating the community on 4R strategy (Reduce, Reuse, Recycle and Recover)

Sections below discuss the various aspects of implementing the above strategy.

9.5.4.5 LAND REQUIRED FOR DISPOSAL SITE

Area requirement for the composting and land fill sites is assessed for the horizon year 2034. At 605 tons per day, the (40%) waste for composting works out to be 242 tons per day, and that for the land filling is 532 tons (including 20% compost rejects and C&D wastes) by the design year. The design capacities have therefore been considered as 242 tons for composting and 532 tons for land-filling.

As summarised below, the area required for disposal of waste NAINA works out to a total of 23 ha. This comprises of 2 ha of land for composting. 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 **Table 9-17** below

Table 9-17: Summary of land required for disposal site

SN	Calculation of Landfill area requirement	Quantity	Unit
1	NAINA Population in 2034	1008000	Persons
2	Waste Generation in 2034 @0.6 Kg per capita per day	605	tpd
3	Total waste	605	tpd
4	Organic Waste @40% of Total Waste	242	tpd
5	**Area requirement of Landfill site**		
a	Waste coming to landfill @ 60% of waste generated	363	tpd
b	Construction and Demolition Waste @20%of Total Waste	121	tpd
c	Compost reject @ 20% of organic waste	48	tpd
6	**Total waste coming to landfill**	**532**	**tpd**
7	Landfill site life	15	years
8	Assumed waste density	2913926.4	t/m^3
9	Total waste generation	0.85	t
10	Total volume of waste generated @1.62 t/ m^3	3428149	m^3
11	Volume of daily cover (10% of Waste)	342815	m^3
12	Volume of liner and cover (12.5% of Waste)	428519	m^3
13	Volume Reduction due to settlement (10%)	342815	m^3
14	Landfill volume	3856667	m^3
15	Assumed Landfill height	17	m
16	Area of Landfill site	226863	m^2
17	Landfill Area required (say)	**23**	ha
18	**Composting area requirement**		
a	Quantity for Compost @ 40% of Total waste generated	242	tpd
b	Conversion factor 1 ton = 1.62 m^3	1.62	m^3
c	Volume	392	m^3
d	Recycling period	21	days
e	Total area for composting (From Table 9-15)	16460.2	m^2
f	Total area in ha (say)	2	ha
19	Total Landfill area = Landfill area req +Composting area	24	ha

Table 9-18: Calculation of land required for composting

S N	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	270	m^2
3	Capacity of 1 Trench	270	m^3
4	No of Trench for 1 day	1.5	No
5	No of Trench for 21 day	30.5	No
6	Area requirement of Trench for 21 day	8230.1	m^2
7	Area of One Standby Trench	8230.1	m^2
8	Total Land Area Requirement	16460.2	m^2

9.5.5 BLOCK COST ESTIMATE

The block cost estimate consists of two components – land cost and waste processing cost. The land cost is Rs. 0.39 Cr/ ha and processing cost is Rs. 300/m^3 for 1 year according to CIDCO standards for Navi Mumbai.

Table 9-19: Block cost estimate for solid waste management

Sr. No.	Item	No.	Unit
A	**Land Acquisition Cost**		
1	Land Area Requirement	24	Ha
2	Rate	0.6	Cr / Ha
3	Land Cost	**15.0**	**Cr**
B	**Composting Cost**		
1	Volume per day	392	m^3 per day
2	Volume for one year	143047	m^3 per year
3	Rate for composting	300	Rs./ m^3 per year
4	Cost per year	4.3	Cr
5	Cost for 15 years	**64.4**	**Cr**
C	**Land fill site development Cost**		
1	Rate	350	Rs per ton
2	Quantity	2913926	ton
3	Cost	**102.0**	Rs Cr
D	**Total Cost (in Rs Cr = A3+B5+C3)**	**181**	**Cr**

9.5.6 METHODOLOGY FOR IDENTIFICATION OF LANDFILL SITES

There are stringent criteria for selection of landfill site. If 20 km aerial distance from proposed airport criteria is applied there is hardly any suitable location within Development plan area as NAINA boundary itself is 25 km from proposed NMIA. Thus a criterion of 10 km from NMIA is adopted. The

existing landfill site approved by MoEFCC for MCGM at Kanjurmarg is about 8.5 km from the Chhatrapati Shivaji International Airport. Similarly in Puducherry the landfill site has been permitted within 7.5 km from the airport.

DP area has other environment sensitive features such as the Karnala Eco-sensitive Zone, Matheran Eco-sensitive Zone, few hills, rivers, reserved forests and areas under Coastal Regulation Zone. Thus identifying a suitable site within these constraints is a difficult task. Amongst the notified rivers as per the GR Dated 13th July 2009, there are three notified rivers in the study area namely Patalganga, Balganga and Bhogeshwari. Out of these the water quality for Balganga and Bhogeshwari is designated as A-I from origin to creek thus a buffer of 3 km is inevitable. In case of Patalganga River A-I Class is from Origin to Tata Power house at Khopoli, A-II Class from Tata Powerhouse to weir at Chawane and SW-II Class from weir at Chawane to creek. For the Gadhi and Kasadi Rivers the entire stretch is classified as A-II Class thus a buffer of 1 km has to be left. This relegates quite a bit of the area unfit for use of landfill site. A composite map of all such buffers shown on the project area is presented in **Figure 9-6: Map showing all mandatory buffers for identifying land fill site**

The Govt. of Maharashtra has recently denotified the River Regulatory Zone policy, however buffers are maintained as per the policy as a good practice.

It is difficult to get such a large land parcel (24 Ha) at one place and hence smaller parcels at different locations are identified (refer **Table 9-20**), based on above requirements and availability of Government Land. The list of suitable sites and area is given in **Table 9-20**.

The most feasible identified pockets at Vaklan and Khanav sites comprise of 24 ha which meets the requirement. The land requirement may reduce if more advanced technology is adopted. This will be decided when a detailed solid waste management plan is prepared and the technology for waste disposal is finalized, nevertheless most of the area required will be managed in 2 selected sites of Khanav and Vaklan. The details of area and land ownership of identified lands are as given in **Table 9-20**

Table 9-20: Area statement of proposed landfill sites

Land Ownership				
Site Location	**Government Land Area(ha)**	**Private Land Area (ha)**	**Total Area (ha)**	**Govt. Land Area %**
Bhatan	3.5	2.8	6.3	55
Khanav	11.7	2.2	13.8	84
Morbe	7.4	4.4	11.8	63
Vaklan	4.9	5.2	10.1	49
Grand Total	**27.5**	**14.5**	**42.0**	

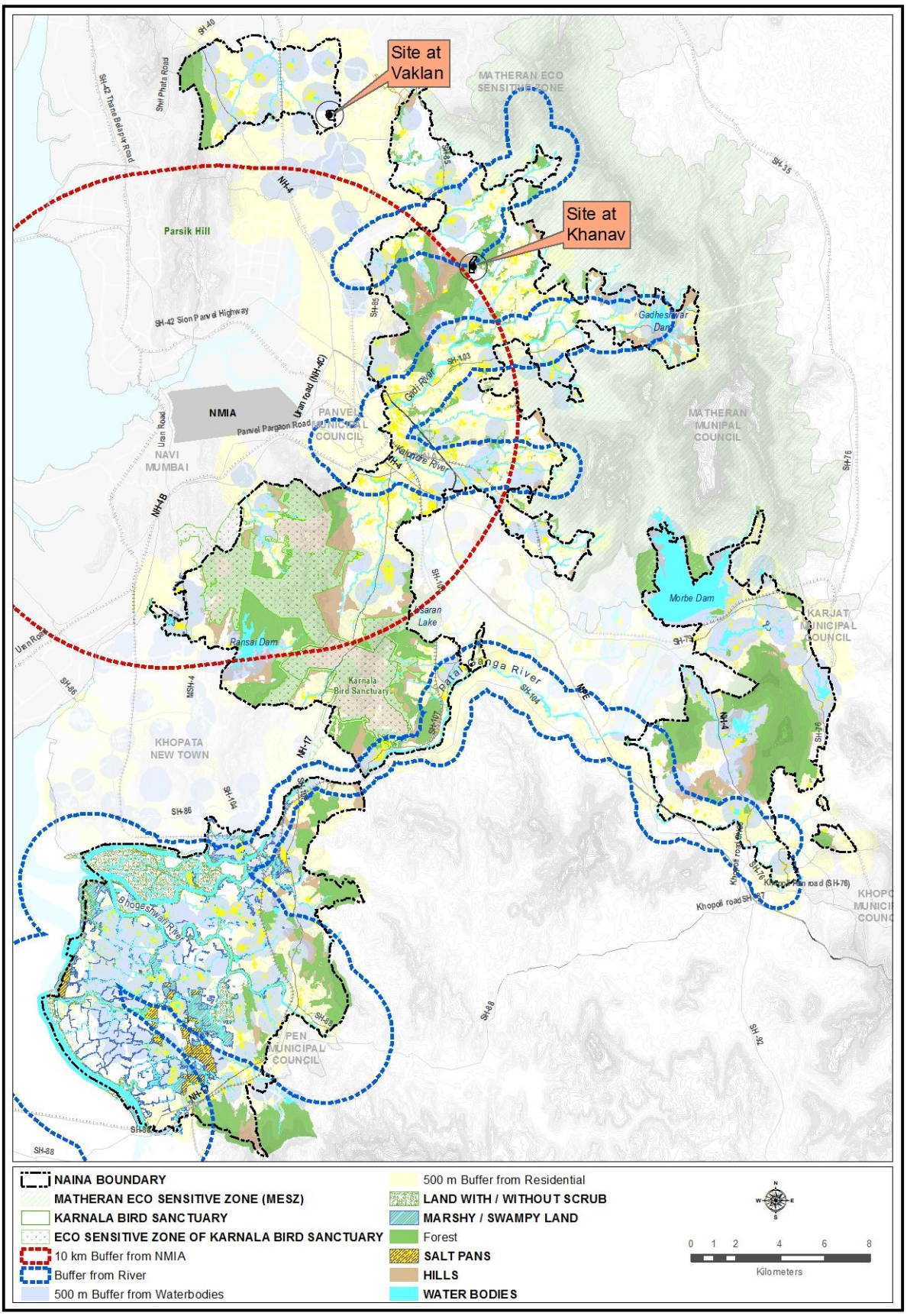


Figure 9-6: Map showing all mandatory buffers for identifying land fill site

9.5.6.1 BIOMEDICAL WASTE

Bio medical waste is the waste material generated from the hospitals, dispensaries & pathological laboratories. The bio medical waste has to be collected, transported & disposed off in the manner & methods as suggested under Bio-medical waste (M & H) Rules 2016. It is clearly mentioned in this rule that the 'occupier' (a person who has control over the concerned institution / premises) of an institution generating bio-medical waste (hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank etc.) shall be responsible for taking necessary steps to ensure that such waste is handled without any adverse effect to human health and the environment.

In no case bio-medical waste shall be mixed with municipal solid waste. In most existing cities large hospitals have their own incineration plants and common incineration plants are set up by local authorities. There are designated agencies for collection and transportation of bio-medical waste which is then brought to the common incinerator/ disposal site. The total bio-medical waste generation would be 345 kg/ day for the DP area as worked out below. A common incinerator may be provided at the land fill site or if such a facility is set up by one of the super speciality/ general hospital it can be used by the other on payment. A hazardous waste disposal site is available at Taloja operated by private agency. The bio-medical waste can also be disposed at Taloja site, details given in **Table 9-21**.

Table 9-21: Estimation of Bio-medical Waste Generation

Sr. No.	Medical facility	No. of hospitals	Total Area Sq. m.	No. of beds	#Biomedical waste generation @0.375 kg/bed
1	Nursing Home / PHC	20	30000	120*	45
2	General Hospital	7	40100	401**	150
3	Super speciality hospital (not shown as reservations but required as per norms, expected through NAINA Scheme)	2	40000	400**	150
	Total	**29**	**110100**	**921**	**345**

***** Each PHC to have 6 beds as per IPHS standards

****** No. of beds = 100 sq. m./bed as per IPHS

As per CPHEEO Manual

9.5.6.2 HAZARDOUS WASTE

Industrial land use of 991 ha is proposed in the DP. It is difficult to estimate the quantity of hazardous waste without knowing the type of industries. Hazardous waste generated if any from construction sites or any other use, such as spent oil swabs, used oil barrels etc can be collected by the authorised agency and disposed at the Common Hazardous Waste Treatment Storage and Disposal Facilities (CHWTSDF) at Taloja as per the provisions of the Hazardous Waste Management and Handling Rules, 2008. The same site can be used by industries to be developed in future on the proposed industrial land use. Furthermore if the area is found insufficient a site can be identified when the DP is revised.

9.6 POWER SUPPLY REQUIREMENT

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

9.6.1 DEMAND ESTIMATION

Based on the above standards the broad estimate for power supply for DP Area for the terminal year 2034 is given below in **Table 9-22**. The estimated population for the terminal year 2034 is 3.9 lacs.

Table 9-22: Estimation of Power requirement

Power requirement – Residential areas					
Sr. No.	**Household**	**Percentage**	**No. of households**	**Total Power requirement MW**	
1	EWS/LIG	30	23400	35	
2	MIG	50	39000	117	
3	HIG	20	15600	62	
	Sub Total	**100**	**78000**	**215**	
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	7800	1	7.8
2	Service Industries	2	780	10	7.8
	Sub Total	**-**	**-**	**-**	**15.6**
Power requirement – Public Utilities and Facilities					
Sr. No.	**Facility**	**KW per 7500 persons**		**Total Power Requirement MW**	
1	Social	50		2.6	
2	Public Utility	120		6.2	
	Sub Total	**-**		**8.84**	
Total				**239**	

The total power supply requirement therefore works out to 239 MW say 250 MW. The power will be sourced from MSETCL.

9.6.2 POWER DISTRIBUTION

The power will be distributed from a Receiving Station (RS) through a network of substations. The power demand works out to be 250 MVA by applying a power factor of 0.85 to the above requirement of 294 MW or 300 MW.
Standards considered for distribution of Receiving Station (RS) and Electric Sub Stations (ESS) are as following:

S. No.	Utility	1 for person	Area required (m^2)	Total Required for 3.9 lacs of population	
				Units	Area (m^2)
1	Receiving Station (RS)	1,00,000	4000	4	16,000
2	Electric Sub Stations (ESS)	50,000	2000	8	16,000

Therefore total 4 Receiving Stations and 8 Electric Sub Stations (ESS) have been provided in Balance Phase-I area, i.e. in Khalapur Smart City area and remaining Ph-I area (excluding IDP area)

9.6.3 BLOCK COST ESTIMATE

The block cost estimate is calculated for the MRS, RS, transmission line and internal distribution based on CIDCO's standards for Navi Mumbai. The key assumptions are

- Cost of MRS - Rs 150 Cr
- Cost of RS -4x2.5 =10 Cr.
- Transmission lines - Rs. 3 cr/ km
- Internal distribution (including ESS) - Rs. 0.2 cr/ ha

The details of Block cost estimate of power supply are given in **Table 9-23**

Table 9-23: Block cost estimate of power supply

Sr. No.	Item	Quantity	Unit	Cost per unit	Unit	Cost	Cost Rs. in Cr
1	Main Receiving Station	1	no	150	Cr/Unit	150	150
2	Receiving stations	4	no	2.5	Cr /Unit	10	10
3	Transmission Line	100	km	3	Cr/Km	300	300
4	Internal Distribution	4493	Ha	0.2	Cr/Ha	899	899
	Total						**1359**

10 LAND DEVELOPMENT MODEL – NAINA SCHEME

This section explains the rationale of search for alternative land development models and recommends a suitable development model for Development Plan.

10.1 APPROACHES FOR PLANNED DEVELOPMENT

The key objectives of planned urban land development are:

- To obtain land for public purposes – physical and social infrastructure
- To ensure inclusive growth by providing housing to the poor, and
- To raise finances by either capturing land value gains that occurs on account of provision of infrastructure or adopting the principle of 'growth pays for growth'.

The two conventional approaches to planned development have been the Development Plan (DP) model and the Bulk Land Acquisition Model. The DP model has been largely used in existing towns and cities such as Mumbai and Thane etc. whereas Bulk Land Acquisition model has been found suitable for greenfield development like Navi Mumbai, NOIDA or capital cities like Chandigarh, Gandhinagar, Bhubaneswar etc. Each has its merits and demerits.

The DP designates particular parcels of land for public purposes, which can then be compulsorily acquired. In this process landowners who lose their land, bear the cost and the benefits accrue to others. DP typically does not attempt to capture land value gains that accrue on account of such benefits. Bulk land acquisition on the other hand can potentially ensure that all three objectives of planned urban land development are achieved. However large scale compulsory land acquisition is increasingly becoming difficult.

In case of land pooling and land readjustment the burden of providing land for public purposes and infrastructure is equitably cast on all landowners. The merit of this method is that the land remains with the original land owners except to the extent that is required for public purposes. The traditional Town Planning Schemes relied on capturing 50% of land value gains to finance implementation of Town Planning Schemes (TPS). The Gujarat model of development plans/ town planning schemes, in addition allows planning authorities to retain land that could be sold for financing TPS. In the Korean model of land readjustment 'cost equivalent' land was retained by planning authority.

Improved TPS framework is now available with the modifications to the MRTP Act, but it could still be tedious and time consuming process. Without ruling out the TPS Route, an innovative model based on voluntary participation incentivised through appropriate DCPRs is necessary.

10.1.1 SUMMARY

It is necessary to appreciate that each approach will have some advantages as well as disadvantages. The models can be grouped into three categories. The salient features of each are explained below based on land acquisition, land value capture and finances.

1. In conventional development plans, planning authorities have to acquire land designated for public purposes with additional responsibility of rehabilitating the displaced persons. The land value gains cannot be captured in this model. Hence external funds are necessary.

2. Voluntary land pooling primarily responds to the demands of the market. As the approach is voluntary there may be holdouts by certain landowners, which may frustrate the development agency leading to uncertain outcomes. Incentives for participation in the scheme as well as some disincentives for not participating are necessary to make the scheme attractive and ensure maximum participation. Retaining land for subsequent sale by planning agency could raise resources for financing the development.

3. Development of new towns with 100% acquisition of land is faced with the same problems of land acquisition and rehabilitation of displaced persons although planned and inclusive development is possible in this method. The land value gains can also be fully captured.

For DP a model belonging to category 2 above has to be developed.

10.2 EXISTING REAL ESTATE SCENARIO

Since the intended model is market dependent an appreciation of current real estate market is desirable. The land prices in Navi Mumbai and surrounding areas, including that of CIDCO have been increasing steadily. The announcement of the development of Navi Mumbai International Airport has further fuelled the increase in real estate prices.

The average price for residential flats in the area around Panvel is about Rs.5400 per ft². As per the ASR the land prices in Vichumbe village were Rs. 27,60,000 per Ha in 2013, Rs. 31,74,000 per ha in 2014 and Rs. 34,91,000 in 2015 which shows an increase of 15% and 10 % over preceding years respectively. In case of Nadode near Khalapur the rates are, Rs. 1753200 (2013), Rs. 19,48,000 (2014) and Rs. 21,43,000 (2015) which show an increase of 11 % and 10% over preceding years respectively. For Shirki village near Pen the rates are Rs. 11,38,500 (2013) 11,95,000 (2014) Rs. 13, 15,000 (2015) which show an increase of 5 % and 10% over preceding years respectively.

Substantial development is happening in the form of Gaothan Expansion Schemes, Integrated Townships, and Affordable Housing Schemes. The existing and proposed transport network are further fuelling the real-estate prices such as NH-4, NH-4B, NH-17 Mumbai –Pune Expressway, proposed Alibag-Virar Multi Modal Corridor, Panvel – Karjat suburban rail, Vasai-Diva- Panvel suburban rail, doubling of tracks between Panvel and Roha by Konkan Railway. Besides this the Delhi-Mumbai Industrial Corridor and Dedicated Freight Corridor are likely to act as impetus for rise in the real estate and land prices. Thus it is very likely that with provision of basic infrastructure for planned development in place, land values may increase rapidly that could be tapped for financing development.

10.3 PROPOSED LAND DEVELOPMENT MODEL FOR DEVELOPMENT PLAN

After studying various development models adopted across the country, including Special Township schemes (now renamed as Integrated Townships in Maharashtra) and development approaches adopted by CIDCO in the past particularly at Waluj a base model was proposed. This model underwent rigorous scrutiny based on inputs received from various stake-holders. The model is now coined as 'NAINA Scheme'.

Its key principles are:

a) **Incentivize aggregation:** Since bulk land acquisition is difficult and time-consuming, SPA-NAINA will have to incentivize land aggregation by owners. The incentives to be given are additional FSI on aggregation, compared to low FSI for individual plot developments. Incentives are to be given in the form of discount in infrastructure development charges, comprehensive Environment Clearance, provision of supporting infrastructure by SPA-NAINA. Minimum area of aggregated land eligible for NAINA Scheme shall be 7.5 Ha (4 Ha. In Urban Village and ~~25~~20 Ha in LDZ zone).

b) **Sharing of Land:** In NAINA scheme, the owner/developer will retain 60% of the land and 40 % land shall be surrendered to SPA-NAINA "free of cost by consent agreement" for providing roads, open spaces, amenities and growth centre. The permissible FSI for the entire plot will be 1.00, which can be consumed on the 60 % of retained land resulting in net FSI of 1.7 for the retained land. In case of NAINA- Scheme having areas between 7.5 ha and less than 10 ha, 50% land will have to be surrendered to SPA-NAINA, resulting in 2 FSI on land retained by owner/ developer. If more land area is affected by reservations, landowner is to be compensated for loss of land in excess than the land to be surrendered as stated above, by way of TDR.

c) **Raising Finances:** The finances required for developing city-level infrastructure will be raised from development charges, as leviable under the MRTP Act, 1966. The second source of revenue will be disposal of 15 % land reserved for growth centre. The outcome of NAINA-Scheme being market dependent is intrinsically uncertain. To overcome the risk and uncertainty of outcome following strategy is proposed:

- Land designated for roads, amenities and growth centre as shown on the PLU of DP shall be notified for compulsory acquisition
- NAINA Schemes can be formulated incorporating roads and amenity reservations. These will be counted towards 40% of the land to be surrendered to SPA-NAINA
- Landowners whose land is notified for acquisition for growth centre if willing to contribute 40% of the land free of cost, will be compensated for 60% of the land by way of TDR

d) **Inclusive housing:** All developments on lands admeasuring 4000 m^2 or more shall have provisions for Inclusive housing. In case of plotted development ~~20~~10% of the plots or land parcel constituting ~~20~~10% area shall be reserved for inclusive housing (ie. EWS/LIG). In case of plots the area shall be between 30 – 50 $m^{2.}$. Such plots/ land parcel will be sold to SPA-NAINA as per the prevalent ASR (Annual Schedule of Rates). Such plots/ land parcel can be located anywhere in DP. The developer shall be entitled for the FSI of such plots/land which can be consumed on the same land or can be availed in the form of TDR as per the Development Control & Promotion Regulations. In case of group housing ~~20~~10% of the built up area shall be

utilized for constructing EWS/LIG tenements anywhere in DP area. All other conditions shall be as per the Government Resolution on affordable housing as amended from time to time.

10.3.1 PROVISION OF LOCAL INFRASTRUCTURE:

The internal layout of 60% of the land retained by the landowner shall follow the standard layout regulations in terms of provision of internal roads, infrastructure, recreational open space and local amenities.

FEATURES OF THE PROPOSED MODEL

a) **Area requirement:** Considering the existing situation and market scenario promoting townships on smaller areas than those proposed in Special Township Policy would be feasible. Minimum land area or land aggregation required for participating in 'NAINA Scheme' is 7.5 Ha. For areas within urban villages (excluding gaothans) the minimum area is 4.0 Ha. The minimum land requirement for NAINA – Schemes in LDZ is ~~25~~20 Ha. SPA-NAINA will not be providing infrastructure in LDZ areas hence the minimum area requirement for NAINA – Schemes has been increased to ~~25~~20 Ha so that only self-sustaining mini-townships are developed.

b) **Permissible Uses:** Uses permissible on owner's land are residential, commercial, hotels, offices etc. as per the Zoning and Land uses/ activities stipulated in the DCPRs. The whole of retained land can also be used for institutions like residential schools, hospitals, college with hostel, research and development institutions etc.

c) **Development of Growth Centres:** Growth Centres will be exclusively developed by SPA-NAINA. These will act as catalysts for urban development and these will be designated in the development plan based on various parameters such as proximity to transport network, existing urban centres and development potential.

10.3.2 DEVELOPMENT GUIDELINES FOR GROWTH CENTRE LANDS

a) The FSI permissible on growth centre lands shall be 1.7, at par with the FSI of land retained by the landowners in 'NAINA scheme'.

b) No amenity space shall be provided in Growth Centres.

c) Only internal and layout roads and open spaces will be required to be provided without losing FSI potential.

d) The Growth centre shall not be used for inclusive housing or development of Social facilities.

e) The Growth centre land shall not be allotted for any request of land by Govt/Semi-Govt. Agency at concessional prices.

11. SALIENT FEATURES OF DEVELOPMENT CONTROL AND PROMOTION REGULATIONS

The Development Control and Promotion Regulations (DCPR) are the mechanisms to facilitate the implementation of the Development Plan and carry out planned development. The DCPRs are largely based on the "Standardized Development Control and Promotion Regulations for Regional Plans" prepared by the Urban Development Department, Government of Maharashtra. These DCPRs have been contextualised for the DP.

11.1 OPTIONS FOR DEVELOPMENT

For the purposes of DCPRs, DP has been divided into four categories viz; Gaothan, Urban Villages, NAINA-Scheme and Non-NAINA Developments.

11.1.1 DEVELOPMENT IN GAOTHANS

Gaothans, as defined in the Maharashtra Land Revenue Code (MLRC) Section 122, are shown on DP. As Gaothans are built areas it is expected that mostly redevelopment proposals will come for approval. No FSI is proposed; instead built-form will be controlled by footprint and number of storey. Existing footprint will have to be retained and maximum two storeys are permissible including ground floor. To facilitate wider access-ways buildings abutting such existing access-ways less than 4.5 in width will be setback by 2.25 m from the centreline of the existing access. Most existing uses will be continued.

In case of availability of unencumbered land within Gaothan or lands capable of being developed according to stipulations of Urban Village including NAINA – Schemes in Urban Villages the same is permissible. This provision will promote planned development within Gaothan wherever possible as well as benefit such land owners.

11.1.2 URBAN VILLAGES

Urban villages are areas of 200 m around existing inhabited Gaothans. These are marked on the Development Plan. As per the existing MMR Regional Plan these areas are permitted for development with 1 FSI and a maximum building height of 24 m. Both NAINA-Schemes and Non-NAINA Developments are permitted in Urban Villages

11.1.3 NAINA-SCHEME

It is further divided in following spatial context-

- **NAINA –Scheme in Urban Villages**: The land holdings in these areas are small and hence landowners may not be able to aggregate to 7.5 ha land to be part of the NAINA-Scheme, though there is no restriction on them forming part of the scheme if they manage to aggregate such land partly within 200 m and partly outside 200m. Therefore considering the land-holding pattern a smaller land assembly scheme is proposed for urban villages. If the owners aggregate a minimum of 4 ha land they will retain 60% of the land and contribute 40% of land to SPA-NAINA. Within the land retained by the landowners open spaces at the rate of 10% of the land will have to be provided however provision of amenity space will be optional. It shall be mandatory that if the NAINA –Scheme is for 4 ha only then all such land shall be within 200m of the Gaothan.

- **NAINA-Scheme out of Urban Villages**: The minimum area required for participating in NAINA Scheme is 7.5 ha. For area 10 Ha and above, 40% land will be surrendered to SPA-NAINA free of cost. Developer will be allowed to use FSI of entire land on balance 60% of retained land. In case of NAINA- Scheme having areas between 7.5 ha and less than 10 ha, 50% land will have to be surrendered to SPA-NAINA and the FSI on retained land will be 2.0. There will be a two-stage approval process. In first stage an Outline Development Permission will be granted based on verification of details of ownership, and proposed allocation of land to be surrendered to SPA –NAINA. Final Permission will be granted based on detailed layout plan, building plans, infrastructure availability, project report etc. Depending upon the size of the scheme and the number of dwelling units proposed a graded range of amenities to be developed by the developer has been proposed. This will include basic education and health facilities.

  Incentive FSI for larger aggregation of land proposed in NAINA-scheme is given in **Table 11-1**

Table 11-1: FSI incentives in NAINA Scheme

Gross Area of NAINA Scheme (Ha)	Gross FSI	FSI on land retained by developer
7.5 ha and above but less than 10 ha	1.00	2.0
10 ha and above and up to 25 ha	1.00	1.7
Above 25 ha but less than 40 ha	1.08	1.8
Above 40	1.14	1.9

- **NAINA – Scheme in LDZ:** The minimum land requirement for NAINA – Schemes in LDZ is ~~25~~20 Ha. The developer is required to surrender 40% land to SPA-NAINA of which 15% will be used for Growth Centre and 25% for city-level and/or peripheral level infrastructure and amenities. The developer will retain and protect the land for Growth Centre, vacant and unencumbered till it is demanded by SPA-NAINA. Similarly he will also maintain the 25% land reserved for amenities, However, SPA-NAINA may allow him to develop such amenities with its consultation and the developer will be compensated as per the DCPRs for developing such amenities. If the developer falls short of ~~25~~20 Ha land aggregation the same can be offset against land under reservation elsewhere.

11.1.4 NON-NAINA DEVELOPMENT

The FSI permissible for such developments will be 0.5 and all other regulations of the DCPRs will be applicable.

The FSI for developing amenities is 1, irrespective of NAINA-Scheme or Non-NAINA development. In case of NAINA-Schemes this will be exclusive of the FSI permissible on the land retained by the developer as mentioned in **Table 11-1.**

- **Applicability of 22.5% Scheme for bulk land pooling (Area 60 Ha and above):** During the hearing of the objections and suggestions of the IDP, there were requests for CIDCO to assist the villagers in land development as they do not possess financial and technical strength to take benefit of NAINA-Scheme.

  The Planning Committee of IDP recommended that CIDCO can propose bulk land pooling scheme for land aggregations above 60 ha provided the land owners voluntarily aggregate and request CIDCO to take scheme with complete development of physical and social infrastructure i.e. City-level, Peripheral-level and Local-level. The cost of development of Local-level infrastructure is Rs 72/m^2. In order to recover this cost CIDCO will require additional 37.5% land and therefore will return 22.5% developed land/plot to landowners. This is similar to the rehabilitation scheme offered to villagers affected by the NMIA for whom Pushpak Node is being developed.

  Developing inclusive housing will not be mandatory for the landowners. Detailed guidelines for conditions of land aggregation, operation of the scheme and other modalities will be framed by SPA-NAINA.

- **Theme-based Developments (TBD):** In a greenfield development, it is important to promote economic activities which will act as magnets to attract investments as well as employment opportunities and thus residents to the area. If this is not done there is always a risk of such city becoming a dormant suburb of the main city around which it is planned. This was amply experienced in the case of Navi Mumbai which was envisaged as an independent self-sustained city with its own economic and employment hub, but did not manifest so even after 50 years of its existence. In order to address this issue the concept of theme-based developments has been introduced. The examples of theme development are Edu-city, Medi-city, Tech-city, Entertainment City, Sports City, Logistics Parks and Tourism City. The details of the same are given in DCPR.

- **Integrated Township Project (ITP or STP):** In case of already approved projects Development Charges payable or paid as per Chapter VI-A of MRTP Act will be payable by the developer. In case of new proposals developer will have to surrender 15% land as decided by SPA-NAINA. This 15% will be exclusive of DP reservations if any.

11.2 FEES, CHARGES AND PREMIUMS

Development charge: The development charge has been increased by Government of Maharashtra to approximately Rs 500 per m^2.

FSI linked Premium: Certain amount based on FSI in the form of Premium will be payable to SPA-NAINA by persons seeking development permission for Integrated Township Projects which are covered under NAINA Scheme,

11.3 TRANSFERABLE DEVELOPMENT RIGHTS (TDR)

Transferable Development Rights (TDR) is a mechanism by which the development potential of a land parcel is separated from the land itself and is made available to the owner to be used on other land parcel or as tradable commodity under certain terms and conditions. The mechanism is extensively used by planning authorities when land under reservation for public purpose is to be acquired by the authority. The GoM by its notification No. TPS -1813/3067/CR-122/MCOUNCIL/12/UD-13, dated 06 /02 /2016 has issued uniform regulations for TDR and Accommodation Reservation to be incorporated in the DCRs of Municipal Councils in Maharashtra. The same have been adopted for DP with suitable modifications. The significant ones are as below:

- The notification stipulates norms for loading of TDR on particular plot based on the road width fronting the plot. The loading increases with increase in width of the road as well as size of the plot. These norms have been bifurcated in two for NAINA – Schemes and other Non-NAINA developments. While maximum permissible loading is restricted to 0.50 in case of Non- NAINA developments it is increased to 1.0 in NAINA-Scheme. This is done to incentivize NAINA-Schemes and encourage land owners to opt for NAINA-Schemes.
- The maximum permissible utilisation of Transferable Development Rights (TDR) loading on receiving plot in Non-NAINA Development in shall be restricted to 20% of area of receiving plot subject to condition that the receiving plot shall be fronting on road having width 9m and above.

11.4 OTHER SALIENT FEATURES

- There will be no restrictions on height of the building, except those governed by Civil Aviation and Fire Safety Act whichever is less
- Rules for tree plantation :
  - Every plot of land shall have at least 1 tree for every 100 m^2 or part thereof
  - Recreational open spaces shall have at least 5 trees for every 100 m^2.
- Rules for size of hoardings and fees and deposit charged for erecting hoarding
- Regulations on Environmental Sustainability and Public safety included
- Regulations for Provision of facilities for physically handicapped, Quarrying and Erection of Mobile Towers included.
- To promote Aesthetics/Urban Design qualities in city architecture special provisions have been incorporated in DCPR in the form of incentive FSI. For aesthetic consideration the FSI incentive is 0.05 in NAINA scheme and 0.02 for others. To avail this incentive the applicant would have to submit their designs for special review by the committee to be constituted for this purpose.

12. ENVIRONMENT SUSTAINABILITY AND TOURISM

Environment sustainability is an important aspect for any plan or project. The environment influences the quality of life of its inhabitants. DP area being a Greenfield development, environment sustainability takes front seat and can also be addressed in a holistic manner. While it is difficult to address all the environmental issues in a Development Plan, attempt has been made through land use proposals and the Development Control and Promotion Regulations (DCPRs). In addition to above, another important aspect discussed in this chapter is tourism. It is an important economic activity, can be developed in the initial stages of the plan period and has scope for involvement of the villagers if developed accordingly.

12.1 EXISTING LAND USE

DP is spread over 437.26 km^2. In Existing Land Use exercise environmentally significant areas were identified. These are Forests, Water bodies, Hills, Wetlands, Salt-pans and Karnala Eco-sensitive zone. The area covered under forest is about 9059 Ha (20.7%), water bodies (including area under revenue waterbodies and waterbodies within forests) is about 3096 Ha (7.1%), steep Hills is about 5305 Ha (12.1%), Marshy/Shrubs is 2402 Ha (5.5%), and salt pans is about 320 Ha (0.7%). Total environmental significant area amounts to be about 20181 Ha, covering around 46.2% of the DP area. Details and table for the same is given in 'Chapter-3: Existing Land Use'.

12.2 PROPOSED ZONING

Zoning has been addressed in the Development plan with an objective to protect or minimise the adverse impact of urbanisation on environment. Taking clue from the Regional Plan 1999, the environmentally significant areas are protected. This objective is achieved by two pronged strategy. One protection comes from intrinsic legal status by way of notification of forest, notified eco-sensitive zones and through provisions in DCPRs such as buffers along water bodies, protection of area of steep hill slope etc.

This Development Plan addresses the issue by proposing LDZ Zone in areas where development was to be controlled. LDZ zone permits selective developments such as farm houses, week-end houses on 2000 m^2 plots, holiday homes, resorts, large institutions on minimum 2.5 Ha plots, film shooting sites on minimum 5 Ha sites and certain obnoxious or hazardous uses with adequate environmental protection

measures. The FSI proposed for such activities was 0.05 with a view to minimise adverse impact on the character of the countryside.

In addition to this, LDZ is proposed to include environmentally significant areas such as wetlands and hills with steep slopes. The total area under LDZ is ~~15169~~15930.83 Km^2 which is about ~~74.3~~78.08% of total developable area of DP and ~~34.7~~36.43% of total DP area.

12.3 PROVISIONS OF ENVIRONMENTAL SUSTAINABILITY IN DCPRs

The DCPR has several provisions related to environmentally sensitive aspects. The same are described below:

- **Hill preservation:** DCPR prohibits construction activities on slopes steeper than 1:5 thus preserving hill slopes.
- **Protection of Water Bodies:** DCPR makes it mandatory to have a buffer of 15 m along rivers and nalas, where no development is permissible. This will ensure protection of the waterbodies and the flood plains.
- **Rain water harvesting:** DCPR makes rain water harvesting mandatory for plots larger than 500 m^2.
- **Use of solar energy:** DCPR has provisions to install Solar water heating systems in public buildings such as hospitals, hostels, hotels, guest houses, laboratories, research institutions, schools and colleges etc. In development on areas of 25 ha or more use of renewable energy based lighting for minimum 25% of external lighting in public areas is mandatory.
- **Tree plantation:** DCPR has mandated tree plantation to have at least 1 tree for every 100 m^2 or part thereof for every plot and for recreational open spaces at least 5 trees for every 100 m^2.
- **Recycling of grey water:** DCPR has mandated all developments on plots 4000 m^2 or more shall have provisions for recycling of grey water.
- **Solid waste handling:** All developments above 20 Ha shall have on-site decentralized plants for treatment of organic waste. Segregation of solid waste at source has also been stipulated for all developments.

12.4 INFRASTRUCTURE DEVELOPMENT

The population of 7.8 lakhs is likely to have huge requirement of water. Furthermore disposal of sewage, waste water and solid waste generated by such a large population will adverse impact environment if not addressed properly. Thus adequate measures are required in provision of infrastructure to minimize the adverse impact. The same are discussed below:

- **Sewage and waste water management:** Sewage treatment plants are grouped into zones such that water will flow by natural gravity thereby avoiding pumping costs and energy required for the same. Treated sewage water will be reused for horticulture, industrial use and non-domestic purpose.
- **Solid waste management:** For solid waste management door-to-door collection and segregation of waste at source into bio-degradable and non-biodegradable will be mandatory. Biodegradable

waste will be converted to compost by vermiculture or other suitable options, possibility of bio-methanation and other such technologies will be explored. As far as possible only non-recyclable inert waste will be sent to landfill site which have been identified and marked in the plan considering all the environmental aspects.

- **Storm water drainage and flood control:** A study was carried out by CIDCO to assess and to take measures to avoid flooding. It has also appointed engineering consultants to propose adequate measures for storm water drainage and flood control. The preliminary results suggest a buffer of 15m along all rivers and nalas, and the same has been incorporated in the DCPRs. Further recommendations from the study if any will also be suitably adopted by SPA.

- **Public transport and Non-Motorized transport:** The DP roads are generally 24 m wide and above, have adequate width for provision of public transport (bus). The roads 36m and above will have exclusive bus lanes, thus facilitating BRTS. The major arterial roads (60m) are designed in such a way, that elevated metro line can be provided if the need be. In addition to above non-motorised transport is encouraged by providing footpath and cycle tracks on roads 24 m wide and above. The cycle and pedestrian network connect suburban stations, metro stations, other public transport nodes and roads of inter-nodal connectivity.

12.5 TOURISM

DP area has abundance of tourism potential. It is surrounded by beautiful mountains of Matheran and Lonavala in the east, and vast sea towards the west. It also encompasses Karnala bird sanctuary. These locations already attract tourist from different places. There are few rivers and creeks within DP area, providing favourable conditions for Mangroves and dense vegetation to grow naturally. These water bodies and dense mangroves provide scenic beauty to this area.

Few local and regional tourism potentials identified in DP are discussed below:

12.5.1 ECOTOURISM

- Karnala Eco-sensitive Zone (KESZ): Karnala bird sanctuary along with KESZ accounts for about 43 km^2 of area (as per MoEFCC notification dated 17th June 2015), in which about 43 km^2 is in DP area and remaining 1 km^2 is in Khopta. The protection, conservation and access to KESZ become essential issues to promote eco-tourism. These will have to be adequately addressed while preparing the zonal plan for the KESZ as stipulated by MoEFCC. Promoting tourism in KESZ also provides an opportunity to attract KESZ tourists to nearby other tourist places.

Figure 12-1: KESZ Bird Sanctuary

- Mangroves and Waterbodies: South-west coast of DP area contains numerous creeks (Dharamtar creek, Karanja creek), tributaries and Patalganga river in the form of water bodies. Due to presence of salty water in this region, mangroves and other natural vegetation is seen in abundance. These water bodies and dense vegetation have lot of potential to be developed as tourist attraction under eco-tourism category.

Therefore a 'Mangrove Park' may be developed near the mouth of Patalganga River, in Dadar, without damaging the natural flora and fauna in this area. Dense vegetation surrounded by creeks and tributaries, with connectivity to the area provide the best suitable location for a 'Mangrove Park'. **Figure 12-2** shows approximately 15 km^2 of area covered by mangroves and water bodies. The Mangrove Park could have board walks on stilts for people to visit the interiors, bird watching towers and ferry services around and within the proposed park. A nature interpretation centre can be developed on the lines of Mahim Nature Park, Mumbai and the Godrej Mangrove Park, Vikroli, Mumbai . This would also provide employment opportunities for local villagers as nature tourist guides, ferry service operators etc.

Figure 12-2: Mangroves at Dadar

12.5.2 ADVENTURE TOURISM

- Water sports: As mentioned, in DP area there are numerous water bodies in the form of creeks (Dharamtar creek), tributaries, ponds and rivers. At few locations in Dharamtar creek, Amba river and Patalganga river water sports can be introduced. During summers and other time of the year when people from Mumbai and Navi Mumbai go to Goa and other beaches which are crowded, these new tourist places can provide a different attraction and an alternative destination much closer to Mumbai.

Figure 12-3: Trek to Matheran

- Trekking: Geographical terrain of DP area is interestingly undulating, giving rise to hills at visible distances. Few series of hills in Matheran and Karnala are visual and physical delight to trek on. The existing trek to Karnala fort and Matheran, are popular ones to start with. Few other trekking routes can be explored and promoted by providing connectivity till base. Provision and program for night stay, camping, food and other activities during trek can be the main selling features. The local villagers can be employed as trekking guides and in setting up way side amenities and homestays.

12.5.3 RURAL/FOLK TOURISM

- Art: There are many villages within DP area which are still untouched by contemporary and modern way of living. These places still possess their traditional art, craft, culture, dance, music, and sports. These can be explored, identified and given platform to showcase their uniqueness and purity. Certain workshops can be conducted for tourist to see, learn and enjoy new form of arts.

  For example, Jite village, in Pen is known for its idol making exercise. Idol making art is practiced by almost all the houses in Jite village. Thousands of Ganesha and other idols are made and sold in Mumbai and other surrounding markets. This art of making sculptures can be promoted and workshop with exhibition can be conducted at least once a year

Figure 12-4: Idol Making in Pen area

- Food: Local food of any place is very peculiar in its own way. This local and traditional food art can also be served with other traditional art exhibition.

- Organizations such as the Yusuf Meherally Foundation are active in the area. They have developed Tara village as an ideal village with a dairy and an experimental organic farm. There is a village industries complex consisting of a soap unit producing both toilet and laundry soap, an oil ghani unit, a bakery unit, a pottery unit and a carpentry unit. Such initiatives can act as tourist attractions as well. These can act as focal points for volunteer tourism.

12.5.4 FILM CITY

There are a few film shooting sites such as Swapna nagri (Harigram Village) and ND studios (Morbe Village). These and more such sites could be developed as tourist attractions as is being done in Ramoji Film city Hyderabad and Film city tour of Mumbai but may be on lesser scale considering environmental factors.

12.5.5 HEALTH AND WELLNESS

An ayurvedic village on 60 acre land is functional in Morbe village. The facility offers various ayurvedic treatments and packages from 7 to 21 days for different ailments such as diabetes, stress management, arthritis or general treatment packages such as panchkarma. This particular enterprise has its own farm from where the ayurvedic herbs are sourced. Such developments can be encouraged by providing adequate infrastructure.

12.5.6 ECO-PARK

A SMART eco-park developed by a non-profit trust SMART is functional near Usarli Khurd village in Panvel Taluka. Study tours to the SMART Eco Park facilities include visits to the Education Centre, Discovery Centre, Activity Centre, Peace Gardens and Animal Barn. Visitors are able to access the balance of the agricultural eco-park by permission of the promoters. The park presents good opportunity for experiential learning for students. Such developments can be promoted in LDZ areas.

Source: www. ayurvedicvillage.com

Source: www.smartindia.org

Figure 12-5: Ayurvedic village and Students exploring plants at SMART Eco-park

Above mentioned attractions can be clubbed together in a holistic manner to work as a 'life time experience' to any tourist.

As per preference, adventurous, heritage, or nature oriented program can be planned for tourists. A trek or a walk in dense mangroves and creeks would give memorable experience to trekkers. Heritage walk or a day drive covering few heritage sites, or visually delightful sites, will generate interest to the context. After any of the day's activity, night stay in the lap of nature and traditional music, dance and food will gift them relaxed and contented sleep.

A location in accordance with other tourist attractions, preferably near Dadar village can be developed as a focal point to all tourists. Haat with food court, handicraft products, local artefacts and folk music and workshops will provide a delightful experience for the tourist. These activities will generate revenue for local development.

One of the most important things in the process would be to monitor waste generated by people, its collection and transportation. Protection of natural vegetation, resources and water bodies will be on priority.

13. BLOCK ESTIMATES & FINANCING DEVELOPMENT

13.1 INTRODUCTION

It is necessary to have fair estimate of the expected revenue and the expenditure for the proposals envisaged in the Development Plan. Accordingly, the MRTP Act 1966 under section 26(v) specifies that the plan should contain "an approximate estimate of the cost involved in acquisition of lands required by the Planning Authority for the public purposes, and also cost of works as may be necessary". In case of a SPA engaged in greenfield development having no recourse to tax revenues, it is imperative to prepare a financing mechanism for implementing the Development Plan.

13.1.1 COST OF DEVELOPMENT

The detailed plan for Phase-II has not been prepared. The development in Phase –II is not expected in the plan period. However some individual development may come and that is also permitted in Phase-II. The land required for ROW of Proposed road network has been shown in Phase-II. The costing of Phase II has not been done except for the facilities which are required for Phase-I for example development of Landfill site.

All the lands will be acquired which are shown as reservations and Growth Centre in the Development Plan. This area is about 1631 Ha including 198 Ha of Govt Land. This includes land area under roads, public utilities, public facilities, amenities and growth centres. Presently the highest non-NA value as per the Annual Statement of Rates (ASR) applicable in Development Plan area is about Rs. 600 per m^2. Considering the land acquisition rate to be four times of this, the acquisition rate would be about Rs. 2400/- per m^2. Further, it is assumed that only 20% land need to be acquired under RFCTLARR 2013 and balance 80% will accrue by way of land assembly. Accordingly, the approximate cost of land acquisition would be about Rs. 688 Crs.

The demand for amenities was assessed and has been discussed in detail in chapters 6 & 8. The estimates for the facilities and amenities, which have to be provided by Government Agencies has been worked out as per Schedule of Rates of CIDCO wherever possible, issued in the year 2012-13, with suitable price escalation added to it to bring the cost at 2016-17 level. For other items, the block costs have been used for estimation. The summary of estimated cost is given in **Table 13-1: Cost of Development**.

Table 13-1: Cost of Development

S N	DESCRIPTION	COST (Rs in Crores)
1	LAND ACQUISITION	688
2	POWER	1359
3	SOLID WASTE MANAGEMENT	181
4	WATER SUPPLY	710
5	SEWERAGE SYSTEM	156
6	ROADS	3032
7	TRANSIT -METRO	1435
8	TRANSIT -SUB URBAN RAIL	90
9	OPEN SPACE	36
10	OTHER INFRASTRUCTURE Crematorium/ Burial ground , Fire station, bus terminus, police station etc	79
	TOTAL	**7766**
NOTE	Above Cost is excluding: 1) Establishment & administration expenditure will be added @10 % on yearly basis after analysing yearly expenditure and, 2) Interest @9% per annum will be calculated on the loan required for the construction of infrastructure	

It has been assumed that infrastructure would be first focused in IDP area and thereafter in the balance Phase -I area. It is expected that infrastructure will be provided from 2019 to 2034. In the initial period of 5 years from 2019 to 2024, basic infrastructure work (road, water supply, sewerage, drainage, power etc) will be taken up on priority. The provision for Metro will wait till the city obtains critical mass and this has been considered from the year 2029 onwards. From the analysis it is clear that in the initial period, the fund requirement for infrastructure would be far more than the revenue and hence the fund would be borrowed from the market. After accounting for items listed at note 1 and 2 in **Table 13-1: Cost of Development, t**he Net Present Value (NPV) of the estimated infrastructure cost is Rs. 12629 Cr. For detailed costing estimation, refer **Annexure 13-1**

13.2 REVENUE SOURCES

13.2.1 REVENUE FROM DEVELOPMENT CHARGE

The Chapter VI-A of MRTP act 1966 provides for Development Charge to be levied by Planning Authority, which can be used only for the purpose of providing public amenities, maintenance and improvement of the area. The development charge is payable by the applicant coming forward for development permission. It is applied on land coming for development and proposed built up area separately. For land the rate specified by the Act is 0.5% of the Annual Statement of Rates for land. Similarly, for proposed built up area, the rate is 2.0% of the Annual Statement of Rates for land.

The total Balance Phase-I area is about ~~6718~~6712.51 Ha of which, developable area accounts for about 4493 Ha. Considering the applicable basic rate of development charge is Rs. 100 per m^2 the potential revenue from Development Charge in terms of present value will be about Rs 767 Cr. The total cost of development of infrastructure is estimated about Rs. 28498 cr. The NPV of the same would be about Rs

12629 cr. Even if the development charge is increased by several fold (say 5 times) the anticipated revenue would be only to the order of Rs. 12297 Cr and NPV of the same would be about Rs 3844 Cr. Accordingly, CIDCO approached Government of Maharashtra and enhanced rate for Development Charge was approved. Even after increase in Development Charge rate, it is evident that Development Charge alone will not be sufficient to meet the cost of infrastructure. Due to such huge gap in revenue and expenditure, it is very clear that the Plan will remain on paper and it cannot be implemented unless additional sources of revenue are tapped.

13.2.2 REVENUE FROM OTHER SOURCES

In order to generate additional resources, about 15% of the developable land has been proposed for Growth Centre in the DP. This land would be developed and disposed off in the market.

13.2.3 SALE OF LAND IN GROWTH CENTRES

The Growth Centres (GC) are shown in the Development Plan. These Growth Centres account for about ~~677~~685.17 Ha (about 15% of the area expected to be available for development). Land in GC would be leased by CIDCO for mixed land use. The revenue generation has been estimated with the assumption that the basic rate is @ 6000 per m^2 in the base (year 2014-15) and the rate of escalation is 12% per annum upto the year 2020 and 15% per annum beyond year 2020. With these assumptions, the revenue available for funding the infrastructure would be of the order of Rs ~~36041~~36507 Crs. The NPV of the same by discounting @ 9% yearly would be about Rs ~~9703~~9829 Cr.

13.2.4 REVENUE FROM SALE OF SOCIAL PLOT

The social facility plots are given on concessional rates to other government bodies / trusts to develop the facility. However, these plots are not provided free of cost. After considering this factor, it is expected that revenue from allotment of social facilities on concessional rate would generate about Rs 1681 Crs. The NPV of the same by discounting @ 9% yearly would be about Rs 512 Cr.

13.2.5 FSI LINKED PREMIUM (FLP)

DCPR enables the applicant to utilise higher FSI than the prescribed base FSI, if required, on payment of premium. This facility is available to NAINA scheme falling within 500m on either side of 60m spine road, Theme Based Developments, buildable amenity plots, residential, mixed use, industrial and developments in urban villages. Since the FSI linked premium is payable only when applicants desires higher FSI, it is difficult to assess the revenue expected from this source.

13.3 IMPLEMENTATION STRATEGY

13.3.1 INFRASTRUCTURE BY CIDCO

CIDCO has developed Navi Mumbai and has vast experience in city development. CIDCO will take up construction and development of infrastructure works i.e. roads, water supply, sewerage, drainage. CIDCO proposes to go for land acquisition in the beginning. Immediately on the approval of the Development Plan, CIDCO would proceed with land acquisition. In the first two years CIDCO would focus on land acquisition. So that land is available for development of infrastructure.

13.3.2 INFRASTRUCTURE BY OTHER GOVERNMENT AGENCIES

There are few facilities and amenities which are under the domain of other government agencies e.g. power by MSEDCL & MAHATRANSCO, Police, and Indian Railways etc. In such cases, CIDCO will provide land to these government agencies and request them to take up work related to their field.

13.4 DYNAMICS OF REVENUE

Although the costs have been estimated at 2016-17 prices the actual costs at current prices will depend upon the year in which the works are executed. The uncertainty of revenues is of higher degree as they are dependent upon the movement of land prices in time and corresponding quantum of development. The financing scheme of implementation of Development Plan therefore needs to be tested in terms of a cash flow analysis over 20 years period with reasonable assumptions. For details, see **Annexure 13.1**.

The summary of the revenue and expenditure is given in **Table 13-2**:

Table 13-2: Summary of Revenue and Cost (Net Present Value)

S. No	DESCRIPTION	Rs in Cr
A	**REVENUE FROM ALL SOURCES**	
1	REVENUE FROM DEVELOPMENT CHARGE (NPV)	3844
2	REVENUE FROM GROWTH CENTER (SALE OF LAND- NPV)	~~9703~~9829
3	REVENUE FROM FLP (NPV)	554
4	SALE OF SOCIAL FACILITY (NPV)	512
5	**NPV OF REVENUE FROM ALL SOURCES A**	**~~14613~~14739**
B	**EXPENDITURE TO BE INCURRED FOR INFRASTRUCTURE**	
1	NET PRESENT VALUE OF ALL EXPENSES	12629
2	**TOTAL EXPENDITURE B**	**12629**
C	**NPV (A - B)**	**~~1984~~2110**
D	**Internal Rate of Return (IRR)**	**22%**

From the **Annexure 13-1**, it can be seen that in the initial period (2019 to 2023), the anticipated expenditure on infrastructure projects would be more than the revenue in the corresponding years. The revenue starts exceeding the anticipated expenditure on infrastructure from the year 2024 onwards. However, accounting for the backlog for the period 2019-2023, the year on year (y-o-y) positive opening balance is expected from the year 2033. With the assumptions cited in the annexure, the NPV surplus (total revenue – total expenditure) of the project is estimated to be Rs. 1984 Crores and the IRR works out to be about 22%. Thus it may be inferred that the proposed development including its NAINA scheme based financing model is financially viable. However, there would be need for institutional funding for the initial phases say first 10-15 years.

ANNEXURE 1-1 NAINA ENGLISH GAZETTE NOTIFICATION

URBAN DEVELOPMENT DEPARTMENT

Mantralaya, Mumbai 400 021, Dated 10th January 2013.

NOTIFICATION

MAHARASHTRA REGIONAL AND TOWN PLANNING ACT, 1966.

No.TPS-1712/475/CR-98/12/UD-12.—Whereas, the Revised Regional Plan for Mumbai Metropolitan Region (hereinafter referred to as the "said Regional Plan") has been sanctioned by the Government in the Urban Development Department under sub-section (*1*) of section 15 of the Maharashtra Regional and Town Planning Act, 1966 (hereinafter referred to as the "said Act") *vide* Notification No.TPS-1297/1094/CR-116/97/UD-12, dated 23rd September 1999 (hereinafter referred to as the "said Notification") and has come into force with effect from the 1st December, 1999 ;

And whereas, the Government has decided to develop a site for International Air Port in Navi Mumbai area within the said Regional Plan;

And whereas, as per one of the conditions laid down by the Ministry of Environment and Forest (MoEF), Government of India, while granting Environmental and CRZ Clearance to the Navi Mumbai International Airport (NMIA) that the Development Plan of Navi Mumbai shall be revised and recast in view of the proposed Air Port Development so as to avoid unplanned haphazard growth around the proposed air port;

And whereas, as per the provisions prescribed in the Notification issued by the Airport Authority of India (AAI) on 14the January 2010, no structure shall be constructed or erected on any land within the periphery of 20 km. from ARP of NMIA (Navi Mumbai International Air Port) without obtaining the No Objection Certificate (NOC) from AAI (Airport Authority of India);

And whereas, City and Industrial Development Corporation of Maharashtra Ltd.(CIDCO) submitted a proposal to the Government vide letter No. CIDCO/PLNG/CP/2012/18 dated 17th January 2012 requesting for its appointment as Special Planning Authority under section40(1)(b) of the said Act for an area around the proposed International Airport comprising the boundaries and villages covered within it, s specified respectively in the schedule-I and schedule-II appended hereto;

And whereas, after making necessary enquiries and after consulting the Director of Town Planning, Maharashtra State, Pune, the Government is of the opinion that it is necessary to have planned and controlled Development within the area proposed by CIDCO to be declared as notified area (hereinafter referred to as the "said notified area").

Now therefore, in exercise of the powers conferred under clause (*b*) of sub-section (*1*) of section 40 of the said Act and of all other powers enabling it in this behelf, the Government of Maharashtra hereby-

(*i*) Notifies the area specified in the schedules-I &II appended hereto as "The Navi Mumbai Airport Influence Notified Arae " (NAINA), as shown on plan.

(*ii*) Appoints the CIDCO to be the Special Planning Authority for the said notified area i.e.NAINA.

(*iii*) Declares that any other Special Planning Authority functioning in the said NAINA, prior to this notification shall cease to function from the date of this notification.

(*iv*) Directs the CIDCO to prepare and publish the development proposals and development control regulations for the said notified area and submit the same to the Government for sanction after following due procedure prescribed in the said Act.

Copy of the plan showing the boundaries of the said notified area shall be available for inspection for the general public during office hours on all working days at the following offices for a period of one month :-

(1) Commissioner, Konkan Division, Konkan Bhavan, Navi Mumbai.

(2) Chief Planner, CIDCO, CIDCO Bhavan, CBD Belapur, Navi Mumbai – 400 614.

(3) Collector Raigad/ Thane.

(4) Dy. Director of Town Planning, Konkan Division, Konkan Bhavan, Navi Mumbai.

(5) Assistant Director of Town Planning, Raigad Branch, Raigad-Alibagh.

(6) Assistant Director of Town Planning, Thane Branch, Thane.

Schedule - I

Boundaries of the Navi Mumbai Airport Influence Notified Area

(NAINA)

Directions	Bounded by
North	The Northern boundary of village Nitalas touching the boundary of AKBSNA; than boundary of Matheran Eco sensitive Zone (MESZ) passing through village Wangani Tarf Taloje;
East	Boundary of MESZ passing through village Wangani Tarf Taloje upto village Wavarle; then Western boundary of Karjat Municipal Council, then railway line passing from Karjat Municipal Council to Khalapur Municipal Council; then Northern noundary of Khalapur Municipal Council up to MMR boundary;
South	MMR boundary from North- West corner of Khalapur Municipal Council to Pen Municipal Council, then North to West bounary of Pen Municipal Council, MMR boundary from West corner of Pen Municipal Council to Tahsil Boundary of Pen; then along the boundary of Pen Tahsil up to villageVittalwadi;
West	Along periphery of Khopta New Town from village Vittalwadi to Kanthavali and further along periphery of Navi Mumbai upto village Nitalas.

It also includes the villages deleted from Navi Mumbai Municipal Corporation, apart from area designated by boundaries described above.

Note.—This shall be read with the plan accompanying this notification.

Schedule - II

List of villages within the boundaries of the Notified area

Sr. No. (1)	Name of Village (2)	Tahsil (3)	District (4)
1	Goteghar	Thane	Thane
2	Bhandarli	Thane	Thane
3	Uttarshiv	Thane	Thane
4	Nagaon	Thane	Thane
5	Narivali	Thane	Thane
6	Bale	Thane	Thane
7	Vaklan	Thane	Thane
8	Bamali	Thane	Thane
9	Nighu	Thane	Thane
10	Navali	Thane	Thane
11	Dahisar	Thane	Thane
12	Mokashi	Thane	Thane
13	Valivali	Thane	Thane
14	Pimpari	Thane	Thane
15	Veshvi	Uran	Raigad
16	Dighode	Uran	Raigad
17	Kanthavali	Uran	Raigad
18	Pohi	Uran	Raigad
19	Ransai	Uran	Raigad
20	Tighar	Karjat	Raigad
21	Nangurle	Karjat	Raigad
22	Varne	Karjat	Raigad
23	Avalas (Excluding area East of Karjat-Khopoli Rail Line)	Karjat	Raigad

Sr. No. (1)	Name of Village (2)	Tahsil (3)	District (4)
24	Palasdari (Excluding area East of Karjat-Khopoli Rail Line)	Karjat	Raigad
25	Talawali (Excluding area East of Karjat-Khopoli Rail Line)	Karjat	Raigad
26	Kharpada	Pen	Raigad
27	Dushmi	Pen	Raigad
28	Kauli Simadevi	Pen	Raigad
29	Khar Simadevi	Pen	Raigad
30	Kharkoshim	Pen	Raigad
31	Jui Khurd	Pen	Raigad
32	Jui Budruk	Pen	Raigad
33	Jite	Pen	Raigad
34	Navkhar	Pen	Raigad
35	Khar Nandai	Pen	Raigad
36	Turkhul	Pen	Raigad
37	Khar Dubej	Pen	Raigad
38	Rave	Pen	Raigad
39	Dadar	Pen	Raigad
40	Urnoli	Pen	Raigad
41	Sonkhar	Pen	Raigad
42	Khar Dutarfa Borli	Pen	Raigad
43	Kalave	Pen	Raigad
44	Hanumanpada	Pen	Raigad
45	Davre	Pen	Raigad
46	Kopar	Pen	Raigad
47	Khar Borli	Pen	Raigad
48	Govirle	Pen	Raigad
49	Balawali	Pen	Raigad
50	Ambivali	Pen	Raigad
51	Hamrapur	Pen	Raigad
52	Tambadshet	Pen	Raigad
53	Johe	Pen	Raigad
54	Dolvi Dababa	Pen	Raigad
55	Mothe Vadhav	Pen	Raigad
56	Kaleshri	Pen	Raigad
57	Kanhoba	Pen	Raigad
58	Vitthalwadi	Pen	Raigad
59	Mothe Bhal	Pen	Raigad
60	Lakhanle	Pen	Raigad
61	Narwel	Pen	Raigad
62	Bahiram Katak	Pen	Raigad
63	Benavale	Pen	Raigad
64	Wadhav	Pen	Raigad
65	Div	Pen	Raigad
66	Borze	Pen	Raigad

Sr. No. (1)	Name of Village (2)	Tahsil (3)	District (4)
67	Kane	Pen	Raigad
68	Waredi	Pen	Raigad
69	Nagadi Sapoli	Pen	Raigad
70	Khar Dutarfa Sapoli	Pen	Raigad
71	Kharsapoli	Pen	Raigad
72	Chinchghar	Pen	Raigad
73	Shitole	Pen	Raigad
74	Davansar	Pen	Raigad
75	Ramraj	Pen	Raigad
76	Dhavate	Pen	Raigad
77	Tarankhop	Pen	Raigad
78	Antore	Pen	Raigad
79	Patnoli	Pen	Raigad
80	Koproli	Pen	Raigad
81	Odhangi	Pen	Raigad
82	Washi	Pen	Raigad
83	Sare Bhag	Pen	Raigad
84	Shirki Chawl	Pen	Raigad
85	Masad Bedi	Pen	Raigad
86	Masad Khurd	Pen	Raigad
87	Masad Budruk	Pen	Raigad
88	Borwe	Pen	Raigad
89	Bori	Pen	Raigad
90	Shirki	Pen	Raigad
91	Kolave	Pen	Raigad
92	Shinganvat	Pen	Raigad
93	Dhondpada	Pen	Raigad
94	Umbarde	Pen	Raigad
95	Meleghar	Pen	Raigad
96	Kandale	Pen	Raigad
97	Uchede	Pen	Raigad
98	Kandlepada	Pen	Raigad
99	Wadkhal	Pen	Raigad
100	Beneghat	Pen	Raigad
101	Wave	Pen	Raigad
102	Kashmirwadi	Pen	Raigad
103	Rode	Pen	Raigad
104	Talegaon	Khalapur	Raigad
105	Panshil	Khalapur	Raigad
106	Rees	Khalapur	Raigad
107	Lodhivali (Excluding area under MESZ)	Khalapur	Raigad
108	Nadhal (Excluding area under MESZ)	Khalapur	Raigad
109	Chouk Manivali (Excluding area under MESZ)	Khalapur	Raigad
110	Nanivali (Excluding area under MESZ)	Khalapur	Raigad
111	Warose Tarf Wankhal (Excluding area under MESZ)	Khalapur	Raigad
112	Borgaon Khurd (Excluding area under MESZ)	Khalapur	Raigad
113	Sondewadi (Excluding area under MESZ)	Khalapur	Raigad
114	Wavarle (Excluding area under MESZ)	Khalapur	Raigad
115	Pali Budruk	Khalapur	Raigad
116	Vadvihir (Excluding area under MESZ)	Khalapur	Raigad
117	Borgaon Budruk (Excluding area under MESZ)	Khalapur	Raigad
118	Padaghe	Khalapur	Raigad
119	Morbe	Khalapur	Raigad

Sr. No. (1)	Name of Village (2)	Tahsil (3)	District (4)
120	Bhilvale	Khalapur	Raigad
121	Hatnoli	Khalapur	Raigad
122	Jambhivali Tarf Wankhal	Khalapur	Raigad
123	Tupgaon	Khalapur	Raigad
124	Pali Khurd	Khalapur	Raigad
125	Sarang	Khalapur	Raigad
126	Parade	Khalapur	Raigad
127	Ambivali Tarf Tungartan	Khalapur	Raigad
128	Wasambe	Khalapur	Raigad
129	Chambharli	Khalapur	Raigad
130	Vat	Khalapur	Raigad
131	Kambe	Khalapur	Raigad
132	Vayal	Khalapur	Raigad
133	Tembhari	Khalapur	Raigad
134	Kopari	Khalapur	Raigad
135	Asroti	Khalapur	Raigad
136	Dharni	Khalapur	Raigad
137	Asare	Khalapur	Raigad
138	Kandharoli Tarf Wankhal	Khalapur	Raigad
139	Vavandal	Khalapur	Raigad
140	Vinegaon	Khalapur	Raigad
141	Kalote Mokashi	Khalapur	Raigad
142	Kalote Rayati	Khalapur	Raigad
143	Nigdoli	Khalapur	Raigad
144	Nadode	Khalapur	Raigad
145	Nimbode	Khalapur	Raigad
146	Vanave	Khalapur	Raigad
147	Shiravali Tarf Boreti	Khalapur	Raigad
148	Khalapur	Khalapur	Raigad
149	Ghodivali	Khalapur	Raigad
150	Kandharoli Tarf Boreti	Khalapur	Raigad
151	Navandhe	Khalapur	Raigad
152	Wangani (Excluding area East of Karjat-Khopoli Railline) ...	Khalapur	Raigad
153	Kelavali (Excluding area East of Karjat-Khopoli Railline) ...	Khalapur	Raigad
154	Dolavali (Excluding area East of Karjat-Khopoli Railline) ...	Khalapur	Raigad
155	Shengaon (Excluding area East of Karjat-Khopoli Railline) ...	Khalapur	Raigad
156	Mankivali (Excluding area East of Karjat-Khopoli Railline) ...	Khalapur	Raigad
157	Anjrun	Khalapur	Raigad
158	Hal Khurd	Khalapur	Raigad
159	Mahad	Khalapur	Raigad
160	Nitalas (Excluding area under MESZ)	Panvel	Raigad
161	Nitale (Excluding area under MESZ)	Panvel	Raigad
162	Kherane Khurd	Panvel	Raigad
163	Vavanje (Excluding area under MESZ)	Panvel	Raigad
164	Mahodar (Excluding area under MESZ)	Panvel	Raigad
165	Kondap (Excluding area under MESZ)	Panvel	Raigad
166	Wangani Tarf Taloje (Excluding area under MESZ)	Panvel	Raigad
167	Karambeli Tarf Taloje (Excluding area under MESZ)... ...	Panvel	Raigad
168	Shiravali (Excluding area under MESZ)	Panvel	Raigad
169	Ambe tarf taloje (Excluding area under MESZ)	Panvel	Raigad
170	Chinchavali Tarf Taloje	Panvel	Raigad
171	Mahalungi	Panvel	Raigad
172	Chindharan	Panvel	Raigad
173	Kanpoli	Panvel	Raigad
174	Valap	Panvel	Raigad
175	Pale Budruk	Panvel	Raigad

Sr. No. (1)	Name of Village (2)	Tahsil (3)	District (4)
176	Hedutane	Panvel	Raigad
177	Kevale	Panvel	Raigad
178	Khanav	Panvel	Raigad
179	Morbe (Excluding area under MESZ)	Panvel	Raigad
180	Kondale (Excluding area under MESZ)	Panvel	Raigad
181	Khairwadi (Excluding area under MESZ)	Panvel	Raigad
182	Tamsai (Excluding area under MESZ)	Panvel	Raigad
183	Maldunge (Excluding area under MESZ)	Panvel	Raigad
184	Dhodani (Excluding area under MESZ)	Panvel	Raigad
185	Deharang (Excluding area under MESZ)	Panvel	Raigad
186	Dhamani (Excluding area under MESZ)	Panvel	Raigad
187	Gadhe (Excluding area under MESZ)	Panvel	Raigad
188	Ambe tarf waje	Panvel	Raigad
189	Shivansai	Panvel	Raigad
190	Dundre (Excluding area under MESZ)	Panvel	Raigad
191	Ritghar (Excluding area under MESZ)	Panvel	Raigad
192	Usarli Budruk (Excluding area under MESZ)	Panvel	Raigad
193	Umroli	Panvel	Raigad
194	Chinchavali Tarf Waje	Panvel	Raigad
195	Vakadi	Panvel	Raigad
196	Nere (Excluding area under MESZ)	Panvel	Raigad
197	Koproli	Panvel	Raigad
198	Harigram	Panvel	Raigad
199	Adai	Panvel	Raigad
200	Akurli	Panvel	Raigad
201	Palidevad	Panvel	Raigad
202	Devad	Panvel	Raigad
203	Shilottar Raichur	Panvel	Raigad
204	Chipale	Panvel	Raigad
205	Bonshet	Panvel	Raigad
206	Vihighar (Excluding area under MESZ)	Panvel	Raigad
207	Ambivali (Excluding area under MESZ)	Panvel	Raigad
208	Sangatoli (Excluding area under MESZ)	Panvel	Raigad
209	Waje (Excluding area under MESZ)	Panvel	Raigad
210	Cheravali (Excluding area under MESZ)	Panvel	Raigad
211	Wajapur	Panvel	Raigad
212	Loniwadi (Excluding area under MESZ)	Panvel	Raigad
213	Wangani Tarf Waje (Excluding area under MESZ)	Panvel	Raigad
214	Pali Khurd	Panvel	Raigad
215	Chikhale	Panvel	Raigad
216	Moho	Panvel	Raigad
217	Shivkar	Panvel	Raigad
218	Vichumbe	Panvel	Raigad
219	Usarli Khurd	Panvel	Raigad
220	Kolkhe	Panvel	Raigad
221	Kon	Panvel	Raigad
222	Borle	Panvel	Raigad
223	Sangade	Panvel	Raigad
224	Belavali	Panvel	Raigad
225	Wardoli (Excluding area under MESZ)	Panvel	Raigad
226	Bherle (Excluding area under MESZ)	Panvel	Raigad
227	Bhingar (Excluding area under MESZ)	Panvel	Raigad
228	Ajivali	Panvel	Raigad
229	Ariwali	Panvel	Raigad
230	Derawali	Panvel	Raigad
231	Palaspe	Panvel	Raigad
232	Kudave	Panvel	Raigad

Sr. No. (1)	Name of Village (2)	Tahsil (3)	District (4)
233	Nandgaon	Panvel	Raigad
234	Mosare	Panvel	Raigad
235	Patnoli	Panvel	Raigad
236	Vadavali	Panvel	Raigad
237	Turmale	Panvel	Raigad
238	Chirvat	Panvel	Raigad
239	Shirdhon	Panvel	Raigad
240	Giravale	Panvel	Raigad
241	Somtane	Panvel	Raigad
242	Kasal Khand	Panvel	Raigad
243	Ashte	Panvel	Raigad
244	Shedung	Panvel	Raigad
245	Bhingarwadi	Panvel	Raigad
246	Mohope (Excluding area under MESZ)	Panvel	Raigad
247	Poyanje (Excluding area under MESZ)	Panvel	Raigad
248	Pali Budruk (Excluding area under MESZ)	Panvel	Raigad
249	Bhokarpada (Excluding area under MESZ)	Panvel	Raigad
250	Barwai (Excluding area under MESZ)	Panvel	Raigad
251	Khanavale	Panvel	Raigad
252	Bhatan	Panvel	Raigad
253	Narpoli	Panvel	Raigad
254	Dahivali	Panvel	Raigad
255	Nanoshi	Panvel	Raigad
256	Sangurli	Panvel	Raigad
257	Chinchavan	Panvel	Raigad
258	Devloli Budruk	Panvel	Raigad
259	Savale	Panvel	Raigad
260	Jatade	Panvel	Raigad
261	Dapiwali	Panvel	Raigad
262	Vaveghar	Panvel	Raigad
263	Gulsunde	Panvel	Raigad
264	Posari	Panvel	Raigad
265	Turade	Panvel	Raigad
266	Kalhe	Panvel	Raigad
267	Koral	Panvel	Raigad
268	Apte	Panvel	Raigad
269	Akulwadi	Panvel	Raigad
270	Ladiwali	Panvel	Raigad

Note.—

(1) MESZ = Matheran Eco-Sensitive Zone

(2) Boundary of Matheran Eco-Sensitive Zone shall be as per the Ministry of Environment and Forests, Govt. of India, Notification No. S.O. 133 (E) dated 4th February 2003.

This notification shall also be published on the Government website *www.urban.maharashtra.gov.in*

By order and in the name of the Governor of Maharashtra,

SANJAY V. PAWAR
Desk Officer.

ANNEXURE 1-2 MIDC 9 VILLAGES NOTIFICATION

RNI No. MAHBIL /2009/37831

महाराष्ट्र शासन राजपत्र

असाधारण भाग चार–ब

वर्ष १, अंक १०६] बुधवार, सप्टेंबर २३, २०१५/आश्विन १, शके १९३७ [पृष्ठे ५१, किंमत : रुपये ९.००

असाधारण क्रमांक २२७

प्राधिकृत प्रकाशन

महाराष्ट्र शासनाने महाराष्ट्र अधिनियमांन्वये तयार केलेले
(भाग एक, एक-अ आणि एक-ल यांमध्ये प्रसिद्ध केलेले नियम व आदेश यांव्यतिरिक्त) नियम व आदेश.

उद्योग, ऊर्जा व कामगार विभाग

मादाम कामा मार्ग, हुतात्मा राजगुरू चौक, मंत्रालय,
मुंबई ४०० ०३२, दिनांक २२ सप्टेंबर २०१५.

अधिसूचना

महाराष्ट्र औद्योगिक विकास अधिनियम, १९६१.

क्रमांक आयडीसी. २००७/(७१८)/उ-१४.—महाराष्ट्र औद्योगिक विकास अधिनियम, १९६१ (१९६२ चा महा. तीन) चे कलम १, पोट-कलम (३) अन्वये प्रदान केलेल्या शक्तींचा वापर करून महाराष्ट्र शासन याद्वारे मौजे केळवली, वांगणी, घोडीवली, कांढरोली, नावंढे, मानकिवली, हाळखुर्द, अंजरुण, तालुका खालापूर, जिल्हा रायगड व मौजे तळवली, तालुका कर्जत, जि. रायगड येथील सोबत जोडण्यात आलेल्या अनुसूचीत उल्लेखिलेल्या क्षेत्रात उक्त अधिनियमाचे प्रकरण ६ ज्या तारखेस अंमलात येईल ती तारीख २३ सप्टेंबर, २०१५ म्हणून नियुक्त करीत आहे व उक्त क्षेत्र अधिनियमाच्या कलम २ खंड (ग) अन्वये औद्योगिक क्षेत्र म्हणून जाहीर करीत आहे.

उक्त क्षेत्र मुख्य कार्यकारी अधिकारी, महाराष्ट्र औद्योगिक विकास महामंडळ, अंधेरी (पूर्व), मुंबई-९३ आणि उप विभागीय अधिकारी, खालापूर विभाग, खालापूर, जि. रायगड यांचे कार्यालयात ठेवलेल्या नकाशात लाल रंगाने जास्त स्पष्टपणे दाखविले आहे आणि सोबतच्या अनुसूचीत दर्शविल्याप्रमाणे त्याच्या चतु:सीमा आहेत.

अनुसूची

जिल्हा रायगड, तालुका खालापूर, मौजे केळवली

अनुक्रमांक	सर्व्हे नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)	अनुक्रमांक	सर्व्हे नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)
(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१	१	०	०.७९१	३	११	०	०.७५८
२	९	०	१.२३८	४	१२	०	१.०४७

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
५	१४	०	०.२०७	४५	४८	०	१.१४३
६	१५	०	०.१५०	४६	४९	०	१.३५०
७	१६	१	०.२३५	४७	५०	०	०.४२६
८	१७	०	०.३४७	४८	५१	०	०.४१७
९	१८	०	०.४८२	४९	५२	०	०.०९९
१०	१९	०	०.५४०	५०	५३	०	०.३३२
११	२०	०	०.३९७	५१	५४	अ	०.३४३
१२	२१	०	१.५३२	५२		ब	०.३५७
१३	२२	०	०.८३६	५३	५५	०	०.४४०
१४	२३	०	०.२३०	५४	५६	०	०.५७८
१५	२४	०	०.१००	५५	५७	०	०.२४८
१६	२५	०	०.२९०	५६	५८	०	०.२२८
१७	२६	अ	०.४०६	५७	५९	०	१.०१०
१८		ब	०.६२०	५८	६०	०	०.३५१
१९		क	०.४६८	५९	६१	अ	१.३००
२०	२७	०	०.६४२	६०		ब	०.१९०
२१	२८	०	०.२२५	६१	६२	०	०.५३०
२२	२९	०	०.६७२	६२	६३	०	०.१२०
२३	३०	१	०.६००	६३	६४	०	०.३७५
२४		२	०.३३१	६४	६५	०	०.३५६
२५	३१	अ	०.४१९	६५	६६	०	०.८९८
२६		ब	०.०३०	६६	६७	१	०.५००
२७	३१	१	०.८००	६७		२	०.४००
२८		२	०.२००	६८		३	०.३८५
२९	३२	०	०.७५९	६९	६८	०	१.६४०
३०	३३	०	०.८२२	७०	६९	०	०.३९७
३१	३४	०	०.७८१	७१	७०	०	०.६९८
३२	३५	०	०.४५५	७२	७१	०	०.९२८
३३	३६	०	०.४५५	७३	७२	०	०.७५६
३४	३७	०	०.१०४	७४	७३	०	०.६१०
३५	३८	०	०.४५७	७५	७४	०	०.४८४
३६	३९	०	०.२३४	७६	७६	०	१.१४६
३७	४०	०	०.७१८	७७	७७	०	१.७०५
३८	४१	०	०.३८०	७८	७८	०	०.८५३
३९	४२	०	१.०९५	७९	७९	०	०.४०७
४०	४३	०	०.९९५	८०	८०	०	०.५२०
४१	४४	०	१.१३०	८१	८१	०	०.५३०
४२	४५	०	०.५२६	८२	८२	०	०.४१०
४३	४६	०	०.३९२	८३	८३	०	०.०५७
४४	४७	०	०.२००	८४	८४	०	०.०५७

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
८५	८५	०	०.४४६	१२५	१२१	०	०.६२०
८६	८६	०	०.२७०	१२६	१२२	०	०.४६२
८७	८७	०	०.६६०	१२७	१२३	०	०.४१०
८८	८८	०	०.३२०	१२८	१२४	०	०.७००
८९	८९	०	१.५८१	१२९	१२५	०	०.६९१
९०	९०	०	०.०५०	१३०	१२६	०	०.२२१
९१	९१	०	०.०५०	१३१	१२७	०	०.०२५
९२	९२	०	०.६६२	१३२	१२८	०	०.३९२
९३	९३	०	०.०१०	१३३	१२९	०	०.४२०
९४	९४	०	०.७९१	१३४	१३०	०	०.७२८
९५	९५	०	०.१६०	१३५	१३१	०	०.१६३
९६	९६	०	०.०६९	१३६	१३२	०	०.१९०
९७	९७	०	०.३७१	१३७	१३३	०	१.११३
९८	९८	०	०.२८८	१३८	१३४	०	०.३२९
९९	९९	०	०.८९०	१३९	१३५	०	०.३८६
१००	१००	०	०.४१७	१४०	१३६	०	०.३७२
१०१	१०१	०	०.३५०	१४१	१३७	०	०.९१८
१०२	१०२	०	०.०५०	१४२	१३८	०	०.११९
१०३	१०३	अ	०.६३७	१४३	१३९	०	०.०६०
१०४		ब	०.०३०	१४४	१४०	०	०.१४४
१०५	१०४	०	०.३२०	१४५	१४१	०	०.०२५
१०६	१०५	०	०.५८५	१४६	१४२	०	१.०९५
१०७	१०६	०	०.३८३	१४७	१४३	०	०.९१६
१०८	१०७	०	०.०९१	१४८	१४४	०	०.१२९
१०९	१०८	०	०.२१०	१४९	१४५	०	०.५२०
११०	१०९	०	०.७३७	१५०	१४६	०	०.९४४
१११	११०	०	०.५४६	१५१	१४७	०	०.४१०
११२	१११	०	०.९४७	१५२	१४८	०	०.४१०
११३	११२	०	०.०५०	१५३	१४९	०	०.४६०
११४	११३	०	०.२३८	१५४	१५०	०	०.२८०
११५	११४	अ	०.२००	१५५	१५१	०	१.९१०
११६		ब	०.०९९	१५६	१५२	०	०.१५५
११७		क	०.०३०	१५७	१५३	०	०.१५५
११८	११५	०	०.४८०	१५८	१५४	०	०.१८५
११९	११६	०	०.२९०	१५९	१५५	०	०.२००
१२०	११७	०	०.०५६	१६०	१५६	०	०.९००
१२१	११८	०	१.९५५	१६१	१५७	०	०.८३०
१२२	११९	०	०.३७०	१६२	१५८	०	०.६१०
१२३	१२०	१	०.३२९	१६३	१८२	०	०.७१०
१२४		२	०.४००	१६४	१८३	०	०.४२०

भाग चार-ब-२२७-१अ

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१६५	१८४	०	०.००५	१७२	१९१	०	०.०१०
१६६	१८५	०	०.४६३	१७३	१९२	०	०.०१५
१६७	१८६	०	०.२८०	१७४	१९३	०	०.०२५
१६८	१८७	०	०.२७०	१७५	१९४	०	०.०४०
१६९	१८८	०	१.६२०	१७६	१९५	०	०.०२३
१७०	१८९	०	९.१४०	१७७	१९६	०	०.०१०
१७१	१९०	०	०.०३०	१७८	१९७	०	१.१२५
				१७९	१९८	०	०.४२०
						एकूण	**९७.२९१**

चतुःसिमा :

उत्तरेस.—मध्य रेल्वे

दक्षिणेस.—मौजे रुरवईची शीव व नाला.

पूर्वेस.—मौजे केवली सर्व्हे नं. १३७,१३८,१३९,१४०, १४१, १४२, १४६, १४९, १५२, १६०

पश्चिमेस.—मोजे वांगणी व नांवढेची शीव.

जिल्हा रायगड, तालुका खालापूर, मौजे वांगणी

अनुक्रमांक	सर्व्हे नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)	अनुक्रमांक	सर्व्हे नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)
(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१	१	०	०.०१०	१९	२०	०	०.०२८
२	२	०	०.५९०	२०	२१	०	०.०३३
३	३	०	०.३०१	२१	२२	०	०.२१७
४	४	०	०.५७३	२२	२३	०	२.०५०
५	५	०	०.३९०	२३	२४	०	०.६१८
६	६	०	०.३२४	२४	२५	०	०.८९९
७	८	०	०.४७४	२५	२६	०	०.३५०
८	९	०	०.४१७	२६	२७	०	०.३२४
९	१०	०	०.०६०	२७	२८	०	०.४००
१०	११	०	०.२०२	२८	२९	०	०.७५०
११	१२	०	०.१४०	२९	३०	अ १	०.४६०
१२	१३	०	१.१४०	३०		ब २	०.०६०
१३	१४	०	०.०९९	३१	३१	०	०.०७०
१४	१५	०	०.४६३	३२	३२	०	२.५४०
१५	१६	०	०.५५४	३३	३३	०	०.७८०
१६	१७	०	०.०६०	३४	३४	०	०.२९०
१७	१८	०	०.६३३	३५	३७	०	०.२२०
१८	१९	०	१.२१०	३६	३८	०	०.१४०

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
३७	३९	०	०.१४०	६५	६८	०	०.०१५
३८	४०	०	२.६९०	६६	६९	०	०.४६५
३९	४१	०	२.४००	६७	७०	०	०.१६३
४०	४२	०	०.१६२	६८	७१	०	०.१५२
४१	४३	०	०.९३१	६९	७२	०	१.०७२
४२	४४	०	०.९३०	७०	७३	०	०.४२२
४३	४५	०	०.०४५	७१	७४	०	१.४११
४४	४६	०	०.५५५	७२	७५	०	०.२९१
४५	४७	०	०.६८६	७३	७६	०	०.८६६
४६	४८	०	०.६७०	७४	७७	०	०.३३४
४७	४९	०	०.०५०	७५	७८	०	०.१३०
४८	५०	०	१.८३३	७६	७९	०	०.०८०
४९	५१	०	२.५५८	७७	८०	०	०.३३२
५०	५२	०	०.२७४	७८	८१	०	०.५८२
५१	५३	०	०.५३७	७९	८२	०	०.४९३
५२	५४	०	०.५८४	८०	८३	०	०.६५३
५३	५५	०	०.४००	८१	८४	०	०.३५२
५४	५६	०	०.०४०	८२	८५	०	०.१३७
५५	५७	०	०.८२०	८३	८६	०	०.५९१
५६	५८	०	०.२८८	८४	८७	०	०.८२४
५७	५९	०	१.३७६	८५	८८	०	०.१२४
५८	६०	०	०.१७२	८६	८९	०	०.४९३
५९	६१	०	०.१५०	८७	९०	०	०.५७१
६०	६२	०	०.८२०	८८	९१	०	०.४०२
६१	६३	०	०.६४६	८९	९२	०	०.५११
६२	६५	०	१.१३४	९०	९३	०	०.६०७
६३	६६	०	०.४९०	९१	९४	०	०.५८२
६४	६७	०	०.७०६	९२	९५	०	०.०२०
						एकूण	५२.६६१

चतुःसिमा :

उत्तरेस.—मौजे तळवलीची शीव

दक्षिणेस.—मौजे केळवलीची शीव

पूर्वेस.—मौजे केळवलीची शीव

पश्चिमेस.—मौजे नांवढेची शीव

अनुसूची—चालू

मौजे घोडीवली, तालुका खालापूर, जिल्हा रायगड

अनुक्रमांक (१)	गट नंबर (२)	हिस्सा नंबर (३)	क्षेत्र (हे. आर) (४)	अनुक्रमांक (१)	गट नंबर (२)	हिस्सा नंबर (३)	क्षेत्र (हे. आर) (४)
१	१		०.३५४	४१	४२		०.११९
२	२	१	०.१४७	४२	४३		०.१३४
३	२	२	०.०४५	४३	४४		०.०४५
४	३		०.१३९	४४	४५		०.५२०
५	४		०.१३७	४५	४६		०.१०५
६	५		०.५४०	४६	४७		०.३५८
७	६		०.२५०	४७	४८		०.०६०
८	७		०.१४४	४८	४९		०.६४०
९	८		०.४६९	४९	५०		०.१५०
१०	९		०.९७९	५०	५१		०.२२२
११	१०		०.१७७	५१	५२		०.१२०
१२	११		१.३६८	५२	५३		०.०१५
१३	१२		१.१९३	५३	५४		०.०१०
१४	१३		०.१२३	५४	५५		०.२२०
१५	१४		०.५५६	५५	५६		०.३८१
१६	१५		०.००५	५६	५७		०.३२०
१७	१६		०.४७०	५७	५८		०.३४७
१८	१७		०.०७१	५८	५९		०.०५०
१९	१८		०.११९	५९	६०		०.०२०
२०	१९		०.०३०	६०	६१		०.४२१
२१	२०		०.८५६	६१	६२		०.६५९
२२	२१		०.८४७	६२	६३		०.४००
२३	२२		०.३२१	६३	६४		०.५२०
२४	२३		१.२०५	६४	६५		०.०७१
२५	२४		०.४५०	६५	६६		०.११७
२६	२६		१.७७५	६६	६७		०.६१०
२७	२७		०.३११	६७	६८		०.८७०
२८	२८		०.१८०	६८	६९		०.१८६
२९	३१		२.७८७	६९	७०		०.२९०
३०	३२		०.८८४	७०	७१		०.०२०
३१	३३		०.४१०	७१	७२		०.२३९
३२	३४		०.१००	७२	७३		०.८००
३३	३५	१	०.१२०	७३	७४		०.४८३
३४	३५	२	०.४३७	७४	७५		०.६३०
३५	३६		१.०८६	७५	७६		०.८५०
३६	३७		०.७९८	७६	७७		०.३७२
३७	३८		०.४७५	७७	७८		०.४४५
३८	३९		०.९६६	७८	७९		०.५४०
३९	४०		०.३१८	७९	८०		०.४००
४०	४१		०.०७१	८०	८१		०.४०७

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
८१	८२		०.३०३	१२४	१२३		०.६४६
८२	८३		०.८४२	१२५	१२४		०.४३४
८३	८४		०.४५४	१२६	१२५		०.२४३
८४	८५		०.२५३	१२७	१२६		०.०९०
८५	८६		०.२६०	१२८	१२७		०.८५१
८६	८७		०.३८७	१२९	१२८		०.७२५
८७	८८		०.३३५	१३०	१२९		१.२९७
८८	८९		०.२२०	१३१	१३०		०.११६
८९	९०		०.३००	१३२	१३१		०.१४२
९०	९१		०.२२८	१३३	१३२		०.०६३
९१	९२		०.३८४	१३४	१३३		०.६७३
९२	९३		०.५८२	१३५	१३४		०.१५७
९३	९४		०.१६५	१३६	१३५		०.११७
९४	९५		०.६२५	१३७	१३६		१.५४९
९५	९६		०.१००	१३८	१३७		०.४००
९६	९७		१.१३८	१३९	१३८		०.२७३
९७	९८		०.०६०	१४०	१३९		०.५३८
९८	९९		०.९४०	१४१	१४०		०.५१०
१००	१००		०.२८०	१४२	१४१		०.५३०
१०१	१०१		०.७१०	१४३	१४२		०.४६०
१०२	१०२		०.२९९	१४४	१४३		०.१७०
१०३	१०३		०.५८०	१४५	१४४		०.१५०
१०४	१०४		०.५११	१४६	१४५		०.१३०
१०५	१०५		०.२१५	१४७	१४६		०.१५९
१०६	१०६		०.५४०	१४८	१४७		०.६४०
१०७	१०७		०.४९८	१४९	१४८		०.५०७
१०८	१०८		०.३२८	१४९	१४९		०.१४४
१०९	१०९		०.४४०	१५०	१५०		०.१३०
११०	११०		०.५००	१५१	१५१		०.०९०
१११	१११		१.१६०	१५२	१५२		०.५५०
११२	११२		०.१८९	१५३	१५३		१.२७०
११३	११३		०.७५०	१५४	१५४		०.४६०
११४	११४		०.०२०	१५५	१५७		०.९२०
११५	११५		०.८९०	१५६	१५८		०.२७०
११६	११६		०.११०	१५७	१५९		०.४१०
११७	११७		०.७३०	१५८	१६०		०.४९०
११८	११८		०.२९०	१५९	१६१		०.९९३
११९	११९	१	०.४२१	१६०	१६२		१.८८०
१२०	११९	२	०.३६०	१६१	१६३		०.६९६
१२१	१२०		०.३१०	१६२	१६४		०.२७९
१२२	१२१		०.४१०	१६३	१६५		०.०७०
१२३	१२२		०.५५०	१६४	१६६		०.६९०

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१६५	१६७		०.४६६	२०७	२०५		०.६२०
१६६	१६८		०.४२५	२०८	२०६		०.१३०
१६७	१६९	१	०.११०	२०९	२०७		०.२५६
१६८	१६९	२	०.११०	२१०	२०८		०.८६३
१६९	१७०		०.०९६	२११	२०९		३.७९०
१७०	१७१		०.०६९	२१२	२१०		३.४९०
१७१	१७२	१	०.५९९	२१३	२११		०.३४०
१७२	१७२	२	०.०४०	२१४	२१२		०.१६०
१७३	१७३		०.६१४	२१५	२१३		०.६४२
१७४	१७४		०.७७९	२१६	२१४		०.८०७
१७५	१७५		०.१८०	२१७	२१५		०.९४८
१७६	१७६		०.१४०	२१८	२१६		१.३२९
१७७	१७७		१.५२०	२१९	२१७		०.२१७
१७८	१७८		०.७१०	२२०	२१८		०.०४३
१७९	१७९		०.१५०	२२१	२१९		०.१७७
१८०	१८०		१.६२०	२२२	२२०		०.०४३
१८१	१८१		०.८४०	२२३	२२१		०.१५२
१८२	१८२	१	०.१७७	२२४	२२२		४.०२२
१८३	१८२	२	०.१७०	२२५	२२३		१.२३२
१८४	१८३	१	०.२४७	२२६	२२४		०.२९४
१८५	१८३	२	०.१५०	२२७	२२५	१	३.३५४
१८६	१८४		०.३४०	२२८	२२५	२	०.९९०
१८७	१८५		०.२९०	२२९	२२६		०.५६०
१८८	१८६		०.७५०	२३०	२२७	२	१.०९०
१८९	१८७		०.२४०	२३१	२२८		०.५६०
१९०	१८७		०.२६०	२३२	२२९		०.२९०
१९१	१८८		१.२१०	२३३	२३०		०.२३३
१९२	१८९		०.६५०	२३४	२३१		१.४९९
१९३	१९०		०.२००	२३५	२३२		०.०१०
१९४	१९२		०.५५०	२३६	२३३		०.४००
१९५	१९३		०.९६०	२३७	२३५		०.३७०
१९६	१९४		२.०५०	२३८	२३६		०.१००
१९७	१९५		१.६५०	२३९	२३७		०.०८८
१९८	१९६		२.६७०	२४०	२३८		०.३३०
१९९	१९७		५.३३०	२४१	२३९	१	०.६४०
२००	१९८		१.२३०	२४२	२३९	२	०.५८४
२०१	१९९		३.५१०	२४३	२४०		०.२२८
२०२	२००		०.६८०	२४४	२४१		०.०५०
२०३	२०१		०.२६०	२४५	२४२		०.२३५
२०४	२०२		२.०१९	२४६	२४३		१.३९८
२०५	२०३		०.२००	२४७	२४५		१.१७०
२०६	२०४		०.४१०	२४८	२४७		०.३५४

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
२४९	२४८		०.०७०	२९१	२८९		०.३४७
२५०	२४९		०.३७२	२९२	२९०		०.३००
२५१	२५०		०.२५०	२९३	२९१		१.७३९
२५२	२५१		०.०९९	२९४	२९२		०.९१८
२५३	२५२		०.०९६	२९५	२९३		१.४३०
२५४	२५३		०.१११	२९६	२९४		०.५४१
२५५	२५४		०.२९१	२९७	२९५		१.६७४
२५६	२५५		०.१७५	२९८	२९६		०.४९८
२५७	२५६		०.४६६	२९९	२९७		१.०४७
२५८	२५७		०.६३४	३००	२९८		०.१३७
२५९	२५८		१.०६७	३०१	२९९		०.७२०
२६०	२५९		०.६४०	३०२	३००		०.५३२
२६१	२६०		०.२२२	३०३	३०१		०.२६४
२६२	२६१		०.०४५	३०४	३०२		०.२०८
२६३	२६२		०.०४०	३०५	३०३		०.३१८
२६४	२६३		१.०८०	३०६	३०४		०.१९६
२६५	२६४		०.०२५	३०७	३०५		०.३४०
२६६	२६५		०.८३०	३०८	३०७		०.३५८
२६७	२६६		०.१२१	३०९	३०८		०.०६०
२६८	२६७		१.४४०	३१०	३०९		०.१३१
२६९	२६८		०.०२०	३११	३१०		०.०५६
२७०	२६९		०.३७७	३१२	३११		०.११४
२७१	२७०		०.१६३	३१३	३१२		०.०४८
२७२	२७१		०.०६४	३१४	३१३		०.२९०
२७३	२७२		०.६८३	३१५	३१४		०.२००
२७४	२७३		१.०३०	३१६	३१५		०.०१३
२७५	२७४		०.०३८	३१७	३१६		०.२४९
२७६	२७५		०.०६८	३१८	३१७		०.०४८
२७७	२७७		०.०८०	३१९	३१८		०.३४४
२७८	२७८		०.८५०	३२०	३१९		०.११३
२७९	२७९		०.४२०	३२१	३२०		०.३४०
२८०	२८०		०.६४२	३२२	३२१		१.४७२
२८१	२८१		०.२००	३२३	३२२		०.१२०
२८२	२८२		०.६६२	३२४	३२३		०.९७६
२८३	२८३		०.०८१	३२५	३२४		१.४८५
२८४	२८४		०.३०३	३२६	३२५		०.८००
२८५	२८५		०.१३०	३२७	३२६		०.१८७
२८६	२८६		०.२७०	३२८	३२७		०.०९०
२८७	२८७	१	०.२७९	३२९	३२८		०.२८९
२८८	२८७	२	०.२३३	३३०	३२९		०.०६३
२८९	२८८	१	०.५७२	३३१	३३०		०.९५४
२९०	२८८	२	०.१३५	३३२	३३१		०.१६०

भाग चार-ब-२२७-२

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
३३३	३३२		०.३६०	३७५	३७२		०.२५३
३३४	३३३		०.४९०	३७६	३७३		०.२६४
३३५	३३४		०.२४५	३७७	३७४		२.२०५
३३६	३३५		०.३५०	३७८	३७५	१	०.२००
३३७	३३६		०.३१०	३७९	३७५	२	०.०५०
३३८	३३७		०.०८६	३८०	३७६		०.६२०
३३९	३३८		०.६०४	३८१	३७७		०.९३०
३४०	३३९		०.०२९	३८२	३७८		०.३२०
३४१	३४०		०.२४०	३८३	३७९		०.७००
३४२	३४१		०.१६०	३८४	३८०		०.०६०
३४३	३४२		०.०६०	३८५	३८१		०.१८०
३४४	३४३		०.२७७	३८६	३८२		०.२५०
३४५	३४४		०.१६७	३८७	३८३		०.०७५
३४६	३४५		०.३१९	३८८	३८४		०.२३३
३४७	३४६		०.२२६	३८९	३८५		०.१४२
३४८	३४७		०.०७०	३९०	३८६		०.५४०
३४९	३४८		०.३००	३९१	३८७		०.२७१
३५०	३४९		०.८६२	३९२	३८८		०.४८०
३५१	३५०		०.३२०	३९३	३८९		०.०१५
३५२	३५१		०.२७०	३९४	३९०		०.१८२
३५३	३५२		०.०३३	३९५	३९१		०.२६०
३५४	३५३		०.१२०	३९६	३९२		०.३२६
३५५	३५४		०.३९०	३९७	३९३		०.४३९
३५६	३५५		०.१८२	३९८	३९४		०.२९०
३५७	३५६		०.१५४	३९९	३९५		०.२२०
३५८	३५७		०.०३३	४००	३९६		०.११०
३५९	३५८		०.१८०	४०१	३९७		०.०१५
३६०	३५९	१	०.१४०	४०२	४०१		०.१७५
३६१	३५९	२	०.१८६	४०३	४०४		०.११०
३६२	३६०		०.१४९	४०४	४०५		०.१६७
३६३	३६१		०.२५३	४०५	४०६		०.७२१
३६४	३६२		०.१०४	४०६	४०७		०.१४७
३६५	३६३		०.०८६	४०७	४०८		०.५५२
३६६	३६४	१	०.५२०	४०८	४०९		०.१४१
३६७	३६४	२	१.२४५	४०९	४१०		०.१४७
३६८	३६५		०.०९९	४१०	४११		०.०६६
३६९	३६६		०.०५६	४११	४१२		०.१४०
३७०	३६७		०.२१०	४१२	४१३	१	५.५३३
३७१	३६८		०.१००	४१३	४१३	२	०.२१०
३७२	३६९		०.१४९	४१४	४१३	३	०.२४०
३७३	३७०		०.१२२	४१५	४१४		०.०६०
३७४	३७१		०.५१०	४१६	४१५		०.८७३

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
४१७	४१६		०.२००	४५९	४५८		०.०९६
४१८	४१७		१.१८३	४६०	४५९		०.१३७
४१९	४१८		०.६८५	४६१	४६०		०.०६१
४२०	४१९		०.२१७	४६२	४६१		०.०६०
४२१	४२०		०.३८७	४६३	४६२	१	०.१५०
४२२	४२१		०.०५१	४६४	४६२	२	०.१४०
४२३	४२२		०.१३५	४६५	४६३		०.३४०
४२४	४२३		०.१२०	४६६	४६४		०.०७६
४२५	४२४		०.२३३	४६७	४६५		०.२६७
४२६	४२५		०.२२०	४६८	४६६		०.०१५
४२७	४२६		०.२१२	४६९	४६७		०.३२६
४२८	४२७		०.१५०	४७०	४६८		०.०१०
४२९	४२८		०.३१९	४७१	४६९		०.१६०
४३०	४२९		०.०६८	४७२	४७०		०.१५०
४३१	४३०		०.२९०	४७३	४७१		०.२५०
४३२	४३१		०.१६४	४७४	४७२		०.१२०
४३३	४३२		०.१७२	४७५	४७३		०.२००
४३४	४३३		०.१०६	४७६	४७४		०.२६९
४३५	४३४		०.६०१	४७७	४७५		०.०२०
४३६	४३५		०.१३९	४७८	४७६		०.२५६
४३७	४३६		०.१५९	४७९	४७७		०.३६७
४३८	४३७		०.२४०	४८०	४७८		०.३६७
४३९	४३८		०.१५०	४८१	४७९		०.२८०
४४०	४३९		०.०९०	४८२	४८०		०.६२०
४४१	४४०		१.०२०	४८३	४८१		०.१४२
४४२	४४१		०.०७८	४८४	४८२		०.०३०
४४३	४४२		०.०८१	४८५	४८३		०.०८०
४४४	४४३		१.०१०	४८६	४८४		०.३१०
४४५	४४४		०.२९६	४८७	४८५		०.१७४
४४६	४४५		०.१७५	४८८	४८६		०.०८३
४४७	४४६		१.०००	४८९	४८७		०.२३४
४४८	४४७		०.३३९	४९०	४८८		०.१०१
४४९	४४८		०.२५०	४९१	४८९		०.७०६
४५०	४४९		०.४००	४९२	४९०		०.०७३
४५१	४५०		०.३८७	४९३	४९१		०.०९९
४५२	४५१		०.०६८	४९४	४९२		०.६३०
४५३	४५२		०.०८८	४९५	४९३		०.०६१
४५४	४५३		०.४६१	४९६	४९४		०.०७६
४५५	४५४		०.१११	४९७	४९५		०.४१३
४५६	४५५		०.०४३	४९८	४९६		०.०७०
४५७	४५६		०.११०	४९९	४९७		०.१३९
४५८	४५७		०.३६३	५००	४९८		०.०६६

भाग चार-ब-२२७-२अ

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
५०१	४९९		०.८२२	५३५	५३५		०.१९०
५०२	५००		०.१४०	५३६	५३६		०.८६०
५०३	५०१		०.६७३	५३७	५३७		०.३२७
५०४	५०२		०.७५७	५३८	५३८		०.०४५
५०५	५०३		०.०९६	५३९	५३९		०.२४०
५०६	५०४		०.०७९	५४०	५४०		०.११४
५०७	५०६		०.१९८	५४१	५४१		०.०३५
५०८	५०७		०.०५३	५४२	५४२		०.१७४
५०९	५०८		०.०३३	५४३	५४३		०.४४५
५१०	५०९		०.२४४	५४४	५४४		०.०९९
५११	५१०		०.३३०	५४५	५४५		०.१६४
५१२	५११		०.०८०	५४६	५४६		०.५४७
५१३	५१२		०.१८०	५४७	५४७		०.१८४
५१४	५१३		०.१६०	५४८	५४८		०.१०१
५१५	५१४		०.८८४	५४९	५४९		०.०५८
५१६	५१५		०.६८८	५५०	५५०		०.१८९
५१७	५१६		०.०५६	५५१	५५१		०.२३३
५१८	५१७		०.११०	५५२	५५२		०.८०३
५१९	५१८		०.३२०	५५३	५५३		०.०५६
५२०	५१९		०.०१५	५५४	५५४		१.४३३
५२१	५२०		२.१८२	५५५	५५५		०.०४५
५२२	५२१		०.४६७	५५६	५५६		०.०६३
५२३	५२२		०.३५९	५५७	५५७		०.७१८
५२४	५२३		०.१०४	५५८	५५८		०.८१७
५२५	५२४		०.७४२	५५९	५५९		०.८७७
५२६	५२५		०.०५०	५६०	५६०		०.७८९
५२७	५२६		०.३७२	५६१	५६१		०.१५०
५२८	५२७		०.४९०	५६२	५६२		२.५६१
५२९	५२८		०.६५०	५६३	५६३		०.१०७
५३०	५२९		०.२७१	५६४	५६४		०.२४८
५३१	५३१		०.७४०	५६५	५६५		०.३५९
५३२	५३२		०.७६१	५६६	५६६		०.४९४
५३३	५३३		०.३१०	५६७	५६७		०.१२७
५३४	५३४		०.१३०	५६८	५६९		०.११२
						एकूण	२५६.५५१

चतु:सिमा :

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दक्षिणेस.—नाला

पूर्वेस.—मौजे कांढरोलीची शीव

पश्चिमेस.—मौजे खालापूरची शीव व कांढरोलीचे गट नं. २९ व ३०.

अनुसूची—चालू

मौजे कांढरोली, तालुका खालापूर, जिल्हा रायगड

अनुक्रमांक (१)	सर्व्हे नंबर (२)	हिस्सा नंबर (३)	क्षेत्र (हे. आर) (४)	अनुक्रमांक (१)	सर्व्हे नंबर (२)	हिस्सा नंबर (३)	क्षेत्र (हे. आर) (४)
१	२	१	१.२२०	४०	९	४	०.०२५
२	२	३	०.०९०	४१	९	५	१.९२३
३	२	४	०.०७०	४२	९	६	०.४४०
४	२	५	०.२५०	४३	९	७	०.०७९
५	२	६	०.०६०	४४	९	८	०.०७०
६	२	७	१.६७०	४५	९	९	०.०३८
७	३	१	५.६१०	४६	१०	१	०.०२३
८	३	२	०.०२०	४७	१०	२	०.३०२
९	३	३	०.०७०	४८	१०	३ब	०.३४५
१०	४	१	०.०६०	४९	१०	३क	१.२९४
११	४	२	०.१९१	५०	१०	४	०.१६७
१२	४	३	०.०३५	५१	१०	६	०.२००
१३	४	४	०.०६७	५२	१०	८	०.१४४
१४	४	५	०.०७९	५३	१०	९	०.०१०
१५	४	६	०.०६१	५४	१०	१०	०.१६०
१६	४	७	०.१०४	५५	१०	११	०.००५
१७	४	८	०.०२५	५६	१०	१२	०.२७२
१८	५	१	०.४४८	५७	१०	१३	०.१२०
१९	५	२	०.०७८	५८	१०	१४	०.१५७
२०	६	१अ	०.७०३	५९	११	१	०.४१४
२१	६	१ब	०.७९०	६०	११	२	०.३३७
२२	६	१क	०.७८९	६१	११	३	०.४१९
२३	६	२	०.१६७	६२	११	४अ	०.०१०
२४	६	३	०.०३३	६३	११	४ब	०.०१५
२५	६	४	०.०२०	६४	११	५	०.२३०
२६	७	१	०.४४६	६५	११	६	०.१६५
२७	७	२	०.२८८	६६	१३	१	०.०३३
२८	७	३अ१	०.४९५	६७	१३	२	०.२२०
२९	७	३अ२	०.४९५	६८	१३	३	०.०३०
३०	७	३अ३	०.५०६	६९	१३	४अ	०.४७५
३१	७	३ब	०.३६७	७०	१३	४ब१	०.०३४
३२	७	४	०.१७७	७१	१३	४ब२	०.०२९
३३	७	५	०.१३०	७२	१३	४ब३	०.०२९
३४	७	६	०.०३०	७३	१३	४ब४	०.०२७
३५	८	२	१.१००	७४	१३	४ब५	०.०२८
३६	९	१	०.०७६	७५	१३	४ब६	०.०२६
३७	९	२अ	०.४०२	७६	१३	४ब७	०.०३०
३८	९	२ब	०.४००	७७	१३	४ब८	०.०३८
३९	९	३	०.०८६	७८	१३	४ब९	०.०४७

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
७९	१३	४ब१०	२.९८०	११९	१८		०.०८३
८०	१३	४ब११	०.०२९	१२०	१९	१	०.११०
८१	१३	४ब१२	०.०४०	१२१	१९	२	०.३००
८२	१३	४ब१३	०.०२८	१२२	१९	३	०.०८०
८३	१३	४ब१४	०.०५५	१२३	१९	४	०.३७०
८४	१३	४ब१५	०.०२९	१२४	१९	५	०.०४०
८५	१३	४ब१६	०.०२९	१२५	२०	१	०.४७३
८६	१३	४ब१७	२.९४०	१२६	२०	२	०.१४०
८७	१३	४ब१८	०.०४६	१२७	२०	३	०.०३३
८८	१३	४ब१९	०.०३२	१२८	२०	४	०.२७०
८९	१३	४ब२०	०.०३१	१२९	२०	५	०.११६
९०	१३	४ब२१	०.०४३	१३०	२०	६	०.५६९
९१	१३	४ब२२	०.०२८	१३१	२०	७	०.०८६
९२	१३	४ब२३	०.०२८	१३२	२०	८	०.१५०
९३	१३	४ब२४	०.०२८	१३३	२०	९	०.२८०
९४	१३	४ब२५	०.०३६	१३४	२०	१०	०.०९१
९५	१३	४ब२६	०.०२८	१३५	२०	११	०.०३३
९६	१३	४ब२७	०.०२९	१३६	२१	१	०.१७२
९७	१३	४ब२८	०.०२९	१३७	२१	२	०.४२२
९८	१३	४ब२९	०.०३०	१३८	२१	३	०.२००
९९	१३	४ब३०	०.०३०	१३९	२१	४	०.३६३
१००	१३	४ब३१	०.३६७	१४०	२१	५	०.०६०
१०१	१५	१	०.९८९	१४१	२२	१	०.५९५
१०२	१५	२अ	०.३६६	१४२	२२	२	०.३००
१०३	१५	२ब	०.०८०	१४३	२२	३	०.०३८
१०४	१७	१अ	०.८६१	१४४	२२	४	०.०८७
१०५	१७	२	०.०६१	१४५	२२	५	०.१६०
१०६	१७	३ब	०.३४७	१४६	२२	६	०.५७०
१०७	१७	३क	०.०४३	१४७	२३	१	०.२५८
१०८	१७	३अ१	०.३३४	१४८	२३	२	०.६१७
१०९	१७	३अ२	०.१८०	१४९	२३	३	०.२६१
११०	१७	५	०.०३०	१५०	२३	४	०.२८०
१११	१७	६अ	०.०१५	१५१	२३	५	०.१४७
११२	१७	६ब	०.१३०	१५२	२४	१	०.२४४
११३	१७	८अ	०.१९०	१५३	२४	२	०.२८७
११४	१७	८ब	०.२०३	१५४	२४	३	०.०६०
११५	१७	९अ	०.१००	१५५	२४	४	०.४८९
११६	१७	९ब	०.०७३	१५६	२४	५	०.२९०
११७	१७	११अ	०.१०६	१५७	२४	६	०.०९९
११८	१७	१३	०.००८	१५८	२५	१	०.६९०

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१५९	२५	२	०.१११	१९९	२९	२ब	०.६६०
१६०	२५	३	०.४८०	२००	२९	३	०.०२३
१६१	२५	४	०.०४०	२०१	२९	४	०.१६०
१६२	२५	५	०.११६	२०२	२९	५	०.०७०
१६३	२५	६	०.०५६	२०३	२९	६अ	०.२६९
१६४	२५	७	०.२६६	२०४	२९	६ब	०.१९७
१६५	२५	८	०.०७१	२०५	२९	८अ	०.२०३
१६६	२५	९	०.३२६	२०६	२९	८ब	०.०६०
१६७	२५	१०	०.१२६	२०७	३०	१	०.२४२
१६८	२५	११	०.०७३	२०८	३०	२	०.३७४
१६९	२५	१२	०.०३०	२०९	३०	३	०.३३५
१७०	२५	१३	०.०७८	२१०	३०	४	०.२१०
१७१	२५	१४	०.०४०	२११	३०	५	०.०७३
१७२	२५	१५	०.०३३	२१२	३०	६अ	०.२९५
१७३	२६	१	०.३३८	२१३	३०	६ब	०.२३३
१७४	२६	३अ	०.०२०	२१४	३०	६क	०.१८२
१७५	२६	३ब	०.०४०	२१५	३०	७	०.०५८
१७६	२६	४	०.२०६	२१६	३०	९	०.२७०
१७७	२६	७	०.०२३	२१७	३०	१०	०.२६७
१७८	२६	८अ	०.४६०	२१८	३०	११	०.२२०
१७९	२६	८ब	०.४०३	२१९	३०	१२	०.०२३
१८०	२६	८क	०.४५५	२२०	३१		०.२४०
१८१	२७	१अ	०.१७२	२२१	३२	१	०.०९०
१८२	२७	१ब	०.२१०	२२२	३२	२अ	०.११५
१८३	२७	३	०.२६०	२२३	३२	२ब	०.०१६
१८४	२७	४अ	०.३९.५	२२४	३२	३अ	०.१४२
१८५	२७	४ब	०.३९२	२२५	३२	३ब	०.३४७
१८६	२८	१	०.१३०	२२६	३२	३क	०.३४५
१८७	२८	२अ	१.००३	२२७	३२	५अ१	०.०९९
१८८	२८	२ब	०.१८०	२२८	३२	५अ२	०.०९१
१८९	२८	३	०.२३२	२२९	३२	६	०.३०४
१९०	२८	५	०.०९४	२३०	३२	७अ	०.२३०
१९१	२८	६	०.१३१	२३१	३२	८अ	०.३९८
१९२	२८	७अ	०.३७०	२३२	३२	९	०.१६३
१९३	२८	७ब	०.०९६	२३३	३२	१०	०.२९०
१९४	२८	८	०.१८२	२३४	३२	११	०.१४०
१९५	२८	९	०.३९२	२३५	३३	१	०.१७०
१९६	२८	१०	०.००५	२३६	३३	२	०.०६०
१९७	२९	१	०.०९०	२३७	३३	३अ	०.४१०
१९८	२९	२अ	०.३९०	२३८	३३	३ब	०.१९७

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
२३९	३३	४	०.१६०	२५६	३४	१०	०.०३८
२४०	३३	५	०.११०	२५७	३५	१	०.०१०
२४१	३३	७	०.१९५	२५८	३५	२	०.०१०
२४२	३३	८	०.२६८	२५९	३६	१	०.६६१
२४३	३३	९	०.१२७	२६०	३६	२अ	०.०५८
२४४	३३	१०	०.६२०	२६१	३६	२ब	०.०४३
२४५	३३	११	०.०३०	२६२	३८	१	०.०४५
२४६	३४	१अ	०.०२०	२६३	३८	२	०.०२८
२४७	३४	१ब	०.०७०	२७९	३८	३	०.०२७
२४८	३४	२	०.१९०	२८०	३८	४अ	०.०३३
२४९	३४	३	०.१९०	२८१	३८	४ब	०.०२३
२५०	३४	४	०.०३०	२८२	३८	५	०.०३३
२५१	३४	५	०.१११	२८३	३८	६	०.०१३
२५२	३४	६	१.१९१	२८४	३८	७	०.०१३
२५३	३४	७	०.२५१	२८५	३८	८	०.०१८
२५४	३४	८	०.०४८	२८६	३८	९	०.०१५
२५५	३४	९	०.१४८	२८७	३८	१०	०.०१०
				२८८	३८	११	०.०३०
						एकूण	**६८.३२०**

चतुःसीमा :

उत्तरेस.—मौजे नवांदेची शीव

दक्षिणेस.—नाला

पूर्वेस.—मौजे नवांदेची शीव

पश्चिमेस.—मौजे घोडवलीची शीव

मौजे नावंढे, तालुका खालापूर, जिल्हा रायगड

अनुक्रमांक (१)	सर्व्हे नंबर (२)	हिस्सा नंबर (३)	क्षेत्र (हे. आर) (४)	अनुक्रमांक (१)	सर्व्हे नंबर (२)	हिस्सा नंबर (३)	क्षेत्र (हे. आर) (४)
१	१०२		०.२९०	९	११८		०.४१०
२	१०७	१	०.२३०	१०	११९		०.४२०
३	१०८	१	०.२००	११	१२०		०.३५०
४	११३		१.२६०	१२	१२१		०.१२०
५	११४		०.५५०	१३	१२२		०.६३०
६	११५		१.५५०	१४	१२३		०.२२०
७	११६		०.५३०	१५	१२७	Pt.	०.११०
८	११७		०.१८०				

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१६	१५२		०.१००	५६	१९०	१	०.३१०
१७	१५३		०.१५०	५७	१९०	२	०.८८०
१८	१५४		०.११०	५८	१९१		०.०९०
१९	१५५		०.२२०	५९	१९२		०.०६१
२०	१५६		०.३५०	६०	१९३		०.०७६
२१	१५७	१	०.३१८	६१	१९४		०.०१०
२२	१५७	२	०.६९०	६२	१९५		०.५१३
२३	१५८		०.९०४	६३	१९६		०.१३९
२४	१५९		०.१४९	६४	१९७		०.६१२
२५	१६०		०.७७२	६५	१९८		०.७३०
२६	१६१		०.११४	६६	१९९		१.०६०
२७	१६२		०.२७३	६७	२००		०.४२५
२८	१६३		०.४२६	६८	२०१		१.१३६
२९	१६४		०.३७४	६९	२०२		०.५८२
३०	१६५		०.५४१	७०	२०३	१	१.७८७
३१	१६६		०.१४५	७१	२०३	२	०.०६६
३२	१६७		०.०२०	७२	२०४		०.११९
३३	१६८		०.५३०	७३	२०५	१	०.४४४
३४	१६९		०.५७०	७४	२०५	२	०.०२०
३५	१७०		०.४८०	७५	२०६		०.२९८
३६	१७१	१	१.२४०	७६	२०७		१.१७४
३७	१७१	२	०.०९०	७७	२०८		०.९८५
३८	१७२		०.०२०	७८	२०९		०.०८४
३९	१७३		०.३२०	७९	२१०		०.९००
४०	१७४		०.४६०	८०	२११		०.६६७
४१	१७५		०.८३०	८१	२१२		०.७००
४२	१७७		०.०७३	८२	२१३		२.९२४
४३	१७८		०.३१८	८३	२१५		१.७६३
४४	१७९		०.०२६	८४	२१६		१.९९९
४५	१८०		०.०५०	८५	२१७		१.६५२
४६	१८१		१.०६८	८६	२१८		०.७६०
४७	१८२		०.११०	८७	२१९	१	०.९८१
४८	१८३		०.१६७	८८	२१९	२	०.१५१
४९	१८४		०.८०५	८९	२२०		०.०२०
५०	१८५		०.६६३	९०	२२१		०.०१५
५१	१८६	१	०.०९६	९१	२२२		१.३००
५२	१८६	२	०.१३९	९२	२२३		१.६८०
५३	१८७		०.१६७	९३	२२४		०.०९९
५४	१८८		०.२५६	९४	२२५		२.८९९
५५	१८९		०.३२६	९५	२२६		०.२६४

भाग चार-ब-२२७-३

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
९६	२२७		०.०८६	१३६	२६१	८	०.०७०
९७	२२८		०.९५०	१३७	२६१	९	०.०७२
९८	२२९		०.००८	१३८	२६१	१०	०.०७२
९९	२३०		०.०१०	१३९	२६१	११	०.०८८
१००	२३१		०.१९३	१४०	२६१	१२	०.०६९
१०१	२३२		०.८१५	१४१	२६१	१३	०.०९०
१०२	२३३		०.०४०	१४२	२६२		०.०२०
१०३	२३४		०.०१०	१४३	२६३		०.०३०
१०४	२३५		१.१७०	१४४	२६४	१	०.०३९
१०५	२३६		२.९२९	१४५	२६४	२	०.०३२
१०६	२३७		०.१६०	१४६	२६४	३	०.०३२
१०७	२३८		०.३१९	१४७	२६४	४	०.०३२
१०८	२३९		०.१७७	१४८	२६४	५	०.०३२
१०९	२४०		०.०५०	१४९	२६४	६	०.०३२
११०	२४२		०.०९०	१५०	२६४	७	०.०३२
१११	२४३		०.१०६	१५१	२६४	८	०.०२७
११२	२४४	१	४.६६९	१५२	२६४	९	०.०२७
११३	२४४	२	०.२५०	१५३	२६४	१०	०.०३०
११४	२४६		२.०४९	१५४	२६४	११	०.०३५
११५	२४७		०.०४५	१५५	२६४	१२	०.०३३
११६	२४८		०.०६०	१५६	२६४	१३	०.०३५
११७	२४९		०.५०९	१५७	२६४	१४	०.०३२
११८	२५०		०.३०९	१५८	२६४	१५	०.०३८
११९	२५१		०.०४०	१५९	२६४	१६	०.०३०
१२०	२५२		०.०२३	१६०	२६४	१७	०.०३६
१२१	२५३		०.८४२	१६१	२६४	१८	०.०२१
१२२	२५४		०.४२०	१६२	२६४	१९	०.०२८
१२३	२५५		०.०५३	१६३	२६४	२०	०.०२८
१२४	२५६		०.१४९	१६४	२६४	२१	०.०२८
१२५	२५७		०.५४४	१६५	२६४	२२	०.०२८
१२६	२५८		०.२५८	१६६	२६४	२३	०.०२८
१२७	२५९		०.०१०	१६७	२६४	२४	०.०२८
१२८	२६०		०.०३०	१६८	२६४	२५	०.०२८
१२९	२६१	१	०.१२०	१६९	२६४	२६	०.०२८
१३०	२६१	२	०.०६०	१७०	२६४	२७	०.०३३
१३१	२६१	३	०.०७०	१७१	२६४	२८	०.०२८
१३२	२६१	४	०.०७१	१७२	२६४	२९	०.३००
१३३	२६१	५	०.०६६	१७३	२६४	३०	०.०३३
१३४	२६१	६	०.०३०	१७४	२६४	३१	०.०४४
१३५	२६१	७	०.०६१	१७५	२६४	३२	०.०३९

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१७६	२६४	३३	०.०३९	१९९	२७०		०.०४३
१७७	२६४	३४	०.०३३	२००	२७१		०.४५५
१७८	२६४	३५	०.०३०	२०१	२७२		१.७९७
१७९	२६४	३६	०.०२८	२०२	२७३		१.१०५
१८०	२६४	३७	०.०२८	२०३	२७४		०.०६०
१८१	२६४	३८	०.०३६	२०४	२७५	१	१.२८०
१८२	२६४	३९	०.०३५	२०५	२७५	२	०.१५४
१८३	२६४	४०	०.०२८	२०६	२७६		०.०९०
१८४	२६४	४१	०.०२८	२०७	२७७		०.४३४
१८५	२६४	४२	०.०२८	२०८	२७८		०.२८९
१८६	२६४	४३	०.०५०	२०९	२७९		१.०८९
१८७	२६४	४४	०.०२९	२१०	२८४		१.६६२
१८८	२६४	४५	०.०२८	२११	२८५		०.५३९
१८९	२६४	४६	०.०२८	२१२	२८६		०.२६०
१९०	२६४	४७	०.०४५	२१३	२८७		०.०२०
१९१	२६४	४८	०.६४७	२१४	३१०		०.००८
१९२	२६४	४९	०.२४१	२१५	१३५		०.४००
१९३	२६४	५०	१.२३४	२१६	२८०	१	१.९८०
१९४	२६५		०.०६६	२१७	२८०	२	०.६५०
१९५	२६६		०.०५०	२१८	२८०	३	०.४८०
१९६	२६७		०.२३७	२१९	२८१		०.०६०
१९७	२६८		१.०८७	२२०	२८२		०.८९०
१९८	२६९		०.०५८	२२१	२८३		०.१९०
						एकूण . .	८९.५७१

चतुःसीमा :

उत्तरेस.—गट नं. २९२, २९३, ३१२, १५०, १४५, १४४, १८१, १२४, १८८, ६६, १८०, १३५, २९९

दक्षिणेस.—नाला

पूर्वेस.—हल बुद्रुक ते कर्जत रोड

पश्चिमेस.—मौजे कांढरोलीची शीव

मौजे मानकिवली, तालुका खालापूर, जिल्हा रायगड

अनुक्रमांक	सर्व्हे नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)	अनुक्रमांक	सर्व्हे नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)
(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१	१५		०.६४०	४	३५		०.१९०
२	३२		०.५४७	५	३६		०.७००
३	३३		०.४४०	६	३७		०.२३५

भाग चार-ब-२२७-९अ

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
७	३८		०.०९९	४५	७६		०.६८०
८	३९		०.३००	४६	७७		०.३५०
९	४०		०.४७५	४७	७८		०.४००
१०	४१		०.४७०	४८	७९		०.१९१
११	४२		०.४२०	४९	८०		०.०३५
१२	४३		०.२००	५०	८१		०.६७९
१३	४४		०.२२८	५१	८२		०.६०४
१४	४५		०.०२४	५२	८३		०.१३२
१५	४६		०.०६०	५३	८४		०.०५३
१६	४७		०.२०३	५४	८५		०.०५६
१७	४८		०.०१०	५५	८६		०.५९२
१८	४९		०.२३४	५६	८८		०.६२७
१९	५०		०.२०४	५७	८९	१	०.४५४
२०	५२		०.६२०	५८	८९	२	०.१७४
२१	५३		०.२०६	५९	९०		०.१७६
२२	५४		०.२३०	६०	९१		०.१६८
२३	५५		०.४७७	६१	९२		०.०४०
२४	५६	१	१.०२२	६२	९३		०.४१९
२५	५६	२	०.०२०	६३	९४		०.१७५
२६	५७		०.०९९	६४	९५		०.१०८
२७	५८		०.२१५	६५	९६		०.२७७
२८	५९		०.७११	६६	९७		०.९४३
२९	६०		०.३७१	६७	९८		०.१५०
३०	६१		०.८३७	६८	९९		०.९०७
३१	६२		०.६९६	६९	१००		०.६२०
३२	६३		०.०४८	७०	१०१		०.०१०
३३	६४		०.२३८	७१	१०२		१.३८७
३४	६५		०.३९५	७२	१०३		२.०७५
३५	६६		०.०२०	७३	१०४		०.६१३
३६	६७		०.१८२	७४	१०५		०.७९५
३७	६८		०.४३५	७५	१०६		२.६५०
३८	६९		०.२४३	७६	१११		०.८५८
३९	७०		०.४८३	७७	११२		०.४७३
४०	७१		०.६०४	७८	११३	१	०.६९५
४१	७२		०.०८६	७९	११३	२	०.०२०
४२	७३		०.६८०	८०	११६		०.१२०
४३	७४		०.४८६	८१	११७		०.७७८
४४	७५		०.४२०	८२	११८		०.१२६

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
८३	११९		०.२९१	१२२	१९५		०.४०४
८४	१२०		१.४३४	१२३	१९६		०.३५०
८५	१२१		०.०१०	१२४	१९७		०.४३८
८६	१२२		०.२३८	१२५	१९८		०.०७१
८७	१२३		०.३२७	१२६	१९९		०.६०२
८८	१२४		०.०१३	१२७	२००		०.१०४
८९	१२५		०.०७६	१२८	२०१		१.१६१
९०	१२६		०.०९४	१२९	२१६		०.४१३
९१	१२७	१	०.२५८	१३०	२१७		०.१९५
९२	१२७	२	०.२४८	१३१	२१८		०.६९१
९३	१२८		०.१०६	१३२	२१९		०.११९
९४	१२९		०.११४	१३३	२२०		०.४७५
९५	१३०		०.२३३	१३४	२२१		०.०९४
९६	१३१		०.०८६	१३५	२२२		०.८९५
९७	१३३	पैकी	०.३४४	१३६	२२३		०.२२८
९८	१३४		०.६९२	१३७	२२४		०.२४१
९९	१३५		०.२३५	१३८	२२५	१	०.६११
१००	१३६		०.०८६	१३९	२२५	२	०.२१०
१०१	१३७		०.२३७	१४०	२२६		०.०९१
१०२	१३८		०.२३०	१४१	२२७		०.५९१
१०३	१३९	१	०.४७१	१४२	२२८		०.०८८
१०४	१३९	२	०.०७१	१४३	२२९		०.२०८
१०५	१४०		०.१५०	१४४	२३०		०.११७
१०६	१४१		०.३०६	१४५	२३१		०.१७०
१०७	१४२		०.१३०	१४६	२३२		०.१४६
१०८	१४३		१.१९७	१४७	२३३		०.०५०
१०९	१४४		०.१४०	१४८	२३४		०.४८०
११०	१४५		०.४२७	१४९	२३५		०.०५६
१११	१४६		०.६५४	१५०	२३६		०.९२४
११२	१४७		०.०८०	१५१	२३७		०.०४८
११३	१४८		०.२१३	१५२	२३८		०.०२०
११४	१४९		०.०३०	१५३	२३९		०.५३९
११५	१८८		०.९१९	१५४	२४०		०.१८१
११६	१८९		०.०५१	१५५	२४१		०.०१५
११७	१९०		०.००८	१५६	२४२		०.२१७
११८	१९१		०.०६६	१५७	२४३		०.४३७
११९	१९२		०.०२५	१५८	२४४		०.४४०
१२०	१९३		०.२४३	१५९	२४५		१.२१४
१२१	१९४		०.०८०			एकूण	५९.०६०

अनुसूची—चालू

चतु:सिमा :

उत्तरेस.—मौजे हाळ बुद्रुक ते कर्जत रोड व मौजे मानकिवलीचे गट नं. १०७, १०९, ११०, ११४, ११५.

दक्षिणेस.—नाला

पूर्वेस.—कर्जत-खोपोली रेल्वे लाईन

पश्चिमेस.—नाला व मौजे अंजरुनची शीव.

मौजे हाळखुर्द, तालुका खालापूर, जिल्हा रायगड

अनुक्रमांक	सर्व्हे नंबर	गट नंबर	क्षेत्र (हे. आर)	अनुक्रमांक	गट नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)
(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१	५४	पैकी	०.२००	३१	५७	१५	०.१००
२	५५	१	०.०६०	३२	५७	१६	०.०७१
३	५५	२	०.१९०	३३	५७	१७	०.०७०
४	५५	३अ	१.०८०	३४	५८		०.८८०
५	५५	४	०.०२०	३५	५९	१	०.५९०
६	५५	५	०.११०	३६	५९	२	१.२५०
७	५५	६	०.२२०	३७	५९	३	०.४५०
८	५५	७	०.३९०	३८	५९	४	०.४५०
९	५५	८अ/१	०.०३०	३९	६०	१अ	०.६३०
१०	५५	८अ/२	०.०३०	४०	६०	१ब	०.३३०
११	५५	८अ/३	०.०४०	४१	६०	२	०.५७०
१२	५५	८अ/४	०.०७०	४२	६०	३	०.२८०
१३	५५	९	०.१८०	४३	६१	१अ	०.१८४
१४	५५	१०	०.०१०	४४	६१	१ब	०.१३७
१५	५५	११अ	०.०६०	४५	६१	२अ	०.५२९
१६	५५	११ब	०.०२०	४६	६१	२ब	०.४७५
१७	५७	१	०.०१०	४७	६१	३अ	०.२३६
१८	५७	२	०.०७१	४८	६१	३ब	०.१८७
१९	५७	३	०.२२८	४९	६१	३क	०.२०७
२०	५७	४	०.१०१	५०	६१	३क	०.०६१
२१	५७	५	०.०७१	५१	६२	१	०.०१०
२२	५७	६	०.४८८	५२	६२	२	०.०३०
२३	५७	७	०.१९०	५३	६२	३	०.०८०
२४	५७	८	०.४६२	५४	६२	४अ	०.४३०
२५	५७	९	०.२३०	५५	६२	४ब	०.४२४
२६	५७	१०	०.०२०	५६	६२	५	०.५२१
२७	५७	११	०.१२२	५७	६२	६	०.०३०
२८	५७	१२	०.२१३	५८	६२	७	०.१८०
२९	५७	१३	०.११०	५९	६२	८	०.०६०
३०	५७	१४	०.११४	६०	६३	अ	१.०२२

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
६१	६४		१.१५३	७९	६७	१	०.१३९
६२	६५	१	०.०९१	८०	६७	२	०.५७९
६३	६५	२अ	०.१७०	८१	६८	१	०.९३२
६४	६५	२ ब	०.१७८	८२	६८	२	०.६७६
६५	६५	३	०.३१०	८३	६८	३	०.७८०
६६	६५	४	०.६३३	८४	६९	१	१.६७१
६७	६५	५	०.०६०	८५	६९	२	०.१२९
६८	६५	६	०.१८०	८६	७०	१	०.०५०
६९	६५	७	०.२२०	८७	७०	२	०.१९८
७०	६६	१अ	०.२३०	८८	७०	३अ	०.४४०
७१	६६	१ब	०.२३०	८९	७०	३ब	०.४३०
७२	६६	२	०.३४१	९०	७०	४	०.२२०
७३	६६	३	०.८१०	९१	७०	५अ	०.०६०
७४	६६	४	०.४९३	९२	७०	५ब	०.०६०
७५	६६	५	०.०६६	९३	७०	६	०.१६०
७६	६६	६	०.३३९	९४	७०	७	०.०६०
७७	६६	७	०.२२०	९५	७०	८	०.१३२
७८	६६	८	०.१९५	९६	७०	९	०.२५०
				९७	७०	१०	०.०२०
						एकूण	**२८.५१९**

चतुःसिमा :

उत्तरेस.—मौजे अंजरुनची शीव.

दक्षिणेस.—राष्ट्रीय महामार्ग क्र. ४ (मुंबई-पुणे).

पूर्वेस.—मौजे हाळ सर्व्हे नं. ७१, ७२, ४, २.

पश्चिमेस.—मौजे हाळ सर्व्हे नं. ६६अ, ५९, ६०.

मौजे अंजरुण, तालुका खालापूर, जिल्हा रायगड

अनुक्रमांक	गट नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)	अनुक्रमांक	गट नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)
(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१	१	१	०.०५०	८	४		०.१२७
२	१	२अ	०.२७२	९	५	१	०.०२५
३	१	२ब१	०.०३०	१०	५	२	०.०९१
४	१	२ब२	०.०५०	११	६		०.०२०
५	२	१२	०.१६०	१२	७		०.४६४
६	२		०.०२०	१३	८		०.३२६
७	३		०.७८६	१४	९		०.३१२

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१५	१०		०.३७७	५४	४८		०.०९६
१६	११		०.२१०	५५	४९		०.३२०
१७	१२		०.९३४	५६	५०		०.११६
१८	१३		०.१०१	५७	५१		०.२८०
१९	१४		०.०३३	५८	५२	१	०.४४४
२०	१५	१	०.१९०	५९	५२	२	०.२६६
२०	१५	२	०.०६०	६०	५३		०.६९६
२१	१६		०.०५९	६१	५४		०.०१३
२२	१७		०.०३८	६२	५५	१	०.३७४
२३	१८		०.२८८	६३	५५	२	०.१४०
२४	१९		०.१८६	६४	५६		०.१०९
२५	२०		१.०००	६५	५७		०.०६०
२६	२१		०.०१०	६६	५८		०.४४०
२७	२२		०.०८०	६७	५९		०.२४७
२८	२३		०.३२०	६८	६०		०.९७८
२९	२४		०.१००	६९	६१		०.१०१
३०	२५		०.०२०	७०	६२		०.०६५
३१	२६		१.३६५	७१	६३		०.०५८
३२	२६		०.२६७	७२	६४		०.१९२
३३	२७		०.३७०	७३	६५		०.२५३
३४	२८		०.४००	७४	६६		०.४२०
३५	२९		०.११०	७५	६७		०.१०६
३६	३०		०.१४५	७५	६८		०.१८०
३७	३१		०.३२९	७६	६९		०.२८०
३८	३२		०.३४४	७७	७०		०.०१०
३९	३३		०.२५९	७८	७१		०.१२६
४०	३४		०.५३९	७९	७२		०.०६०
४१	३५		०.०५०	८०	७४	२	०.२९०
४२	३६		०.१८७	८१	७६		०.३६४
४३	३७		०.४१०	८२	७७		१.१८८
४४	३८		०.९०१	८३	७८		०.५४९
४५	३९		०.३५४	८४	७९		०.७५६
४६	४०		०.१५०	८५	८०		०.२२०
४७	४१		०.१३७	८६	८१		०.२६८
४८	४२		०.२६७	८७	८२		०.०८०
४९	४३		०.३६७	८८	८३		०.१९२
५०	४४		०.०६९	८९	८४		०.४३१
५१	४५		०.०६०	९०	८५		१.२७३
५२	४६		०.०७६	९१	८६		०.५८५
५३	४७		०.५३०	९२	८७		०.४६०

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
९३	८८		०.२६८	१३३	१२७		०.५३४
९४	८९		०.२६८	१३४	१२७	२	०.३८२
९५	९०		०.२६०	१३५	१२८		०.१०२
९६	९१		०.७५४	१३६	१२९		०.०५९
९७	९२		०.३११	१३७	१३०		०.२८१
९८	९३		०.२८०	१३८	१३१		०.३५७
९९	९४	१	०.०६०	१३९	१३२		०.२३३
१००	९४	२	०.११९	१४०	१३३		०.३३८
१०१	९५		०.२८६	१४१	१३४		०.३८२
१०२	९६		०.५०१	१४२	१३५		०.१०६
१०३	९७		०.४३८	१४३	१३६		०.३१९
१०४	९८		०.३२९	१४४	१३७		०.४२५
१०५	९९		०.५७०	१४५	१३८		०.१३७
१०६	१००		०.११०	१४६	१३९		०.०६१
१०७	१०१		०.३९०	१४७	१४०		०.५५४
१०८	१०२		०.९१६	१४८	१४१		०.०४५
१०९	१०३		०.४३०	१४९	१४२		०.०४५
११०	१०४		०.८३९	१५०	१४३		०.२६०
१११	१०५		०.४८१	१५१	१४४	१	०.१७७
११२	१०६		०.५६४	१५२	१४५		०.०९०
११३	१०७		०.१५०	१५३	१४६		०.२६३
११४	१०८		०.१४२	१५४	१४७		०.०४८
११५	१०९		०.२७७	१५५	१४८		०.७२८
११६	११०		०.४१४	१५६	१४९		०.८३४
११७	१११		०.२२३	१५७	१५०		०.४८६
११८	११२		०.९०३	१५८	१५१		०.२६३
११९	११३		०.५७४	१५९	१५२		०.६७७
१२०	११४		०.७९०	१६०	१५३		१.६०९
१२१	११५		०.३३४	१६१	१५४		०.२३८
१२२	११६		०.३२०	१६२	१५५		०.२१५
१२३	११७		०.५१७	१६३	१५६		०.८६०
१२४	११८		०.०७२	१६४	१५७		०.४४५
१२५	११९		०.१८५	१६५	१५८		१.१४३
१२६	१२०		०.७२६	१६६	१५९		१.२४२
१२७	१२१		०.३८५	१६७	१६०		०.८९५
१२८	१२३		०.४०५	१६८	१६१		०.१४०
१२९	१२५	१	०.२२०	१६९	१६२	१	०.२७८
१३०	१२५	२	०.२००	१७०	१६२	२	०.२१५
१३१	१२६	१	०.२२१	१७१	१६३		०.७८६
१३२	१२६	२	०.१६२	१७२	१६४	१	०.४८८

भाग चार-ब-२२७-४

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१७३	१६४	२	०.६६८	२१३	२०४		०.१२४
१७४	१६५		०.३७०	२१४	२०५		०.१७४
१७५	१६६		०.२८३	२१५	२०६	१	०.४००
१७६	१६७		०.५२९	२१६	२०६	२	१.१६४
१७७	१६८		०.९३६	२१७	२०७		०.४४२
१७८	१६९		०.४७०	२१८	२०९		०.२४०
१७९	१७०		०.०४३	२१९	२१०		०.१०९
१८०	१७१		०.२२५	२२०	२११		०.११४
१८१	१७२		०.३२६	२२१	२१२		०.५९४
१८२	१७३		०.४५७	२२२	२१३		०.२६६
१८३	१७४		०.२४१	२२३	२१४		०.२३५
१८४	१७५		०.२७१	२२४	२१५		०.९६४
१८५	१७६		०.२९८	२२५	२१६	१	१.०३१
१८६	१७७		१.११०	२२६	२१६	२	०.१६०
१८७	१७८		०.३००	२२७	२१७		०.२७६
१८८	१७९		०.२५३	२२८	२१८		०.३३९
१८९	१८०		०.१६४	२२९	२१९		०.२०७
१९०	१८१		०.८५०	२३०	२२०		०.०५८
१९१	१८२		०.२७३	२३१	२२१		०.६८८
१९२	१८३		०.६२०	२३२	२२२		०.२५६
१९३	१८४		०.०१०	२३३	२२३		०.०६१
१९४	१८५		०.२०९	२३४	२२४		०.५४६
१९५	१८६		०.०२०	२३५	२२५		०.१४०
१९६	१८७		०.०८६	२३६	२२६		०.५०५
१९७	१८८		०.५३२	२३७	२२७		०.०४३
१९८	१८९		०.३८०	२३८	२२८		०.०५६
१९९	१९०		०.१३७	२३९	२२९		०.३६६
२००	१९१		०.१५७	२४०	२३०		०.९७०
२०१	१९२		०.७३४	२४१	२३१		०.४२८
२०२	१९३		०.२७६	२४२	२३२		०.०९०
२०३	१९४		०.६७३	२४३	२३३		०.२२०
२०४	१९५		०.७७९	२४४	२३४		०.०४५
२०५	१९६		०.३४४	२४५	२३५		०.२२७
२०६	१९७		०.८०१	२४६	२३६		०.१८५
२०७	१९८		०.१८०	२४७	२३७		०.५३०
२०८	१९९		०.१६७	२४८	२३८		०.०९६
२०९	२००		०.८३२	२४९	२३९		०.०४७
२१०	२०१		०.०६०	२५०	२४०		०.४००
२११	२०२		०.२४०	२५१	२४१		०.१३९
२१२	२०३		०.१२२	२५२	२४२		०.२८१

अनुसूची—चालू

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
२५३	२४३		०.१७६	२५९	२४९		०.०१०
२५४	२४४		०.०१०	२६०	२५०		०.०१०
२५५	२४५		०.०१०	२६१	२५१		०.०१०
२५६	२४६		०.०१०	२६२	२५२		०.०१०
२५७	२४७		०.०१०	२६३	२५३		०.०११
२५८	२४८		०.०१०	२६४	२५४		०.६९३
						एकूण	८९.२५७

चतुःसिमा :

उत्तरेस.—नाला

दक्षिणेस.—मौजे हळखुर्दची शीव.

पूर्वेस.—मौजे मानकिवलीची शीव व मौजे अंजरुनचे गट नंबर २०८.

पश्चिमेस.—नाला.

मौजे तळवली, तालुका कर्जत, जिल्हा रायगड

अनुक्रमांक	गट नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)	अनुक्रमांक	गट नंबर	हिस्सा नंबर	क्षेत्र (हे. आर)
(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
१	२०	१	०.१३०	२२		२	०.५३१
२		२अ	०.९४५	२३		३	०.८९९
३		२ ब	०.२६०	२४		४	०.४४३
४	२५	१	०.२४८	२५	३३	०	०.३७४
५		२	०.६९३	२६	३४	०	०.३००
६	२६	१अ	१.४९१	२७	३५	०	०.५०६
७		१ ब	२.०००	२८	३६	१	०.२६८
८		२	०.२८३	२९		२	०.२६८
९	२७	१	१.३३७	३०		३	०.४९१
१०		२	०.१६०	३१	३७	१अ	०.३५९
११	२८	०	०.५५६	३२		१ब	०.३२९
१२	२९	१	०.०५०	३३	३७	२	०.५७९
१३		२	०.१५०	३४	३८	१	०.८१९
१४		३	०.२९०	३५		२	०.६५६
१५		४	०.१५०	३६	३९	०	१.१२१
१६		५	१.४१०	३७	४०	१अ	०.५४३
१७	३०	०	०.४८८	३८		२अ	०.३०१
१८	३१	१	०.१९२	३९		३	०.०२५
१९		२	०.०८३	४०		४अ	०.३४४
२०		३	०.५०४	४१	४१	१	१.६६०
२१	३२	१	०.३१२	४२		२अ	१.९१०

भाग चार-ब-२२७-४अ

अनुसूची—समाप्त.

(१)	(२)	(३)	(४)	(१)	(२)	(३)	(४)
४३		२ ब/१	०.२३०	६१	४५	१	०.३६०
४४		२ ब/२	०.२६०	६२		२	०.१००
४५		३	०.३८०	६३	४६	०	०.१७०
४६		४	०.०६०	६४	४७	१	१.४४८
४७	४२	१	०.१९५	६५		२	०.०८०
४८		२	०.०९६	६६		३	०.२७०
४९		३	०.५५२	६७	४८	०	०.४१०
५०		४	०.२५५	६८	५६	१	०.५३०
५१		५	१.३५०	६९	५६	२	०.१९०
५२		६	०.३०८	७०		३	०.१४०
५३		७	०.३४८	७१		४	०.६७०
५४		८	०.०२५	७२		५अ	१.२३३
५५		९	०.०३८	७३		५ब	०.५८६
५६	४३	०	०.७११	७४	५६	६	०.२३३
५७	४४	१	१.३२९	७५		७	०.१५०
५८		२अ	०.१२०	७६		८अ	०.२२०
५९		२ब	०.४८८	७७		८ब	०.५०९
६०		३	०.५३२	७८	५७	०	०.२३५
						एकूण	**३९.२६९**

चतुःसिमा :

उत्तरेस.—मौजे तळवली सर्व्हे नं. १, २, गावठाण, १०, ९, २२.

दक्षिणेस.—मौजे नावंढे व वांगणीची शीव

पूर्वेस.—मौजे तळवली सर्व्हे नं. २४.

पश्चिमेस.—फॉरेस्ट.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

वै. भू. लटके,
शासनाचे उप सचिव.

INDUSTRIES, ENERGY AND LABOUR DEPARTMENT

Madam Cama Marg, Hutatma Rajguru Chowk, Mantralaya,
Mumbai 400 032, dated the 22nd September 2015

NOTIFICATION

MAHARASHTRA INDUSTRIAL DEVELOPMENT ACT, 1961.

No. IDC. 2007/(718)/IND-14.—In exercise of powers conferred by sub-section (*3*) of section I of the Maharashtra Industrial Development Act, 1961 (Mah. III of 1962), the Government of Maharashtra hereby appoints 23rd September 2015 to be the date from which the provisions of Chapter VI of the said Act shall take effect in certain areas of villages Kelvali, Vangni, Ghodivali, Kandroli, Navandhe, Mankivali, Helkhurd, Anjarun, in Taluka Khalapur of District Raigad and village Talavli in Taluka Karjat of District Raigad, mentioned in the Schedule appended hereto and declares the said area to be an industrial area under clause (*g*) of section 2 of the said Act, for the purpose of the said Act;

The said area is more clearly defined in red in the maps deposited in the offices of the Chief Executive Officer, Maharashtra Industrial Development Corporation, Andheri (East) Mumbai 400 093 and Sub Divisional Officer, Khalapur, Division Khalapur, District Raigad and is bounded by the areas as indicated in the said schedule.

Schedule

Village Kelvali, Taluka Khalapur, District Raigad

Serial No. (1)	Survey No. (2)	Hissa No. (3)	Area (H. R.) (4)	Serial No. (1)	Survey No. (2)	Hissa No. (3)	Area (H. R.) (4)
1	1	0	0.791	26		B	0.030
2	9	0	1.238	27	31	1	0.800
3	11	0	0.758	28		2	0.200
4	12	0	1.047	29	32	0	0.759
5	14	0	0.207	30	33	0	0.822
6	15	0	0.150	31	34	0	0.781
7	16	1	0.235	32	35	0	0.455
8	17	0	0.347	33	36	0	0.455
9	18	0	0.482	34	37	0	0.104
10	19	0	0.540	35	38	0	0.457
11	20	0	0.397	36	39	0	0.234
12	21	0	1.532	37	40	0	0.718
13	22	0	0.836	38	41	0	0.380
14	23	0	0.230	39	42	0	1.095
15	24	0	0.100	40	43	0	0.995
16	25	0	0.290	41	44	0	1.130
17	26	A	0.406	42	45	0	0.526
18		B	0.620	43	46	0	0.392
19		C	0.468	44	47	0	0.200
20	27	0	0.642	45	48	0	1.143
21	28	0	0.225	46	49	0	1.350
22	29	0	0.672	47	50	0	0.426
23	30	1	0.600	48	51	0	0.417
24		2	0.331	49	52	0	0.099
25	31	A	0.419	50	53	0	0.332

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
51	54	A	0.343	99	99	0	0.890
52		B	0.357	100	100	0	0.417
53	55	0	0.440	101	101	0	0.350
54	56	0	0.578	102	102	0	0.050
55	57	0	0.248	103	103	A	0.637
56	58	0	0.228	104		B	0.030
57	59	0	1.010	105	104	0	0.320
58	60	0	0.351	106	105	0	0.585
59	61	A	1.300	107	106	0	0.383
60		B	0.190	108	107	0	0.091
61	62	0	0.530	109	108	0	0.210
62	63	0	0.120	110	109	0	0.737
63	64	0	0.375	111	110	0	0.546
64	65	0	0.356	112	111	0	0.947
65	66	0	0.898	113	112	0	0.050
66	67	1	0.500	114	113	0	0.238
67		2	0.400	115	114	A	0.200
68		3	0.385	116		B	0.099
69	68	0	1.640	117		C	0.030
70	69	0	0.397	118	115	0	0.480
71	70	0	0.698	119	116	0	0.290
72	71	0	0.928	120	117	0	0.056
73	72	0	0.756	121	118	0	1.955
74	73	0	0.610	122	119	0	0.370
75	74	0	0.484	123	120	1	0.329
76	76	0	1.146	124		2	0.400
77	77	0	1.705	125	121	0	0.620
78	78	0	0.853	126	122	0	0.462
79	79	0	0.407	127	123	0	0.410
80	80	0	0.520	128	124	0	0.700
81	81	0	0.530	129	125	0	0.691
82	82	0	0.410	130	126	0	0.221
83	83	0	0.057	131	127	0	0.025
84	84	0	0.057	132	128	0	0.392
85	85	0	0.446	133	129	0	0.420
86	86	0	0.270	134	130	0	0.728
87	87	0	0.660	135	131	0	0.163
88	88	0	0.320	136	132	0	0.190
89	89	0	1.581	137	133	0	1.113
90	90	0	0.050	138	134	0	0.329
91	91	0	0.050	139	135	0	0.386
92	92	0	0.662	140	136	0	0.372
93	93	0	0.010	141	137	0	0.918
94	94	0	0.791	142	138	0	0.119
95	95	0	0.160	143	139	0	0.060
96	96	0	0.069	144	140	0	0.144
97	97	0	0.371	145	141	0	0.025
98	98	0	0.288	146	142	0	1.095

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
147	143	0	0.916	163	182	0	0.710
148	144	0	0.129	164	183	0	0.420
149	145	0	0.520	165	184	0	0.005
150	146	0	0.944	166	185	0	0.463
151	147	0	0.410	167	186	0	0.280
152	148	0	0.410	168	187	0	0.270
153	149	0	0.460	169	188	0	1.620
154	150	0	0.280	170	189	0	9.140
155	151	0	1.910	171	190	0	0.030
156	152	0	0.155	172	191	0	0.010
157	153	0	0.155	173	192	0	0.015
158	154	0	0.185	174	193	0	0.025
159	155	0	0.200	175	194	0	0.040
160	156	0	0.900	176	195	0	0.023
161	157	0	0.830	177	196	0	0.010
162	158	0	0.610	178	197	0	1.125
				179	198	0	0.420
						Total	**97.291**

Boundaries :

On the North by.—Central Railway

On the South by.—Boundary of Village Dholivali & Nala

On the East by.—Village Kelvli Survey No. 137,138,139,140, 141, 142, 146, 149, 152, 160

On the West by.—Boundary of Village Vangni & Navandhe.

Village Vangni, Taluka Khalapur, District Raigad.

Serial No. (1)	Survey No. (2)	Hissa No. (3)	Area (H. R.) (4)	Serial No. (1)	Survey No. (2)	Hissa No. (3)	Area (H. R.) (4)
1	1	0	0.010	18	19	0	1.210
2	2	0	0.590	19	20	0	0.028
3	3	0	0.301	20	21	0	0.033
4	4	0	0.573	21	22	0	0.217
5	5	0	0.390	22	23	0	2.050
6	6	0	0.324	23	24	0	0.618
7	8	0	0.474	24	25	0	0.899
8	9	0	0.417	25	26	0	0.350
9	10	0	0.060	26	27	0	0.324
10	11	0	0.202	27	28	0	0.400
11	12	0	0.140	28	29	0	0.750
12	13	0	1.140	29	30	A 1	0.460
13	14	0	0.099	30		B2	0.060
14	15	0	0.463	31	31	0	0.070
15	16	0	0.554	32	32	0	2.540
16	17	0	0.060	33	33	0	0.780
17	18	0	0.633	34	34	0	0.290

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
35	37	0	0.220	63	66	0	0.490
36	38	0	0.140	64	67	0	0.706
37	39	0	0.140	65	68	0	0.015
38	40	0	2.690	66	69	0	0.465
39	41	0	2.400	67	70	0	0.163
40	42	0	0.162	68	71	0	0.152
41	43	0	0.931	69	72	0	1.072
42	44	0	0.930	70	73	0	0.422
43	45	0	0.045	71	74	0	1.411
44	46	0	0.555	72	75	0	0.291
45	47	0	0.686	73	76	0	0.866
46	48	0	0.670	74	77	0	0.334
47	49	0	0.050	75	78	0	0.130
48	50	0	1.833	76	79	0	0.080
49	51	0	2.558	77	80	0	0.332
50	52	0	0.274	78	81	0	0.582
51	53	0	0.537	79	82	0	0.493
52	54	0	0.584	80	83	0	0.653
53	55	0	0.400	81	84	0	0.352
54	56	0	0.040	82	85	0	0.137
55	57	0	0.820	83	86	0	0.591
56	58	0	0.288	84	87	0	0.824
57	59	0	1.376	85	88	0	0.124
58	60	0	0.172	86	89	0	0.493
59	61	0	0.150	87	90	0	0.571
60	62	0	0.820	88	91	0	0.402
61	63	0	0.646	89	92	0	0.511
62	65	0	1.134	90	93	0	0.607
				91	94	0	0.582
				92	95	0	0.020
						Total	**52.661**

Boundaries :

On the North by.—Boundary of Village Talvali

On the South by.—Boundary of Village Kelvali

On the East by.—Boundry of Village Kelvali

On the West by.—Boundary of Navandhe

Village Ghodivali, Taluka Khalapur, District Raigad.

Serial No. (1)	GAT No. (2)	Hiss No. (3)	Area (H. R.) (4)	Serial No. (1)	GAT No. (2)	Hiss No. (3)	Area (H. R.) (4)
1	1		0.354	5	4		0.137
2	2	1	0.147	6	5		0.540
3	2	2	0.045	7	6		0.250
4	3		0.139	8	7		0.144

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
9	8		0.469	57	58		0.347
10	9		0.979	58	59		0.050
11	10		0.177	59	60		0.020
12	11		1.368	60	61		0.421
13	12		1.193	61	62		0.659
14	13		0.123	62	63		0.400
15	14		0.556	63	64		0.520
16	15		0.005	64	65		0.071
17	16		0.470	65	66		0.117
18	17		0.071	66	67		0.610
19	18		0.119	67	68		0.870
20	19		0.030	68	69		0.186
21	20		0.856	69	70		0.290
22	21		0.847	70	71		0.020
23	22		0.321	71	72		0.239
24	23		1.205	72	73		0.800
25	24		0.450	73	74		0.483
26	26		1.775	74	75		0.630
27	27		0.311	75	76		0.850
28	28		0.180	76	77		0.372
29	31		2.787	77	78		0.445
30	32		0.884	78	79		0.540
31	33		0.410	79	80		0.400
32	34		0.100	80	81		0.407
33	35	1	0.120	81	82		0.303
34	35	2	0.437	82	83		0.842
35	36		1.086	83	84		0.454
36	37		0.798	84	85		0.253
37	38		0.475	85	86		0.260
38	39		0.966	86	87		0.387
39	40		0.318	87	88		0.335
40	41		0.071	88	89		0.220
41	42		0.119	89	90		0.300
42	43		0.134	90	91		0.228
43	44		0.045	91	92		0.384
44	45		0.520	92	93		0.582
45	46		0.105	93	94		0.165
46	47		0.358	94	95		0.625
47	48		0.060	95	96		0.100
48	49		0.640	96	97		1.138
49	50		0.150	97	98		0.060
50	51		0.222	98	99		0.940
51	52		0.120	100	100		0.280
52	53		0.015	101	101		0.710
53	54		0.010	102	102		0.299
54	55		0.220	103	103		0.580
55	56		0.381	104	104		0.511
56	57		0.320	105	105		0.215

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
106	106		0.540	154	153		1.270
107	107		0.498	155	154		0.460
108	108		0.328	156	157		0.920
109	109		0.440	157	158		0.270
110	110		0.500	158	159		0.410
111	111		1.160	159	160		0.490
112	112		0.189	160	161		0.993
113	113		0.750	161	162		1.880
114	114		0.020	162	163		0.696
115	115		0.890	163	164		0.279
116	116		0.110	164	165		0.070
117	117		0.730	165	166		0.690
118	118		0.290	166	167		0.466
119	119	1	0.421	167	168		0.425
120	119	2	0.360	168	169	1	0.110
121	120		0.310	169	169	2	0.110
122	121		0.410	170	170		0.096
123	122		0.550	171	171		0.069
124	123		0.646	172	172	1	0.599
125	124		0.434	173	172	2	0.040
126	125		0.243	174	173		0.614
127	126		0.090	175	174		0.779
128	127		0.851	176	175		0.180
129	128		0.725	177	176		0.140
130	129		1.297	178	177		1.520
131	130		0.116	179	178		0.710
132	131		0.142	180	179		0.150
133	132		0.063	181	180		1.620
134	133		0.673	182	181		0.840
135	134		0.157	183	182	1	0.177
136	135		0.117	184	182	2	0.170
137	136		1.549	185	183	1	0.247
138	137		0.400	186	183	2	0.150
139	138		0.273	187	184		0.340
140	139		0.538	188	185		0.290
141	140		0.510	189	186		0.750
142	141		0.530	190	187		0.240
143	142		0.460	191	187		0.260
144	143		0.170	192	188		1.210
145	144		0.150	193	189		0.650
146	145		0.130	194	190		0.200
147	146		0.159	195	192		0.550
148	147		0.640	196	193		0.960
149	148		0.507	197	194		2.050
150	149		0.144	198	195		1.650
151	150		0.130	199	196		2.670
152	151		0.090	200	197		5.330
153	152		0.550	201	198		1.230

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
202	199		3.510	250	248		0.070
203	200		0.680	251	249		0.372
204	201		0.260	252	250		0.250
205	202		2.019	253	251		0.099
206	203		0.200	254	252		0.096
207	204		0.410	255	253		0.119
208	205		0.620	256	254		0.291
209	206		0.130	257	255		0.175
210	207		0.256	258	256		0.466
211	208		0.863	259	257		0.634
212	209		3.790	260	258		1.067
213	210		3.490	261	259		0.640
214	211		0.340	262	260		0.222
215	212		0.160	263	261		0.045
216	213		0.642	264	262		0.040
217	214		0.807	265	263		1.080
218	215		0.948	266	264		0.025
219	216		1.329	267	265		0.830
220	217		0.217	268	266		0.121
221	218		0.043	269	267		1.440
222	219		0.177	270	268		0.020
223	220		0.043	271	269		0.377
224	221		0.152	272	270		0.163
225	222		4.022	273	271		0.064
226	223		1.232	274	272		0.683
227	224		0.294	275	273		1.030
228	225	1	3.354	276	274		0.038
229	225	2	0.990	277	275		0.068
230	226		0.560	278	277		0.080
231	227	2	1.090	279	278		0.850
232	228		0.560	280	279		0.420
233	229		0.290	281	280		0.642
234	230		0.233	282	281		0.200
235	231		1.499	283	282		0.662
236	232		0.010	284	283		0.081
237	233		0.400	285	284		0.303
238	235		0.370	286	285		0.130
239	236		0.100	287	286		0.270
240	237		0.088	288	287	1	0.279
241	238		0.330	289	287	2	0.233
242	239	1	0.640	290	288	1	0.572
243	239	2	0.584	291	288	2	0.135
244	240		0.228	292	289		0.347
245	241		0.050	293	290		0.300
246	242		0.235	294	291		1.739
247	243		1.398	295	292		0.918
248	245		1.170	296	293		1.430
249	247		0.354	297	294		0.541

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
298	295		1.674	346	344		0.167
299	296		0.498	347	345		0.319
300	297		1.047	348	346		0.226
301	298		0.137	349	347		0.070
302	299		0.720	350	348		0.300
303	300		0.532	351	349		0.862
304	301		0.264	352	350		0.320
305	302		0.208	353	351		0.270
306	303		0.318	354	352		0.033
307	304		0.196	355	353		0.120
308	305		0.340	356	354		0.390
309	307		0.358	357	355		0.182
310	308		0.060	358	356		0.154
311	309		0.131	359	357		0.033
312	310		0.056	360	358		0.180
313	311		0.114	361	359	1	0.140
314	312		0.048	362	359	2	0.186
315	313		0.290	363	360		0.149
316	314		0.200	364	361		0.253
317	315		0.013	365	362		0.104
318	316		0.249	366	363		0.086
319	317		0.048	367	364	1	0.520
320	318		0.344	368	364	2	1.245
321	319		0.113	369	365		0.099
322	320		0.340	370	366		0.056
323	321		1.472	371	367		0.210
324	322		0.120	372	368		0.100
325	323		0.976	373	369		0.149
326	324		1.485	374	370		0.122
327	325		0.800	375	371		0.510
328	326		0.187	376	372		0.253
329	327		0.090	377	373		0.264
330	328		0.289	378	374		2.205
331	329		0.063	379	375	1	0.200
332	330		0.954	380	375	2	0.050
333	331		0.160	381	376		0.620
334	332		0.360	382	377		0.930
335	333		0.490	383	378		0.320
336	334		0.245	384	379		0.700
337	335		0.350	385	380		0.060
338	336		0.310	386	381		0.180
339	337		0.086	387	382		0.250
340	338		0.604	388	383		0.075
341	339		0.029	389	384		0.233
342	340		0.240	390	385		0.142
343	341		0.160	391	386		0.540
344	342		0.060	392	387		0.271
345	343		0.277	393	388		0.480

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
394	389		0.015	442	440		1.020
395	390		0.182	443	441		0.078
396	391		0.260	444	442		0.081
397	392		0.326	445	443		1.010
398	393		0.439	446	444		0.296
399	394		0.290	447	445		0.175
400	395		0.220	448	446		1.000
401	396		0.110	449	447		0.339
402	397		0.015	450	448		0.250
403	401		0.175	451	449		0.400
404	404		0.110	452	450		0.387
405	405		0.167	453	451		0.068
406	406		0.721	454	452		0.088
407	407		0.147	455	453		0.461
408	408		0.552	456	454		0.111
409	409		0.141	457	455		0.043
410	410		0.147	458	456		0.110
411	411		0.066	459	457		0.363
412	412		0.140	460	458		0.096
413	413	1	5.533	461	459		0.137
414	413	2	0.210	462	460		0.061
415	413	3	0.240	463	461		0.060
416	414		0.060	464	462	1	0.150
417	415		0.873	465	462	2	0.140
418	416		0.200	466	463		0.340
419	417		1.183	467	464		0.076
420	418		0.685	468	465		0.267
421	419		0.217	469	466		0.015
422	420		0.387	470	467		0.326
423	421		0.051	471	468		0.010
424	422		0.135	472	469		0.160
425	423		0.120	473	470		0.150
426	424		0.233	474	471		0.250
427	425		0.220	475	472		0.120
428	426		0.212	476	473		0.200
429	427		0.150	477	474		0.269
430	428		0.319	478	475		0.020
431	429		0.068	479	476		0.256
432	430		0.290	480	477		0.367
433	431		0.164	481	478		0.367
434	432		0.172	482	479		0.280
435	433		0.106	483	480		0.620
436	434		0.601	484	481		0.142
437	435		0.139	485	482		0.030
438	436		0.159	486	483		0.080
439	437		0.240	487	484		0.310
440	438		0.150	488	485		0.174
441	439		0.090	489	486		0.083

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
490	487		0.234	530	528		0.650
491	488		0.101	531	529		0.271
492	489		0.706	532	531		0.740
493	490		0.073	533	532		0.761
494	491		0.099	534	533		0.310
495	492		0.630	535	534		0.130
496	493		0.061	536	535		0.190
497	494		0.076	537	536		0.860
498	495		0.413	538	537		0.327
499	496		0.070	539	538		0.045
500	497		0.139	540	539		0.240
501	498		0.066	541	540		0.114
502	499		0.822	542	541		0.035
503	500		0.140	543	542		0.174
504	501		0.673	544	543		0.445
505	502		0.757	545	544		0.099
506	503		0.096	546	545		0.164
507	504		0.079	547	546		0.547
508	506		0.198	548	547		0.184
509	507		0.053	549	548		0.101
510	508		0.033	550	549		0.058
511	509		0.244	551	550		0.189
512	510		0.330	552	551		0.233
513	511		0.080	553	552		0.803
514	512		0.180	554	553		0.056
515	513		0.160	555	554		1.433
516	514		0.884	556	555		0.045
517	515		0.688	557	556		0.063
518	516		0.056	558	557		0.718
519	517		0.110	559	558		0.817
520	518		0.320	560	559		0.877
521	519		0.015	561	560		0.789
522	520		2.182	562	561		0.150
523	521		0.467	563	562		2.561
524	522		0.359	564	563		0.107
525	523		0.104	565	564		0.248
526	524		0.742	566	565		0.359
527	525		0.050	567	566		0.494
528	526		0.372	568	567		0.127
529	527		0.490	569	569		0.112
						Total	**256.551**

Bundaries —

On the North by.—Village Godivali Gat No. 155 & 191

On the South by.—Nala

On the East by.—Village Boundry of Kandroli

On the West by.—Village Boundry of Khalapur and village Kandroli Gat No. 29, 30.

Schedule—Contd.

Village Kandroli, Taluka Khalapur, District Raigad

Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R) (4)	Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R) (4)
1	2	1	1.220	47	10	2	0.302
2	2	3	0.090	48	10	3B	0.345
3	2	4	0.070	49	10	3C	1.294
4	2	5	0.250	50	10	4	0.167
5	2	6	0.060	51	10	6	0.200
6	2	7	1.670	52	10	8	0.144
7	3	1	5.610	53	10	9	0.010
8	3	2	0.020	54	10	10	0.160
9	3	3	0.070	55	10	11	0.005
10	4	1	0.060	56	10	12	0.272
11	4	2	0.191	57	10	13	0.120
12	4	3	0.035	58	10	14	0.157
13	4	4	0.067	59	11	1	0.414
14	4	5	0.079	60	11	2	0.337
15	4	6	0.061	61	11	3	0.419
16	4	7	0.104	62	11	4A	0.010
17	4	8	0.025	63	11	4B	0.015
18	5	1	0.448	64	11	5	0.230
19	5	2	0.078	65	11	6	0.165
20	6	1A	0.703	66	13	1	0.033
21	6	1B	0.790	67	13	2	0.220
22	6	1C	0.789	68	13	3	0.030
23	6	2	0.167	69	13	4A	0.475
24	6	3	0.033	70	13	4B1	0.034
25	6	4	0.020	71	13	4B2	0.029
26	7	1	0.446	72	13	4B3	0.029
27	7	2	0.288	73	13	4B4	0.027
28	7	3A1	0.495	74	13	4B5	0.028
29	7	3A2	0.495	75	13	4B6	0.026
30	7	3A3	0.506	76	13	4B7	0.030
31	7	3B	0.367	77	13	4B8	0.038
32	7	4	0.177	78	13	4B9	0.047
33	7	5	0.130	79	13	4B10	2.980
34	7	6	0.030	80	13	4B11	0.029
35	8	2	1.100	81	13	4B12	0.040
36	9	1	0.076	82	13	4B13	0.028
37	9	2A	0.402	83	13	4B14	0.055
38	9	2B	0.400	84	13	4B15	0.029
39	9	3	0.086	85	13	4B16	0.029
40	9	4	0.025	86	13	4B17	2.940
41	9	5	1.923	87	13	4B18	0.046
42	9	6	0.440	88	13	4B19	0.032
43	9	7	0.079	89	13	4B20	0.031
44	9	8	0.070	90	13	4B21	0.043
45	9	9	0.038	91	13	4B22	0.028
46	10	1	0.023	92	13	4B23	0.028

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
93	13	4B24	0.028	141	22	1	0.595
94	13	4B25	0.036	142	22	2	0.300
95	13	4B26	0.028	143	22	3	0.038
96	13	4B27	0.029	144	22	4	0.087
97	13	4B28	0.029	145	22	5	0.160
98	13	4B29	0.030	146	22	6	0.570
99	13	4B30	0.030	147	23	1	0.258
100	13	4B31	0.367	148	23	2	0.617
101	15	1	0.989	149	23	3	0.261
102	15	2A	0.366	150	23	4	0.280
103	15	2B	0.080	151	23	5	0.147
104	17	1A	0.861	152	24	1	0.244
105	17	2	0.061	153	24	2	0.287
106	17	3B	0.347	154	24	3	0.060
107	17	3C	0.043	155	24	4	0.489
108	17	3A1	0.334	156	24	5	0.290
109	17	3A2	0.180	157	24	6	0.099
110	17	5	0.030	158	25	1	0.690
111	17	6A	0.015	159	25	2	0.111
112	17	6B	0.130	160	25	3	0.480
113	17	8A	0.190	161	25	4	0.040
114	17	8B	0.203	162	25	5	0.116
115	17	9A	0.100	163	25	6	0.056
116	17	9B	0.073	164	25	7	0.266
117	17	11A	0.106	165	25	8	0.071
118	17	13	0.008	166	25	9	0.326
119	18		0.083	167	25	10	0.126
120	19	1	0.110	168	25	11	0.073
121	19	2	0.300	169	25	12	0.030
122	19	3	0.080	170	25	13	0.078
123	19	4	0.370	171	25	14	0.040
124	19	5	0.040	172	25	15	0.033
125	20	1	0.473	173	26	1	0.338
126	20	2	0.140	174	26	3A	0.020
127	20	3	0.033	175	26	3B	0.040
128	20	4	0.270	176	26	4	0.206
129	20	5	0.116	177	26	7	0.023
130	20	6	0.569	178	26	8A	0.460
131	20	7	0.086	179	26	8B	0.403
132	20	8	0.150	180	26	8C	0.455
133	20	9	0.280	181	27	1A	0.172
134	20	10	0.091	182	27	1B	0.210
135	20	11	0.033	183	27	3	0.260
136	21	1	0.172	184	27	4A	0.39.5
137	21	2	0.422	185	27	4B	0.392
138	21	3	0.200	186	28	1	0.130
139	21	4	0.363	187	28	2A	1.003
140	21	5	0.060	188	28	2B	0.180

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
189	28	3	0.232	232	32	9	0.163
190	28	5	0.094	233	32	10	0.290
191	28	6	0.131	234	32	11	0.140
192	28	7A	0.370	235	33	1	0.170
193	28	7B	0.096	236	33	2	0.060
194	28	8	0.182	237	33	3A	0.410
195	28	9	0.392	238	33	3B	0.197
196	28	10	0.005	239	33	4	0.160
197	29	1	0.090	240	33	5	0.110
198	29	2A	0.390	241	33	7	0.195
199	29	2B	0.660	242	33	8	0.268
200	29	3	0.023	243	33	9	0.127
201	29	4	0.160	244	33	10	0.620
202	29	5	0.070	245	33	11	0.030
203	29	6A	0.269	246	34	1A	0.020
204	29	6B	0.197	247	34	1B	0.070
205	29	8A	0.203	248	34	2	0.190
206	29	8B	0.060	249	34	3	0.190
207	30	1	0.242	250	34	4	0.030
208	30	2	0.374	251	34	5	0.111
209	30	3	0.335	252	34	6	1.191
210	30	4	0.210	253	34	7	0.251
211	30	5	0.073	254	34	8	0.048
212	30	6A	0.295	255	34	9	0.148
213	30	6B	0.233	256	34	10	0.038
214	30	6C	0.182	257	35	1	0.010
215	30	7	0.058	258	35	2	0.010
216	30	9	0.270	259	36	1	0.661
217	30	10	0.267	260	36	2A	0.058
218	30	11	0.220	261	36	2B	0.043
219	30	12	0.023	262	38	1	0.045
220	31		0.240	263	38	2	0.028
221	32	1	0.090				
222	32	2A	0.115	279	38	3	0.027
223	32	2B	0.016	280	38	4A	0.033
224	32	3A	0.142	281	38	4B	0.023
225	32	3B	0.347	282	38	5	0.033
226	32	3C	0.345	283	38	6	0.013
227	32	5A1	0.099	284	38	7	0.013
228	32	5A2	0.091	285	38	8	0.018
229	32	6	0.304	286	38	9	0.015
230	32	7A	0.230	287	38	10	0.010
231	32	8A	0.398	288	38	11	0.030
						Total	**68.320**

Bondaries :

On the North by.—Village Boundry of Navande

On the South by.—Nala

On the East by.—Village Boundry Navande

On the West by.—Village Boundry of Ghodivali

भाग चार-ब-२२७-६

Schedule—Contd.

Village Navandhe, Taluka Khalapur, District Raigad

Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)	Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)
1	102		0.290	47	182		0.110
2	107	1	0.230	48	183		0.167
3	108	1	0.200	49	184		0.805
4	113		1.260	50	185		0.663
5	114		0.550	51	186	1	0.096
6	115		1.550	52	186	2	0.139
7	116		0.530	53	187		0.167
8	117		0.180	54	188		0.256
9	118		0.410	55	189		0.326
10	119		0.420	56	190	1	0.310
11	120		0.350	57	190	2	0.880
12	121		0.120	58	191		0.090
13	122		0.630	59	192		0.061
14	123		0.220	60	193		0.076
15	127	Pt.	0.110	61	194		0.010
16	152		0.100	62	195		0.513
17	153		0.150	63	196		0.139
18	154		0.110	64	197		0.612
19	155		0.220	65	198		0.730
20	156		0.350	66	199		1.060
21	157	1	0.318	67	200		0.425
22	157	2	0.690	68	201		1.136
23	158		0.904	69	202		0.582
24	159		0.149	70	203	1	1.787
25	160		0.772	71	203	2	0.066
26	161		0.114	72	204		0.119
27	162		0.273	73	205	1	0.444
28	163		0.426	74	205	2	0.020
29	164		0.374	75	206		0.298
30	165		0.541	76	207		1.174
31	166		0.145	77	208		0.985
32	167		0.020	78	209		0.084
33	168		0.530	79	210		0.900
34	169		0.570	80	211		0.667
35	170		0.480	81	212		0.700
36	171	1	1.240	82	213		2.924
37	171	2	0.090	83	215		1.763
38	172		0.020	84	216		1.999
39	173		0.320	85	217		1.652
40	174		0.460	86	218		0.760
41	175		0.830	87	219	1	0.981
42	177		0.073	88	219	2	0.151
43	178		0.318	89	220		0.020
44	179		0.026	90	221		0.015
45	180		0.050	91	222		1.300
46	181		1.068	92	223		1.680

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
93	224		0.099	141	261	13	0.090
94	225		2.899	142	262		0.020
95	226		0.264	143	263		0.030
96	227		0.086	144	264	1	0.039
97	228		0.950	145	264	2	0.032
98	229		0.008	146	264	3	0.032
99	230		0.010	147	264	4	0.032
100	231		0.193	148	264	5	0.032
101	232		0.815	149	264	6	0.032
102	233		0.040	150	264	7	0.032
103	234		0.010	151	264	8	0.027
104	235		1.170	152	264	9	0.027
105	236		2.929	153	264	10	0.030
106	237		0.160	154	264	11	0.035
107	238		0.319	155	264	12	0.033
108	239		0.177	156	264	13	0.035
109	240		0.050	157	264	14	0.032
110	242		0.090	158	264	15	0.038
111	243		0.106	159	264	16	0.030
112	244	1	4.669	160	264	17	0.036
113	244	2	0.250	161	264	18	0.021
114	246		2.049	162	264	19	0.028
115	247		0.045	163	264	20	0.028
116	248		0.060	164	264	21	0.028
117	249		0.509	165	264	22	0.028
118	250		0.309	166	264	23	0.028
119	251		0.040	167	264	24	0.028
120	252		0.023	168	264	25	0.028
121	253		0.842	169	264	26	0.028
122	254		0.420	170	264	27	0.033
123	255		0.053	171	264	28	0.028
124	256		0.149	172	264	29	0.300
125	257		0.544	173	264	30	0.033
126	258		0.258	174	264	31	0.044
127	259		0.010	175	264	32	0.039
128	260		0.030	176	264	33	0.039
129	261	1	0.120	177	264	34	0.033
130	261	2	0.060	178	264	35	0.030
131	261	3	0.070	179	264	36	0.028
132	261	4	0.071	180	264	37	0.028
133	261	5	0.066	181	264	38	0.036
134	261	6	0.030	182	264	39	0.035
135	261	7	0.061	183	264	40	0.028
136	261	8	0.070	184	264	41	0.028
137	261	9	0.072	185	264	42	0.028
138	261	10	0.072	186	264	43	0.050
139	261	11	0.088	187	264	44	0.029
140	261	12	0.069	188	264	45	0.028

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
189	264	46	0.028	206	276		0.090
190	264	47	0.045	207	277		0.434
191	264	48	0.647	208	278		0.289
192	264	49	0.241	209	279		1.089
193	264	50	1.234	210	284		1.662
194	265		0.066	211	285		0.539
195	266		0.050	212	286		0.260
196	267		0.237	213	287		0.020
197	268		1.087	214	310		0.008
198	269		0.058	215	135		0.400
199	270		0.043	216	280	1	1.980
200	271		0.455	217	280	2	0.650
201	272		1.797	218	280	3	0.480
202	273		1.105	219	281		0.060
203	274		0.060	220	282		0.890
204	275	1	1.280	221	283		0.190
205	275	2	0.154				
						Total	**89.571**

Bondaries :

On the North by.—Gat No. 292, 293, 312, 150, 151, 145, 144, 181, 124, 188, 66, 180, 135, 299.
On the South by.—Nala.
On the East by.—Halbudruk- Karjat Road..
On the West by.—Village Boundry of Kandhroli.

Village Mankivali, Taluka Khalapur, District Raigad.

Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)	Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)
1	15		0.640	19	50		0.204
2	32		0.547	20	52		0.620
3	33		0.440	21	53		0.206
4	35		0.190	22	54		0.230
5	36		0.700	23	55		0.477
6	37		0.235	24	56	1	1.022
7	38		0.099	25	56	2	0.020
8	39		0.300	26	57		0.099
9	40		0.475	27	58		0.215
10	41		0.470	28	59		0.711
11	42		0.420	29	60		0.371
12	43		0.200	30	61		0.837
13	44		0.228	31	62		0.696
14	45		0.024	32	63		0.048
15	46		0.060	33	64		0.238
16	47		0.203	34	65		0.395
17	48		0.010	35	66		0.020
18	49		0.234	36	67		0.182

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
37	68		0.435	85	121		0.010
38	69		0.243	86	122		0.238
39	70		0.483	87	123		0.327
40	71		0.604	88	124		0.013
41	72		0.086	89	125		0.076
42	73		0.680	90	126		0.094
43	74		0.486	91	127	1	0.258
44	75		0.420	92	127	2	0.248
45	76		0.680	93	128		0.106
46	77		0.350	94	129		0.114
47	78		0.400	95	130		0.233
48	79		0.191	96	131		0.086
49	80		0.035	97	133	Pt.	0.344
50	81		0.679	98	134		0.692
51	82		0.604	99	135		0.235
52	83		0.132	100	136		0.086
53	84		0.053	101	137		0.237
54	85		0.056	102	138		0.230
55	86		0.592	103	139	1	0.471
56	88		0.627	104	139	2	0.071
57	89	1	0.454	105	140		0.150
58	89	2	0.174	106	141		0.306
59	90		0.176	107	142		0.130
60	91		0.168	108	143		1.197
61	92		0.040	109	144		0.140
62	93		0.419	110	145		0.427
63	94		0.175	111	146		0.654
64	95		0.108	112	147		0.080
65	96		0.277	113	148		0.213
66	97		0.943	114	149		0.030
67	98		0.150	115	188		0.919
68	99		0.907	116	189		0.051
69	100		0.620	117	190		0.008
70	101		0.010	118	191		0.066
71	102		1.387	119	192		0.025
72	103		2.075	120	193		0.243
73	104		0.613	121	194		0.080
74	105		0.795	122	195		0.404
75	106		2.650	123	196		0.350
76	111		0.858	124	197		0.438
77	112		0.473	125	198		0.071
78	113	1	0.695	126	199		0.602
79	113	2	0.020	127	200		0.104
80	116		0.120	128	201		1.161
81	117		0.778	129	216		0.413
82	118		0.126	130	217		0.195
83	119		0.291	131	218		0.691
84	120		1.434	132	219		0.119

भाग चार-ब-२२७-७

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
133	220		0.475	146	232		0.146
134	221		0.094	147	233		0.050
135	222		0.895	148	234		0.480
136	223		0.228	149	235		0.056
137	224		0.241	150	236		0.924
138	225	1	0.611	151	237		0.048
139	225	2	0.210	152	238		0.020
140	226		0.091	153	239		0.539
141	227		0.591	154	240		0.181
142	228		0.088	155	241		0.015
143	229		0.208	156	242		0.217
144	230		0.117	157	243		0.437
145	231		0.170	158	244		0.440
				159	245		1.214
						Total	**59.060**

Bondaries :

On the North by.—Village Mankivali Gat No. 107,109,110, 114, 115 & Halbudruk to Karjat Road.
On the South.—Nala
On the East by.—Karjat-Khopoli Raliway Line
On the West by.—Nala & Village Boundry of Anjarun

Village Halkhurd, Taluka Khalapur, District Raigad.

Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)	Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)
1	54	Pt.	0.200	21	57	5	0.071
2	55	1	0.060	22	57	6	0.488
3	55	2	0.190	23	57	7	0.190
4	55	3A	1.080	24	57	8	0.462
5	55	4	0.020	25	57	9	0.230
6	55	5	0.110	26	57	10	0.020
7	55	6	0.220	27	57	11	0.122
8	55	7	0.390	28	57	12	0.213
9	55	8 A /1	0.030	29	57	13	0.110
10	55	8A/2	0.030	30	57	14	0.114
11	55	8A/ 3	0.040	31	57	15	0.100
12	55	8 A/4	0.070	32	57	16	0.071
13	55	9	0.180	33	57	17	0.070
14	55	10	0.010	34	58		0.880
15	55	11A	0.060	35	59	1	0.590
16	55	11B	0.020	36	59	2	1.250
17	57	1	0.010	37	59	3	0.450
18	57	2	0.071	38	59	4	0.450
19	57	3	0.228	39	60	1A	0.630
20	57	4	0.101	40	60	1B	0.330

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
41	60	2	0.570	70	66	1A	0.230
42	60	3	0.280	71	66	1B	0.230
43	61	1A	0.184	72	66	2	0.341
44	61	1 B	0.137	73	66	3	0.810
45	61	2A	0.529	74	66	4	0.493
46	61	2B	0.475	75	66	5	0.066
47	61	3A	0.236	76	66	6	0.339
48	61	3 B	0.187	77	66	7	0.220
49	61	3 C	0.207	78	66	8	0.195
50	61	3 D	0.061	79	67	1	0.139
51	62	1	0.010	80	67	2	0.579
52	62	2	0.030	81	68	1	0.932
53	62	3	0.080	82	68	2	0.676
54	62	4A	0.430	83	68	3	0.780
55	62	4B	0.424	84	69	1	1.671
56	62	5	0.521	85	69	2	0.129
57	62	6	0.030	86	70	1	0.050
58	62	7	0.180	87	70	2	0.198
59	62	8	0.060	88	70	3A	0.440
60	63	A	1.022	89	70	3B	0.430
61	64		1.153	90	70	4	0.220
62	65	1	0.091	91	70	5A	0.060
63	65	2A	0.170	92	70	5B	0.060
64	65	2 B	0.178	93	70	6	0.160
65	65	3	0.310	94	70	7	0.060
66	65	4	0.633	95	70	8	0.132
67	65	5	0.060	96	70	9	0.250
68	65	6	0.180	97	70	10	0.020
69	65	7	0.220				
						Total	**28.519**

Bondaries :

On the North by.—Boundary of Village Anajrun.
On the South by.—National Highway No. 4.
On the East by.—Sr. No. 72, 1, 2.
On the West by.—Karjat- Khopoli Road and Sr. No. 56 A.

Village Anjarun, Taluka Khalapur, District Raigad.

Serial No.	Survey No.	Hiss No.	Area (H. R.)	Serial No.	Survey No.	Hiss No.	Area (H. R.)
(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1	1	1	0.050	6	2		0.020
2	1	2A	0.272	7	3		0.786
3	1	2B1	0.030	8	4		0.127
4	1	2B2	0.050	9	5	1	0.025
5	2	12	0.160	10	5	2	0.091

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
11	6		0.020	58	52	1	0.444
12	7		0.464	59	52	2	0.266
13	8		0.326	60	53		0.696
14	9		0.312	61	54		0.013
15	10		0.377	62	55	1	0.374
16	11		0.210	63	55	2	0.140
17	12		0.934	64	56		0.109
18	13		0.101	65	57		0.060
19	14		0.033	66	58		0.440
20	15	1	0.190	67	59		0.247
20	15	2	0.060	68	60		0.978
21	16		0.059	69	61		0.101
22	17		0.038	70	62		0.065
23	18		0.288	71	63		0.058
24	19		0.186	72	64		0.192
25	20		1.000	73	65		0.253
26	21		0.010	74	66		0.420
27	22		0.080	75	67		0.106
28	23		0.320	75	68		0.180
29	24		0.100	76	69		0.280
30	25		0.020	77	70		0.010
31	26		1.365	78	71		0.126
32	26		0.267	79	72		0.060
33	27		0.370	80	74	2	0.290
34	28		0.400	81	76		0.364
35	29		0.110	82	77		1.188
36	30		0.145	83	78		0.549
37	31		0.329	84	79		0.756
38	32		0.344	85	80		0.220
39	33		0.259	86	81		0.268
40	34		0.539	87	82		0.080
41	35		0.050	88	83		0.192
42	36		0.187	89	84		0.431
43	37		0.410	90	85		1.273
44	38		0.901	91	86		0.585
45	39		0.354	92	87		0.460
46	40		0.150	93	88		0.268
47	41		0.137	94	89		0.268
48	42		0.267	95	90		0.260
49	43		0.367	96	91		0.754
50	44		0.069	97	92		0.311
51	45		0.060	98	93		0.280
52	46		0.076	99	94	1	0.060
53	47		0.530	100	94	2	0.119
54	48		0.096	101	95		0.286
55	49		0.320	102	96		0.501
56	50		0.116	103	97		0.438
57	51		0.280	104	98		0.329

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
105	99		0.570	156	149		0.834
106	100		0.110	157	150		0.486
107	101		0.390	158	151		0.263
108	102		0.916	159	152		0.677
109	103		0.430	160	153		1.609
110	104		0.839	161	154		0.238
111	105		0.481	162	155		0.215
112	106		0.564	163	156		0.860
113	107		0.150	164	157		0.445
114	108		0.142	165	158		1.143
115	109		0.277	166	159		1.242
116	110		0.414	167	160		0.895
117	111		0.223	168	161		0.140
118	112		0.903	169	162	1	0.278
119	113		0.574	170	162	2	0.215
120	114		0.790	171	163		0.786
121	115		0.334	172	164	1	0.488
122	116		0.320	173	164	2	0.668
123	117		0.517	174	165		0.370
124	118		0.072	175	166		0.283
125	119		0.185	176	167		0.529
126	120		0.726	177	168		0.936
127	121		0.385	178	169		0.470
128	123		0.405	179	170		0.043
129	125	1	0.220	180	171		0.225
130	125	2	0.200	181	172		0.326
131	126	1	0.221	182	173		0.457
132	126	2	0.162	183	174		0.241
133	127		0.534	184	175		0.271
134	127	2	0.382	185	176		0.298
135	128		0.102	186	177		1.110
136	129		0.059	187	178		0.300
137	130		0.281	188	179		0.253
138	131		0.357	189	180		0.164
139	132		0.233	190	181		0.850
140	133		0.338	191	182		0.273
141	134		0.382	192	183		0.620
142	135		0.106	193	184		0.010
143	136		0.319	194	185		0.209
144	137		0.425	195	186		0.020
145	138		0.137	196	187		0.086
146	139		0.061	197	188		0.532
147	140		0.554	198	189		0.380
148	141		0.045	199	190		0.137
149	142		0.045	200	191		0.157
150	143		0.260	201	192		0.734
151	144	1	0.177	202	193		0.276
152	145		0.090	203	194		0.673
153	146		0.263	204	195		0.779
154	147		0.048	205	196		0.344
155	148		0.728	206	197		0.801

Schedule—Contd.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
207	198		0.180	236	226		0.505
208	199		0.167	237	227		0.043
209	200		0.832	238	228		0.056
210	201		0.060	239	229		0.366
211	202		0.240	240	230		0.970
212	203		0.122	241	231		0.428
213	204		0.124	242	232		0.090
214	205		0.174	243	233		0.220
215	206	1	0.400	244	234		0.045
216	206	2	1.164	245	235		0.227
217	207		0.442	246	236		0.185
218	209		0.240	247	237		0.530
219	210		0.109	248	238		0.096
220	211		0.114	249	239		0.047
221	212		0.594	250	240		0.400
222	213		0.266	251	241		0.139
223	214		0.235	252	242		0.281
224	215		0.964	253	243		0.176
225	216	1	1.031	254	244		0.010
226	216	2	0.160	255	245		0.010
227	217		0.276	256	246		0.010
228	218		0.339	257	247		0.010
229	219		0.207	258	248		0.010
230	220		0.058	259	249		0.010
231	221		0.688	260	250		0.010
232	222		0.256	261	251		0.010
233	223		0.061	262	252		0.010
234	224		0.546	263	253		0.011
235	225		0.140	264	254		0.693
						Total	**89.257**

Bondaries :

On the North by.—Nala
On the South by.—Village Boundry of Halkhurd
On the East by.—Village Boundry of Mankivali & Anjarun Gat No. 208.
On the West by .—Nala

Village Talavli, Taluka Karjat , District Raigad.

Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)	Serial No. (1)	Survey No. (2)	Hiss No. (3)	Area (H. R.) (4)
1	20	1	0.130	7		1 B	2.000
2		2A	0.945	8		2	0.283
3		2 B	0.260	9	27	1	1.337
4	25	1	0.248	10		2	0.160
5		2	0.693	11	28	0	0.556
6	26	1A	1.491	12	29	1	0.050

Schedule—Concld.

(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
13		2	0.150	46		4	0.060
14		3	0.290	47	42	1	0.195
15		4	0.150	48		2	0.096
16		5	1.410	49		3	0.552
17	30	0	0.488	50		4	0.255
18	31	1	0.192	51		5	1.350
19		2	0.083	52		6	0.308
20		3	0.504	53		7	0.348
21	32	1	0.312	54		8	0.025
22		2	0.531	55		9	0.038
23		3	0.899	56	43	0	0.711
24		4	0.443	57	44	1	1.329
25	33	0	0.374	58		2A	0.120
26	34	0	0.300	59		2 B	0.488
27	35	0	0.506	60		3	0.532
28	36	1	0.268	61	45	1	0.360
29		2	0.268	62		2	0.100
30		3	0.491	63	46	0	0.170
31	37	1A	0.359	64	47	1	1.448
32		1 B	0.329	65		2	0.080
33	37	2	0.579	66		3	0.270
34	38	1	0.819	67	48	0	0.410
35		2	0.656	68	56	1	0.530
36	39	0	1.121	69	56	2	0.190
37	40	1A	0.543	70		3	0.140
38		2A	0.301	71		4	0.670
39		3	0.025	72		5A	1.233
40		4A	0.344	73		5 B	0.586
41	41	1	1.660	74	56	6	0.233
42		2A	1.910	75		7	0.150
43		2 B/1	0.230	76		8A	0.220
44		2 B/2	0.260	77		8 B	0.509
45		3	0.380	78	57	0	0.235
						Total	**39.269**

Boundaries :-

On the North by.—Village Talavli Survey No. 1,2,Gaothan, 10,9,22
On the South by.—Boundary ofVillage Navandhe & Village Vangni
On the East by.—Village Talavli Survey No. 24
On the West by.—Forest

By order and in the name of the Governor of Maharashtra,

V. B. LATKE,
Deputy Secretary to Government.

ON BEHALF OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, PRINTED AND PUBLISHED BY SHRI PARSHURAM JAGANNATH GOSAVI, PRINTED AT GOVERNMENT CENTRAL PRESS, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004 AND PUBLISHED AT DIRECTORATE OF GOVERNMENT PRINTING, STATIONERY AND PUBLICATION, 21-A, NETAJI SUBHASH ROAD, CHARNI ROAD, MUMBAI 400 004, EDITOR : SHRI PARSHURAM JAGANNATH GOSAVI.

ANNEXURE 1-3 MSRDC SPA NOTIFICATION

मुंबई-पुणे द्रुतगती मार्गाच्या लगतच्या क्षेत्रासाठी महाराष्ट्र राज्य रस्ते विकास महामंडळाची विशेष नियोजन प्राधिकरण म्हणून नेमणूक करणेबाबत.

महाराष्ट्र शासन
नगर विकास विभाग,
मंत्रालय, मुंबई-४०० ०३२
निर्णय क्रमांक : टीपीएस-१८१५/अनौसं/७८/१५/नवि-१३,
दिनांक :१७/०२/२०१६.

सोबतची **शासकिय अधिसूचना** महाराष्ट्र शासन साधारण राजपत्रामध्ये मध्ये प्रसिध्द करावी.

महाराष्ट्राचे राज्यपाल यांचे आदेशानुसार व नांवाने,

Sanjay Balkrishna Saoji

Digitally signed by Sanjay Balkrishna Saoji
DN: c=IN, o=Government Of Maharashtra, ou=UNDER SECRETARY, postalCode=400032, st=Maharashtra, 2.5.4.20=13f024b79c19b420653021e52311db55b7964b2bc5c3642efdb26f8633f8af7f, serialNumber=be169cc754827a9bfadc916ac5c85a4c876ae29f24ca9e6f7c2064ada52d6747, cn=Sanjay Balkrishna Saoji
Date: 2016.02.17 16:54:04 +05'30'

(संजय सावजी)
अवर सचिव, महाराष्ट्र शासन

प्रत माहितीकरिता सादर:-

१) मा.मुख्यमंत्री महोदयांचे सचिव, मंत्रालय, मुंबई.
२) मा.राज्यमंत्री (नवि) महोदयांचे खाजगी सचिव, मंत्रालय, मुंबई.
३) प्रधान सचिव (नवि-१) नगर विकास विभाग, मंत्रालय, मुंबई.

प्रत माहितीकरिता व कार्यवाहीकरिता:-

१) संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे.
२) आयुक्त, कोकण विभाग, कोकण.
३) जिल्हाधिकारी, ठाणे / रायगड.
४) व्यवस्थापकीय संचालक, सिडको, मुंबई.
५) व्यवस्थापकीय संचालक, महाराष्ट्र राज्य रस्ते विकास महामंडळ, मुंबई.
६) मुख्य कार्यकारी अधिकारी, मुंबई महानगर प्रदेश विकास प्राधिकरण.
७) सह संचालक, नगर रचना, कोकण विभाग, कोकण.
८) सहायक संचालक, नगर रचना, ठाणे / अलिबाग शाखा.
९) व्यवस्थापक, शासकीय मुद्रणालय, चर्नी रोड, मुंबई - त्यांना विनंती करण्यात येते की, सोबतची शासकीय अधिसूचना महाराष्ट्र शासनाच्या **साधारण राजपत्रामध्ये** प्रसिध्द करुन त्याच्या प्रत्येकी १० प्रती विभागास, संचालक नगर रचना, महाराष्ट्र राज्य, पुणे, सह संचालक, नगर रचना, पुणे विभाग, पुणे, सहायक संचालक, नगर रचना, पुणे शाखा, पुणे व जिल्हाधिकारी, पुणे यांना पाठवाव्यात.
१०) कक्ष अधिकारी (नवि-२९), नगर विकास विभाग, मंत्रालय, मुंबई - त्यांना विनंती करण्यात येते की, सदर **अधिसूचना** शासनाच्या संकेतस्थळावर प्रसिध्द करण्याबाबत कार्यवाही करण्यात यावी.
११) कक्ष अधिकारी, माहिती व तंत्रज्ञान विभाग, मंत्रालय, मुंबई - त्यांना विनंती करण्यात येते की, सदरची **अधिसूचना** शासनाच्या संकेतस्थळावर प्रसिध्द करावी.
१२) निवडनस्ती (नवि-१३).

****

Notification
Government of Maharashtra
Urban Development Department
Mantralaya, Mumbai-32
Date:17 /02/2016

Maharashtra Regional And Town Planning Act,1966

No. TPS-1815/UOR/78/15/UD-13: Whereas, the Revised Regional Plan for Mumbai Metropolitan Region (hereinafter referred to as the "said Regional Plan") has been sanctioned by the Government in the Urban Development Department under sub-section (1) of section 15 of the Maharashtra Regional and Town Planning Act,1966 (hereinafter referred to as the "said Act") vide Notification No.TPS-1297/1094/CR-116/97/UD-12, dated 23rd September 1999 (hereinafter referred to as the "said Notification") and has come into force with effect from the 1st December, 1999;

Whereas, the Government of Maharashtra in exercise of powers conferred under clause (b) of Sub-section (1) of the section 40 of the said Act , declared by Notification No.TPS-1712/475/CR-98/12/UD-12, dated 10th January 2013 (hereinafter referred to as 'the said Notification') ,City and Industrial Development Corporation of Maharashtra Limited (being a company owned and controlled by the Government of Maharashtra) (hereinafter referred to as 'the said Corporation') as Special Planning Authority (hereinafter referred to as 'the SPA') for Navi-Mumbai Influence Notified Area (NAINA) (hereinafter referred to as 'said notified area') as specified therein.

And whereas the Vice Chairman and Managing Director MSRDC has suggested the Development policy of their own land and Development policy within the adjoining land of Mumbai Pune Express way (hereinafter referred to as the said land) and the Additional Chief Secretory Public Works Department, Mantralaya Mumbai has requested to appoint MSRDC as SPA for the said land;

And whereas the **Maharashtra State Road Development Corporation Limited**, commonly abbreviated as **MSRDC**, is an Indian Public limited company fully owned by the Government of Maharashtra and the roles of the MSRDC are responsibility of planning, designing, constructing and managing the road projects, flyovers, bridges, light rail transit, sea links and water transport etc. in Maharashtra and integrated road development projects in select cities of the State. It also provides roadside amenities and any other infrastructure tasks specifically assigned to it and were under the control of the Public Works Department.

And whereas, after considering the report of the Additional Chief Secretory Public Works Department, Mantralaya Mumbai, Government is of the opinion that the MSRDC shall be appointed as Special Planning Authority for the area between Mumbai -Pune Express way & Mumbai Pune Old High way (NH4) and for the land within the two k.m. south-West from Mumbai Pune Express way *excluding* the area of Pune district(Mawal Taluka), Area covered under IDP-1 project of NAINA and local authority if any (hereinafter referred to as ' the said area');

Now therefore in exercise of the powers conferred under clause (b)of sub section (1) of section-40 of the said Act, and all other powers enabling it in this behalf, the Government of Maharashtra here by ;

a) appoints the **Maharashtra State Road Development Corporation Limited**, (**MSRDC**) to be the **Special Planning Authority** for the area between Mumbai -Pune Express way & Mumbai Pune Old High way (NH4) and for the land within the two k.m. south-West from Mumbai Pune Express way ***excluding*** the area of Pune district (Mawal Taluka), Area covered under IDP-1 project of NAINA and local authority if any as specified in Schedule A;

b) declares that any other Special Planning Authority functioning in the said area prior to this notification shall cease to function for the said area from the date of this notification.

c) directs the Special Planning Authority i.e. MSRDC to prepare and publish the planning proposals along with Development Control Regulations for the said area and submit the same to the Government for sanction after following due procedure prescribed in the said Act,

02. Copy of the plan showing the boundaries of the said SPA shall be available for inspection for the general public during an office hours on all working days at the following offices for period of one month.

(1) Commissioner, Konkan Division, Kokan Bhavan, Navi Mumbai-400 614.
(2) Managing Director, CIDCO, CIDCO Bhavan, CBD Belapur, Navi Mumbai.
(3) Collector Raigad / Thane.
(4) Managing Director MSRDC Bandra (W) Mumbai
(5) Joint Director of Town Planning, Konkan Division, Konkan Bhavan,
(6) Assistant Director of Town Planning, Raigad Branch, Raigad-Alibagh.
(7)Assistant Director of Town Planning, Thane Branch, Thane.

By Order and in the Name of Governor of Maharashtra,

Sanjay Balkrishna Saoji

Digitally signed by Sanjay Balkrishna Saoji
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Date: 2016.02.17 16:54:55 +05'30'

(Sanjay Saoji)
Under Secretary to Government

SCHEDULE -A
(Accompaniment to the Government in Urban Development Department Notification bearing No. TPS-1815/UOR/78/15/UD-13 dated 17/02/2016.)

List of villages within the boundaries of the Notified Special Planning authority Area

A) Tahasil - Khalapur District -Raigad

Sr.No.	Name of the Villages
1	Talegaon
2	Panshil
3	Mohapada (Aliyas Vasambe)
4	Rees
5	Lodhivali
6	Nadhal
7	Tembari
8	Vayal
9	Pali (Khu.)
10	Sarang
11	Tupgaon
12	Jambhivali tarfe Boreti
13	Chowk-Manivali
14	Hatnoli
15	Knadaroli tarf Wankhal
16	Wavandhal
17	Vinegaon
18	Asare
19	Kopari
20	Asroti
21	Dharni
22	Warad
23	Majgaon
24	Nigdoli
25	Kalate Mokashi
26	Kalate Rayati
27	Nadode
28	Paud
29	Mapad
30	Nimbade
31	Vanve
32	Shiravali tarfe Borati
33	Khalapur
34	Kumbhivali
35	Dhamni
36	Kandaroli tarfe Borati
37	Hal (Khu.)
38	Mahad
39	Savaroli
40	Nifan
41	Sarsan
42	Sajgaon

43	Dahivali tarfe Borati
44	Dheku
45	Honad
46	Mandad Atkargaon
47	Aadoshi
48	Ambivali tarfe Wankhal
49	Kambe
50	Chambharli
51	Vat
52	Borivali
53	Vahshivali
54	Vanivali
55	Lohop
56	Esambe
57	Ambivaali tarfe Tungartan
58	Vadgaon
59	Talavali
60	Kharsundi
61	Tambati
62	Vadval
63	DevaNhave
64	ThaneNhave
65	Chinchvali Gohe
66	Chavani
67	Padge

A) Tahasil - Panvel District -Raigad

Sr.No.	Name of the Villages
1	Girawali
2	Arivali
3	Ajivali
4	Ashte
5	Shedung
6	Kasalkhand
7	Kanhavale
8	Bhatane
9	Barvai
10	Bhokarpada
11	Jatade
12	Somatane
13	Narpoli
14	Dahivali
15	Sawale
16	Devloli Bk
17	Dapivali

By Order and in the Name of Governor of Maharashtra,

Sanjay Balkrishna Saoji

Digitally signed by Sanjay Balkrishna Saoji
DN: c=IN, o=Government Of Maharashtra, ou=UNDER SECRETARY, postalCode=400032, st=Maharashtra, 2.5.4.20=13f024b79c19b420653021e52311db55b7964b2bc5c3642efdb26f8633f8af7ff, serialNumber=be169cc754827a9bfadc916ac5d83a4c87fdae2f024ca9e6f7c2064ada52d6747, cn=Sanjay Balkrishna Saoji
Date: 2016.02.17 16:55:34 +05'30'

(Sanjay Saoji)
Under Secretary to Government

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ANNEXURE 1-4 MSRDC NOTIFICATION REVISED

मुंबई-पुणे द्रुतगती मार्गाच्या लगतच्या क्षेत्रासाठी महाराष्ट्र राज्य रस्ते विकास महामंडळाची विशेष नियोजन प्राधिकरण म्हणून नेमणूक करणेबाबत. (पुरक पत्र)

महाराष्ट्र शासन
अधिसुचना (पुरक पत्र)
नगर विकास विभाग,
मंत्रालय, मुंबई-४०० ०३२.
क्रमांक : टीपीएस-१८१५/अनौसं/७८/१५/नवि-१३,
दिनांक :१८/०३/२०१६.

सोबतची शासकिय अधिसूचना (पुरक पत्र) महाराष्ट्र शासन साधारण राजपत्रामध्ये मध्ये प्रसिध्द करावी.

महाराष्ट्राचे राज्यपाल यांचे आदेशानुसार व नांवाने,

Sanjay Balkrishna Saoji

Digitally signed by Sanjay Balkrishna Saoji
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Date: 2016.03.18 12:43:46 +05'30'

(संजय सावजी)
अवर सचिव, महाराष्ट्र शासन

प्रत माहितीकरिता सादर:-

१) मा.मुख्यमंत्री महोदयांचे सचिव, मंत्रालय, मुंबई.
२) मा.राज्यमंत्री (नवि) महोदयांचे खाजगी सचिव, मंत्रालय, मुंबई.
३) प्रधान सचिव (नवि-१) नगर विकास विभाग, मंत्रालय, मुंबई.

प्रत माहितीकरिता व कार्यवाहीकरिता:-

१) संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे.
२) आयुक्त, कोकण विभाग, कोकण.
३) जिल्हाधिकारी, ठाणे / रायगड.
४) व्यवस्थापकीय संचालक, सिडको, मुंबई.
५) व्यवस्थापकीय संचालक, महाराष्ट्र राज्य रस्ते विकास महामंडळ, मुंबई.
६) मुख्य कार्यकारी अधिकारी, मुंबई महानगर प्रदेश विकास प्राधिकरण.
७) सह संचालक, नगर रचना, कोकण विभाग, कोकण.
८) सहायक संचालक, नगर रचना, ठाणे / अलिबाग शाखा.
९) व्यवस्थापक, शासकीय मुद्रणालय, चर्नी रोड, मुंबई - त्यांना विनंती करण्यात येते की, सोबतची शासकीय अधिसूचना महाराष्ट्र शासनाच्या **साधारण राजपत्रामध्ये** प्रसिध्द करुन त्याच्या प्रत्येकी १० प्रती विभागास, संचालक नगर रचना, महाराष्ट्र राज्य, पुणे, सह संचालक, नगर रचना, पुणे विभाग, पुणे, सहायक संचालक, नगर रचना, पुणे शाखा, पुणे व जिल्हाधिकारी, पुणे यांना पाठवाव्यात.
१०) कक्ष अधिकारी (नवि-२९), नगर विकास विभाग, मंत्रालय, मुंबई - त्यांना विनंती करण्यात येते की, सदर **अधिसूचना** शासनाच्या संकेतस्थळावर प्रसिध्द करण्याबाबत कार्यवाही करण्यात यावी.
११) कक्ष अधिकारी, माहिती व तंत्रज्ञान विभाग, मंत्रालय, मुंबई - त्यांना विनंती करण्यात येते की, सदरची **अधिसूचना** शासनाच्या संकेतस्थळावर प्रसिध्द करावी.
१२) निवडनस्ती (नवि-१३).

****

NOTIFICATION

(ADDENDUM)

Government of Maharashtra
Urban Development Department
Mantralaya, Mumbai-32
Date: 18/03/2016

Maharashtra Regional And Town Planning Act, 1966

No. TPS-1815/UOR/78/15/UD-13: Whereas, the Government of Maharashtra in exercise of powers conferred under Section 40 (1 B) of the Maharashtra Regional and Town Planning Act,1966 (hereinafter referred to as the "said Act") vide notification No. TPS-1815/UOR/78/15/UD-13, Dt.17/02/2016(hereinafter referred to as ' the said notification) has appointed the **Maharashtra State Road Development Corporation Limited**, (**MSRDC)** as **Special Planning Authority** (hereinafter referred to as ' the said SPA) for the area as specified in the said notification (hereinafter referred to as ' the said area');

And whereas, Vice Chairman and Managing Director CIDCO vide their letter No.CIDCO/MD/159, Dt.22/02/2016 has requested to delete the villages in Khalapur taluka as land owners are willing to participate in voluntary land pulling model in the line of NAINA scheme by forming SPV of the land owners (hereinafter referred to as ' the said villages) and in this regard MoU has been already signed between CIDCO and Khalapur Nagar Panchayat;

And whereas after considering the request of the CIDCO, the Government of Maharashtra is of the opinion that the said villages are required to be excluded from the said area of the said SPA And whereas it is noticed that areas for which MIDC is a Special Planning Authority is also to be excluded ;

Now therefore, the Government of Maharashtra has decided to amend the said notification TPS-1815/UOR/78/15/UD-13, Dt.17/02/2016 accordingly by issuing following addendum;

In clause (a) of the said notification -

for the word " local authority if any as specified in Schedule A " the words " **local authority, area under proposed Khalapur SPV (the said Villages) and area for which MIDC is a Special Planning Authority as specified in revised Schedule A attached herewith** " shall be deemed to have been added.

in clause (b) of the said notification -

After the word " cease to function for the said area from the date of this notification" *the word* " **excluding the area for which MIDC is a Special Planning Authority** shall be deemed to have been added.

By Order and in the Name of Governor of Maharashtra, Sanjay Balkrishna Saoji

Digitally signed by Sanjay Balkrishna Saoji
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Date: 2016.03.18 12:44:19 +05'30'

(Sanjay Saoji)
Under Secretary to Government

२/४

SCHEDULE -A
(Revised)

List of Revised villages within the boundaries of the Notified Special Planning Authority Area

A) Tahasil - Khalapur, District -Raigad

Sr.No.	Name of the Villages
1	Talegaon
2	Panshil
3	Mohapada (Aliyas Vasambe)
4	Rees
5	Lodhivali
6	Nadhal
7	Tembari
8	Vayal
9	Pali (Khu.)
10	Sarang
11	Tupgaon
12	Jambhivali tarfe Boreti
13	Chowk-Manivali
14	Hatnoli
15	Wavandhal
16	Asare
17	Kopari
18	Asroti
19	Dharni
20	Warad
21	Majgaon
22	Paud
23	Mandap
24	Kumbhivali
25	Dhamni
26	Hal (Khu.)
27	Savaroli
28	Nifan
29	Sarsan
30	Sajgaon
31	Dahivali tarfe Borati
32	Dheku
33	Honad
34	Mandad Atkargaon
35	Aadoshi
36	Ambivali tarfe Wankhal
37	Kambe
38	Chambharli
39	Vat
40	Borivali
41	Vahshivali
42	Vanivali
43	Lohop
44	Esambe

45	Ambivaali tarfe Tungartan
46	Vadgaon
47	Talavali
48	Kharsundi
49	Tambati
50	Vadval
51	DevaNhave
52	ThaneNhave
53	Chinchvali Gohe
54	Chavani

B) Tahasil - Panvel District -Raigad

Sr.No.	Name of the Villages
1	Girawali
2	Arivali
3	Ajivali
4	Ashte
5	Shedung
6	Kasalkhand
7	Kanhavale
8	Bhatane
9	Barvai
10	Bhokarpada
11	Jatade
12	Somatane
13	Narpoli
14	Dahivali
15	Sawale
16	Devloli Bk
17	Dapivali

By Order and in the Name of Governor of Maharashtra,

Sanjay Balkrishna Saoji

Digitally signed by Sanjay Balkrishna Saoji
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Date: 2016.03.18 12:44:52 +05'30'

(Sanjay Saoji)
Under Secretary to Government

ANNEXURE 1-5: LIST OF VILLAGES IN NAINA DP

S No.	Village Codes	NAINA	Sub District
1	552448	Dahisar	Thane
2	552449	Mokashi	Thane
3	552450	Walivali	Thane
4	552451	Pimpari	Thane
5	552452	Nighu	Thane
6	552453	Navali	Thane
7	552454	Vakalan	Thane
8	552455	Bamali	Thane
9	552456	Narivali	Thane
10	552457	Bale	Thane
11	552458	Nagaon	Thane
12	552459	Bhandarli	Thane
13	552460	Uttarshiv	Thane
14	552461	Goteghar	Thane
15	553312	Veshvi	Uran
16	553320	Dighode	Uran
17	553321	Kanthavali	Uran
18	553322	Pohi	Uran
19	553323	Ransai	Uran
20	553366	Valap	Panvel
21	553367	Pale Budruk	Panvel
22	553368	Nitalas	Panvel
23	553369	Nitale	Panvel
24	553370	Kondap	Panvel
25	553371	Wangani Tarf Taloje	Panvel
26	553373	Shiravali	Panvel
27	553374	Chinchavali Tarf Taloje	Panvel
28	553375	Mahodar	Panvel
29	553376	Vavanje	Panvel
30	553377	Kherane Khurd	Panvel
31	553379	Kanpoli	Panvel
32	553380	Chindharan	Panvel
33	553381	Mahalungi	Panvel
34	553382	Ambe tarf taloje	Panvel
35	553383	Khairwadi	Panvel
36	553384	Tamsai	Panvel
37	553385	Kondale	Panvel
38	553386	Morbe	Panvel
39	553387	Hedutane	Panvel
40	553388	Kevale	Panvel
41	553389	Khanav	Panvel
42	553390	Chinchavali Tarf Waje	Panvel
43	553391	Ritghar	Panvel
44	553392	Dundre	Panvel
45	553393	Dhamani	Panvel

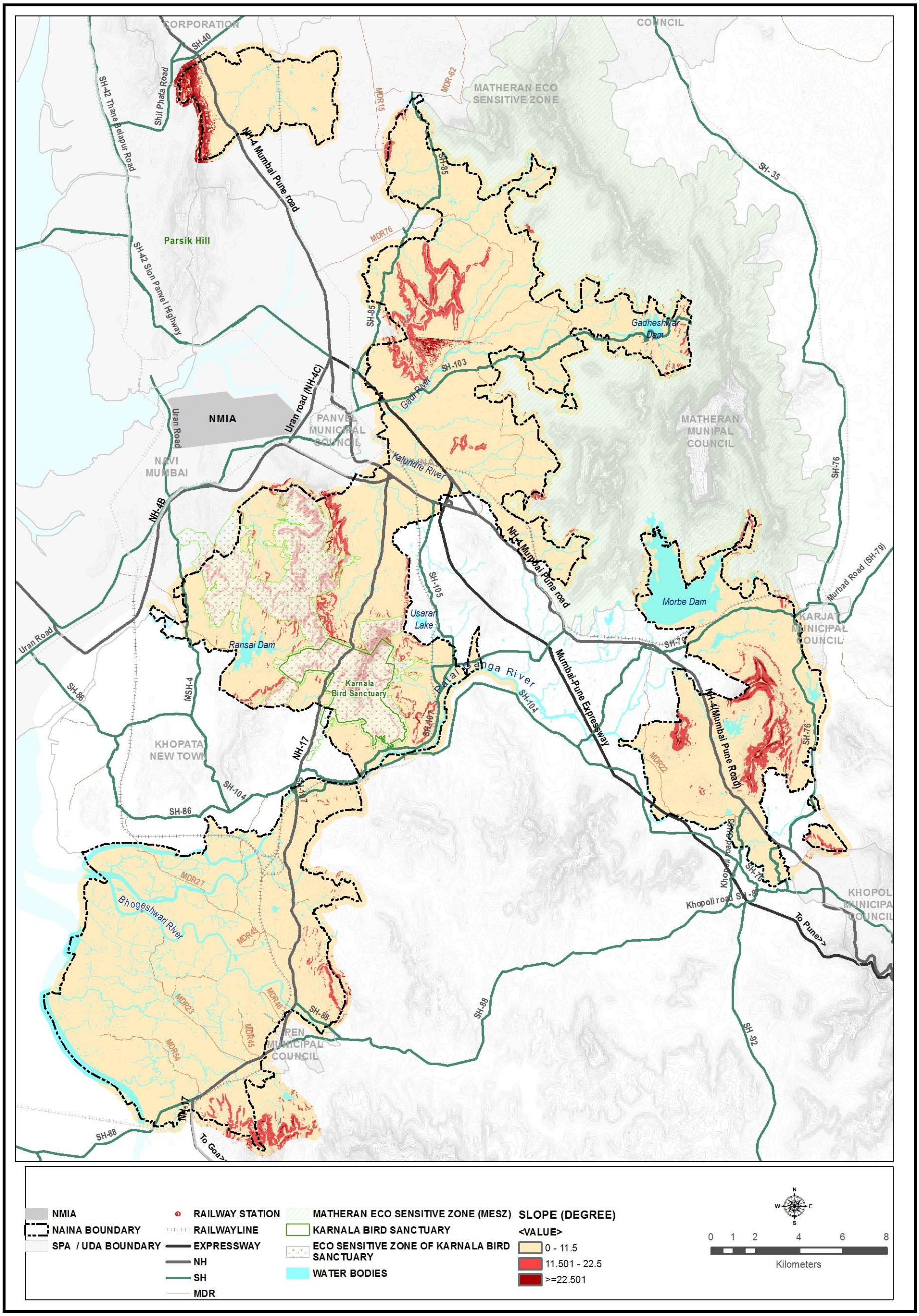
S No.	Village Codes	NAINA	Sub District
46	553394	Maldunge	Panvel
47	553395	Dhodani	Panvel
48	553396	Deharang	Panvel
49	553397	Gadhe	Panvel
50	553398	Ambe tarf waje	Panvel
51	553399	Shivansai	Panvel
52	553400	Umroli	Panvel
53	553401	Usarli Budruk	Panvel
54	553402	Vakadi	Panvel
55	553403	Harigram	Panvel
56	553409	Ambivali	Panvel
57	553411	Waje	Panvel
58	553412	Cheravali	Panvel
59	553413	Wajapur	Panvel
60	553414	Nevali	Panvel
61	553420	Wangani Tarf Waje	Panvel
62	553421	Loniwadi	Panvel
63	553427	Bherle	Panvel
64	553430	Wardoli	Panvel
65	553433	Bhingar	Panvel
66	553436	Bhingarwadi	Panvel
67	553454	Mosare	Panvel
68	553455	Patnoli	Panvel
69	553456	Nanoshi	Panvel
70	553457	Chirvat	Panvel
71	553458	Turmale	Panvel
72	553459	Vadavali	Panvel
73	553460	Nandgaon	Panvel
74	553461	Kudave	Panvel
75	553470	Poyanje	Panvel
76	553471	Mohope	Panvel
77	553472	Pali Budruk	Panvel
78	553478	Shirdhon	Panvel
79	553479	Sangurli	Panvel
80	553480	Chinchavan	Panvel
81	553486	Posari	Panvel
82	553488	Vaveghar	Panvel
83	553489	Turade	Panvel
84	553490	Akulwadi	Panvel
85	553491	Gulsunde	Panvel
86	553495	Ladiwali	Panvel
87	553496	Apte	Panvel
88	553497	Kalhe	Panvel
89	553505	Koral	Panvel
90	553671	Nangurle	Karjat
91	553672	Tighar	Karjat

S No.	Village Codes	NAINA	Sub District
92	553673	Varne	Karjat
93	553674	Avalas	Karjat
94	553689	Palasdari	Karjat
95	553690	Talawali	Karjat
96	553701	Nanivali	Khalapur
97	553702	Padaghe	Khalapur
98	553703	Warose Tarf Wankhal	Khalapur
99	553704	Borgaon Budruk	Khalapur
100	553705	Borgaon Khurd	Khalapur
101	553706	Sondewadi	Khalapur
102	553707	Wavarle	Khalapur
103	553708	Pali Budruk	Khalapur
104	553709	Vadvihir	Khalapur
105	553710	Morbe	Khalapur
106	553719	Parade	Khalapur
107	553728	Kandroli Tarf Wankhal	Khalapur
108	553730	Bhilvale	Khalapur
109	553731	Kalote Mokashi	Khalapur
110	553732	Vinegaon	Khalapur
111	553733	Kalote Rayati	Khalapur
112	553743	Nigdoli	Khalapur
113	553744	Nadode	Khalapur
114	553745	Nimbode	Khalapur
115	553746	Vanave	Khalapur
116	553747	Shiravali Tarf Boriti	Khalapur
117	553748	Khalapur	Khalapur
118	553749	Ghodivali	Khalapur
119	553751	Navandhe	Khalapur
120	553758	Shengaon	Khalapur
121	553760	Dolavali	Khalapur
122	553761	Mankivali	Khalapur
123	553762	Anjrun	Khalapur
124	553764	Mahad	Khalapur
125	553820	Mothe Bhal	Pen
126	553821	Vitthalwadi	Pen
127	553822	Kanhoba	Pen
128	553823	Kaleshriwadi	Pen
129	553824	Lakhola	Pen
130	553825	Benavale	Pen
131	553826	Bahiram katak	Pen
132	553827	Narwel	Pen
133	553828	Wadhav	Pen
134	553829	Div	Pen
135	553830	Mothe vadhav	Pen
136	553831	Kane	Pen
137	553832	Borze	Pen

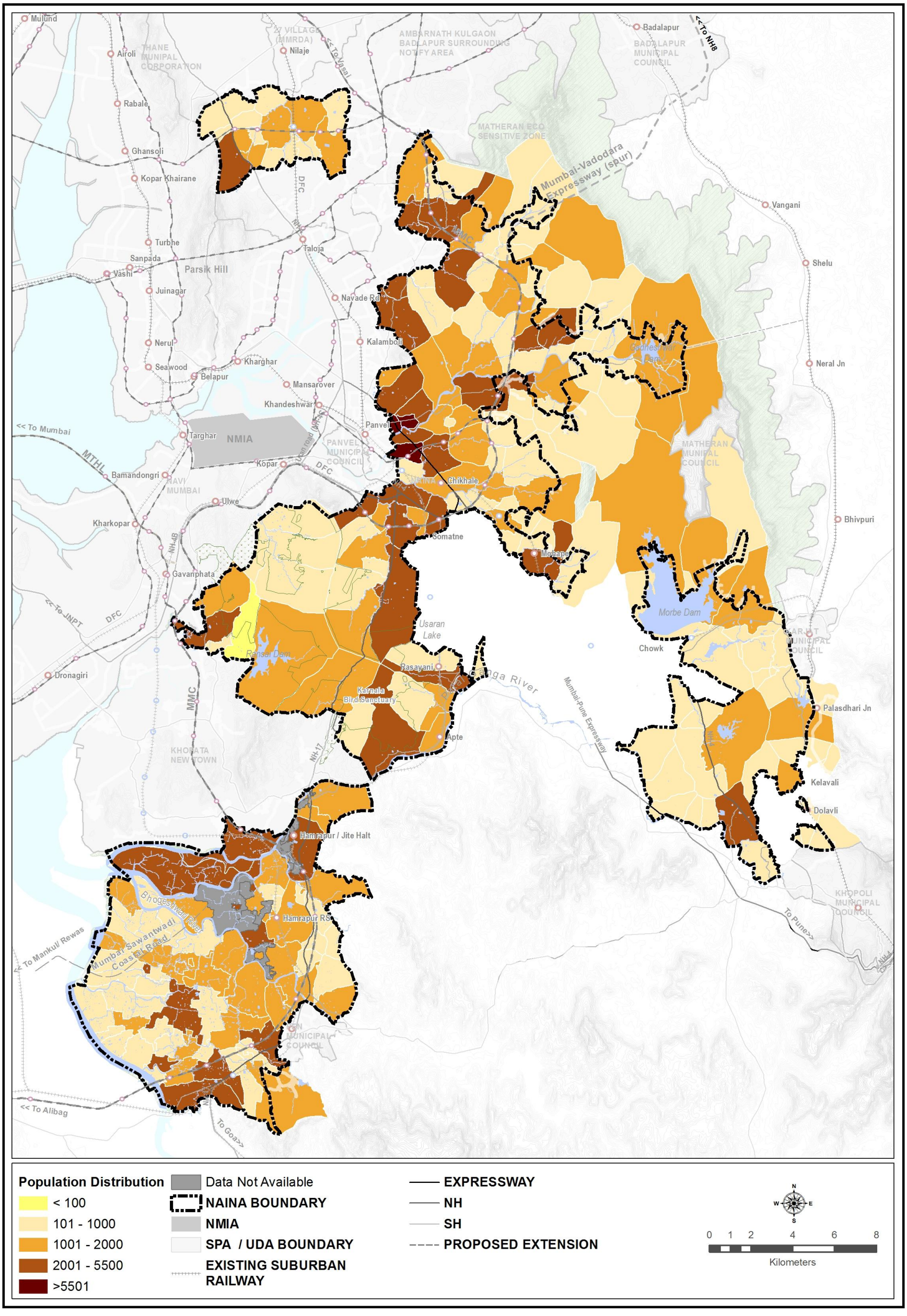
S No.	Village Codes	NAINA	Sub District
138	553833	Washi	Pen
139	553834	Odhangi	Pen
140	553835	Koproli	Pen
141	553836	Patnoli	Pen
142	553837	Antore	Pen
143	553838	Dhondpada	Pen
144	553839	Umbarde	Pen
145	553840	Shirki	Pen
146	553841	Shirki Chawl	Pen
147	553842	Masad Budruk	Pen
148	553843	Masad Bedi / Masad Beli	Pen
149	553844	Masad Khurd	Pen
150	553845	Borwe	Pen
151	553846	Bori	Pen
152	553847	Sarebhag	Pen
153	553848	Shinganvat	Pen
154	553849	Kolave	Pen
155	553850	Wadkhal	Pen
156	553851	Beneghat	Pen
157	553853	Wave	Pen
158	553854	Khar Nandai	Pen
159	553855	Jui Budruk	Pen
160	553856	Turkhul	Pen
161	553857	Jui Khurd	Pen
162	553858	Kharpada	Pen
163	553859	Dushmi	Pen
164	553860	Khar Simadevi	Pen
165	553861	Kauli Simadevi	Pen
166	553862	Kharkoshim	Pen
167	553863	Rave	Pen
168	553864	Khar Dubej	Pen
169	553865	Jite	Pen
170	553869	Navkhar	Pen
171	553870	Balawali	Pen
172	553871	Khar Borli	Pen
173	553872	Kopar	Pen
174	553873	Davre	Pen
175	553874	Hanumanpada	Pen
176	553875	Kalave	Pen
177	553876	Sonkhar	Pen
178	553877	Urnilee (Urnoli)	Pen
179	553878	Khar Dutarfa Borli	Pen
180	553879	Dolvi Dababa	Pen
181	553880	Johe	Pen
182	553881	Tambadshet	Pen
183	553882	Govirle	Pen

S No.	Village Codes	NAINA	Sub District
184	553889	Ambivali	Pen
185	553890	Hamrapur	Pen
186	553891	Waredi	Pen
187	553892	Dutarfa Sapoli (Khar Dutarfa Sapoli)	Pen
188	553893	Kharsapoli	Pen
189	553894	Nagadi Sapoli	Pen
190	553895	Chinchghar	Pen
191	553896	Shitole	Pen
192	553897	Davansar	Pen
193	553900	Ramraj	Pen
194	553901	Tarankhop	Pen
195	553902	Uchede	Pen
196	553903	Kandlepada	Pen
197	553904	Kashmire (Kashmirwadi)	Pen
198	553905	Kandale	Pen
199	553906	Meleghar	Pen
200	553908	Dhavate	Pen
201	553989	Dadar	Pen

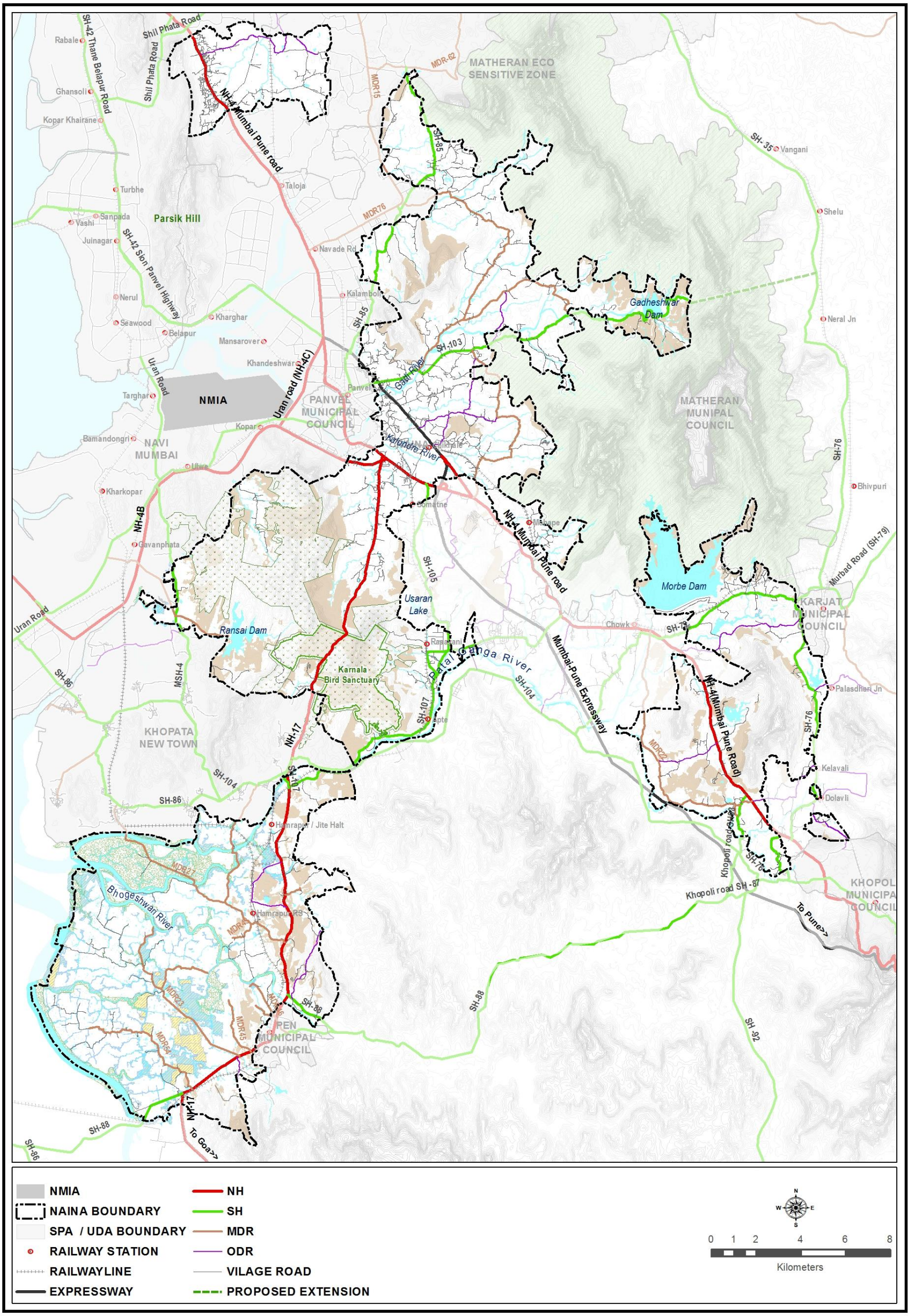
ANNEXURE 2 -1: TOPOGRAPHY OF NAINA



ANNEXURE 2 -2: VILLAGE POPULATION IN NAINA



ANNEXURE 2 -3: EXISTING ROAD NETWORK IN NAINA



ANNEXURE 2-4 QUESTIONNAIRE FOR SOCIO-ECONOMIC SURVEY

DEVELOPMENT PLAN FOR NAINA & KNT

SOCIO-ECONOMIC SURVEY

PART 1. Household Data Sheet

Traffic Zone: | HH.ID | HH Sr No:

HOUSEHOLD LOCATION: Assembly No. | Electoral Booth No. | Map Reference: | Sheet | of

Village code | Village Name | Pada | Taluka | Dist:

Name of Head of household	
Building Name/Number	
Street Name	
Locality / Area Name	
City / Village	
Landmark 1	
Nearest Bus Stop	
Email ID	
Contact Tel. No.	
PIN Code	

Schedule No.			
Interviewer:			
Supervisor:			
Date of Interview:	1st	D D M M Y Y Y Y	
	2nd	D D M M Y Y Y Y	
	3rd	D D M M Y Y Y Y	
Interview Status:	Refused	Partial	Full
Household Data Sheet (Part 1)	1	2	3
Travel Data Sheet (Part 2)	1	2	3
Daily Trip Diaries (Part 3)	1	2	3

Type of Residence		Ownership: Owned	Rented	Employer Provided	No. Rooms
Apartment/flat	1	1	2	3	
Independent House	2	1	2	3	
Chawls	3	1	2	3	
Slums Type	4	1	2	3	
Wadi	5	1	2	3	

Caste	
General	1
OBC	2
SC	3
ST	4
VJNT	5
Others	6

No. vehicles in a household:	Owned by H'hold				Rented			
Cars/Vans	0	1	2	3+	0	1	2	3+
2-wheelers	0	1	2	3+	0	1	2	3+
Bicycles	0	1	2	3+	0	1	2	3+
Others	0	1	2	3+	0	1	2	3+
Parking available at household	Private Spaces				Park Outside			
Cars/Vans	0	1	2	3+	0	1	2	3+
2-wheelers	0	1	2	3+	0	1	2	3+
Others	0	1	2	3+	0	1	2	3+

Religion	1 Hindu	2 Muslim	3 Christian	4 Others
Floor Area	Sq.feet		Sq.meters	

Construction Type	Pucca	Semi-Pucca	Kutcha	Others
	1	2	3	4

Total no. persons living in household

No. Earners in household

Employed persons by the household

How Long are you staying here? (in Years)

Where did you lived before? Village/Town

District

Toilet Connection	Public Toilet	Sewer	Septic Tank	Open Drain	Open Land
	1	2	3	4	5

Electricity Connection: 1 Yes | 2 No

Water Source (Specify)	Tap	Stand Post	Well	Hand Pump	Bore Well	Pond	River	Others (Specify)
	1	2	3	4	5	6	7	8

Assets	TV	Fridge	Mobile	Landline	None
	1	2	3	4	5

Flooding (Year)

Flooding (Nos.)

Cooking Fuel	Wood	Coal	Kerosene	Gas	Gobar Gas	Others
	1	2	3	4	5	6

PERSONAL INFORMATION:	Person 1 (Head)	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7
Completed Travel Diary (Part 3)	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
No. of trips made on Travel Day (Part 3)	0 None	0 None	0 None	0 None	0 None	0 None	0 None
Name							
Relation to Head of HH							
Age (years)							
Sex	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F
Disabled	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N
Marital Status							
Married	1	1	1	1	1	1	1
Single/Unmarried	2	2	2	2	2	2	2
Diverse/ Separated	3	3	3	3	3	3	3
Widow/ Widower	4	4	4	4	4	4	4
Completed Education Level							
Illiterate	1	1	1	1	1	1	1
Pre-primary	2	2	2	2	2	2	2
Primary (5th Pass)	3	3	3	3	3	3	3
Secondary (10th Pass)	4	4	4	4	4	4	4

DEVELOPMENT PLAN FOR NAINA & KNT

SOCIO-ECONOMIC SURVEY

Higher Secondary (12th Pass)	5	5	5	5	5	5	5
Technical diploma	6	6	6	6	6	6	6
Graduate	7	7	7	7	7	7	7
Post Graduate & above	8	8	8	8	8	8	8
Occupation Status							
Employed (Full Time)	1	1	1	1	1	1	1
Employed (Part Time)	2	2	2	2	2	2	2
Self Employed	3	3	3	3	3	3	3
Daily Wages	4	4	4	4	4	4	4
Student (all levels)	5	5	5	5	5	5	5
Seeking Employment	6	6	6	6	6	6	6
Homemaker/Housewife	7	7	7	7	7	7	7
Retired	8	8	8	8	8	8	8
Resident Maid / Driver / Caretaker	9	9	9	9	9	9	9
Infants	10	10	10	10	10	10	10
Others	11	11	11	11	11	11	11
Not doing anything	12	12	12	12	12	12	12
Location of Work Place/ School/ College							
Are you employed in Government / Private sector?							
	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv
Building Type or Land Use that best describes your USUAL place of employment or education:							
Employment Place:							
Residential	1	1	1	1	1	1	1
Industry/Factory	2	2	2	2	2	2	2
Warehouse	3	3	3	3	3	3	3
Office	4	4	4	4	4	4	4
Film Industry	5	5	5	5	5	5	5
Shop	6	6	6	6	6	6	6
Restaurant/Eating Place	7	7	7	7	7	7	7
Hotel	8	8	8	8	8	8	8
Entertainment/Tourism	9	9	9	9	9	9	9
Place of Education	10	10	10	10	10	10	10
Hospital/ Clinic	11	11	11	11	11	11	11
Agriculture	12	12	12	12	12	12	12
Construction Site	13	13	13	13	13	13	13
Varies day to day	14	14	14	14	14	14	14
Others	15	15	15	15	15	15	15
Resident Space	16	16	16	16	16	16	16
Student Destination Type:							
Pre-School	1	1	1	1	1	1	1
Primary School	2	2	2	2	2	2	2
Secondary/High School	3	3	3	3	3	3	3
Degree College	4	4	4	4	4	4	4
University/Research Institute	5	5	5	5	5	5	5
Coaching classes	6	6	6	6	6	6	6
Others	7	7	7	7	7	7	7
Medium of School/ College							
What is your monthly household income (Rs / month)	**A**	Upto 5,000	**D**	16,001-25,000	**G**	60,001-80,000	
	B	5,001-8,000	**E**	25,001-40,000	**H**	80,001-1 lakh	
	C	8,001-16,000	**F**	40,001-60,000	**I**	Above 1 lakh	
Family Expenditure Heads (in Rs.)	Rs.						
Education	Rs.						
Food	Rs.						
Maintenance -Water, Electricity etc.	Rs.						
Telephone bill	Rs.						
Clothing	Rs.						
Entertainment	Rs.						
Installments	Rs.						
Medical	Rs.						
Transport	Rs.						
Others	Rs.						
Savings	Rs.						

DEVELOPMENT PLAN FOR NAINA & KNT

SOCIO-ECONOMIC SURVEY

PART 2. Person & 'Regular' Travel Data

Sheet ____ of ____ Household serial number: ____

	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7
Address and Location of USUAL Place of Employment or Education							
At Home	1	1	1	1	1	1	1
Same Building as Home	2	2	2	2	2	2	2
OR Building Number / Name							
Street Name							
Location 2							
Landmark 1							
Nearest Bus Stop							
Traffic Zone (for Office Use)							
Please circle each day of the week that you usually go to work/school/college							
Monday	1	1	1	1	1	1	1
Tuesday	2	2	2	2	2	2	2
Wednesday	3	3	3	3	3	3	3
Thursday	4	4	4	4	4	4	4
Friday	5	5	5	5	5	5	5
Saturday	6	6	6	6	6	6	6
Sunday	7	7	7	7	7	7	7
What time do you USUALLY leave home to travel to work or school							
Time (hh:mm)							
How long does it USUALLY take to travel from home to your place of employment or education							
Time in minutes							
What time do you USUALLY leave your place of employment or education at the end of the day							
Time (hh:mm)							
Do you have a driving license?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
What modes of travel do you USUALLY use when travelling from home to work or school/college (where several modes are used, list in order of use i.e. ist part of journey, 2nd part, 3rd part etc.)							
Walk (1)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Bicycle (2)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Bullock Cart (3)	2 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Taxi (4)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Auto-Rickshaw (5)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Maxi cab (6)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
2-wheeler (as driver) (7)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
2-wheeler (as passenger) (8)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Car/Van (as driver) (9)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Car/Van (as passenger) (10)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Bus (Public) (11)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Bus (Company Charter) (12)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Bus (Private Charter) (13)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Train (Local) (14)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Train (Long Distance) (15)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Metro (16)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Other (17)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
If you drove, or were driven, to work - where did you park?	0 Not Applicable 1 On Street 2 Off Street	0 Not Applicable 1 On Street 2 Off Street	0 Not Applicable 1 On Street 2 Off Street	0 Not Applicable 1 On Street 2 Off Street	0 Not Applicable 1 On Street 2 Off Street	0 Not Applicable 1 On Street 2 Off Street	0 Not Applicable 1 On Street 2 Off Street
Do you usually use a Toll Road pass?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
If yes, what is the cost? (Rs / month)							
If public bus was used, which routes numbers were used (in order of use-where multiple routes are available choose a representative one)							
1st Bus (1)							
2nd Bus (2)							
3rd Bus (3)							
4th Bus (4)							
If a Train was used, what stations did you use. (1st station first, last station last, and transfer stations in between).							
First Station (1)							
Traffic Zone (for Office Use)							
First Transfer Station (2)							
Traffic Zone (for Office Use)							
Second Transfer Station (3)							
Traffic Zone (for Office Use)							
Last Station (4)							
Traffic Zone (for Office Use)							
If a train was used, did you use a slow train, a fast train, or both	1 Slow 2 Fast 3 Both	1 Slow 2 Fast 3 Both	1 Slow 2 Fast 3 Both	1 Slow 2 Fast 3 Both	1 Slow 2 Fast 3 Both	1 Slow 2 Fast 3 Both	1 Slow 2 Fast 3 Both
Do you usually use a Bus/ Suburban Rail pass? 1. Bus Pass/ 2. Rail Pass	1 2	1 2	1 2	1 2	1 2	1 2	1 2
If Yes, what is the cost? (Rs / month)							
How much do you normally spend on transport costs every month (all respondents please - in the case of children ask the adults)							
Rupees per month							

DEVELOPMENT PLAN FOR NAINA & KNT

SOCIO-ECONOMIC SURVEY

On your Travel Day did you make any trips for any of the following reasons?

Trip Reason

01.	Home	05.	Personal Business	09.	Entertainment/Recreation		
02.	Work	06.	Health	10.	Employers Business		
03.	Education	07.	Eating	11.	Drop-off passenger		
04.	Shopping	08.	Social	12.	Other Reason		

Travel Modes:

01.	Walk	03.	Taxi	06.	2-wheeler (driver)	10.	Bus (public)	14.	Train (long distance)	T	= Toll Paid (in cash)
02.	Bicycle	04.	Auto rickshaw	07.	2-wheeler (passenger)	11.	Bus (company charter)	15.	Other mode	P	= Rail Pass used
		05.	Maxi cab	08.	Car/Van (driver)	12.	Bus (private charter)				
				09.	Car/Van (passenger)	13.	Train (local)				

No cost for car, 2-wheeler, walk or bicycle except if toll paid

Transfer Time = Walk time + Wait time for next mode

PART 3. Previous Working Day Trip Diary **Day of Diary:** D D (Day) M M (Month) **Person Name:** **Person No.:** **Household No.:**

Is this a proxy interview? 1 No 2 Yes **Sheet**

Trip No.	Place at which this trip started	Time of Journey	Trip Reason	Modes of Travel Used	Mode Time (mins) Transfer	Mode Time (mins) Travel	Cost of Mode (Rupees)	Transfer / Interchange / Intermediate Location or Station	Place at which this trip ended	If Mode is Car or 2-wheeler
1	1 Home 2 Work 3 Education or 4 OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Trip Start Time (hh:mm) Trip End Time (hh:mm)		1st 2nd 3rd 4th 5th 6th 7th 8th			P T		1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Occupants (including driver) Toll Pass Used? 1 Yes 2 No Parking cost Rs
2	1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Trip Start Time (hh:mm) Trip End Time (hh:mm)		1st 2nd 3rd 4th 5th 6th 7th 8th			P T		1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Occupants (including driver) Toll Pass? 1 Yes 2 No Parking cost Rs
3	1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Trip Start Time (hh:mm) Trip End Time (hh:mm)		1st 2nd 3rd 4th 5th 6th 7th 8th			P T		1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Occupants (including driver) Toll Pass? 1 Yes 2 No Parking cost Rs
4	1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Trip Start Time (hh:mm) Trip End Time (hh:mm)		1st 2nd 3rd 4th 5th 6th 7th 8th			P T		1 Home 2 Work 3 Education or OTHER Building No. / Name: Street Name: Location 1 Location 2 Landmark 1 Landmark 2 Nearest Bus Stop	Occupants (including driver) Toll Pass? 1 Yes 2 No Parking cost Rs

CIDCO WE MAKE CITIES

DEVELOPMENT PLAN FOR NAINA & KNT

SOCIO-ECONOMIC SURVEY

PERSONAL INFORMATION - ADDITIONAL SHEET

	Person 8	Person 9	Person 10	Person 11	Person 12	Person 13	Person 14
Completed Travel Diary	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
No. of trips made on Travel Day	0 None	0 None	0 None	0 None	0 None	0 None	0 None
Name							
Relation to Head of HH							
Age (years)							
Sex	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F	1 M 2 F
Disabled	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N	1 Y 2 N
Marital Status							
Currently Married	1	1	1	1	1	1	1
Single/Unmarried	2	2	2	2	2	2	2
Diverse/ Separated	3	3	3	3	3	3	3
Widow/ Widower	4	4	4	4	4	4	4
Completed Education Level							
Illiterate	1	1	1	1	1	1	1
Pre-primary	2	2	2	2	2	2	2
Primary (5th Pass)	3	3	3	3	3	3	3
Secondary (10th Pass)	4	4	4	4	4	4	4
Higher Secondary (12th Pass)	5	5	5	5	5	5	5
Technical diploma	6	6	6	6	6	6	6
Graduate	7	7	7	7	7	7	7
Post Graduate & above	8	8	8	8	8	8	8
Occupation Status							
Employed (Full Time)	1	1	1	1	1	1	1
Employed (Part Time)	2	2	2	2	2	2	2
Self Employed	3	3	3	3	3	3	3
Daily Wages	4	4	4	4	4	4	4
Student (all levels)	5	5	5	5	5	5	5
Seeking Employment	6	6	6	6	6	6	6
Homemaker/Housewife	7	7	7	7	7	7	7
Retired	8	8	8	8	8	8	8
Resident Maid / Driver / Caretaker	9	9	9	9	9	9	9
Infants	10	10	10	10	10	10	10
Others	11	11	11	11	11	11	11
Not doing anything	12	12	12	12	12	12	12
Location of Work Place/ School/ College							
Are you employed in Government / Private sector?							
	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv	1 Govt 2 Priv
Building Type or Land Use that best describes your USUAL place of employment or education:							
Employment Place:							
Residential	1	1	1	1	1	1	1
Industry/Factory	2	2	2	2	2	2	2
Warehouse	3	3	3	3	3	3	3
Office	4	4	4	4	4	4	4
Film Industry	5	5	5	5	5	5	5
Shop	6	6	6	6	6	6	6
Restaurant/Eating Place	7	7	7	7	7	7	7
Hotel	8	8	8	8	8	8	8
Entertainment/Tourism	9	9	9	9	9	9	9
Place of Education	10	10	10	10	10	10	10
Health Facility	11	11	11	11	11	11	11
Agriculture	12	12	12	12	12	12	12
Construction Site	13	13	13	13	13	13	13
Varies day to day	14	14	14	14	14	14	14
Others	15	15	15	15	15	15	15
Resident Space	16	16	16	16	16	16	16
Student Destination Type:							
Pre-School	1	1	1	1	1	1	1
Primary School	2	2	2	2	2	2	2
Secondary/High School	3	3	3	3	3	3	3
Degree College	4	4	4	4	4	4	4
University/Research Institute	5	5	5	5	5	5	5
Coaching classes	6	6	6	6	6	6	6
Others	7	7	7	7	7	7	7
Medium of School/ College							

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ANNEXURE 3-1: LEGEND FOR EXISTING LAND USE

भू वापर वर्गीकरण
LAND USE CLASSIFICATIONS

- रहिवासी **RESIDENTIAL**
  - बांधीव BUILT
  - UC — बांधकाम निर्माणाधीन UNDER CONSTRUCTION
  - T — तात्पुरते बांधकाम TEMPORARY STRUCTURE
- मिश्र वापर **MIXED USE**
  - R + C — रहिवासी + वाणिज्य RESIDENTIAL + COMMERCIAL
  - R + O — रहिवासी + इतर RESIDENTIAL + OTHERS
- वाणिज्य **COMMERCIAL**
  - M — बाजार MARKET
  - HO — हॉटेल HOTEL
  - O — इतर OTHERS
- उद्योग INDUSTRIAL
  - LS — बृहत उद्योग LARGE SCALE INDUSTRY
  - SS — लघु उद्योग SMALL SCALE INDUSTRY
  - SR — सेवा उद्योग SERVICE INDUSTRY
  - BK — वीट भट्टी BRICK KILN
- WH — गोदाम WAREHOUSING
- सार्वजनिक आणि निम सार्वजनिक सुविधा **PUBLIC & SEMI PUBLIC AMENITIES**
  - S — शाळा SCHOOL
  - C — महाविद्यालय COLLEGE
  - PHC — प्राथमिक आरोग्य केंद्र PRIMARY HEALTH CENTRE
  - H — रुग्णालय HOSPITAL
  - CR — स्मशान भूमी /दफन भूमी BURIAL GROUNDS / CREMATORIUM
  - SC — सामाजिक आणि सांस्कृतिक केंद्र SOCIAL AND CULTURAL CENTRE
  - GP — ग्राम पंचायत कार्यालय GRAM PANCHAYAT OFFICE
  - T — देऊळ TEMPLE
  - MO — मशिद MOSQUE
  - CH — चर्च CHURCH
  - G — गुरूद्वारा GURUDWARA
  - PS — पोलीस स्थानक POLICE STATION
  - F — अग्निशामक केंद्र FIRE STATION
  - BN — बँक / ए टीएम BANKS/ATMS
  - O — इतर OTHERS
- मोकळी जागा **VACANT LAND**

- दळणवळण **TRANSPORTATION**
  - EW — द्रुतगतीमार्ग EXPRESSWAY
  - NH — राष्ट्रीय महामार्ग NATIONAL HIGHWAY
  - SH — राज्यमार्ग STATE HIGHWAY
  - MDR — मुख्य जिल्हा रस्ते MAJOR DISTRICT ROAD
  - ODR — इतर जिल्हा रस्ते OTHER DISTRICT ROAD
  - VR — गाव रस्ते VILLAGE ROAD
  - RL — रेल्वे जमीन RAILWAY LAND
- जलाशय **WATERBODY**
  - नदी RIVER
  - P — तलाव LAKE / POND
- WL — आर्द्रभूमी WETLAND
- वनक्षेत्र FOREST
- खारफुटी MANGROVES
- सार्वजनिक सुविधा **PUBLIC UTILITIES**
  - BT — बस स्थानक /आगार BUS TERMINUS / DEPOT
  - ES — विद्युत उपकेंद्र ELECTRIC SUBSTATION
  - OHT — जलकुंभ OVER HEAD TANK
  - TO — शौचालय TOILET
  - WP — जलप्रक्रिया केंद्र WATER TREATMENT PLANT
  - O — इतर OTHERS
- कृषिक्षेत्र **AGRICULTURAL**
  - पिकाखालील जमीन CROP LAND
  - पडीक जमीन FALLOW LAND
  - वृक्ष लागवड PLANTATION
  - कुक्कुटपालन /गोठा POULTRY FARM/CATTLE SHED
- H I — टेकडी **HILL**
- Q — खाण **QUARRY**
- धरण **DAM / BARRAGE**
- REC — करमणूक **RECREATIONAL**
- PG — क्रीडांगण **PLAYGROUND**
- बोगदा **TUNNEL**
- इमारत **STRUCTURE/BUILDING**

इतर वर्गीकरण
OTHER CLASSIFICATIONS

- राज्य हद्द STATE BOUNDARY
- Thane / Raigarh — जिल्हा हद्द DISTRICT BOUNDARY
- Ulhasnagar / Thane — तालुका हद्द TALUKA BOUNDARY
- Adai / Akruli — गाव हद्द VILLAGE BOUNDARY
- मु.म.प्र. हद्द MMR BOUNDARY
- नैना हद्द NAINA BOUNDARY
- नैना टप्पा -१ हद्द NAINA PHASE-I BOUNDARY
- शहर हद्द / विशेष नियोजन प्राधिकरण हद्द MUNICIPAL / SPA BOUNDARY
- NERE — गावठाण /वसाहत GAOTHAN/ SETTLEMENT
- सर्वेक्षण / महसुल हद्द SURVEY / REVENUE BOUNDARY
- हिस्सा हद्द HISSA BOUNDARY
- जलाशय REVENUE WATER BODIES
- पूल BRIDGE
- पादचारी मार्ग FOOT TRACK
- अंतर्गत रस्ते INTERNAL ROAD
- लोहमार्ग RAILWAY LINE
- रेल्वे स्थानक RAILWAY STATION
- ओढा /नाला STREAM
- विद्युत वाहिनी POWER TRANSMISSION LINE
- जल वाहिनी WATER PIPELINE
- वायू वाहिनी GAS PIPELINE
- परिरेषा पातळी CONTOURS

ANNEXURE 6-1: RANGE OF NORMS & STANDARDS, AND ADOPTED STANDARDS

Sl.No	Facilities		UDPFI		New URDPFI (2013)		1979 GR Norms		CIDCO(Navi Mumbai) Norms		Waluj Draft Development plan		ADOPTED Norms	
			Pop (No.)	Area (ha)	Pop (No.)	Area (ha)	Pop (No.)	Area (ha)	Pop (No.)	Area (ha)	Pop (No.)	Area (ha)	Pop (No.)	Area (ha)
A	**Amenities**													
1	Educational Facilities	Balwadi/Creche	2,500	0.08	5,000	0.02	Nil		Nil		12,000	0.05	12,000	0.05
		Primary & Secondary School	5,000	0.20	5,000	0.20	10,000	0.65	10,000	0.4	12,000	0.6	10,000	0.4
		Play Grounds		0.20		0.20		1.25				1.0		0.6
		Degree Colleges	1,25,000	4.00	1,00,000	5.00	Nil		1,25,000	1.00	12,000	1.25	1,25,000	1.00
		Professional Colleges/Technical College	10,00,000	4.00	10,00,000	6.00	Nil		1,25,000	2.00	12,000	1.2	1,25,000	2.00
2	Health Facilities	Clinic											10,000	0.06
		Dispensary/Public Health Center	15,000	0.08	15,000	0.08	10,000	0.25	25,000	0.15	12,000	0.1	25,000	0.15
		General Hospital	2,50,000	6.00	5,00,000	6.00	Nil		1,00,000	0.50	20,000	0.5	1,00,000	0.50
		Super Specialty Hospital/Intermediate hospital(Category-A)	1,00,000	3.70	1,00,000	3.70	Nil		2,50,000	2.00	Nil		2,50,000	2.00
3	Social and Cultural centers	Library (community hall and library)	15,000	0.20	15,000	0.20	10,000	0.05	Nil		10,000	0.05	10,000	0.05
		Multipurpose Hall	Nil		Nil		Depending upon the needs		Nil		Nil		10,000	0.2
		Community Hall	Nil		Nil		10,000	0.05	1,00,000	0.20	38,000	0.2	1,00,000	0.20
		Health Club & Gymnasium (Meditation or Spiritual Center)	1,00,000	0.50	1,00,000	0.50	Depending upon the needs		Nil		Nil		10,000	0.1
		Religious	Nil		10,00,000	4.00	Nil		10,000	0.15	Nil		10,000	0.15
		Working Women hostel	Nil		10,00,000	0.10	Nil		1,00,000	0.30	Nil		1,00,000	0.30
4	Daily Bazaar/ Market Complex	Vegetable Market	Nil		Nil		10,000	0.2	10,000	0.1	12,000	0.2	10,000	0.1
		Fish/Meat Market	Nil		Nil		Nil				12,000	0.2		
		Rationing shops	Nil		Nil		Nil				Nil			
		Flour mills	Nil		Nil		Nil				Nil			
		Milk Booths	Nil		5,000	0.02	Nil				Nil			
		Post office/Head post office with delivery office	5,00,000	0.15	5,00,000	0.15	Nil				12,000	0.05		
B	**Public Utilities**													
5	Fire station/ Police station	Fire Brigade and Allied services	2,00,000	1.00	1,00,000	1.00	Depending upon the needs				12,000	0.05	2,00,000	1.00
		Burial Ground/Cremation Ground	5,00,000	0.50	5,00,000	4.00	Depending upon the needs				Nil		5,00,000	4
		Police Station	90,000	1.50	50,000	0.32	Nil				12,000	0.05	1,00,000	1
C	**Parks and open spaces**													
6	Parks and open spaces	Play fields/Neighborhood Play fields	Play fields mentioned along schools		5,000	1.50	1,000	0.4			12,000	0.2	1,000	0.4
		Parks/Neighborhood parks			5,000	1.00	1,000	0.2			12,000	1.0		
		Open space/ Parks/Play grounds	10,000	10.00	10,000	10.00			10,000	3.00			10,000	3.00
		City Park			10,00,000	100.00							5,00,000	50.00

Adopted Norms

Assumed Figures after discussion with CIDCO

ANNEXURE 6-2: VILLAGE WISE RESERVATION LIST

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
238_BG/C	11	1.6966	Panvel	Turmale	33/1,33/2,34/1,34/2,34/3,34/4,35/2,35/3,35/4,35/6,53/,53/1,53/2,54/1,54/3,54/6
239_CC	11	0.2850	Panvel	Kudave	12/1,13/,3
240_DB	11	0.0997	Panvel	Turmale	37/2
241_DB	11	0.1084	Panvel	Kudave	25/3,25/4,27/1,27/4
242_FS	11	1.0058	Panvel	Shirdhon	29,30
243_GC	11	~~14.5168~~ 16.4298	Panvel	Nandgaon	31/1,31/16,32/,32/10,32/14,32/15,32/7,32/8,32/9,37/,37/3,37/6A,37/9B,40/,40/10, 40/11,40/5,40/6A,40/6B,40/6C,41/,41/1/A+5,41/1B,41/6,42/,42/1,42/10,42/12,42/13, 42/13,42/14,42/2+8+9,42/3,42/7,43/1,43/2, 43/3,43/6,44/5,44/6, 37/1, 37/2, 38, 39, 40/1, 40/14, 40/15,40/16,40/17,40/2,40/3,40/4
				Vadavali	31,32,33,44,45
244_GC	11	13.4282	Panvel	Turmale	110/2,110/4,35/4,35/5,37/2,50/1,50/3,51/1,51/2,51/3,51/4,52/1,52/2,52/3,52/4,53/, 53/1,53/3,53/4,53/6,56/1,56/2,57/1,57/2,57/3,57/4,57/5,57/6,58/1,58/2,58/3,58/4, 59/1,59/2,59/3,59/4,59/5,59/6,60/1,60/2,60/3,61/1,61/2,61/3,62/1,62/2,62/3,63/2, 63/3,64/1,64/2,65/1,65/2,65/3,65/4,66/1,66/2,66/4,67/1,67/3,83/3
245_GC	11	13.7029	Panvel	Turmale	10,125/3,126/1,126/4,126/5,126/6,6/3,
				Vadavali	10,10,10,11,12,12,13,14/A,14/B,15,16,17,18,19,20,28/APAI,28/B,28/C,28/C,39, 52,8,9
246_GC	11	9.3896	Panvel	Shirdhon	29,30,31,32,33,34,35,36,37,38,39

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
247_GH	11	0.5000	Panvel	Vadavali	18
248_P	11	2.3726	Panvel	Nandgaon	10/1,10/2,10/3,10/4,10/5,10/6,10/7,10/8+9,3/1,3/2,3/3,3/4,3/5,3/6,4/1,4/2,4/3A,4/4,4/5
249_P	11	2.3992	Panvel	Shirdhon	29,39
250_PG	11	2.3399	Panvel	Kudave	8/1,8/2,8/3,8/4,9/1,9/2,9/3,
				Nandgaon	14/1,14/10,14/2,14/9,22/12,22/6,22/7,23/3
251_PG	11	1.7004	Panvel	Kudave	31/4,31/5,32/1,32/3,32/4,32/5,32/6,33/,33/3,34/2,34/3,34/4,34/6
252_PG	11	1.7386	Panvel	Shirdhon	39,41
253_PG	11	1.4647	Panvel	Vadavali	25,33,34,43A
254_PG	11	1.2390	Panvel	Turmale	125/2,125/3,126/5,126/6,127,94,
				Vadavali	15,16
255_PG	11	1.3705	Panvel	Kudave	53/1,53/2,53/3,53/4,54/3,54/5,54/6,
				Nandgaon	25/2,25/3
256_PHC	11	0.1500	Panvel	Turmale	50/1,50/2,50/3
257_PHC	11	0.1516	Panvel	Kudave	3,7/5,7/6
258_S	11	0.3966	Panvel	Kudave	33/1,34/1,34/5,34/6,35/3,35/4,35/6,
				Vadavali	7
259_SPG	11	0.5969	Panvel	Kudave	34/1,34/6,35/1,35/2,35/3,35/4,35/5,37/3

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
260_STP-6	11	1.7445	Panvel	Kudave	10/2,3,7/1,7/2,7/3,7/4,8/2,9/2,9/3,9/4
261_STP-7	11	1.1005	Panvel	Turmale	53/,54/1,54/2,54/5,54/6,55/1,55/2,55/3,55/4,56/2
262_CC	12	0.2433	Panvel	Chirvat	45
263_CWR 2	12	3.4355	Panvel	Chirvat	45,
				Turmale	94,95
263A_GC	16	6.810	Panvel	Sangurli	14,26,27,29,30,31,5,177,14,15,26,27,29,30,31,5
				Shirdhon	177
264_DB	12	0.1141	Panvel	Chirvat	15/2,15/4
265_DB	12	0.1355	Panvel	Chirvat	45
266_ESS	12	0.3309	Panvel	Nandgaon	36/8,37/4,37/5
267_GC	12	40.7477	Panvel	Nandgaon	32/1,32/11,32/12,32/13,32/14,32/2,32/3,32/4,32/5,32/6,32/7,36/,36/8,37/4, 37/7,37/8,
				Turmale	100,101,102/1,102/2,103/,104,107/,107/1,107/2,107/3,108/1,108/2,108/3,108/4, 108/5,113/1,113/2,113/3,115/1,115/2,115/3,116,117,118/1,118/2,119,120,121, 122,123, 124/1,124/2,125/1,125/2,125/4,128,94,95,97/
				Vadavali	17,19,20,21,22,23,24,25,26,27,28APAI,28APAI,29,30,31,33,34,35,50
268_GC	12	~~9.3160~~ 7.315	Panvel	Chirvat	~~10/1,10/2,11,12,16/1,16/2,7/2,7/5,7/6,7/9,8/,8/1,~~8/2,~~8/3,~~11(Part),8/3(Part),8/1(Part), 8(Part)

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
				Turmale	104,105/1,105/2,105/3,106/1,106/2,106/3,106/4,107/1,107/2,107/3,107/4,109/1, 109/3,110/5,62/1,62/3,63/1,63/2,63/4,63/5,64/2,85/4,86/1,86/2,87/1,87/2,87/3, 88/1,88/2,88/3,88/4
269_GSR 8	12	0.3765	Panvel	Chirvat	45
				Turmale	95
270_GSR7	12	0.2900	Panvel	Nandgaon	36/,36/8,37/4,37/5,37/8
271_P	12	2.6187	Panvel	Chirvat	198,199,27,28,29,30
272_P	12	10.7892	Panvel	Turmale	100,101,103/,94,95,96,97/,97/1,97/2,98,99
273_P	12	3.2754	Panvel	Chirvat	1,45
				Turmale	95
274_PG	12	2.8652	Panvel	Chirvat	11,8/,8/1,8/2,
				Turmale	63/1,63/2,63/3,63/4,63/5,63/6,83/1,83/2,84/1,85/1,85/2,85/3,85/4,85/5,86/1, 86/2,86/3
275_PG	12	~~1.3217~~ 0.5417	Panvel	Chirvat	45(part)
276_PHC	12	0.1500	Panvel	Chirvat	15/1,15/2,15/4
277_PHC	12	0.2513	Panvel	Chirvat	44,45
278_PS	12	1.0511	Panvel	Chirvat	13/2,14,
				Turmale	79/1,80/1,80/2,80/3,80/4,80/5,80/6,81/5,82/2,82/6

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
279_S	12	0.3953	Panvel	Chirvat	16/3,16/4,16/5,19/2
280_SPG	12	0.5554	Panvel	Chirvat	16/3,16/5,17/1,18/1,18/2
281_BD	16	~~14.8803~~ 8.0703	Panvel	Chirvat	29,
				Sangurli	13,~~14,~~15(part),16,17,18,19,20,26(part),~~27,28,~~29(part),30(part),~~31~~,4,5
				Shirdhon	~~177~~
282_PG	16	7.5702	Panvel	Sangurli	12,35,36,37,38,43,44,45,46,47,48
283_DB	17	0.1066	Panvel	Chinchavan	16/5,17/1,17/2,17/3,63
284_P	17	3.0774	Panvel	Chinchavan	11/1,11/2,11/3,11/4,11/5,11/6,12/4,19,20/4,21/3
285_PHC	17	0.1574	Panvel	Chinchavan	16/5,63
286_S	17	0.3728	Panvel	Chinchavan	79/2,80/1,80/2,80/4
287_SPG	17	0.6640	Panvel	Chinchavan	78/1,79/1,79/2,80/1,83/1
288_STP-8	17	1.7881	Panvel	Chinchavan	22/3,22/4,23/2,23/3,23/4,23/5,24/3,24/4,24/5,24/6,26/1,26/2,26/4,26/5,26/5,
289_DB	18	0.0999	Panvel	Shirdhon	131,132
290_ESS	18	0.5996	Panvel	Shirdhon	115,122,123,124
291_GC	18	20.6806	Panvel	Shirdhon	105,106,107,108,109,110,111,112,113,114,125,126,127,129,56,129,56,84,85,86, 89,90,91,92,93,94,96,97,98,117
292_GC	18	13.2172	Panvel	Shirdhon	117,118,123,124,125,127,128,129,132,133,134,135,136,137,138,137,138,139, 141,372/2,373/10,373/11,375,376,377/1,378

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
293_GC	18	7.1200	Panvel	Shirdhon	113,114,82,83,84,85,87,92
294_GSR 9	18	0.2481	Panvel	Shirdhon	114,82
295_P	18	3.1298	Panvel	Shirdhon	138,139,140,141
296_PG	18	2.1926	Panvel	Shirdhon	135,137,138,139,141
297_PG	18	1.6163	Panvel	Shirdhon	88,89,90
298_PG	18	2.9929	Panvel	Shirdhon	252,252/5,253/1,253/2,253/3,254,256,257,258,29
299_PHC	18	0.1471	Panvel	Shirdhon	131
300_RS	18	3.1630	Panvel	Shirdhon	117,118,119,120,122
301_S	18	0.3921	Panvel	Shirdhon	105,106,107
302_SPG	18	0.6295	Panvel	Shirdhon	106,131
303_BT	19	0.9711	Panvel	Bhingar	110,113,114,115,152,92
304_GC	19	7.8340	Panvel	Bhingarwadi	10,11,12,20,22,23,24,25,26,27,28,29,31,33,35,36,37,38,40,57,58
305_GC	19	~~42.5633~~ 43.2313	Panvel	Bhingarwadi	28,29,32,33,34,35,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,58,
				Mohope	41,42,43,44/1,47,48,49/1,49/2,49/3,49/4,49/5,50,51/1,51/2,52,54,55/1,55/2,56, 57/1,57/2,58,59,60/1,60/2,61,62,63/1,63/2,65,66,67,69/1,69/2,70,71/1,71/2,71/3,72, 73,74,75, 76,
				Poyanje	184,189
306_GC	19	1.5823	Panvel	Poyanje	183,184,185,186,188,189,64
307_GC	19	30.0389	Panvel	Poyanje	104/4,104/5,105,106/1,106/2,106/3,106/4,107,108/1,108/2,108/3,108/4,109,110,

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
					111/1,111/2,111/3,114,115,116,117,118,119/1,119/10,119/11,119/12,119/2,119/3, 119/4,119/5,119/6,119/7,119/8,119/9,120,121,122,123/1,123/2,123/3,124,125,126, 127,128,129,131/10,131/7,131/8,132,133,134,144/1,144/2,144/3,144/4,144/5,144/6, 144/7,144/8,144/9,145/1,145/2,145/3,146,147,163,164,165,166,167,168,170,180, 183,188,189,190,191,192,193,194,196,197,198,199/1,199/2,200,85/1,85/2,85/5, 97,98,99
308_PG	19	1.6007	Panvel	Bhingar	119,124,125,126,127,128,131
309_PG	19	4.1050	Panvel	Bhingarwadi	77,86,87,88,89,90,91,92,93,94,97,98,99
310_PG	19	3.2216	Panvel	Bhingarwadi	28,29,
				Mohope	68,69/2,69/3
311_S	19	0.4286	Panvel	Poyanje	172/1,173,174,175
312_SAF	19	1.9153	Panvel	Bhingar	115,116,151,152,153,155
313_SPG	19	0.6977	Panvel	Poyanje	168,170,171,172/1,172/2
314_STP-10	19	3.2128	Panvel	Bhingar	119,120,121,122,123,124,125,126,
				Shedung	117
315_BG/C	20	1.6250	Panvel	Poyanje	83/2,83/5,84
316_BT	20	0.5042	Panvel	Poyanje	205,208,209,211/2,211/3,211/4
317_C	20	1.1208	Panvel	Pali Budruk	13/3,13/4,19,20,22/1,22/3,7/1,7/2

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
318_CC	20	0.2000	Panvel	Pali Budruk	17/2,19
319_DB	20	0.1012	Panvel	Mohope	30,4
320_DB	20	0.1419	Panvel	Poyanje	157,158
321_DB	20	0.1200	Panvel	Pali Budruk	17/2,18,19
322_ESS	20	0.2399	Panvel	Poyanje	1/1,257,259/3
323_GH	20	0.4712	Panvel	Mohope	20,21/1,4,17/1
324_GSR 11	20	0.2820	Panvel	Mohope	105/1,112,113,114,115/1,115/2
325_P	20	3.7077	Panvel	Poyanje	60,61/1,62/1,62/2,62/3,62/4,62/5,63,64/2,65
326_P	20	0.9564	Panvel	Mohope	112,113,114,82,83/1,83/2,83/3,84/4,6
327_PG	20	1.4078	Panvel	Mohope	77,78,79,80,81,82,83/1
328_PG	20	2.9085	Panvel	Poyanje	52/1,52/2,52/3,52/4,52/5,52/6,52/7,53,55,57,61/1
329_PG	20	1.5581	Panvel	Pali Budruk	13/3,13/4,19,25
330_PG	20	3.7503	Panvel	Poyanje	1/1,1/2,10,11,12,13,14,15,2/3,2/5,255,257
331_PHC	20	0.1512	Panvel	Pali Budruk	84/8,84/9,85,86
332_PHC	20	0.1529	Panvel	Mohope	78,79
333_PHC	20	0.1494	Panvel	Poyanje	100,95/1,97
334_PS	20	0.8196	Panvel	Poyanje	221/1,221/2,222,223,225,

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
				Pali Budruk	22/3,23/1,23/2,24/3,61/2
335_S	20	0.4000	Panvel	Pali Budruk	22/3
336_S	20	0.4005	Panvel	Mohope	35/1
337_SAF	20	0.2999	Panvel	Poyanje	202/1,210,211/1,211/2,211/4
338_SAF	20	0.4666	Panvel	Poyanje	211/1,211/2,211/3,211/4
339_SAF	20	0.1199	Panvel	Poyanje	210
340_SPG	20	0.5305	Panvel	Poyanje	209,215,216,219/1,219/2
341_SPG	20	0.6380	Panvel	Mohope	33/1,33/2,35/1,36/3,46/2
342_SPG	20	0.6400	Panvel	Pali Budruk	23/1,23/2,24/3,61/1,61/2,67
343_DB	21	0.1039	Panvel	Bherle	147,149,
				Wardoli	21
344_GC	21	7.9715	Panvel	Bherle	104,105,106/1,88/5,91,92/1,92/2,92/3,92/4,93,94,95,96/1,96/2
				Bhingar	113,154,155,158,165,166,167,168,169,170,171,172,173,175,177,178
345_GC	21	14.4545	Panvel	Bherle	113,114,115,116,117/1,117/2,118/2,119,128,129/1,129/2,134,135,136,138,139/1, 139/2,140/1,140/2,141/1,141/2,141/3,142,143,144,145/1,145/2,145/3,146,147,149, 150/1,151,152,153/1,153/2,154/1,155,75,76/1,76/2,83,84/1,84/2,85/1,85/2,85/3,86, 87,88/1,88/3
346_GC	21	14.2215	Panvel	Wardoli	11,12,126,127,129,13,130,132,133,134,136,143,18,2,3,4,9,10,128, 131

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
347_GH	21	0.7863	Panvel	Bherle	17/4,6/8,6/10,6/6,65,72,73,65,63,64,71/2
348_P	21	~~1.5465~~ 1.5505	Panvel	Wardoli	104,40,45
349_P	21	2.7061	Panvel	Bherle	149,2/1,
				Wardoli	11,12,19,20,10
350_PG	21	~~1.2014~~ 1.1964	Panvel	Wardoli	40,44,45,50
351_PG	21	1.5369	Panvel	Bherle	1,149,150/1,150/2,2/1,2/2,
				Wardoli	11
352_PG	21	2.0618	Panvel	Bherle	78/1,79,80,81/1,81/2,82,83,84/1,84/2,85/3,87
353_PHC	21	0.2006	Panvel	Bherle	149
354_S	21	0.4000	Panvel	Bherle	149,150/1,2/1
355_S	21	0.4174	Panvel	Loniwadi	95,
				Wardoli	31,35
356_S	21	0.3771	Panvel	Bhingar	165,166,167,170
357_SPG	21	0.6214	Panvel	Loniwadi	95,
				Wardoli	31,35
358_SPG	21	0.6086	Panvel	Bherle	95,96/1,96/2,

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
				Bhingar	165,175,177
359_SPG	21	0.5419	Panvel	Bherle	149,150/1
360_CC	22	0.2100	Panvel	Loniwadi	100,102,202/D
361_DB	22	0.1020	Panvel	Loniwadi	181,196
362_DB	22	0.1001	Panvel	Loniwadi	78,79,88
363_ESS	22	0.4079	Panvel	Wardoli	65,66,69
364_FS	22	1.0701	Panvel	Loniwadi	114,115,174
365_GC	22	30.0520	Panvel	Loniwadi	114,115,145,150,151,153,154,155,156,158,161,162,164,165,166,167,169,170,171, 172,173,174,178,181
366_GC	22	17.3946	Panvel	Loniwadi	114,115,116,117,119,120,123,124,132,133,142,143,144,145,168,171,202/C/1, 202/D
367_P	22	4.2886	Panvel	Loniwadi	102/B,113,114,117,118,122,174,47
368_P	22	1.8189	Panvel	Loniwadi	11,12,194,195,4,5,6,7,9
369_PG	22	19.9175	Panvel	Loniwadi	28,29,30,31,32,33,34,52,55,56,57,58,62,63,65,28,41
370_PG	22	1.9430	Panvel	Loniwadi	129,130,131
371_PHC	22	0.1471	Panvel	Loniwadi	181,196
372_PS	22	1.0000	Panvel	Loniwadi	156,158
373_S	22	0.4577	Panvel	Loniwadi	194,195,4

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
374_SPG	22	0.8288	Panvel	Loniwadi	1,195,196
375_DB	23	0.1200	Panvel	Wangani Tarf Waje	59,60
376_GH	23	0.5205	Panvel	Wangani Tarf Waje	49,8,9/3
377_GSR 13	23	0.2495	Panvel	Wangani Tarf Waje	19,2/17
378_MD	23	17.5654	Panvel	Ambivali	/2,/3,/7,1/11,1/12,1/13,1/15,1/16,1/7,14/1/A+4,15,16,17,18/1,18/2,18/3,18/4,19/, 19/1,3,4,5,5/1,5/2,5/3,5/4,5/5,5/6,6,7,8/1,8/2,9/15,9/16,9/17,9/18,9/19,9/5,9/6,9/8,
				Wangani Tarf Waje	10,13,14,15,16,17,19,2/,2/13,2/14,2/15,2/16,2/17,2/18,8,9/1,9/2,9/3
379_P	23	2.8238	Panvel	Ambivali	12,13,9/1,9/11,9/12,9/21,
				Moho	136
380_PG	23	2.3917	Panvel	Wangani Tarf Waje	100,101/1,101/2,102,103,104,105,109,115,98/1,98/2,99
381_PHC	23	0.1500	Panvel	Wangani Tarf Waje	59,60
382_S	23	0.3984	Panvel	Wangani Tarf Waje	84,87/1,90,88
383_SPG	23	0.6378	Panvel	Wangani Tarf Waje	61,87/1,90
384_STP-9	23	2.2155	Panvel	Ambivali	12,13,14/A,9/1
385_DB	24	0.1000	Panvel	Nevali	42,45

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
386_P	24	2.7160	Panvel	Nevali	10,12,22
387_PG	24	0.9709	Panvel	Nevali	43,45,46
388_PHC	24	0.1464	Panvel	Nevali	22
389_S	24	0.4000	Panvel	Nevali	35,36,37,38,45
390_SPG	24	0.6400	Panvel	Nevali	37,38,45
391_DB	25	0.1809	Panvel	Harigram	38/2K,38/3
392_GH	25	0.6281	Panvel	Harigram	49/,49/1+2K,56/1V,56/K,58
393_GSR 14	25	0.2718	Panvel	Harigram	68,88
394_P	25	9.0055	Panvel	Harigram	57/1V,58,68
395_P	25	4.1520	Panvel	Harigram	39V
396_PG	25	2.6381	Panvel	Harigram	34/,34/,34/7K,37/,38/5K,39V
397_PG	25	2.8517	Panvel	Harigram	57/1V,57/2V,57/3V,58
398_PHC	25	0.1474	Panvel	Harigram	15/2K,15/K
399_PS	25	1.0426	Panvel	Harigram	45/8V,45/K,47/,47/1+5K,47/2K,51/7+9K,52/1,52/2,52/2,53/3K,53/5K,85
400_S	25	0.3774	Panvel	Harigram	64/2K,65/,66,68
401_SPG	25	0.6264	Panvel	Harigram	64/2K,66,68
402_STP-11	25	~~3.2008~~ 3.3358	Panvel	Harigram	19/10V,19/11V,19/12V,19/13A,19/13B,19/13C,19/8,84/,84/2A, 84/2B,84/3V, 84/4K

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
403_C	26	1.0000	Panvel	Vakadi	15/19,151/1,151/3,152
404_DB	26	0.1250	Panvel	Kevale	27,8
405_ESS	26	0.2000	Panvel	Kevale	42,58
405A_TBR	26	6.882	Panvel	Kevale	42(part),43(part)
406_GC	26	21.6585	Panvel	Kevale	42,43,44,45,46,48,49,50,51,52,53,54,55,56,57,58,60
407_GC	26	39.9681	Panvel	Kevale	14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33, 34,35,36,37,41,78,8
408_P	26	4.7080	Panvel	Kevale	35,37
409_PG	26	2.7800	Panvel	Harigram	76/2,76/3,
				Kevale	10,11,12,16,18,19,23
410_PG	26	1.1023	Panvel	Vakadi	149/1,15/19,150,151/1
411_S	26	0.4519	Panvel	Vakadi	119,120,129,130/3
412_SPG	26	0.8019	Panvel	Vakadi	119,120,130/1,130/3,130/4
413_CP	27	34.3093	Panvel	Khanav	100,101,102,103/1,103/2,72,75,77,78,79/1,79/2,79/3,79/4,79/5,83,84,85,86,87/1, 87/2,87/3,88,89,90,91/1,91/2,91/3,91/4,91/5,91/6,91/7,91/8,91/9,92/1,92/2,92/3, 92/5,93,96,97,98,99
				Morbe	63
414_FS	27	0.9898	Panvel	Khanav	39,48/1,48/16,48/19,48/2,48/3,48/5,48/6

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
415_GC	27	32.0645	Panvel	Khanav	114,63/1,63/2,63/3,63/4,64,65/1,65/2,66/1,66/2,67,68,69,70,71,72,73,74,75,79/1, 79/2, 79/4,79/5,79/6
416_LFS	27	15.2117	Panvel	Khanav	83,91/1,94,95
417_BG/C	28	2.9133	Panvel	Khanav	100,101,102,103/2,103/3,75,76/1,76/2,96
418_CC	28	0.6183	Panvel	Khanav	112/13,114,117
419_DB	28	0.0993	Panvel	Chinchavali Tarf Waje	59/1,60/1
420_DB	28	0.1471	Panvel	Khanav	114,32/2,32/3,32/4
421_DB	28	0.0954	Panvel	Vakadi	63,67
422_GC	28	22.8466	Panvel	Khanav	104,105,106/1,106/2,106/3,107/1,107/13,107/14,107/15,107/16,107/2,107/3,107/4, 107/5,107/6,108,109,110,112/1,114,115,116/1,116/2,32/4,33/1,33/2,33/3,33/4,33/5, 33/6,33/7, 33/8, 33/9, 34,35,36/1,42,43,44,45,46,48/19,48/20,48/21,52
423_GSR 15	28	0.2500	Panvel	Chinchavali Tarf Waje	26,27/1,28/1,28/2
424_P	28	1.7735	Panvel	Khanav	114,13/3,13/5,13/8,13/9,14/1,14/2,15
425_P	28	3.1516	Panvel	Khanav	18/17,18/18,18/21,48/23,48/8,50
426_P	28	3.0852	Panvel	Vakadi	62,67,72/1,72/2
427_PG	28	2.8643	Panvel	Chinchavali Tarf Waje	38/2,47,48,49,50/2,50/3,51,56/1,56/2,57/3,58
428_PG	28	7.3046	Panvel	Vakadi	33,34,38,39,48
429_PHC	28	0.1494	Panvel	Chinchavali	45,47,48,59/1,60/1

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
				Tarf Waje	
430_PHC	28	0.1422	Panvel	Vakadi	62,63
431_PPU	27	1.1432	Panvel	Khanav	93,94
432_PS	28	1.1518	Panvel	Khanav	107/15,107/16,107/17,107/9,114
433_S	28	0.3967	Panvel	Umroli	96,97,
				Vakadi	67,86
434_S	28	0.4000	Panvel	Chinchavali Tarf Waje	28/5,28/6,29/2,30/1,31
435_SPG	28	0.6400	Panvel	Chinchavali Tarf Waje	28/5,28/6
436_SPG	28	0.6347	Panvel	Umroli	96
437_BG/C	61	1.6024	Khalapur	Nigdoli	12/1,12/4,14/2,24/1,25,26/1
438_GC	61	28.4606	Khalapur	Asare	103,
				Dharni	16/7,
				Nigdoli	15/1,37,38,39,40,41,42,43,44/1,44/2,44/3,44/4,45/2,45/3,45/4,45/5,45/6,45/7,46/1, 46/2,46/3,47,48/1,48/2,48/3,48/4,49,51/11,57/1,57/2,58/1,58/2,59,60,61,62/1,62/2, 63,64/1, 64/10,64/16,64/18,64/19,64/2,64/3,65,66,85
				Dharni	15
439_GC	61	9.1276	Khalapur	Nigdoli	36,45/8,45/9,49,50,51/1,51/11,51/2,51/3,51/4,51/5,52/1,52/2,52/3,53/4,53/5

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
440_P	61	4.4993	Khalapur	Nigdoli	52/2,52/4,53/1,53/2,53/3,53/4,53/5,53/6,53/7,53/8,53/8,54/1,54/1,54/1,54/2,54/3&4, 55,56/1,56/2,56/3
441_P	61	0.5890	Khalapur	Nigdoli	55
442_P	61	18.5832	Khalapur	Nigdoli	38,39,64/11,64/12,64/13,64/14,64/15,64/17,64/5,64/6,64/7,64/8,69,70,71,72/1, 72/2,72/3,73,85,86,84
443_P	61	1.9837	Khalapur	Nigdoli	82
444_P	61	3.8455	Khalapur	Nigdoli	112/1,112/2,76,77,81,78
445_PG	61	4.9161	Khalapur	Nadode	43/1,43/2,43/3,43/4,78,120,120/9
446_PG	61	3.4801	Khalapur	Nigdoli	64/11,64/4,64/5,64/6,64/7,64/8,64/9,66,67,68/1,68/2,69
447_RS	61	2.5927	Khalapur	Nigdoli	10,11,12/1,12/4,12/7,12/8,13,9
448_S	61	0.3942	Khalapur	Nigdoli	28,29/3,29/4
449_SPG	61	0.7001	Khalapur	Nigdoli	28,29/4
450_STP-12	61	4.2287	Khalapur	Nigdoli	50,51/2,51/5,52/2,52/4,52/5,52/6,52/7,53/5,53/7,53/8,56/1,101
451_C	62	1.0621	Khalapur	Nadode	28,30,31,34/6,34/7,34/8,43/17,43/19
452_DB	62	0.0998	Khalapur	Nadode	59/2
453_ESS	62	0.5225	Khalapur	Nadode	52/3,83,88/3,91
454_GC	62	~~12.2313~~ 12.3343	Khalapur	Nadode	10,100/2,100/3,100/4,11/1,12,17,18,19/1,19/2,45,46,47,48/1,48/2,48/4,49/1,49/2, 49/3,50,51,52/4,52/5,52/6,52/7,52/8,53/4,53/5,53/6,83,88/3,91

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
455_GC	62	37.6454	Khalapur	Kaloterayathi	105,9,
				Nadode	1/10,1/11,1/12,1/8,1/9,11/1,11/2,12,13,19/1,19/2,20/1,20/1,20/2,20/2,20/3, 20/4,21,22,23,23,24/2,3,3,3/1,3/10,3/11,3/4,3/5,3/6,3/6,3/7,3/8,3/9,3/9,4/1,4/2, 4/2,45,6,7,8,9
456_GC	62	~~18.7838~~ 20.4598	Khalapur	Nadode	100/1,52/2,52/3,53/1,53/2,53/3,53/4,53/5,53/6,71,72/1,72/2,80,81/1,81/2,81/3,88/2, 89,90,79
457_GH	62	0.5750	Khalapur	Nadode	1/1,92,93,94
458_P	62	10.4020	Khalapur	Kaloterayathi	13,14,15,
				Nadode	17,1/1,3/1,52/1,52/2,88/1,88/2,89,92,95,96,97
459_P	62	~~1.4660~~ 1.7745	Khalapur	Nadode	100/4,43/23,48/2,48/6,54
460_PG	62	1.5577	Khalapur	Nadode	31,34,34/10,34/7,34/8
461_PG	62	1.9041	Khalapur	Kaloterayathi	105,8,9
				Nadode	3/1,4/1,4/2
462_PG	62	1.9046	Khalapur	Nadode	59/1,64
463_S	62	0.4000	Khalapur	Nadode	43/23,43/8,69
464_SPG	62	0.6415	Khalapur	Nadode	43/23,69,70
465_CC	63	0.2000	Khalapur	Kaloterayathi	17,27
466_DB	63	0.1069	Khalapur	Kaloterayathi	47

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
467_ESS	63	0.2000	Khalapur	Kaloterayathi	17,27
468_GC	63	10.9044	Khalapur	Kaloterayathi	10,105,11,12,13,14,17,4,5,6,7,9,
				Nadode	3/1,3/1,3/2,3/3,3/3
469_GC	63	19.0239	Khalapur	Kaloterayathi	60,61,62,63,65,66,67,68,69,70,71,72,73,76,77
470_GC	63	17.4466	Khalapur	Kalote Mokashi	215,216,217,218,219,220,221,222,223,224,225,228,229,230,231,232
				Kaloterayathi	18,19,56,57,58,59,60,73,74,75
471_P	63	3.2008	Khalapur	Kaloterayathi	108,109,18,60,61
472_PG	63	2.9232	Khalapur	Kaloterayathi	16,17
473_S	63	0.3750	Khalapur	Kaloterayathi	41,43
474_SPG	63	0.6193	Khalapur	Kaloterayathi	43,44
475_DB	64	0.0997	Khalapur	Kandroli Tarf Wankhal	14/3,16/1,17/2
476_GSR 16	64	0.1901	Khalapur	Kandroli Tarf Wankhal	18/1,18/6
477_P	64	2.0495	Khalapur	Kandroli Tarf Wankhal	43,
				Vinegaon	57/2,57/3
478_P	64	0.4615	Khalapur	Kandroli Tarf Wankhal	14/3,15,16/1,17/1,17/2,18,18/1,18/4

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
479_PG	64	2.2573	Khalapur	Asare	62,
				Kandroli Tarf Wankhal	10/10,10/11,10/6,14/3,16/1,16/2
480_PG	64	2.6988	Khalapur	Vinegaon	22,24/5,24/7,24/8,25/1,25/2,25/3,26,29/1,29/2,29/3,31/1
481_PG	64	1.2799	Khalapur	Kandroli Tarf Wankhal	1/1,1/2,1/3,49/2,53/1
482_PHC	64	0.1500	Khalapur	Kandroli Tarf Wankhal	1/13,48
483_S	64	0.4000	Khalapur	Kandroli Tarf Wankhal	1/4,22/3,24
484_SPG	64	0.6347	Khalapur	Kandroli Tarf Wankhal	18/1,21/2,22/3,23,24
485_BT	65	1.6976	Khalapur	Kalote Mokashi	247,252,265,266
486_CP	65	21.1235	Khalapur	Kalote Mokashi	183,195,196,197,198,199,551,566,570,572,573,574,575,576, 577,578,579,
				Kaloterayathi	84
487_DB	65	0.1000	Khalapur	Kalote Mokashi	142,153,156
488_FS	65	0.9831	Khalapur	Kalote Mokashi	314,322,323
489_GC	65	7.0172	Khalapur	Kalote Mokashi	242,243,244,245,246,247,252,253,254,255,263,264,265,266,267,268,269,270,271, 272,273,274,275,276,284,285
490_GSR 17	65	0.2500	Khalapur	Kalote	152,153,154,156

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
				Mokashi	
491_PG	65	2.3795	Khalapur	Kalote Mokashi	123,124,125,126,127,128,129,130
492_PHC	65	0.1874	Khalapur	Kalote Mokashi	260,262,280,282,283
493_PHC	65	0.1487	Khalapur	Kalote Mokashi	191
494_S	65	0.4000	Khalapur	Kalote Mokashi	141,142,143,144
495_SPG	65	0.6560	Khalapur	Kalote Mokashi	141,142,143,144,145
496_CC	66	0.2000	Khalapur	Nimbode	16/1,19/2,29/5
497_DB	66	0.0993	Khalapur	Vanave	75,78/2
498_DB	66	0.0998	Khalapur	Nimbode	16/8,17,30/4
499_GSR 18	66	0.2500	Khalapur	Nimbode	27/1,28/1
500_P	66	3.3880	Khalapur	Nimbode	13,16/4,16/6,16/7,18,30/5,30/6
501_P	66	4.6081	Khalapur	Vanave	57,62/1,62/2,62/3,63,72/1,72/2,72/3,73,73,75
502_PG	66	10.5254	Khalapur	Shiravali(Tarf Boreti)	1,34/1,35/1,44,45/1,48,49/2,49/3,50,51/1,51/2,51/3,52,53,54,55,56,57,58,59,60/1, 60/2
502A_PPU	66	0.4137	Khalapur	Shiravali Tarf Boreti	Un-inhabitated Gaothan (Part)

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
503_PHC	66	0.1500	Khalapur	Nimbode	27/1,28/1
504_PS	66	1.0000	Khalapur	Nimbode	37/2,37/3,38,41/2,41/6
505_S	66	0.4000	Khalapur	Nimbode	16/12,16/8
506_S	66	0.2969	Khalapur	Nimbode	1/1,
				Vanave	78/1,80,81,82,83,83/1
507_SPG	66	0.6400	Khalapur	Nimbode	14/2,16/12,16/13,16/14
508_SPG	66	0.5107	Khalapur	Vanave	75,78/1,78/2,80,81
509_STP-13	66	4.2897	Khalapur	Shiravali (Tarf Boreti)	23,24,25,26,28
510_DB	67	0.1380	Khalapur	Khalapur	25
511_GC	67	13.0728	Khalapur	Khalapur	107,108,109,62,63,64,65,66,67,68,69
512_GSR 19	67	0.2566	Khalapur	Khalapur	34
513_P	67	3.6238	Khalapur	Khalapur	11,12,13,14,15
514_P	67	2.4075	Khalapur	Khalapur	37,83,85,90,93
515_PG	67	3.1797	Khalapur	Khalapur	61,62,63,64
516_PG	67	2.3681	Khalapur	Khalapur	115,116,117
517_PG	67	6.1215	Khalapur	Khalapur	34,40,41

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
518_S	67	0.3418	Khalapur	Khalapur	13,14
519_SPG	67	0.6219	Khalapur	Khalapur	13,14
520_BD	68	7.2500	Khalapur	Mahad	105,106,76,77,78,79,85,86,87,88
521_BG/C	68	1.0254	Khalapur	Mahad	13,12
522_DB	68	0.1000	Khalapur	Mahad	41
523_ESS	68	0.2459	Khalapur	Mahad	13,12
524_GC	68	14.8105	Khalapur	Mahad	108,39,40,41,42,42,43,43,45,45,45,46,46,54,54,55,56,62,65,66,45
525_GC	68	16.1212	Khalapur	Mahad	100,104,57,59,60,62,63,64,65,94,96
526_GC	68	13.6105	Khalapur	Mahad	42,45,46,47,48,50,51,52,54,99,44
527_GC	68	11.7946	Khalapur	Mahad	50,54,55,58,59,61,62,66,67,79
528_GH	68	0.6000	Khalapur	Mahad	104,70,71
529_GC	68	22.4958	Khalapur	Mahad	13,16,17,18,19,20,22,27,28,29,30,31,32,34,36,93
530_GSR 20	68	0.2679	Khalapur	Mahad	73
531_P	68	3.3070	Khalapur	Mahad	96,7
532_PG	68	3.6587	Khalapur	Mahad	108,36,38,39,41
533_PS	68	0.8896	Khalapur	Mahad	73,74,75,76
534_S	68	0.3987	Khalapur	Mahad	104,57,80

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
535_SPG	68	0.5981	Khalapur	Mahad	104,57
536_BT	109	1.4167	Pen	Kandale	30,32,
				Wadkhal	74,76,77,78
537_SAF	109	2.5343	Pen	Wadkhal	77,78,80,81,82,82,83,91
538_GSR 10	18	0.2528	Panvel	Shirdhon	219,236
539_TBR	18	55.1012	Panvel	Shirdhon	219,236,237,238,333,
540_GSR 12	20	0.2498	Panvel	Pali Budruk	32,33/1
541_RS	20	1.8443	Panvel	Pali Budruk	29/2,30,32,33/1,33/2,35/3,34/3,41/1
542_PPU	29	1.2279	Panvel	Umroli	52
543_P	30	1.9509	Panvel	Waje	251
544_P	30	0.6968	Panvel	Waje	78,79,81
545_P	30	0.1280	Panvel	Waje	81
546_PG	30	0.2309	Panvel	Waje	5
547_PPU	30	0.8516	Panvel	Waje	110
548_P	31	5.7976	Panvel	Dundre	47
549_PPU	31	0.5074	Panvel	Dundre	47
550_PG	34	2.0654	Panvel	Valap	35

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
551_BT	36	1.7691	Panvel	Chinchavali Tarf Taloje	4,5,
				Chindharan	27,31
552_GH	36	0.6890	Panvel	Chindharan	31
553_P	36	~~3.4181~~ 0.9471	Panvel	Chindharan	114 (part)
553A_P	40	2.8659	Panvel	Mahodar	114/1(part),114/2(part),116(part),117(part),118(part)
				Vavanje	71(part),67(part),68(part)
554_P	36	1.6726	Panvel	Chindharan	31
555_PPU	36	0.0574	Panvel	Chindharan	114
556_PPU	36	0.5535	Panvel	Chindharan	31
557_S	36	0.6281	Panvel	Chindharan	31
558_SPG	36	1.2485	Panvel	Chindharan	31
559_PPU	37	0.9344	Panvel	Mahalungi	34
560_RS	38	2.1883	Panvel	Morbe	237,238,239
561_BD	40	~~20.6251~~ 8.2231	Panvel	Mahodar	~~100,~~101/1,~~101/2,102/1,103/1,103/2,108,109,110,111,112/1,112/2~~,113(part),114/1, 114/2(part),~~—~~115/1(p), 115/2(p), ~~116,~~ 117/1, 117/2, ~~118/1~~, 118/2, ~~119/2,~~ ~~120,250,~~69, 98(part), ~~99/1,99/2,~~
				Vavanje	65,66,67(part),101,71,71PAI,77,78

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
562_P	40	0.4438	Panvel	Mahodar	55,57
563_PPU	40	1.1713	Panvel	Mahodar	57
564_PPU	40	0.2162	Panvel	Mahodar	57
565_TT	41	18.5620	Panvel	Kherane Khurd	78,
				Vavanje	146,147,148,149,150,166,167,168,169,171,172,173,174,175,176,177,178,181,123, 187, 190,191,192
566_PPU	42	2.0427	Panvel	Nitale	109,110,62
567_LFS	43	12.0877	Thane	Vaklan	100,101,102,104,105,106,157,85,86,90,91,92,93,94,95,96,97,98,99
568_P	43	1.5893	Thane	Vaklan	160,84
569_PG	43	0.8618	Thane	Vaklan	70
570_PPU	43	0.7433	Thane	Vaklan	16
571_PPU	43	0.4692	Thane	Vaklan	84
572_PPU	43	0.5468	Thane	Vaklan	84
573_PPU	43	0.0920	Thane	Vaklan	16
574_TBR	43	12.7912	Thane	Vaklan	157,158,74,75,76,77,78,79,80,81,84,85,86,87,88,89,91
	44			Navali	22
575_P	44	4.7721	Thane	Nighu	42

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
576_P	44	0.9404	Thane	Nighu	41,42
577_P	44	0.7164	Thane	Navali	15,22
578_P	44	0.5327	Thane	Nighu	42
579_P	44	0.2598	Thane	Navali	22
580_PPU	44	1.6639	Thane	Nighu	45
581_PPU	44	0.3041	Thane	Navali	75
582_PPU	44	0.4316	Thane	Navali	75
583_BT	45	0.6784	Thane	Narivali	158,160,161
584_BT	45	0.4841	Thane	Narivali	161,162
585_SAF	45	2.2338	Thane	Narivali	144,146,147,148,149,161
586_SAF	45	1.6953	Thane	Narivali	159,160,161
587_TBR	45	7.7780	Thane	Narivali	25,26,28,29
588_BD	46	~~15.1906~~ 8.1866	Thane	Nagaon	~~170,174,180,181,182,183,184,~~185,186,~~187,~~188(p),189(p),~~190,~~191,192,~~199,~~200(p),201,214, 45,223,224,226~~,227~~,199(p)
589_PG	46	0.2811	Thane	Nagaon	36,42,43
590_PG	46	0.7094	Thane	Nagaon	126
591_S	46	0.2263	Thane	Nagaon	43

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
592_TBR	46	33.2008	Thane	Uttarshiv	38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,59,60,61,62,63,64,65,66,67,68, 69,70,71,72,73,16/4,75,76,77,78,79
593_CC	51	0.5095	Uran	Dighode	3,4,6,5
594_P	51	3.4957	Uran	Dighode	10,124/A PAI,9
595_S	51	1.0910	Uran	Dighode	11
596_SPG	51	2.8379	Uran	Dighode	11
597_SAF	56	1.7630	Panvel	Posari	37/3,38/1,38/2,38/3,39/1,39/2,28,39/4,
				Turade	46,47/1
598_SAF	56	1.4229	Panvel	Posari	40/2,41/2,41/4,42/1,42/2,42/3,37,43/,43/1,43/2,43/3,43/4,43/5,43/6,44/4,45/7
				Turade	35/1
599_BT	57	1.6835	Panvel	Turade	2,44/,44/1,45/1,45/2,45/3,46,47/1,47/2,47/3,47/4,48
600_BT	58	0.7865	Panvel	Ladwali	10,20,22,23
601_SAF	58	4.4782	Panvel	Ladwali	10,24,25,26,27,28,31,32,9
602_BT	70	1.5083	Khalapur	Bhilavale	125,127,126,128
603_SAF	70	3.3518	Khalapur	Bhilavale	115,122,123,114
604_SAF	70	3.9559	Khalapur	Morbe	32,
				Bhilavale	114,128

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
605_SAF	70	0.8200	Khalapur	Bhilavale	123,128
606_PPU	71	4.7343	Khalapur	Wavarle	386
607_PPU	71	0.7760	Khalapur	Wavarle	340,344
608_BT	77	0.7781	Khalapur	Dolavali	11
609_BT	77	~~0.1930~~ 0.6011	Khalapur	Dolavali	11,12
610_SAF	77	0.9819	Khalapur	Dolavali	12,11
611_BT	79	0.5513	Pen	Jite	12/17,12/4,12/7,12/9,13/1,13/2,13/6,21/1,23/2,23/6
612_BT	79	0.7979	Pen	Jite	10/14,10/15,10/23,10/24,10/25,12/18,12/21,12/24,12/27,12/28,12/29,13/4,13/5, 13/6,8/3,8/4
613_SAF	79	2.1662	Pen	Jite	13/10,13/11,13/12,13/13,13/14,13/15,13/16,13/17,13/18,13/19,13/20,13/21,13/3, 13/6,13/7,13/9
614_SAF	79	0.7111	Pen	Jite	12/10,12/11,12/12,12/13,12/14,12/15,12/18,12/20,12/21,12/23,12/24,12/8,
				Turkhul	1,5
615_BT	85	0.8458	Pen	Hamrapur	71
				Hanumanpada	7
616_SAF	85	2.1553	Pen	Hamrapur	168,169A,60,61,67,68
617_SAF	85	1.6094	Pen	Hamrapur	67 PAI,68Pai,70,71
618_BT	86	0.9581	Pen	Tambadshet	10,11,12,9
619_P	86	1.3959	Pen	Kolave	18

Reservation No.	Sector	Area_Ha	Tahsil	Village	Survey No.
620_PPU	86	3.6389	Pen	Kolave	18
621_PPU	92	3.4207	Pen	Kane	145,151,153
622_PPU	92	2.3431	Pen	Kane	144,145
623_P	94	3.4108	Pen	Antore	45/A
624_P	94	3.4432	Pen	Antore	45/A,45/B
625_TBR	94	13.3762	Pen	Tarankhop	59,21,22,58
626A_P	66	3.1171	Khalapur	Nimbode	20, 22, 24/3, 24/4, 25, 26/1, 26/2
626B_P	66	3.0308	Khalapur	Nimbode	24/2, 25
626C_P	66	3.0360	Khalapur	Nimbode	22, 23/2, 23/3, 24/2, 24/3

Note:- Reservation no. 263_GC is a typological error though it is indicated on plan, and it should be read as 268_GC.

ANNEXURE 13-1: BLOCK COST ESTIMATE AND FINANCIAL ANALYSIS

ANNEXURE - 13.1 : BLOCK COST ESTIMATE AND FINANCIAL ANALYSIS

FINANCIAL VIABILITY ANALYSIS FOR DP NAINA BALANCE PH-1

SN	BASIC ASSUMPTION	QUANTITY	UNIT	QUANTITY	UNIT
1	LAND RATE - NON NA	0.6	Rs/ha (Cr)	600	Rs/ M^2
2	LAND ACQUISITION RATE - FOUR TIMES OF NON NA RATE	2.4	Rs/ha (Cr)	2400	Rs/ M^2
3	LAND RATE - NA	6	Rs/ha (Cr)	6000	Rs/ M^2
4	SALE PRICE LAND RATE IS 1.25 X NA RATE	7.5	Rs/ha (Cr)	7500	Rs/ M^2
5	SF LAND SALE RATE	50%	of sale price	3750	Rs/ M^2
6	FSI LINKED PREMIUM(FLP) CHARGE	1.8	Rs/ha (Cr)	1800	Rs/ M^2
7	FLP AS %AGE OF NA RATE	30%		30%	
8	INCREASE IN COST (ESCALATION)	7%	PER YEAR	1.07	Factor
9	INCREASE IN LAND SALE RATE UPTO 2020	12%	PER YEAR	1.12	Factor
10	INCREASE IN LAND SALE RATE BEYOND 2020	15%	PER YEAR	1.15	Factor
11	OPEN SPACE DEVELOPMENT RATE	0.1	Rs/ha (Cr)	100	Rs/ M^2
12	%AGE OPTING NAINA SCHEME	80%			
13	BASIC RATE OF DEVELOPMENT CHARGE	0.5	Rs/Ha (Cr)	500	Rs/ M^2
14	EQUIVALENT RATE OF DEVELOPMENT CHARGE	0.622	Rs/Ha (Cr)	622.1	Rs/ M^2
15	RATE OF BORROWING - INTEREST RATE	9%	PER YEAR	1.09	FACTOR
16	DISCOUNTING FACTOR	9%	PER YEAR	0.92	FACTOR
17	SHARE OF CIDCO IN MMC (ROAD AND METRO COST)	50%	50% BY MMRDA		
18	FOR SUB URBAN RAILWAY CIDCO WILL SHARE COST	**67%**	33% BY INDIAN RAILWAY		
19	MORATORIUM PERIOD	5	YRS		
20	ALL PRICES ARE WITH REFERENCE TO YEAR	2014			
21	NAINA BALANCE PH-1 WORK TO COMMENCE FROM	**2019**	4	YEARS	

FINANCIAL VIABILITY ANALYSIS FOR DP - NAINA BAL PH-1

A REVENUE FROM DEVELOPMENT CHARGE **REVENUE (Rs Cr)**

Sr No	Year	Land %age coming for Development	Area coming up for Development	Development Charge equivalent * Rs/M2	Revenue from DC Rs in Cr	Discounting Factor	NPV AS ON 2014
1	2019	3	108.3	978.9	106.0	0.708	75.1
2	2020	3	108.3	1096.3	118.8	0.650	77.2
3	2021	5	180.5	1260.8	227.6	0.596	135.7
4	2022	5	180.5	1449.9	261.8	0.547	143.2
5	2023	5	180.5	1667.4	301.0	0.502	151.1
6	2024	7	252.8	1917.5	484.6	0.460	223.1
7	2025	7	252.8	2205.1	557.3	0.422	235.4
8	2026	7	252.8	2535.8	640.9	0.388	248.4
9	2027	9	325.0	2916.2	947.7	0.356	336.9
10	2028	9	325.0	3353.6	1089.8	0.326	355.5
11	2029	9	325.0	3856.7	1253.3	0.299	375.0
12	2030	9	325.0	4435.2	1441.3	0.275	395.7
13	2031	7	252.8	5100.5	1289.2	0.252	324.7
14	2032	7	252.8	5865.5	1482.5	0.231	342.6
15	2033	4	144.4	6745.4	974.2	0.212	206.5
16	2034	4	144.4	7757.2	1120.4	0.194	217.9
		100	3610.7		12296.5		3844.1

NOTE

* Equivalent Developemt Charge Factors = (Area of specific Landuse X DC factor)/ Total Landuse area
(Residential-1, Commercial-2, Industrial-1.5)

B	REVENUE FROM GROWTH CENTER (SALE OF LAND)					REVENUE (Rs Cr)	
Sr No	Year	Rate of Land Sale Rs/M^2	%age of land available for sale	Land sale year-wise ha	LAND SALE Estimated receipts Rs.Cr	Discounting Factor	NPV land sale revenue
1	2019	11801.4	0	Dev. Period	0	0.708	0.0
2	2020	13217.6	0	Dev. Period	0	0.650	0.0
3	2021	15200.2	0	Dev. Period	0	0.596	0.0
4	2022	17480.2	0	Dev. Period	0	0.547	0.0
5	2023	20102.3	5.0	~~33.8~~34.3	~~679.9~~688.7	0.502	~~341.2~~345.6
6	2024	23117.6	5.0	~~33.8~~34.3	~~781.9~~792.0	0.460	~~360.0~~364.6
7	2025	26585.2	5.0	~~33.8~~34.3	~~899.1~~910.8	0.422	~~379.8~~384.7
8	2026	30573.0	5.0	~~33.8~~34.3	~~1034.0~~1047.4	0.388	~~400.7~~405.9
9	2027	35159.0	10.0	~~67.6~~68.5	~~2378.2~~2409.0	0.356	~~845.6~~856.5
10	2028	40432.8	10.0	~~67.6~~68.5	~~2735.0~~2770.3	0.326	~~892.1~~903.6
11	2029	46497.8	10.0	~~67.6~~68.5	~~3145.2~~3185.9	0.299	~~941.2~~953.4
12	2030	53472.4	10.0	~~67.6~~68.5	~~3617.0~~3663.8	0.275	~~993.0~~1005.8
13	2031	61493.3	10.0	~~67.6~~68.5	~~4159.6~~4218.3	0.252	~~1047.7~~1061.2
14	2032	70717.3	10.0	~~67.6~~68.5	~~4783.5~~4845.3	0.231	~~1105.3~~1119.6
15	2033	81324.9	10.0	~~67.6~~68.5	~~5501.0~~5572.1	0.212	~~1166.2~~1181.3
16	2034	93523.6	10.0	~~67.6~~68.5	~~6326.2~~6408.0	0.194	~~1230.4~~1246.3
			100.0	~~676.4~~685.2	~~36040.7~~36506.5		~~9703.2~~9828.6

C	REVENUE FROM FSI LINKED PREMIUM						REVENUE (Rs Cr)		
Sr No	Year	LAND %AGE COMING FOR DEVELOPMENT	LAND AREA (HA)	RATE (Rs/M^2)	TOTAL AMOUNT RS CR	REVENUE AT THE TIME OF CC	TOTAL REVENUE YEARLY	DISCOUNTING FACTOR	REVENUE NPV
1	2019	3	17.6	2832.3	49.9	14.96	14.96	0.708	10.6
2	2020	3	17.6	3172.2	55.8	16.75	16.75	0.650	10.9
3	2021	3	17.6	3648.0	64.2	19.27	19.27	0.596	11.5
4	2022	5	29.3	4195.3	123.1	36.93	36.93	0.547	20.2
5	2023	5	29.3	4824.5	141.6	42.47	42.47	0.502	21.3
6	2024	5	29.3	5548.2	162.8	48.84	48.84	0.460	22.5
7	2025	7	41.1	6380.5	262.1	78.63	78.63	0.422	33.2
8	2026	7	41.1	7337.5	301.4	90.43	90.43	0.388	35.0
9	2027	7	41.1	8438.2	346.6	103.99	103.99	0.356	37.0
10	2028	10	58.7	9703.9	569.5	170.85	170.85	0.326	55.7
11	2029	10	58.7	11159.5	654.9	196.47	196.47	0.299	58.8
12	2030	10	58.7	12833.4	753.1	225.94	225.94	0.275	62.0
13	2031	10	58.7	14758.4	866.1	259.83	259.83	0.252	65.4
14	2032	5	29.3	16972.1	498.0	149.40	149.40	0.231	34.5
15	2033	5	29.3	19518.0	572.7	171.82	171.82	0.212	36.4
16	2034	5	29.3	22445.7	658.6	197.59	197.59	0.194	38.4
		100	586.9		6080.6	1824.18	1824.18		553.6

D	REVENUE FROM SALE OF SF Plots					REVENUE (Rs Cr)	
Sr No	Year	Land %age coming for Developement	Area IN HA	Rate (50% of Land rate) Rs/m2	Revenue Rs Cr	Discounting Factor	NPV
1	2019	3	2.6	5900.7	15.2	0.708	10.8
2	2020	3	2.6	6608.8	17.1	0.650	11.1
3	2021	3	2.6	7401.8	19.1	0.596	11.4
4	2022	5	4.3	8290.1	35.7	0.547	19.5
5	2023	5	4.3	9284.9	40.0	0.502	20.1
6	2024	5	4.3	10399.0	44.8	0.460	20.6
7	2025	7	6.0	11958.9	72.1	0.422	30.5
8	2026	7	6.0	13752.7	82.9	0.388	32.1
9	2027	7	6.0	15815.6	95.4	0.356	33.9
10	2028	10	8.6	18188.0	156.7	0.326	51.1
11	2029	10	8.6	20916.2	180.2	0.299	53.9
12	2030	10	8.6	24053.6	207.2	0.275	56.9
13	2031	10	8.6	27661.7	238.3	0.252	60.0
14	2032	5	4.3	31810.9	137.0	0.231	31.7
15	2033	5	4.3	36582.6	157.6	0.212	33.4
16	2034	5	4.3	42069.9	181.2	0.194	35.2
		100	86		1680.5		512.3

Saleable Social Facility list - SCHOOL, COMMUNITY CENTER,

Expenditure Pattern (Rs in Cr)

INFRASTUCTURE HEAD

COST (Rs Cr)	LAND	POWER	SWM	WS	SEWER	ROAD	SUB URBAN	METRO	OPEN SPACE	OTH	SUB TOTAL	EST & ADM COST	SUB TOTAL + ESTABLISHMENT	INTEREST	TOTAL	Discounting Factor	Present value of cost (Rs Cr)
	687.7	1358.6	181.0	710.0	156.0	3032.2	90.1	1435.1	35.8	78.9	7765.3	10% PER YR					
Year	2	5	5	5	5	5	5	5	5	5							
2019	541.0			186.1	40.9	794.9			9.4		1572.4	157.2	1729.6	140.3	1869.9	0.708	1324.7
2020	606.0	381.1	50.8	199.2	43.8	850.6	25.3		10.0	22.1	2188.8	218.9	2407.6	352.3	2760.0	0.650	1793.8
2021		407.8	54.3	213.1	46.8	910.1	27.1		10.8	23.7	1693.6	169.4	1863.0	523.7	2386.7	0.596	1423.1
2022		436.3	58.1	228.0	50.1	973.8	29.0		11.5	25.3	1812.1	181.2	1993.4	712.4	2705.8	0.547	1480.1
2023		466.9	62.2	244.0	53.6	1042.0	31.0		12.3	27.1	1939.0	193.9	2132.9	863.8	2996.7	0.502	1504.0
2024		499.5	66.5				33.1			29.0	628.2	62.8	691.1	1086.9	1778.0	0.460	818.6
2025											0.0	0.0	0.0	1330.4	1330.4	0.422	562.0
2026											0.0	0.0	0.0	1479.8	1479.8	0.388	573.5
2027											0.0	0.0	0.0	1491.6	1491.6	0.356	530.3
2028											0.0	0.0	0.0	1350.7	1350.7	0.326	440.6
2029								740.1			740.1	74.0	814.1	1298.1	2112.2	0.299	632.1
2030								791.9			791.9	79.2	871.1	1175.8	2046.8	0.275	561.9
2031								847.3			847.3	84.7	932.0	825.3	1757.3	0.252	442.6
2032								906.6			906.6	90.7	997.3	368.2	1365.5	0.231	315.5
2033								970.1			970.1	97.0	1067.1	0.0	1067.1	0.212	226.2
2034											0.0	0.0	0.0	0.0	0.0	0.194	0.0
														12999.4	**28498.4**		**12629.0**

YEARWISE EXPENDITURE PATTERN

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
EXPENDITURE	1729.6	2407.6	1863.0	1993.4	2132.9	691.1	0.0	0.0	0.0	0.0	814.1	871.1	932.0	997.3	1067.1	0.0
REVENUE	171.1	191.7	311.0	420.6	1162.5	1474.1	1790.7	2059.3	3767.9	4551.0	5233.6	6018.7	6553.1	6901.1	7205.6	8286.4
PROFIT/ DEFICIT	-1558.5	-2216.0	-1552.0	-1572.8	-970.4	783.0	1790.7	2059.3	3767.9	4551.0	4419.5	5147.6	5621.1	5903.8	6138.5	8286.4
IRR	**22.2%**															
YEARLY PROFIT/ LOSS (-)	-1558.5	-2216.0	-1552.0	-1572.8	-970.4	783.0	1790.7	2059.3	3767.9	4551.0	4419.5	5147.6	5621.1	5903.8	6138.5	8286.4

VALUE WITH INTEREST - MORATORIUM PERIOD 5 YEARS

YEAR	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
YEAR OPENING BALANCE + INTEREST	0	-1699	-4267	-6343	-8628	-10462	-13164	-16113	-17922	-18065	-16358	-15721	-14240	-9995	-4460	1679
LOAN/ SURPLUS in Year	-1558	-2216	-1552	-1573	-970	-1615	-1619	-329	1348	3058	1935	2657	5070	5904	6138	8286
LOAN INTEREST	-140	-352	-524	-712	-864	-1087	-1330	-1480	-1492	-1351	-1298	-1176	-825	-368	0	0
LOAN REPAYMENT	0	0	0	0	0	2398	3410	2388	2420	1493	2485	2491	551	0	0	0
YEAR CLOSING BALANCE (With 5 Years Moratorium)	-1698.7	-4267.0	-6342.7	-8627.9	-10462.2	-13163.9	-16113.2	-17921.5	-18065.2	-16358.0	-15721.1	-14240.1	-9995.4	-4459.8	1678.6	9965.0

SUMMARY OF COST AND REVENUE ESTIMATES		
S. No	**DESCRIPTION**	**Rs in Cr**
A	**REVENUE FROM ALL SOURCES**	
1	REVENUE FROM DEVELOPMENT CHARGE (NPV)	**3844**
2	REVENUE FROM GROWTH CENTER (SALE OF LAND- NPV)	**~~9703~~9829**
3	REVENUE FROM FLP (NPV)	**554**
4	SALE OF SOCIAL FACILITY (NPV)	**512**
5	**NPV OF REVENUE FROM ALL SOURCES A**	**~~14613~~14739**
B	**EXPENDITURE TO BE INCURRED FOR INFRASTUCTURE**	
	NET PRESENT VALUE OF ALL EXPENSES	**12629**
	TOTAL EXPENDITURE B	**12629**
C	**NPV (A - B)**	**~~1984~~2110**
D	**Internal Rate of Return (IRR)**	**22.2%**