Government of Maharashtra

District Disaster Management Plan

PALGHAR

2023-2024

District Disaster Management Authority

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Guardian Minister
Massage

Palghar is one of the most multi- hazards prone district in the State. While natural hazards are beyond our control, our capability to reduce risks, prevent losses, prepare, respond, and recover are the inevitable part.

For disaster risk reduction prevention measures like capacity building training, awareness programs, structural and non-structural measures are including the plan. It is a matter of great satisfaction that District Disaster Management Authority has prepared the District Disaster Management Plan.

I heartily congratulate the District Disaster Management Authority for preparing the plan.

Sd/
Shri. Ravindra Chavhan
Minister of Guardian, Palghar

Foreword

Disaster management department under the aegis of District executive committee is facilitating the mainstreaming of Flagship development program to reduce the risk of Disaster in the state. Department has taken several initiatives to strengthen the convergence between different line departments and institutions of excellence in District to develop sustainable strategy for various disasters in the state.

District Disaster Management Authority (DDMA) to develop a sustainable mechanism for updating the hazard, risk and vulnerability status of the district as well as of the taluka and develop a dynamic, contextual and quality plan for this.

District Disaster Management Plan focuses on the realistic assessment of the hazard risk and vulnerability status, capacity of the line departments, institutions, need for strengthening the disaster specific strategies for the district to develop collective response plan for the different disasters based on emergency support functions.

A follow plan will be developed with all the stakeholders to abide this plan in terms of their departmental plan as guiding plan to reduce the risk of Disaster in the state. The main vision of this document is to initiate coordinated efforts in between all the line departments to have an effective disaster management strategy for the district, which will reduce the risk of disasters. The other main focus area of this document is to have an extremely quick, efficient and coordinated response and recovery plans in place from the vulnerable villages to the district level (village being the unit of planning) with a mechanism that will ensure increasing community participation in all disaster preparedness activities.

Shri Govind Bodke (IAS)
District Collector, Palghar

Massage from RDC

Palghar district is vulnerable to both the natural as well as the man-made disaster. In the past the district faced different kind of disasters of various magnitudes. The District Disaster Management Authority has been established as per the provision of Disaster Management Act,2005.

Disaster Management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspect of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.

The District Disaster Management Plan included with district hazard profile, prevention and mitigation methods, preparedness measures, emergency response and mainstreaming of disaster management mechanisms. The Incident Response System Also included in this plan for institutionalized effective response.

Dr. Kiran Mahajan
Resident Deputy Collector, Palghar

Massage from DDMO

This DDMP discussed the roles and responsibility of line departments which gone help to strengthen departmental SOP's. Apart from preparedness, response and recovery this document focused on mainstreaming of Disaster Risk Reduction which is current global phenomena.

The District Disaster Management Plan of Palghar district includes the plan for Tarapur Atomic Power Station. The Tarapur Atomic Power Station is the first of its kind in India. This project capacity is 1400 MW. This plan gives detailed information about what to do in the case of Off-site Emergency in this Plan.

Vivekanand

Mr. Vivekanand V. Kadam
District Disaster Management Officer, Palghar

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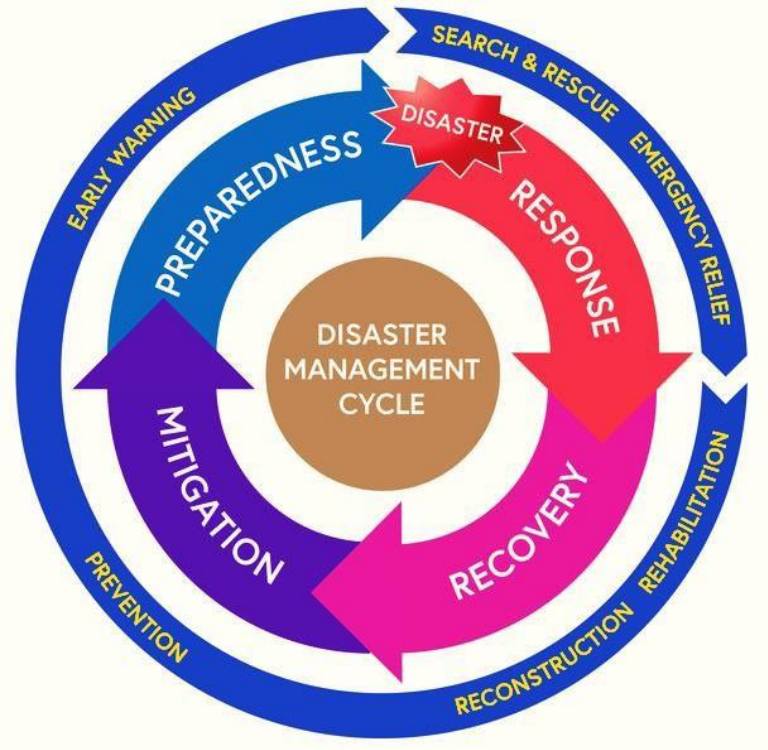
Chapter-1

Rationale

There is no such thing as a 'natural' disaster, only natural hazards. The District Disaster Management Plan (DDMP) provides a brief idea about the hazard scenario present in the district and gives direction to all the necessary line departments for all phases of disaster management cycle as per the NDMA guidelines. The DDMP is a progressive document in the sense that it will be periodically improved keeping up with the all-changing nature of environment and different scenario of district as well as the state. This document accordance with the provisions of the DM Act 2005, the guidelines given by the State Disaster Management authority as well as the NDMA guidelines – to carry out different activities in different phases in the hazard affected areas depending on the type and the scale of hazard.



Disaster Management Cycle

India’s geo-climatic conditions as well as its high degree of socio-economic vulnerability, makes it one of the most disaster-prone country in the world. A disaster is an extreme disruption of the functioning of a society that causes wide spread human, material, or environmental losses that exceed the ability of the affected society to cope with its own resources.

A more modern and social understanding of disasters, however, views this distinction as artificial since most disasters result from the action or in action of people and their social and economic structures. This happens by people living ways that degrade their environment, developing and overpopulation gurban centres, or creating and perpetuating social and economic systems. Communities and population settled in areas susceptible to the impact of arranging river or the violent tremors of the earth a replace the situations of high

vulnerability because of their socio-economic conditions. This is compounded by every aspect of nature being subject to seasonal, annual and sudden fluctuations and also due to the unpredictability of the timing, frequency and magnitude of occurrence of the disasters.

The DDMP recognizes the need to minimize, if no eliminate the implications of hazardous event. It, therefore, specifies who is responsible for what at different stages of managing disasters. The DDMP is envisaged as ready for activation at all times in response to an emergency in any part of the country. It is designed in such a way that it can be implemented as needed on a flexible and scalable manner in all phases of disaster management:

a) Mitigation (prevention and risk reduction),
b) Preparedness
c) Response and
d) Recovery (immediate restoration to long-term betterment reconstruction).

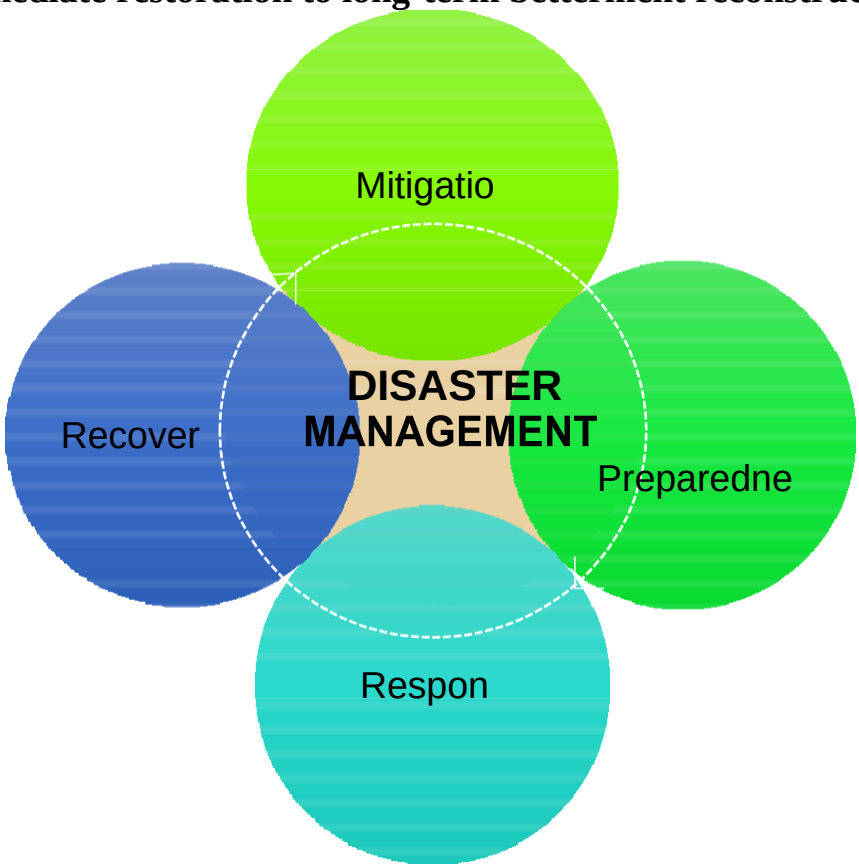


Figure 1.2 District Disaster Management Plan

The DDMP provides a broad idea with role clarity for rapid mobilization of resources and effective disaster management by the district disaster management authority. While it focuses primarily on the needs of the government agencies, it envisages all those involved in disaster management including communities and non-government agencies as potential users. The DDMP provides a well-defined framework for disaster management covering scope of work and roles of relevant agencies along with their responsibilities and accountability necessary to ensure effective mitigation develop preparedness and mobilize adequate response.

Vision

To make a safer and disaster resilient district, significantly decrease the losses of life, livelihood and assets - economic, physical, social, cultural and environmental - achieving through sustainable disaster risk reduction mechanism and technology-oriented strategy for prevention, mitigation and preparedness action, at all level of administrations as well as among the first responders (affected community).

Aims and objectives of the Plan

Section 30.2 (i) of National Disaster management Act 2005, makes it mandatory to have a disaster management plan for every District. Under the chairmanship of the collector, the District Disaster Management Department should prepare a disaster management plan including the HRVA, prevention & mitigation measures, preparedness, response and recovery plan. The broader objectives of this plan are:

- To improve the understanding of disaster risk, hazard and vulnerabilities.
- To understand the district disaster scenario through Hazard, Risk, Vulnerability and Coping Capacity analysis.
- To assemble all in formation from line departments and the stakeholders related to disaster management through a unified format.
- To prepare the resource data and maps for better preparedness plan and reduced response time.
- To specify who is responsible for what at different stages of managing disasters through responsibility framework.
- Setting up of District Operation Centre which will act as a coordination hub or decision support centre in a normal scenario and in times of any kind of emergency convert as EOC.
- To prepare the guidelines and mechanism for the District Operation Centre.
- To prepare the SOPs (Standard Operation Procedures) following the Incident response system for making disaster management mechanism proactive rather than reactive one.
- Mainstreaming the understanding of prevention and preparedness by ensuring that disaster management measures should include in every sector at every level.
- To integrate mitigation measures in all development's plans.
- To promote the culture of disaster risk reduction for resilience through structural, non-structural land financial measures, as well as comprehensive capacity development.
- To promote the idea of "Build Back Better" in recovery, rehabilitation and reconstruction.

Types of Disaster

Primarily disasters triggered by natural hazards or human-induced, or result from a combination of both. In particular, human-induced factors can greatly aggravate the adverse impacts of a natural disaster. Even at a larger scale, globally, the UN Inter-Governmental Panel on Climate Change (IPCC) has shown that human-induced climate change has significantly increased both the frequency and intensity of extreme weather events. While heavy rains, cyclones, or earthquakes are all natural, the impacts may, and are

usually, worsened by many factors related to human activity. The extensive industrialization and urbanization increase both the probability of human-induced disasters, and the extent of potential damage to life and property from both natural and human-induced disasters. The human society is also vulnerable to Chemical, Biological, Radiological, and Nuclear (CBRN) disasters.

Natural Hazard

The classification mention in the National Disaster Management Plan (2016) :

- Geophysical: Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Hydro-meteorological factors are important contributors to some of these processes. Tsunamis are difficult to categorize; although they are triggered by undersea earthquakes, and other geological events, they are essentially an oceanic process that is manifested as a coastal water- related hazard.
- Hydrological: Events caused by deviations in the normal water cycle and / or overflow of bodies of water caused by wind set-up
- Meteorological: Events caused by short-lived/small to meso-scale atmospheric processes (in the spectrum from minutes todays)
- Climatological: Events caused by long-lived meso- to macro-scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)
- Biological: Process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances that mcause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
- Hydro-Meteorological: Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Human-Induced Hazards

National Institute for disaster management notes that rise in population, rapid urbanization and industrialization, development within high-risk zones, environmental degradation, and climate change aggravates the vulnerabilities to various kinds of disasters. Because of inadequate disaster preparedness, communities, and animals are at increased risk from many kinds of human-induced hazards arising and call for adequate preparedness and planning.

- Accidents-industrial, road, air, rail, on river or sea, building collapse, fires, mine flooding, oil spills, etc.
- Chemical, Biological, Radiological, and Nuclear (CBRN) hazards rank very high in among the human- induced risks.
- Terrorist activities and secondary incidents add to these risks.

Levels of Disasters Management

The National Disaster Management Plan theoretically described the different disaster management labels. The disaster management and its planning at various tiers must take into account the vulnerability of disaster-affected area, and the capacity of the authorities to deal with the situation. Using this approach, the High-Power Committee on Disaster Management5, in its report of 2001, categorized disaster situations into three 'levels': L1, L2, and L3. The period of normalcy, L0, should be utilized for disaster risk reduction.

Level-L1: The level of disaster that can be managed within the capabilities and resources at the district level. However, the state authorities will remain in readiness to provide assistance if needed.

Level-L2: This signifies the disaster situations that require assistance and active mobilization of resources at the state level and deployment of state level agencies for disaster management. The central agencies must remain vigilant for immediate deployment if required by the state.

Level-L3: This corresponds to an early catastrophic situation or a very large-scale disaster that over whelms the State and District authorities.

Review of DDMP

The District Disaster Management Plan is a vital document inters of implementation and response perspective. The state plan has consisted of the broader idea the vulnerability profile of whole state, but the district plan consists with the detailed assessment report. So, in case of any emergency scenario this document is very useful to response quickly and mitigates the scenario.

As per the DM act 2005, section 31 (7) the district authority shall review the plan time to time, the implementation of the plan and issue such instructions to different departments of the Government in the district as it may deem for the implementation thereof. Following measures should take care while updating the DM plan

- A planning should be done to review the plan on a regular basis, to ensure that the item recurring updation is changed and are current.
- When an updation is made to plan, the review date should be displayed on the review page of the plan.
- Plan holders are requested to verify that they have received the changes.

Plan Implementation

The 31 section of the DM Act 2005 is applicable on the district government to make provisions for the implementation of the disaster management plans. **The Chapters V and VI of the DM Act spell out the responsibilities of the central, state, and local governments with respect to disaster management. The DM Act states that every Ministry or Department of the Government of India shall make provisions, in its annual budget, for funds for the purposes of carrying out the activities and programs set out in its disaster management plan.** It should also ensure by the district authority that disaster management drill and training should carry out periodically.

The main objective of the plan implementation is discussed below:

- Identify the core vulnerable areas where attention should require primary basis.
- Identify and involve the governmental and NGO's working in disaster management sector.
- Understand the pre- scheduled activity during pre-disaster phase.
- Make the early warning system stronger so it's being easy to reach as many as people to reach in shortest time.
- Recognize the response mechanism in terms of response time and logistics management.
- Strengthen the prevention and capacity building phase through difference kind of training programs.

Chapter 2

Hazard, Risk and Vulnerability Analysis

Brief History of Palghar District

The part of the country's largest urban sea-hill of Palghar District divided on 1st August 2014 and 36th new district of Maharashtra, Palghar came in to existence. The working time of ane wdistrict in the presence of then Chief Minister Prithviraj Chavan and then Revenue Minister Balasaheb Thorat started from 1st August 2014. Palghar is the 36th district of the state. Palghar District is one of the most industrialized districts in Western Maharashtra.

Geographical Location

Palghar District is located between 19°17' and 20°13' North latitude and 72°38' and 73°300' East longitude. The district has a geographical area of 5,344 sq.km, which is 1.74 % of the State total area. District consists of 8 administrative block i.e. Vasai, Palghar, Dahanu, Talasari, Vikramgad, Wada, Jawhar andMokhada.

It is bounded on the north by the state boundary of Gujarat; on north-east by the union territory of Dadar and nagar Haveli*;* on the east by Nashik district; on the south by Palghar district, and and on the west by gigantic Arabian Sea, while Vasai- Virar is the only Metropolitan region.

Palghar lies on the Western Line of the Mumbai Suburban Railway in the busy Mumbai-Ahmedabad rail corridor. The town is located about 87 kilometers north of Mumbai, about 35 kilometers north of Virar and about 24 kilometers west of the Mumbai-Ahmedabad National Highway at Manor. It is the newly formed district in the state and covers 1.74% of the total geographical area of the state.

Administrative Setup

District comprises of revenue Talukas i.e. Jawhar, Mokhada, Talasari, Palghar' Vasai' Vikamgad, Dahanu and wada having it's headquarter at Palghar. There are 5 administrative sub divisions in the district. Total 473 Gram panchayat, l008 villages and 3818 Habitations in the district, out of that most of the area dominated by Tribe's. District comes under the Tribal Areas of the state of Maharashtra. Within the 8 blocs Dahanu consist with largest area1248 sq.km. (21.36% of the district total area) and Talasari Block is the smallest is terms of area-291.07 sq. km. (5% of the districts total area).

Administrative Divisions of Palghar District

HeadQuarter	PalgharCollectorate
District Control Room	Collector Office/
Total area	5,344 sq.km
District geographical coordination	19°17’ and 20°13’ North latitude and 72°38’ and 73°300’ East longitude
District boundaries	North- State of Gujarat, North-east- Union territory of Dadar and Nagar Haveli; East- Nashik district; South- Palghar district, West- Arabian Sea

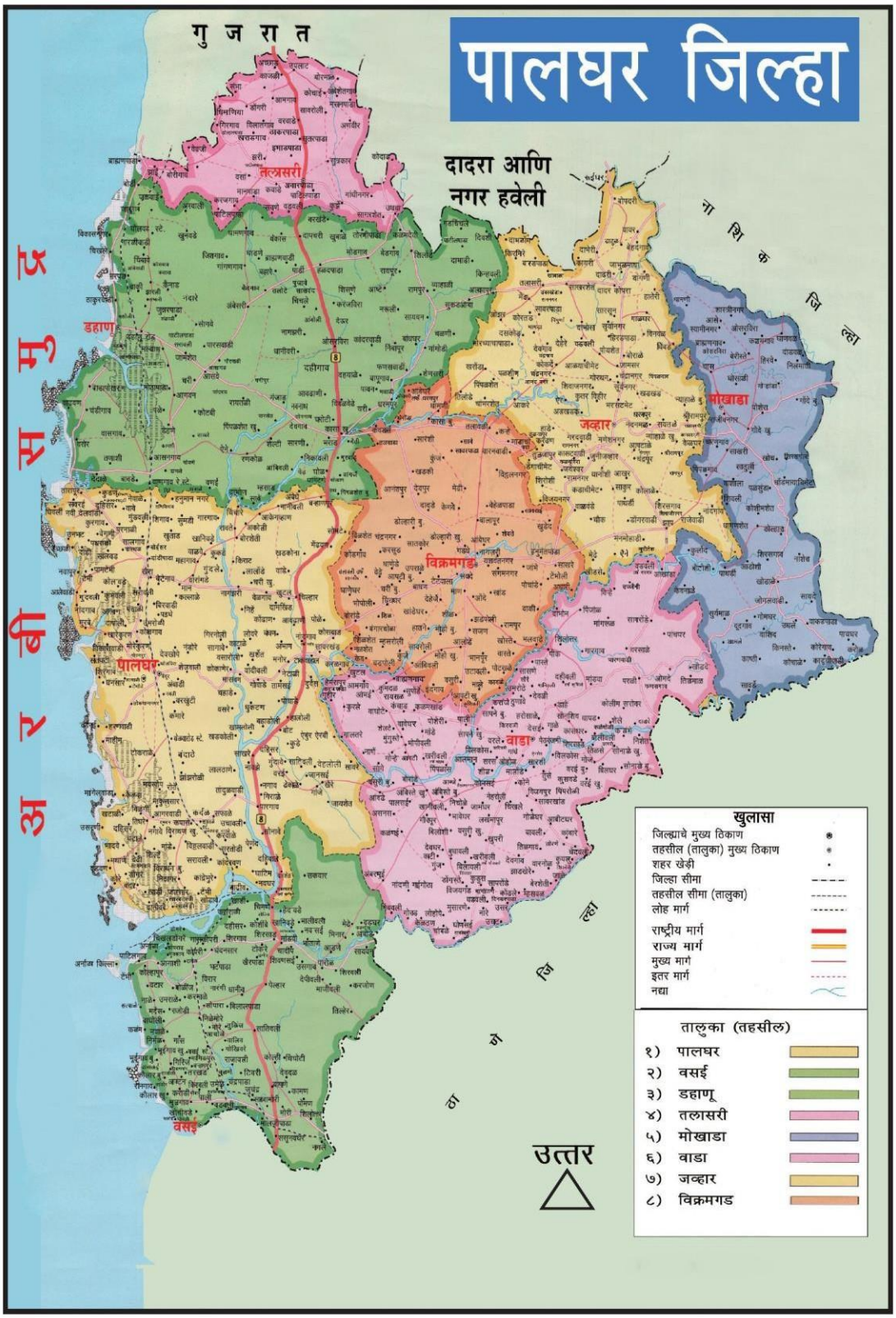
For No. of Villages and City - https://palghar.gov.in/about-district/

Taluka Name	Area in sq.km.	Headquarter	No. of Villages	No. of Cities	Gram Panchayet	Name of Municipal Corporation
Palghar	1,02,303	Palghar	215	02	133	
Vasai	73,276	Vasai	49	05	31	Vasai- Virar
Dahanu	96,300	Dahanu	174	02	85	……
Talasari	26,718	Talasari	41	00	21	……
Jawhar	56,640	Jawhar	108	01	50	……
Vikramgad	35,944	Vikramgad	93	00	42	……
Mokhada	42,456	Mokada	56	00	27	……
Wada	35,862	Wada	168	00	84	……
Total	4,69,699		904	10	473	

Base Map of Palghar District

The Base Map shows the administrative divisions of Palghar District, taluka boundaries, surface water bodies, rivers and location of district headquarter and taluka headquarters. The boundary of surrounding districts, connectivity between district head quarter and taluka headquarters and with the surrounding districts through road and rail network is also shown.

Base Map of Palghar District



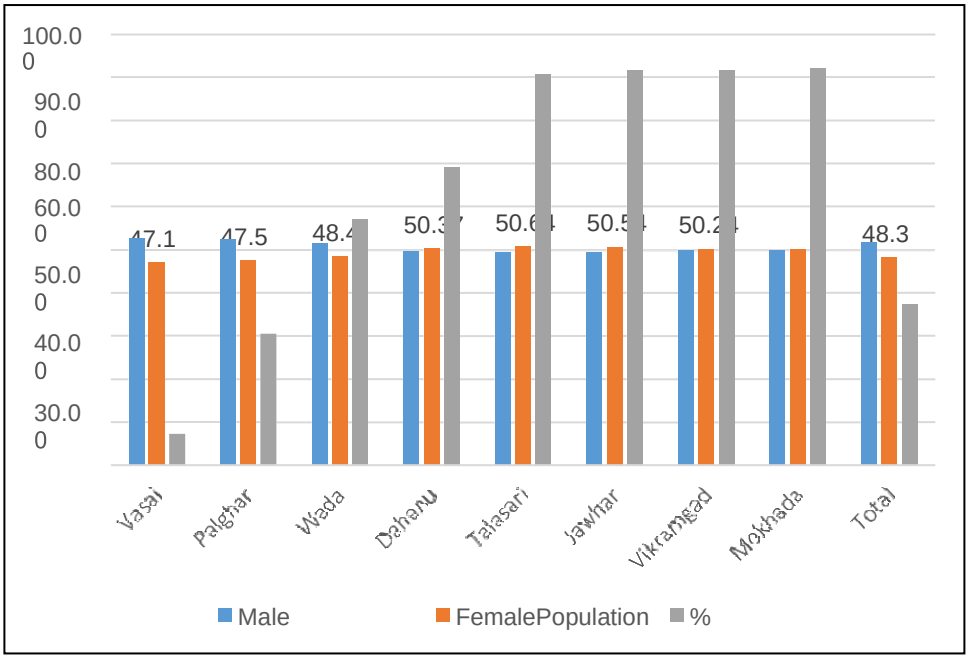
Demography

As the District website (https://palghar.gov.in/about-district/) total population of Palghar district was 29,90,116 dated on 16/03/2022. Out of this total population 51.70% male and 28.30% were female. Palghar District population constituted 2.66 percent of total Maharashtra population as per 2011 census data.

Male and Female Population Distribution

Total population	29,90,116		
Male	15,45,779		
Female	14,44,337		
Sex Ration	934		
Sex Ration of 0-6 age group	Total	Male	Female
Population density	559/sq.km.		
Rural population	Total	Male	Female
Urban Population	Total	Male	Female
Decadal Growth			
Literacy Rate	77.04		

Block wise Male Female and ST population Distribution



From this above figure, it's recognizable those 4 blocks – Talasari, Jawhar, Vikramgad and Mokhada out of 8 blocks having the greatest number of ST populations in the district.

Climate

There are two distinctly different climates in the district one on the western coastal plain and the other on the eastern slopes of Sahyadri. The climate on the western coastal plains of Vasa- Virari, Palghar and Dahanu Talukas is tropical, very humid and warm. The climate on the plains at the foot of the slopes. – Vada and Talasari taluka) and on the eastern slopes of Sahyadri (Jawhar, Vikramgad and Mokhada talukas) is comparatively less humid. The temperature variation is also more in the eastern part of district comparing to western coastal areas.

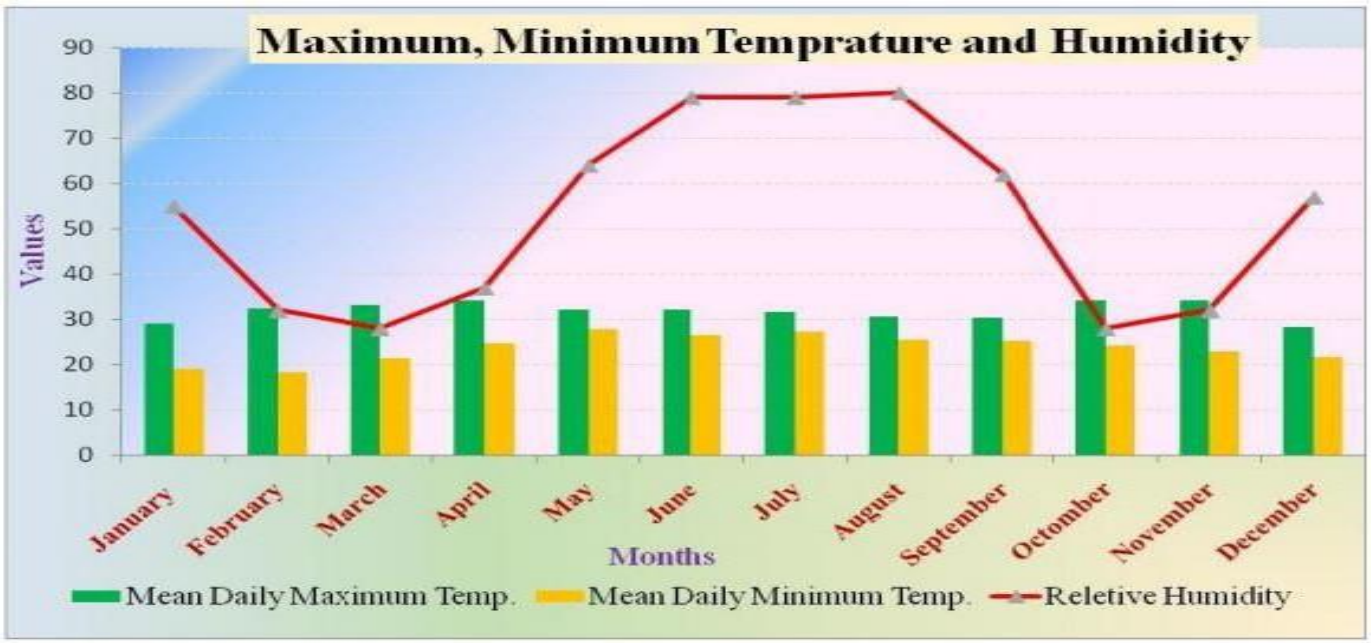
The district has four seasons in a year. The winter season from December to February followed by the summer season from March to June. The southwest monsoon season is from June to September. October and November month constitute the post monsoon season which is hot and humid in the coastal areas.
Many scientistshave argued that climate plays an important role in the development of nation economy through affecting the energy of land the stimulus too man in his various environment climate determines where man may live and thrive what crops he may rise? What sort of clothing he may wear? Since climatic factors expert mainly a regional influence on planet like the differences in the behavior of a crop or a ground of crops over extensive asinagiven state or a ground of states may be considered as the due primarily to differentness in climate rather than soil condition. There always exist a significant relationship between climate and crops because of the limits imposed on crop. The success of failure of the cropping season is determined by the intensity of the climate factors. The three most important factors of climate from the point of view of new plant response are temperature, water supply and light (Hildreathetal 1941) and they may be treated as primary determinants of crop growth, plant growth does not depend on limited variable but is controlled by various elements acting in combination at a time.

Temperature and Humidity

Temperature is the important phenomenon in the climate of particular area. Temperature is fareless erratic from year to year. However great annual range may highly significant in different zones giving rise to tube or more cropping seasons. The only meteorological observatory in the district which Palghar began functioning recently. The description of the temperature and of the meteorological condition in the district which follows is based on the records at the meteorological objection in the heightening district and the major records for Palghar. This area mean daily minimum and maximum temperature is not varies. The mean daily high range of temperature was recorded in the month of April and Octomber 34.30 can thewinter season the range was gone near about 17.20 c in the month of February. This district temperature is humid throughout they ear because this area is located on the west coast of Arabian Sea. The relative humidity was recorded 28 % to 80%. The minimum humidity was recorded in the month of March and October (28%) and the highest humidity was recorded in the month of August (80%).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	22.6	23.3	26	28.2	29.8	29.2	27.4	27	27	27.6	26.3	24
Min. Temperature (°C)	17.2	18	21.2	24	26.5	26.3	25.1	24.7	24.3	23.3	20.6	18.2
Max. Temperature (°C)	28.1	28.7	30.8	32.4	33.2	32.1	29.7	29.3	29.7	32	32	29.9
Avg. Temperature (°F)	72.7	73.9	78.8	82.8	85.6	84.6	81.3	80.6	80.6	81.7	79.3	75.2
Min. Temperature (°F)	63.0	64.4	70.2	75.2	79.7	79.3	77.2	76.5	75.7	73.9	69.1	64.8
Max. Temperature (°F)	82.6	83.7	87.4	90.3	91.8	89.8	85.5	84.7	85.5	89.6	89.6	85.8
Precipitation / Rainfall (mm)	1	0	2	1	11	437	831	436	301	71	9	1

Source- https://en.climate-data.org/asia/india/maharashtra/palghar-24344/(20/04/2020)



Rainfall

It dominated the weather element; the rainfall is the most critical climate factors as it determines the potential of any region terms of agriculture and industrial crop productivity. The quarters of rainfall and the number of rainy days may be quite sufficient to meet the annual requirement of successful crop production.

Provided they are so naturally spread that rain received at the time it is required. The district has one meteorological station. The rainfall in the district average was 2441.60 mm. and in 2019 the district rainfall average is 3483.80 mm. It means that the rainfall in 2019 increased, and the percentage of rain was 287.2% in September.

Monsoon Rainfall data, 2021

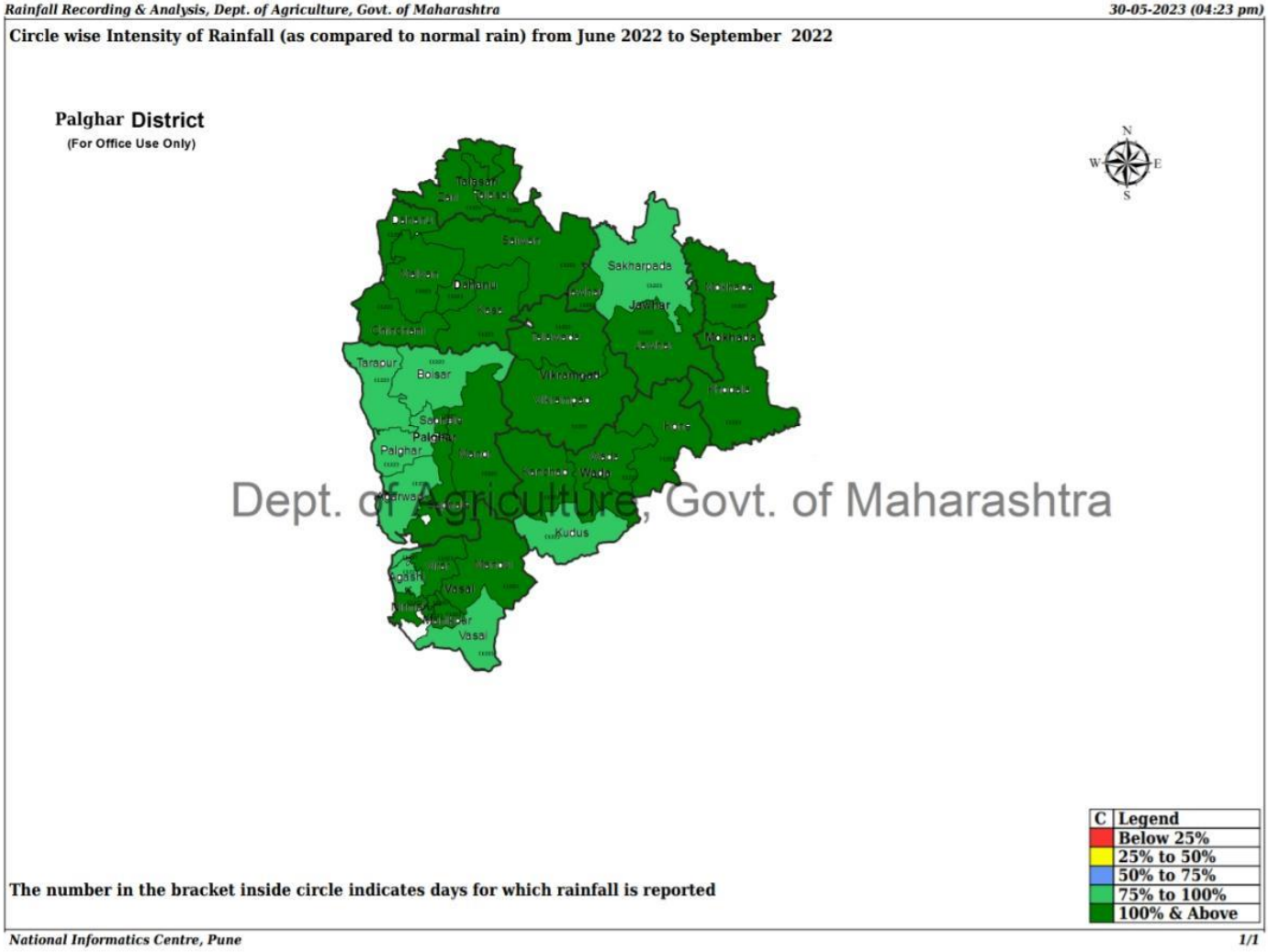
Rainfall Recording & Analysis, Dept. of Agriculture, Govt. of Maharashtra *16-03-2022 (05:42 pm)*

Tehsil wise rainfall for the district : Palghar for the year 2021

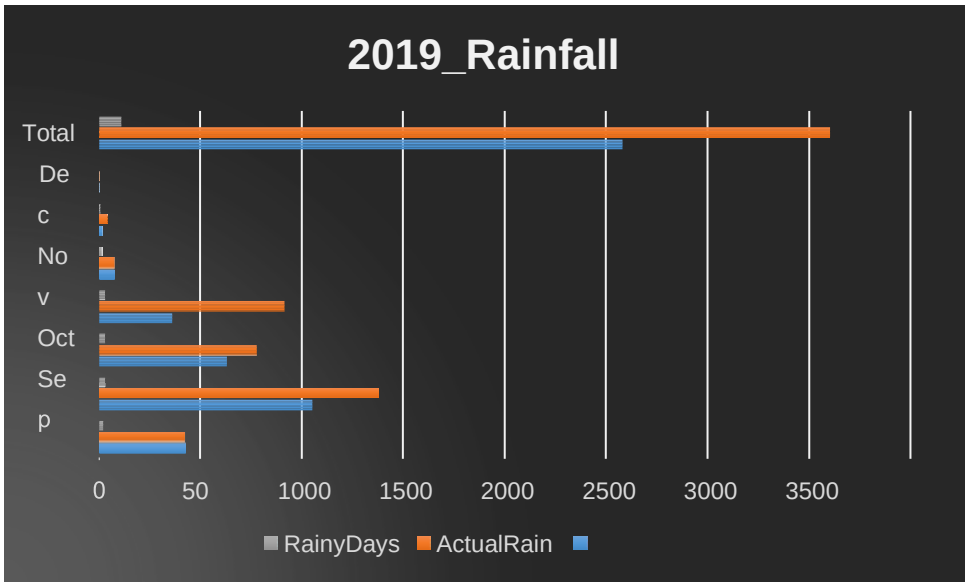
(Rainfall in mm)

Sr.	Taluka	June			July			August			September		
		Normal Rainfall	Actual Rainfall	% To Normal	Normal Rainfall	Actual Rainfall	% To Normal	Normal Rainfall	Actual Rainfall	% To Normal	Normal Rainfall	Actual Rainfall	% To Normal
1	Vasai	590.3	1007.5	170.7	951.9	814.6	85.6	703.4	405.5	57.6	456.7	514.6	112.7
2	Wada	455.4	604.3	132.7	1027.2	794.1	77.3	776.3	308.1	39.7	350.5	741.6	211.6
3	Dahanu	441.3	661.5	149.9	693.9	764.0	110.1	485.8	411.7	84.7	278.9	928.0	332.7
4	Palghar	500.5	844.9	168.8	852.5	754.2	88.5	692.3	486.9	70.3	386.6	718.1	185.8
5	Javhar	429.0	607.8	141.7	1108.8	1265.8	114.2	817.8	224.3	27.4	353.3	1091.5	308.9
6	Mokhada	363.5	517.3	142.3	869.2	1188.5	136.7	683.0	248.0	36.3	350.9	849.5	242.1
7	Talasari	390.2	582.8	149.3	853.3	961.6	112.7	607.1	365.8	60.2	281.7	1009.3	358.3
8	Vikramgad	504.8	605.6	120.0	948.9	883.1	93.1	786.3	270.1	34.4	333.5	919.8	275.8
	District-Palghar	**411.9**	**740.2**	**179.7**	**905.0**	**862.3**	**95.3**	**669.7**	**374.5**	**55.9**	**318.8**	**784.2**	**246.0**

Rainfall Map, 2022



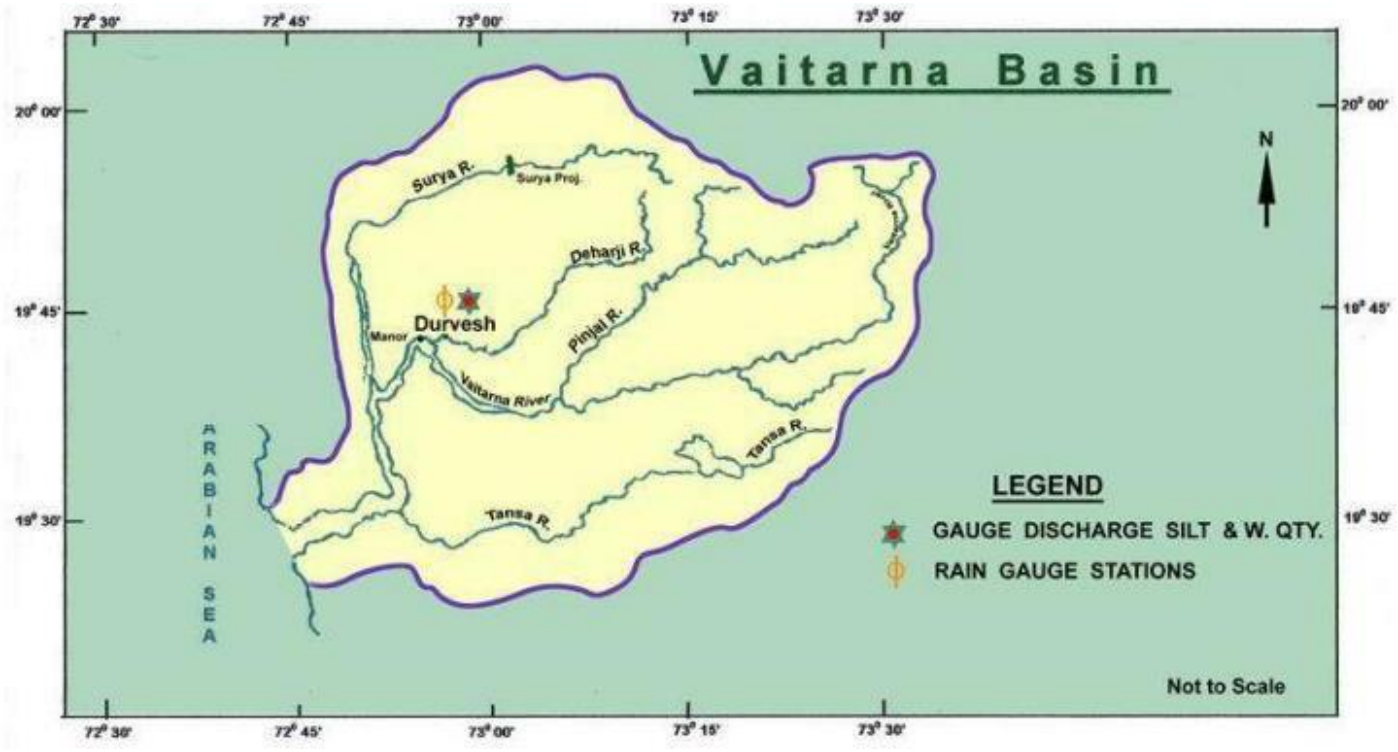
The district has one meteorological station. The rainfall in the district average was **2814.00** mm. and in 2010- 11 the district rainfall average is 2843.48 63 mm. It means that the rainfall in 2010-11 is increase and the percentage of rainfall is116.50%in2010-11. The district Thane laying on Arabian Sea coast this region comes under monsoon winds. Total area of district comes under heavy rainfall. The height rainfall is occurred in Talasari Tahsil 3357.00 mm. and the lowest rainfall is found in Murbad Tahsil 2387.60 mm. during the year 2010-11. All the Tahsil have got above average rainfall except Vikramgad, Jawhar, Wada Tahsil. The highest number of day rainfall is occurred in Vikramgad and Shahapur Tahsil (110 days) the lowest rainfall days was found in Ulhasnagar Tahsil (94 days) in2010-11.



Majors Rivers in the District

Palghar is crossed by 2 main rivers, that is Vaitarna and Surya. Many small streams occur during monsoon season which take their rise in eastern norther part of the district, and, flow west and south across the district.

River Vaitarna originates in Sahyadri mountain ranges near Trimbakeshwar, Nashik. Vaitarna River is just 2 km away from India's second longest river Godavari. The Vaitarna basin lies between East longitude of 720 45' to 730 35' and North latitude of 190 25'to 200 20'. Tanasais it's left bank tributary and Pinjal, Dehraja, Suryaare its right bank tributaries. Vaitarna has a confluence with the Tanasajust before it entersthe Arabian Sea. Jhowand Wadhiv is lands lie initsestuary. Arnala is land lies off its mouth. It has three major dams– Dhamni, Tansa, Modaksagar which supply water to Mumbai.



Major projects on River Vaitarna

Sr No	Name of the project	River	Status
1	Vaitarn Hydro Electric Project. (Upper Vaitarna)	Vaitarn	Major
2	Surya Project	Surya	Major
3	Modak Sagar (Lower Vaitarna)	Vaitarn	Medium
4	Wandri	Wandri	Medium
5	Tansa Dam	Dam Tansa	Medium

Agriculture Profile

Agriculture potential of a district primarily depends on nature and thickness of soil, terrain of land and amount and duration of rainfall. Soil is the important phenomena is the basis of an agriculture enterprise and play a very important role in the agricultural economy of the region differences is soil text uredrainageand the fertility is the major importance inex plaining contrasts in agricultureun like climate, soil should not be regarded as part of the natural endowment of an area.

Farming is business and to extend that man makes judicious use of them our standard of living which predominantly depends on agriculture is often determined by a combination of the physical, chemical and biological characteristics of the soil and crops and livestock raised on them. The soil is mainly derived from trap except in the forest covered. Mountainous area in the east which they are of late rite origin. The Vaitarna basin has benefited from and unparalleled regimentation and have develop in to the some of the most productive area of the region on the basis of the different physical characteristics three broad types are distinguished a) deep black soil b) medium deep black soil and c) coarse shallow soil.

From the point of view, agriculture is an essential base for industrial development. The population density of Thane district is 1,157 persons per sq.km. The total geographical area is 9558 sq. Km. The region lies on the Arabian Sea coast. 50% area is not cultivable due to many Estuaries and Daldal. There is ample scope for agriculture development that may take place in the region in the near future.

1) The region soil eliminates complex is suitable for horticulture and tree crops. If this favorable factor systematically managed along with industrialization and developments of better road transport, fruit growing in bound to expand 25 and there by the district could become the highest prominent of Rice and Coconut, Mango producing region in Maharashtra.

2) The part is suitable for growing many plants in the hilly area.

3) Slopes and barren and undulating hill could use for Grapes, Mango, Cashew, and other foods.

4) The climate of the region is suitable for rice and coconut cultivation. Hence with the improvement in irrigation facilities, their crop could be undertaking on a large scale. Due to favorable factors, soil, climate, and physiography are necessary for cultivation.

Forest

The Land use and Landcover show that the total land under forest is 1386.58 sq. km, which is 29.53% of the district. Hilly portion of Western side of the district is covered by the forest land and includes Taluka Jawhar, Mokhada, and Vikramgad.

Industries

Due to easy accessibility by road and railway leaving the north enrapt of country it has potentials for Industrial Development. As a result Palghar district has many industrial pockets on Western Railway track and highway. The main industrial activities are located at MIDC Tarapur are a near Boisar Station, and other industrial estates and scattered industries along the highway and railway lines at Palghar,Vasai, Virar,Wada, Dahanu etc. Theses industrial activities mainly include small, medium and large scale chemical, steel, fine chemicals, textile and other alliedindustries.

Type of Companies	NO.
Tarapur Automic power station (TAPS)	1
MAH (Major Accident Hazardous) factories	26
Hazardous Factories	722
Chemical Factories	307
Other Factories	2522

The numbers of MAH (Major Accident Hazardous) factories are 26 as identified under The Maharashtra Factories (CIMAH) Rules, 2003. These units have hazardous / toxic / flammable chemicals like Ethylene Oxide, Propylene Oxide, Oleum, Liquified Petroleum Gas (LPG), Chlorine, Ammonia etc. The reare also ther Chemical factories handling/ storing inflammable solvents like Toluene, Methanol, Isopropyl Alcohol, Hexane, and Monomer.

The office of Joint Director, Industrial Safety and Health for industrial area in the Palghar district is located at Vasai. There are two Local Crisis Group (LCG) identified as LCG Tarapur – Talasari - Wada and LCG Vasai – Virar.ADistrictCrisisGroupframedunderchemicalaccidents(EmergencyPlanningandPreparednessRules – 1996). Amongst the above-mentioned MAH units, most of the units are located at MIDC Tarapur and others are at Vasai and surrounding area.

Transport and Trade Linkages

The district Is well connected with the State capital and surrounding district headquarters through road and rail linkages. The road network consists of National Highways, State Highways and Major District Roads. The rail network consists of both broad gauge (Electrified and Non-Electrified) double track as well as single track lines.

The roads are classified according to their importance by the authorities who maintain them. The district having sea port at Dahanu.

Types of Transportation	No.	Length	Name of Taluka Passed trough
National Highway	NH48	115Km.	Vasai, Palghar, Dahanu, Talasari
State Highway	--	--	--
ZP Road	Other District Road	1150.7km	All Talukas
	Village Road	4299.35 Km	All Talukas

Tourism

Palghar District has a number of archaeological monuments (Forts, Temples), and locations having cultural importance, which attract tourists. These areas include heritage sites and monuments of state or local significance. These locations are marked as sensitive zones for their religious, heritage, historical and cultural importance and need to beprotected.

Name of The fort	Taluka	Village	Authority	Building Condition
Arnala Fort	Vasai	Arnala	Archiology Department	Good
Kelve Fort	Palghar	Kelve	Archiology Department	Good
Bhawangad Fort	Palghar	3 Km. Form Kelve	Archiology Department	Good
Shirgaon Fort	Palghar	Shirgaon	Archiology Department	Good

Tandulwadi Fort	Palghar	Tandulwadi	Archiology Department	Good

Religious Places and Pilgrim Centres
Palghar District is famous from the historic days as the land of saints. The district has a sizable number of religious gatherings as follows.

Name of the Festival	Taluka	Village	Month	Expected Gathering
Mahalaxmi	Dahanu	Vivalwedhe	April-may	200000
Jivnani	Vasai	Virar	October-Nov	Above 100000
Tungareshwar	Vasai	Chinchoti	August-Sup	25000
Ramnavami	Palghar	Satpati	April-May	100000
Mahashivratri	Wada	Tilsa	March-April	60000

HAZARD STUDY

Earthquake

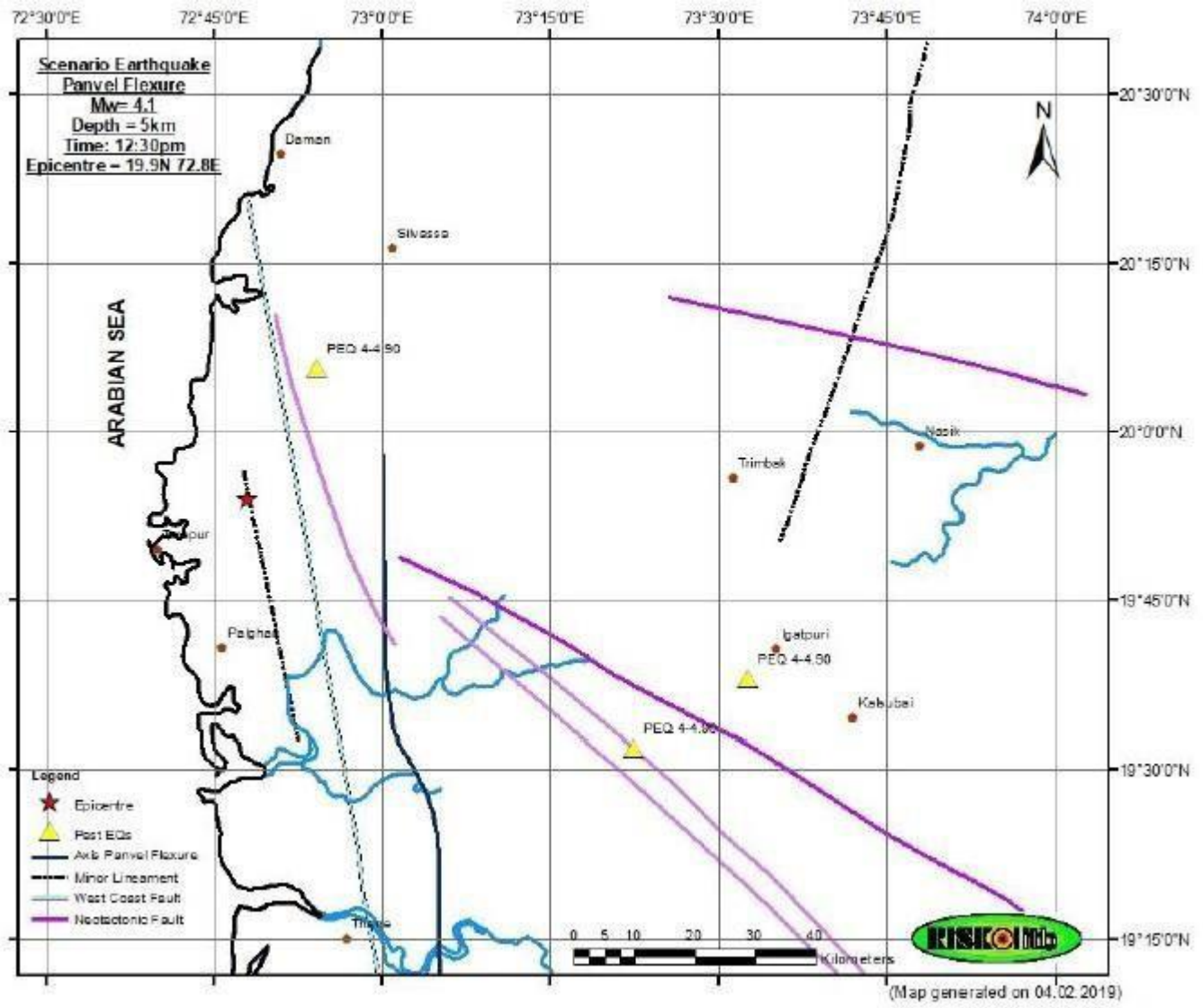
Different parts of Maharashtra are located in seismic zones II, III and IV as per the Indian Standards (IS 1893 (Part 1):2016). Seismic zone IV corresponds to those areas where earthquakes of magnitude 6.5 to 7.0 or even slightly greater magnitude may occur, while seismic zone III corresponds to areas where earthquakes of magnitude 6.0 to 6.5 may occur. The region of Maharashtra adjoining Koyna has been assigned with seismic zone IV, while the other parts of the state are located in seismic zones II and III.

The most devastating earthquake after independence occurred in 1993 in Killari region of Marathwada, near the town of Latur. The earthquake magnitude was estimated as 6.2 and resulted in the deaths of nearly 9,000 people, while another 30,000 people suffered injuries. Prior to the occurrence of that earthquake, the Marathwada region was considered to be free from seismic risk, and was assigned with seismic zone I by the then applicable Indian Standard (IS1893:1984). The existence of the seismic fault where the Killari earthquake occurred was also not known prior to the earthquake.

Recent Seismic Activities in Palghar District

The Palghar district, which has been recently carved out of erstwhile Thane district, has been experiencing frequent ground shaking. These shocks are generally in the magnitude range between 3 and 4, while a couple of shocks are between magnitude 4.0 and 4.5. Tremors were also reported after monsoons in 2017, which eventually subsided after a few months. It has been informed by the district administration that some buildings have been reportedly damaged during to the ground shaking. The ground shaking has resulted in wide spread alarm in the area.
Palghar district has numerous seismic sources through acomple x network off aults and lineaments. The seismic sources in the vicinity of the reported recent earthquakes are shown in Figure 1. The figure also shows the locations of some earthquakes that occurred in the region. It can be seen that a number of potential seismic sources exist in the region. It can also be seen that the region has past history of seismic events, and several earthquakes have been felt in the region and mentioned in the earthquake catalogue of Seismo tectonic Atlas of India.

Earthquake Zonation Map



Landslide

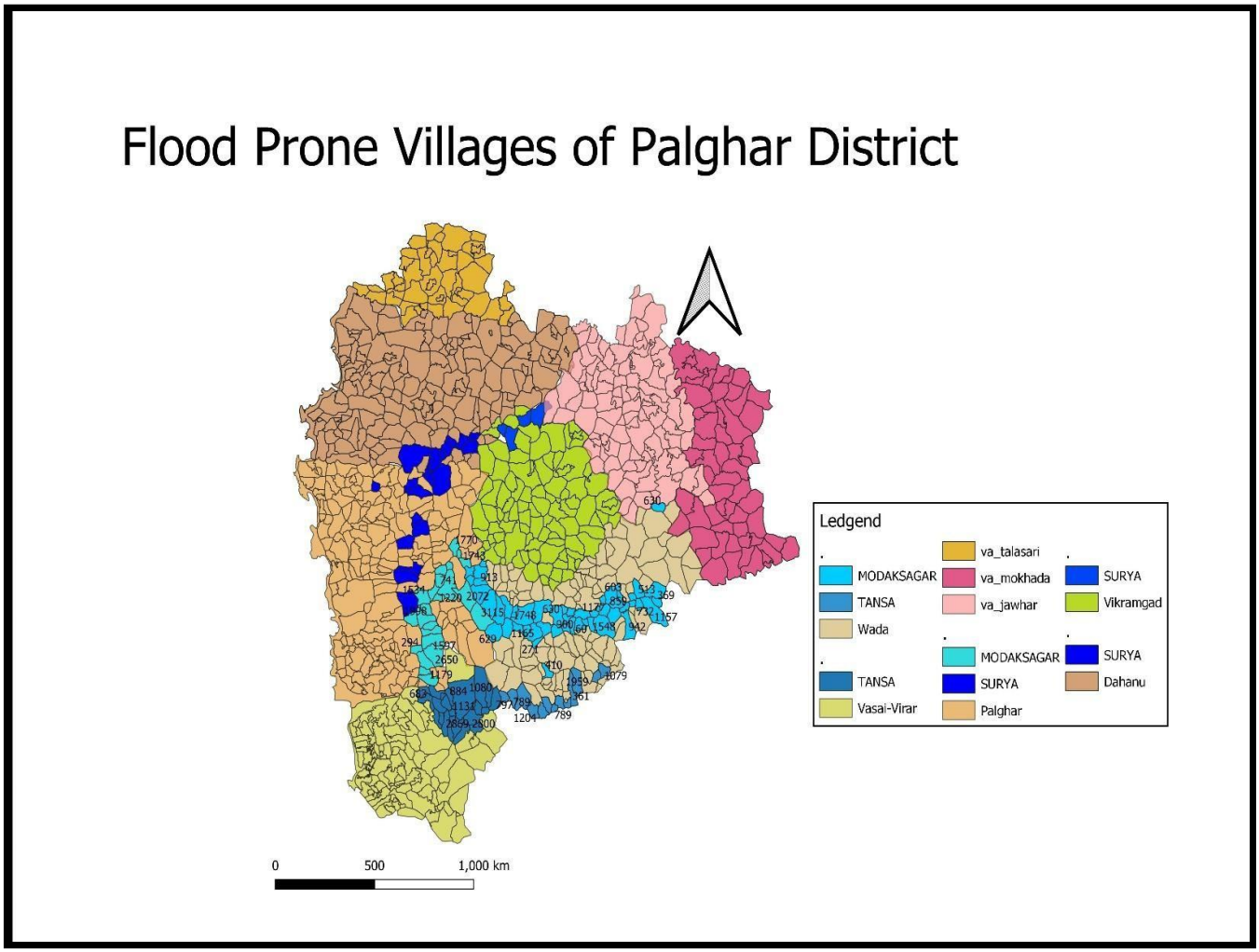
Palghar district is moderately prone to landslides, rock falls, debri-flows, especially in the Easter ghat areas. Though there is no history of major landslide so far but the earthquake can tiger landslide as secondary hazard.

Flood

Floods affect most of the Taluka within Palghar district. As found on HRVA assessment 187 villages are likely to be affected by flood. The Dam project- Modaksagar, Tansa and Surya are likely to cause flooding in Wada, Palghar, Vasai, Vikramgad and Danahu Taluka.

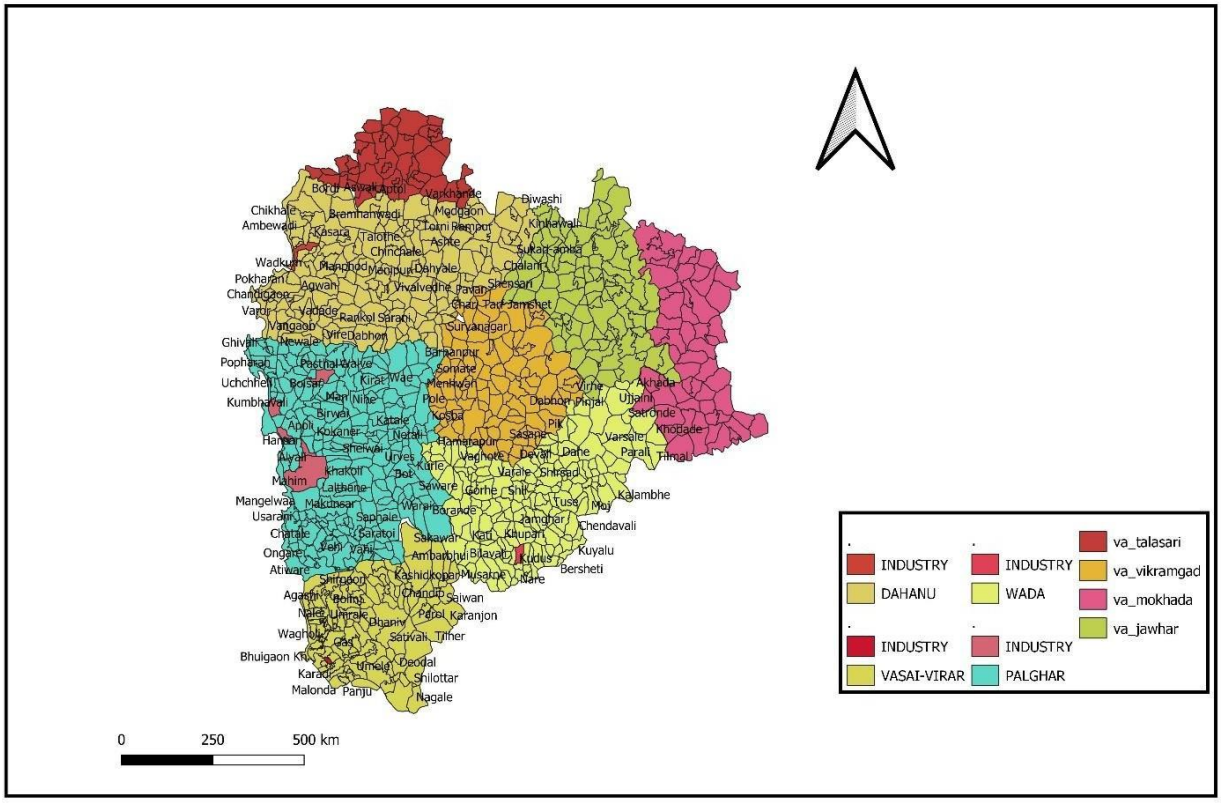
Flood Prone Villages

Sr. No.	Taluka	Dam	Affected Village	No. of Villages
1	Wada	Modaksagar	59	59
2	Palghar	Modaksagar	37	37
3	Vasai	Modaksagar	2	2
4	Wada	Tansa	17	17
5	Vasai	Tansa	32	32
6	Vikramgad	Surya	5	5
7	Danahu	Surya	16	16
8	Palghar	Surya	19	19
			Total No. Of Villages	187



Geographically the VASAI-DIVISION extends from Vasai Creek to the Talasari, up to the StateBoundaries of Gujarat State. The industrial belts are located adjacent to N.H: 8 with prominently dense concentration of industries.

INDUSTRIAL HAZARD _PALGHAR



TYPES OF EMERGENCIES:

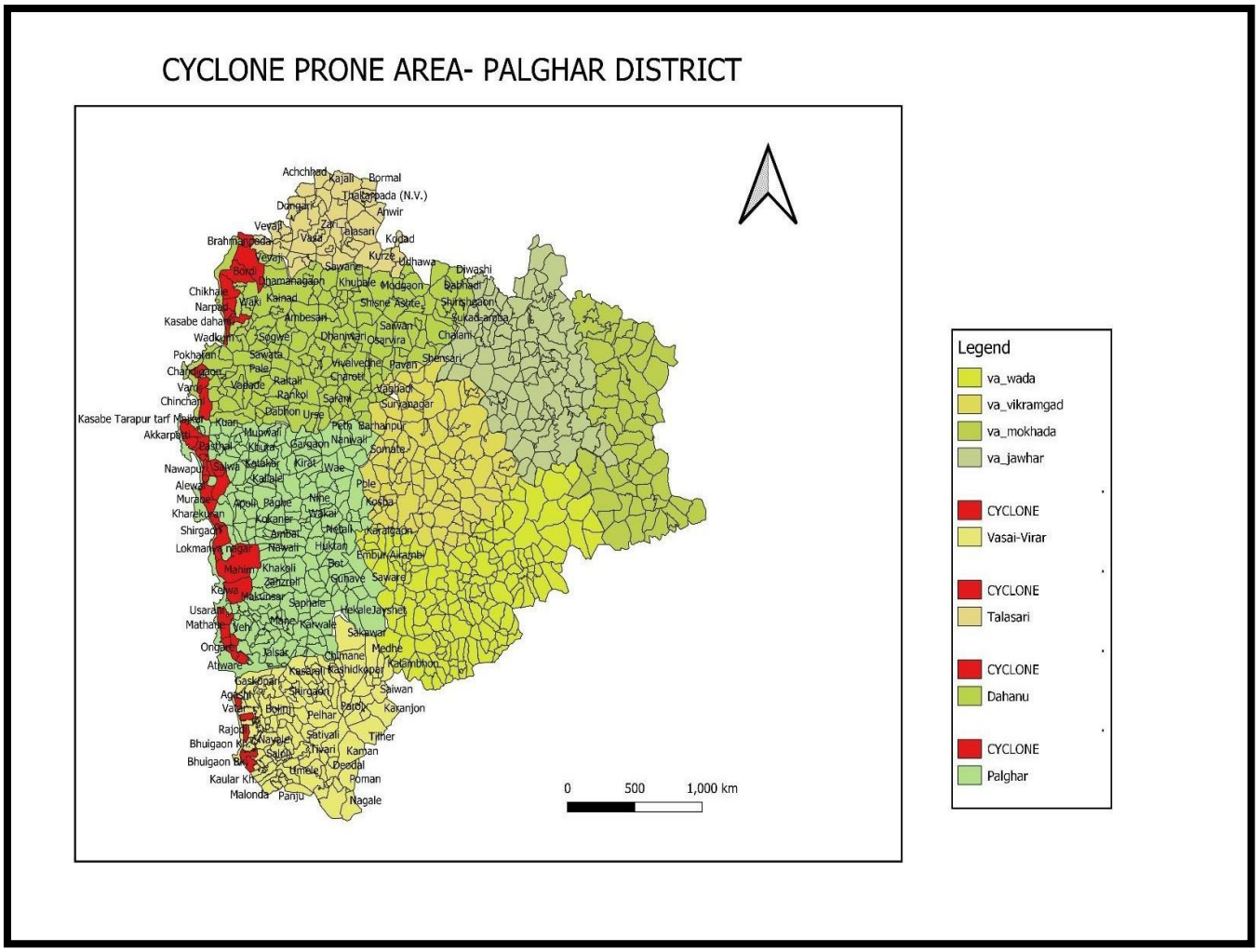
The off- Site Disaster Control Plan envisages the following types of emergencies.

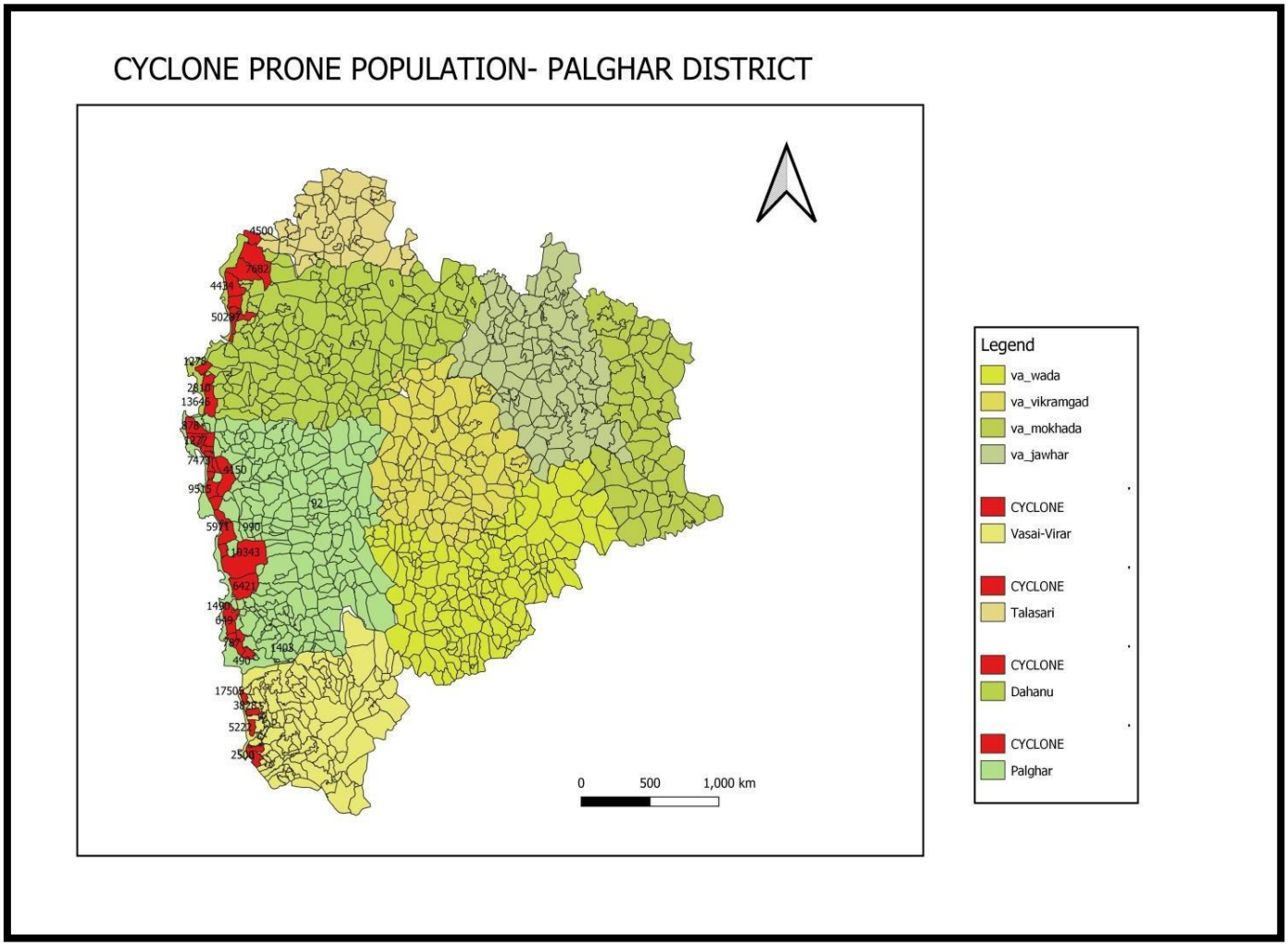
1. TOXIC RELEASE OF CHEMICAL SUBSTANCES/GASES
2. FIRE /EXPLOSION / BLEVE/VCE
3. TRANSPORTATIONEMERGENCY
4. SPILLAGE (CORROSIVECHEMICALS)

The total resident population of TIMA is living mainly in rural area. Also, lots of people pass through the industrial pockets. In the event of disaster depending up on industrial area, public in the vicinity could be at risk. In case of toxic gas chlorine leakage, everyone within 0.35 km to 4.3 km downwind of the release would be affected. And due to this large population in the downstream could be at risk. Similarly, if a flammable chemical like Ethylene oxide were to catch fire or explode the public in the vicinity will be at risk. The flora and fauna between creek and hill are vulnerable to chemical release. In transportation disaster of tanker / truck causing a flammable spill to catch fire and/ or explode vulnerable would be of Radius1.8km. So, it is imperative to have better Road condition, skilled trained drivers and traffic management.

CYCLONE

Mainly 3 talukas- Vasai Virar, Danahu and Palghar is prone to cyclone-related disasters. Recurring cyclones account for large number of deaths, loss of livelihood opportunities, loss of public and private property and severe damage to infrastructure, thus seriously reversing developmental gains at regular intervals.





Fire

The statistics of calls attended by the Fire and Emergency Services (Palghar Rural):-

Particulars	2014	2015	2016	2017	2018	2019	2020	2021
Total No. of Fire and Rescue Calls								
a) Fire Calls	36	15	30	23	50	29	33	
b) Rescue Calls	7	9	9	10	9	38	19	
c)No of Gas Leaks	6	1	2	7	4	6	2	
d)Building Collapse	00	00	00	00	00	00	00	
e) Industrial Call	53	69	54	39	57	52	49	

Calls Attended by the Fire and Emergency Services

Fire

The statistics of calls attended by the Fire and Emergency Services (Vasai Virar Muncipal Corporation):-

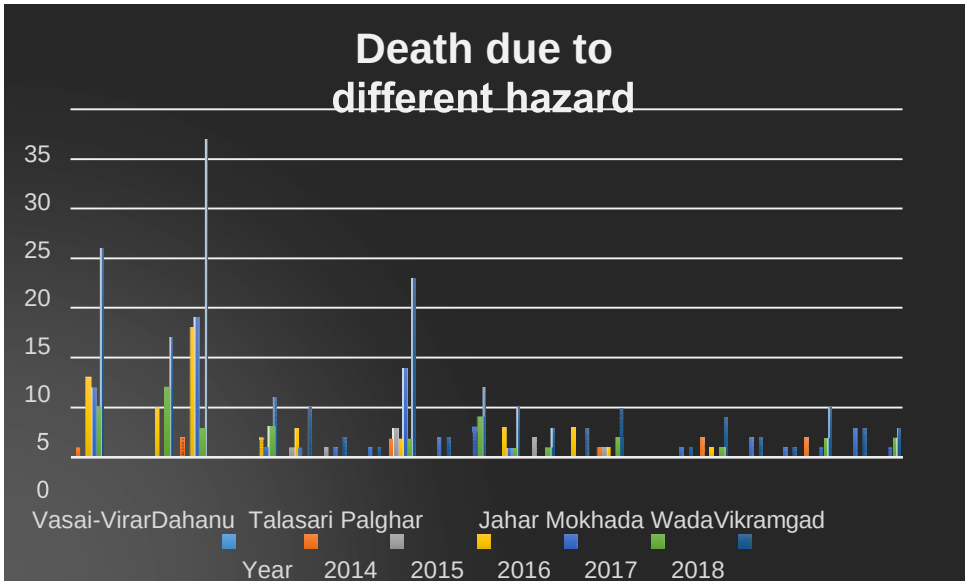
Particulars	2014	2015	2016	2017	2018	2019	2020
Total No. of Fire and Rescue Calls							
a)Fire Calls	403	387	786	686	902	803	659
b)Rescue Calls	202	54	237	193	282	168	5999
c)No of Gas Leaks	-	-	-	-	-	-	6
d)Building Collapse	-	-	-	-	-	-	6
e)Industrial Call	-	-	-	-	-	-	0

History of the Disaster in the District

Natural / Manmade Disaster

Table 12 – Showing the History of Damage Assessment Data in the District

Date/year of Occurrence	Human Life Loss		Cattle Loss		Land Affected	
	Dead	Injured	Dead	Injured	Land Specification^2	Area (No./Acers/Hectares)



Nuclear Emergency

Palghar district houses four no. of nuclear reactors situated near Tarapur which is 30 km from Palghar by road. TAPS-1&2 is two Boiling Water Reactors of 160 MWe each operating since 1969 and TAPS-3&4 is two Pressurized Heavy Water Reactors of 540 MWe each operating since 2006. The NPPs are supplying electricity to Maharashtra and Gujarat. Nuclear plants are sited, designed, constructed, commissioned and operated with utmost care, in order that the operating personnel, the public in the vicinity and the environment are protected from any risks of undue radiation exposure. Yet, as a measure of abundant precaution it is quite essential that an emergency response plan is meticulously drawn up and the concerned personnel are trained and tested to ensure that the organization is prepared to meet the unlikely occurrence of abnormal or accident situations at the site of any nuclear installation in the country

Emergency conditions in Tarapur Maharashtra Site arising out of failure in System, Structure, Component, human error, natural calamities, and hostile activities etc and abnormal plant conditions which could result in possible release of radioactivity such as loss of one or more safety barriers with potential loss of the next barrier and complete or partial loss of post-accident mitigation measures.
Radiation Emergencies are classified based on the nature and severity of the incident. The emergency situation of nuclear facilities is classified as:

i) Plant Emergency:

For Plant Emergency, the radiological consequences are expected to remain confined to the plant buildings and the affected areas within the plant boundary. Station Director of the affected plant is the Plant Emergency Director and will respond to the emergency.

ii) Site Emergency:

In case of site emergency, the consequences are likely to extend beyond the plant but remain confined to the site boundary (1.6 km exclusion zone). Site Director, Tarapur Maharashtra Site (TMS) will be Site Emergency Director. Here Site Emergency Committee under the leadership of Site Emergency Director will respond to the emergency.

iii) Off-site Emergency:

In case of off-site emergency, areas in public domain beyond the exclusion zone are likely to be affected in addition to site boundary. Here, Site agencies of Tarapur Maharashtra Site along with District Administration will respond to the emergency.

Offsite Emergency is declared by Site Emergency Director, TMS and District Collector, Palghar who is Responsible Officer (RO) or Alternate Responsible Officer who is Resident Deputy Collector is requested to issue notification. Subsequently RO/Alternate RO will issue offsite emergency notification. He will arrange to inform the other State Government agencies & the members of the Offsite Emergency Response and Coordination Committee (OERCC) for

handling radiation emergency through District Disaster Management Officer (DDMO).

District Administration is responsible for implementing all the protective actions in the public domain. Technical guidance/advice for implementing the protective actions in the public domain will be provided by Site Emergency Director, TMS during Early phase of offsite emergency.

During Offsite Emergency Situation, RO/Alternate RO will activate and function from the District Emergency Operation Centre (DEOC) which is located at Planning Hall, DC office first floor. The technical assessment of the emergency conditions at the affected NPP and the environmental radiological conditions (projected / existing) and the desired protective action in the public domain due to the accident will be assessed by the Offsite Radiological Condition Assessment (ORCA) group which is a technical committee available at the site headed by the Site Emergency Director. This group will function from the Site Emergency Control Centre or Off-Site Emergency Support Centre (OFESC) available at each NPP facility. Based on the assessment of the emergency conditions by the technical committee, the affected areas and the desired protective action (Sheltering / Administration of Iodine Thyroid Blocking / Evacuation) to be initiated in the affected areas will be communicated to RO/Alternate RO by the Site Director through Protective Action Recommendation (PAR).

The district officials / agencies that will be intimated by District Disaster Management Officer (DDMO) and will respond to offsite Emergency.

Offsite Emergency is divided in three phases namely Early Phase, Intermediate Phase and Late Phase. During Early Phase when radioactive release from the affected unit is in progress the Protective Action Recommendations (PAR) will be sent by SED to RO/Alternate RO. When radioactive releases from the affected unit are negligible or no more increasing, offsite emergency phase will switch over from Early phase to Intermediate phase. During the Intermediate phase Director/Associate Director, Health, Safety and Environment Group (HSEG), BARC will take over from SED and will function as Emergency Response Director (ERD). During the Intermediate and Late phase ERD will provide PARs to RO/Alternate RO.

Urgent Protective Actions & Response Actions

Various Protective or Response Actions to be taken in public domain as per the technical guidance of Site Emergency Director are –

1. **Sheltering:**

   The members of public are advised to remain inside their houses to protect them from direct plume exposure. It is advisable to keep the windows and doors of house closed and keep handkerchief over the nose and mouth to prevent inhalation of particulate radionuclides.

2. **Administration of Iodine Thyroid Blocking (Prophylaxis):**

   Administration of Iodine Thyroid Blocking means oral intake of Potassium Iodate (KIO_3) tablets. This is given to prevent the uptake of radioactive iodine by thyroid. These tablets will

be administered to the members of public by the Iodine Thyroid Blocking administration team when decided by Offsite Emergency Response and Coordination Committee (OERCC) as advised by SED.

3. **Evacuation:**

Evacuation would involve movement of the population from the affected area to radiologically safe location. Evacuation is carried out in rare cases to keep the exposure to public within prescribed limits. Evacuation is achieved by transporting members of public as per pre-arranged plans to temporary shelters (called Rallying posts) beyond 16km. The path followed during evacuation is important and the path suggested by Protective Action Recommendations will be followed. The public evacuation plan with respective village Shelters and rallying posts for each village in UPZ is detailed in plan.

4. **Control on Consumption of Contaminated Food &Water:**

This includes the banning of consumption of locally produced milk and vegetables if required, closing intakes of rainwater supply and removing cattle from grazing in contaminated pastures. Food, water, milk etc. in the affected area will be analyzed by ESL for radioactivity and then only can be allowed for consumption. However, covered food, water and milk can be consumed.

In the event of an actual or projected excessive uncontrolled release of radioactive material in the environment the surrounding areas are likely to get contaminated. In order to mitigate the adverse effects on the surrounding population, various protective measures will be taken by District authorities under the guidance of Site Emergency Director. For Implementation of protection action in public domain, various teams will be formed and these teams will perform assigned tasks in public domain as per directive of RO/Alternate RO. The team members will report to District Emergency Operation Center (DEOC) at Palghar.

All the details are available in Last chapter “DDMP for Offsite Emergency TAPS”.

Chapter 3

Institutional Arrangements for Disaster Management Authority

Institutional Arrangements

The institutional mechanism for disaster management at the district level will be as follow: -

1) District Disaster Management Authority
2) District Disaster Management Advisory Committee
3) District Disaster Management Committee
4) Sub Divisional Disaster Management Committee
5) Village level Disaster Management Committee
6) Crisis Management Group/Incident Command System
7) Setting up of Emergency Operation Centre and its operation
8) Establishment of Site operation center
9) Modalities and procedures
10) Linkages with the Sub Plans

District Disaster Management Authority

This authority has been constituted under section 25 (1) of the Disaster Management Act 2005 under the chairmanship of District Collector i.e. Deputy Commissioner with the following officers as its members: -

Showing the DDMA Member Names

Sr. no.	Designation of the officers	Position in Committee	Name	Contact Number	Email Id
1	District Collector	Chairperson	Mr. Govind Bodke	9730684666	collectorpalghar@gmail.com
2	President ZP	Co- Chair Person	Mr. Prakash Nikam	7798426000 9272800787	ceozppalghar@gmail.com
3	Residential Deputy Collector	CEO	Dr. Kiran Mahajan	9822434196	collectorpalghar@gmail.com
4	Superintendent of Police	Member	Mr. Balasaheb Patil	8652781777	sp.palghar@mahapolice.gov.in
5	Civil Surgeon	Member	Dr. Sanjay Bodade	9004421199	dhopalghar@gmail.com
6	District Superintendent Agriculture Officer	Member	Mr. Nilesh Bhageshwar	9405660981	dsaopalghar@rediffmail.com
7	The Executive Engineer, P.W.Department	Member	Mr. Sachin Patil & Mr. Vijay Sapkale	8779861681 9158581978	pwdpalghar@gmail.com pwdjawhar@gmail.com
8	District Animal Husbandry Officer	Member	Dr. Sanjay Shinde	9404685785	dahopalghar@gmail.com
9	The Local Radio Station Director, A.I.R/ Food Supply Officer/Chief Engineer PHE/Head of Social Welfare	Member	Mr. Popat Omase	9689901395	dsopalghar2014@gmail.com

Article 27 on Meetings of DDMA states that the District Authority shall meet as and when necessary and such time and place as the chairperson may think fit. Considering multiple hazard nature of Palghar explained in the chapter -2, HRVCA and the need for achieving priorities of Sustainable development goal and Sendai framework of Action it is four meetings of the DDMA are proposed annually and inclusion of disaster prevention/ mitigation measures discussion during policy discussion. Followings are the proposed meetings for DDMA:

Meeting No.	Month	Purpose
1	February	1. Approval of the District Disaster Management Plan with the Budget which willbe required for Awareness generation/Training/Equipment and soon. 2. Individual departmental priorities for mainstreaming Disaster Risk Reduction should be include in individual Departmental plan with budget. Updating of IDRN
2	April/May	For taking stock and discussion about: 1. Flood/Cyclone Preparedness as per NDMA guideline. 2. District and Block Emergency operation Centre Emergency Response Task Force and Equipment Status of School Safety Plan as per the NDMA guideline. 3. Any other allied matters.
3	September/ October	For Monitoring: 1. Progress of prevention and mitigation work taken up by the departments with special reference to the point number(vii)and(ix) of Article 30 of DM Act 2005. 2. The progress of community based (Gram Panchayat) level Disaster Risk Management with special reference to the point number (xiii) of Article 30 of DM act2005. 3. Any other allied matters.
4	December/J anuary	For the revision of the District Disaster Management Plan with special reference to update HRVCA and Disaster Risk Reduction Strategies

Power and Function of District Authority

As per section 30 of the Disaster management Act 2005, this authority has been vested with the following powers and functions: -

1) It shall act as the planning, coordinating and implementing body in the district for disaster management and take all measures for disaster management in the district as per the guidelines in the National/state Disaster management plans
2) To prepare the District Disaster Management Plan of the district and its periodic review and update.
3) To identify the areas vulnerable to the different hazards in the district and measures for its prevention, mitigation thereof by the different departments and the local authorities at the district level.
4) Givedirectiontothedifferentdepartmentsandthelocalauthoritiestotakemeasuresforpreventionand mitigation of the disasters in the district.
5) Monitor the implementation of the disaster management plans prepared by the departments at the district level.
6) Lays down guidelines at the district level to be followed by the departments for integration of measures in their developmental plans for prevention and mitigation of the disasters.
7) Review the state of capabilities for responding to the disasters and give direction to the departments for their up gradation as may be necessary.
8) Organize and coordinate the specialized training programs for different level officers, employees and voluntary rescue workers in the district along with the community training programs.
9) Set up maintain and review the mechanism for early warnings and dissemination of the information to the general public.
10) To ensure that departments prepare their response plans in accordance with the district response plan.
11) Examine the construction in any area in the district and if it is of the opinion that the standards for prevention, mitigation are not being complied with may direct the concerned authority to take such actions being necessary to secure such compliances.
12) Identify buildings and places which could in the event of disaster can be used as shelter/relief camps and make arrangements for sanitation and water supply in such places.
13) Ensure the communication systems are in order and disaster management drills are carried out periodically.

District Disaster Management Advisory Committee

Section 28 of the District Disaster Management Act 2005, empowered the DDMA to constitute a committee or subcommittee and also enable it to make payment of allowances to any person associated as an expert with this committee. An expert committee can also be constituted to assist DDMA. Considering the multiple Hazard nature of Palghar district discussed in the HRVCA chapter and the need of achieving priorities of Sustainable development goal and Sendai framework of Action. This plan proposed three key advisory committee with specific roles. On the behalf of the District Collector these committees work will be monitored by the Residential District Collector /Additional collector and coordinated/ facilitated by DDMO.

Committee No.	Advisory Committee	Members	Roles
1	Advisory committee for the assessment of critical infrastructure (Health facilities, School, Relief Centers, Anganwadi etc.) Including public buildings, roads and bridges.	Head of the Department/ Chief Executive Engineer of - PDWD - Health Civil - Supply - PHED - Electric - Supply WCD - Education - Irrigation/CWC - Any Subject - Expert - Any other allied Department	- Considering the Risk of Flood, Cyclone and Earthquake this advisory committee will primarily coordinate with departments about collecting data about vulnerabilities of the critical infrastructure Including public buildings, roads and bridges.
2	Advisory committee for the assessment and recommendation on Sustainable development goal and Sendai framework of Action.	Head of the Department/ Chief Executive Engineer of - Agriculture - Tribal - PDWD - Health - Forest/Environment - PHED - Electric - Supply WCD - Education - Irrigation/CWC - Any Subject Expert/Academic Institutions - Civil Society/CSR - Any other allied Department	- Considering the climate change emerging from frequent flood and cyclone like situation this committee will commission and guide a study on understanding the impact of climate change on agricultural production, health, sanitation, small farmers and vulnerable population. - Based on the study this committee will provide specific recommendation for including of Sustainable development goal and Sendai framework of Action activities in DDMP as well as for integration those recommendation in Departmental Plan.

3	Advisory committee for the assessment, monitoring and Recommendation on Industrial Safety.	Head of the Department/ Chief Executive Engineer of MIDC DISH TAPS Health Forest/Environment WCD Education Any Subject Expert Civil Society Any other allied Department	Considering the fact that Palghar having Boisar MIDC and TAPS, Preparedness and Risk Reduction of Industrial Hazards is an important issue for the district. This committee will assess, monitor and recommend on Industrial Safety issues. Based on the suggestions the HRVCA will be updated as well as community based Disaster Risk Reduction measures will be undertaken.

District Disaster Management Committee

In order to implement the District Disaster management Plan in the district the following committee has been constituted under the chairmanship of Deputy Commissioner as below:-

1) Superintendent of Police
2) Additional Deputy Commissioner
3) Additional District Collector(L&O)
4) Conservator of Forest
5) General Manager (Telecommunication)
7) Chief Medical Officer
8) Superintending Engineer (PWD)
9) Superintending Engineer (Irrigation)
10) Superintending Engineer (Power)
11) CEO of Zila Parishad
12) District Food and supplies controller
13) Commandant Home Guards
14) District/Divisional Fire Officer
15) District Supply Officer
16) District Town Planner (if present)
17) Commissioner Municipal Corporation
18) Deputy Director (Higher Education)
19) Deputy Director (Elementary Education)
20) Medical Superintendent

21) Civil Surgeon
22) Additional District Collector (Protocol)

Sub- Divisional Disaster Management Committee

This committee shall be constituted at every sub division under the Chairmanship of Sub-Divisional Officer and the following members: -

1) Dypt. SP
2) Tehsildar
3) Block Development Officer
4) Block Medical Officer
5) Executive Engineers PWD, IPH, Electricity
6) Divisional Forest Officer
7) Sub divisional fire officer

All other Sub Divisional Officers

Non-Official Members

1) Chairman /Vice chairman Panchayat Samiti
2) All members of Panchayat Samiti
3) Selected NGO/Volunteers /CBO in the subdivision.

This Committee will prepare the Sub divisional disaster management Plans may be Sub-division wise if more thantwosub-divisionsarethereandresponseplansinaccordancewiththeDistrictDisastermanagementplans andidentifythehazardsencounteredbythepeopleinpastandsendthedatasocollectedtotheDistrictDisaster Management Authority for further updation in the disaster plan.

Village Disaster Management Committee

This committee will function at the village levels and will be headed by Sarpanch Gram Panchayat with all the village/Panchayat officers and members its members and the secretary Gram Panchayat as member Secretary. This will prepare the panchayat wise disaster management plans in accordance with the District Disaster Management Plan.

Chapter- 4

Prevention and Mitigation Measures

Understanding Preventive and Mitigation

Culture of prevention refers to the action that needs to be taken at all levels to save lives before a disaster's trikes. Prevention refers to the activities and measures that are taken to avoid existing and new disaster risks. While certain disaster risks cannot really completely eliminate, prevention measures aim at reducing vulnerability and exposure. The key elements to prevention and mitigation are preventive planning and integration of disaster risk reduction measures in developmental planning. Disaster Prevention & Mitigation measures are guards of hazard impact. They stand against the intensity of the hazard impact and reduce the risk involved. The report states that the major responders in disaster situations, the state governments are responsible for organizing an effective disaster response mechanism as well as preparedness and mitigation measures. The first step towards this is the strengthening of the organizational structure of disaster management at various levels and revising/ updating codes, manuals and disaster plans.

The HPC carried out series of consultations with Government, non- Government, National and international agencies and media organizations that submitted their findings on the disaster management scenario in their respective areas. This became the basis for the planning process for prevention, preparedness and response plans for all administrative levels.

The importance of physical as well as socio-economic vulnerability is emphasized. The prevailing social and economic conditions and its effect on human activities affect the capacities of people to deal with the physical components of vulnerability. Thus, the prevention and mitigation measures undertaken by the various levels of governance need to take into account both these aspects simultaneously. Policies that do not take into account both these aspects often fail to protect the populations they were created for. A good example of this are resettlement projects that do not take into account the traditional livelihood options of the people and fails to explore its viability in the new area, or introduce alternate options.

Without a through vulnerability assessment, it is impossible to create a preparedness and mitigation plan. The following steps were stated as imperative for the same –

- Identification of hazard prone areas.
- Preparation of vulnerability profiles that map physical as well as socio economic hazards.
- Vulnerability and risk assessment of existing buildings and the initiation of retro fitting activities.
- The creation and implementation of technical guidelines for hazard resistant construction of buildings through techno-legal regimes.

This is an important aspect of prevention and mitigation activities a sun planned and inadequate developmental activity is one of the major causes of increased losses during disasters. Unchecked urbanization increases risks as communities live in high-density areas with poorly built and maintained infrastructure. Unplanned and unscientific urbanization, poor land use patterns and deforestation are discussed

in the report as a major cause for losses of human life and infrastructure in the aftermath of a disaster. Due to rapid population growth and urbanization in disaster prone areas, more and more people are vulnerable to disasters. Natural occurrences such as floods, earthquakes, cyclones etc. cannot be avoided completely as it is a part of the environment we live in, however it's impact can be reduced and its worst effects prevented. A natural hazard turns into a disaster when it affects people and causes economic damage, i.e., when it hits a community and disrupts its normal functioning.

An emphasis has been made on the need to link disaster mitigation measures with developmental plans, effective communication systems, use of latest information technology, insurance, extensive public awareness and education campaigns. This can be done only through the strengthening of institutional mechanisms, international cooperation, and the involvement of the private sector.

The following were other brief guidelines for prevention and mitigation of disasters –

- Takeaproactiveapproachbyemphasizingmeanstoprepareforandpreventdisastersthusreducingits effects on human life.
- Examine the relation between environmental degradation and vulnerability to disasters, and their combined effects on both natural and manmade habitats that will assist in creating longer prevention and mitigation plans.
- Utilize remote sensing data while conduction risk analysis and mapping.
- Adopt as a point of policy retrofitting of buildings and structures as a component of disaster management and earmark funding for the purpose.
- Create a knowledge base by linking with disaster research and education institutions to create a space for collaborative strategic thinking that can allow continuous revision of disaster prevention and mitigation plans.
- Initiate research that will collate local traditional disaster knowledge. This knowledge should be studied and examined alongside disaster information and scientific knowledge to create better prevention and mitigation plans.
- Record data about disaster events in a structured and systematic manner so that current measures and plans can be evaluated for effectiveness and amended as needed.
- Apply meteorological, climatological and hydrological knowledge in the area of disaster management that will assist in the assessment of risk, land-use planning and the designing of structures that greatly contribute to disaster mitigation.
- Take into account the cascading nature of disasters to create more effective prevention and mitigation strategies.
- Identify and strengthen existing centers of excellence in order to improve disaster prevention, reduction and mitigation capabilities.
- Create a culture of prevention by introducing measures for intensive training for building up of human resources to improve disaster awareness and capabilities.
- Initiate public disaster awareness and training programs that cater to the need's vulnerable groups like women, children, elderly and disabled to build up society's resilience towards disasters.
- Community mobilization in disaster situation is extremely important. Panchayats and Urban Local Bodies should be involved in activities to wards community level coordinated action, disaster mitigation education etc.

Investing in DRR- Structural Measures

Undertaking necessary structural measures is one of the major thematic areas for action for disaster risk reduction and enhancing resilience. These consist of various physical infrastructure and facilities required to help communities cope with disasters. The implementation of these measures is essential to enhance disaster preparedness. For instance, for earthquakes, bolting down appliances and securing shelves costs several hundred dollars in order to save several thousand dollars in damage averted. That presumes that the entire building will stand up in an earthquake because it has been engineered with seismic safety measures.

Investing in DRR- Non- Structural Measures

The most cost-effective forms of DRR investment tend to be non-structural approaches—such as land use planning, warning systems, and household-level changes—but these are often backed by structural measures, making full separation difficult. Sets of appropriate laws, mechanisms, and techno-legal regimes are crucial components in strengthening the disaster risk governance to manage disaster risk. These non-structural measures comprising of laws, norms, rules, guidelines, and techno-legal regime (e.g., building codes) framework and empowers the authorities to mainstream disaster risk reduction and disaster resilience into development activities. The district administration governments have to set up necessary institutional support for enforcement, monitoring, and compliance.

Hazard Specific Mitigation Measures

Earthquake

An earthquake is a violent and sudden shaking of the earth's crust due to collusion or breaking or moving away of tectonic plates at the top of which the whole of human civilization is perched. The joining of the tectonic plates is known as fault-lines and where the disturbances weaken the surface of the plate almost to the breaking point is known as sub-surface fault lines. The earthquake is caused by the release of energy through these fault lines and sub-surface fault lines. The intensity of this energy ranges from 0 to 10 and is measured on Richter scale.

The typical impact of the tremor known as earthquake varies from it intensity to intensity and the distance of the area from its epicenter. It ranges from shaking of structures to the changing of very landscape. Its typical impact is in the form of physical damage, destruction of infrastructure and loss of property. Physical damages may be in terms of damages or destruction of structures or damages or destruction by fire or floods due to dam failures caused by earthquake. Casualties will be due to damage or destruction of structures etc. It will be much higher in areas nearer to the epicenter and densely populated area with weak buildings traditionally constructed with earth, rubble, bricks etc; urban settlements in poorly constructed apartments and in proximity of high-rise buildings.

Prevention & Mitigations Measures

In case of earthquake as a hazard no prevention measures are there to be taken. However, mitigation measures for earthquake impact reduction are there to be taken. They consist of structural and non-structural measures.

Structural Measures: The prime structural mitigation measures that are expected to considerably reduce the impact of earthquake are:

- Conduct micro-zonation study and create seismic map in earthquake prone location.
- Identify the vulnerable structure
- Adopt the building code and suggestion given by the micro- zonation study and properly designed, engineered and constructed structures—residential, service or infrastructure—built on well tested soil for adapting to suitable adjustments in design.
- Retrofitting in old structures so that short-comings in construction could be externally strengthened to a considerable extent to withstand the convulsions caused by earthquake.

No	Key Action/ Project for Mitigation and Preparedness	Department/Authority	Target	Timeline
Improving the Awareness and Understanding of Risk				
1	Awareness generation campaign among citizens on earthquake safety	DDMA in collaboration with Pachayati raj Institution, Education, ULBs and other related stakeholders	At-least one campaign per year covering all the suspect able villages and town.	Any suitable period during the year.
Legal Support and Disaster Governance				
1	Reinforcement of Regulation and model codes for planning civil works and public Infrastructure.	DDMA in collaboration with Pachayati raj Institution, Education, RD, PWD, ULBs and other related stakeholders	All over the district.	Continuous process starting from Immediate effect.
Investing in DRR – Structural Measures				
1	Conduct Safety audit of all lifeline buildings and critical infrastructure.	DDMA in Collaboration with PWD.	All over the district.	Continuous process starting from Immediate effect.

2	Social Housing: Ensure that multi-hazard resistance features are incorporate in planning and execution on Social Housing Schemes. Special focus on Earthquake on vulnerable areas.	DDMA in collaboration with Pachayati raj Institution, ZP, Pradhan Mantri Awas Yojana, Planning, RD, PWD, ULBs and other related stakeholders	All over the district.	Every year during annual Planning stage.
3	Hazard Resistant construction and strengthening of all lifeline structures and critical infrastructure.	DDMA in collaboration with PWD, and other related stakeholders	All over the district.	Continuous process starting from Immediate effect.
Investing on Non- Structural Measures				
1	Development of School Disaster Management Plans as per National Disaster Management Guidelines; School Safety Policy by NDMA	DDMA in collaboration with Pachayati raj Institution, ZP, Education, RD, PWD, ULBs and other related stakeholders	All Schools	Continuous process starting from Immediate effect.
2	Capacity building of Architects/Engineers/Builders and even masons for construction of earth quake resistant houses/structures.	DDMA in collaboration with Pachayati raj Institution, ZP, RD, PWD, ULBs and other related stakeholders	All over the district.	Continuous process starting from Immediate effect.
3	Conduct micro-zonation study and create seismic map in earthquake prone location.	DDMA in collaboration with Pachayati raj Institution, ZP, RD, PWD, ULBs and other related stakeholders	All over the district.	Continuous process starting from Immediate effect.

Non-Structural Measures:

For getting the structural measures implemented with due earnestness, honesty of purpose and sense of compulsion host of non-structural measures in the form of policies guidelines and training have to be provided.

- Policy decisions about construction of structures with due approval from specified authorities have to be taken. The building codes etc have to be suitably formulated/amended and appropriately detailed and legal implications properly stated.

- Guidelines both for earthquake-resistant constructions as well as for retrofitting have to be formulated with specifications about site selection, foundation, construction, materials and work man ship making involvement of specialist architects, trained engineer and masons mandatory.
- The guidelines have to be formulated for the concerned authorities about land use planning, monitoring of construction work and controlling of settlements in hazard prone areas to avoid fatalities and loss of property.

Mitigation Strategy

The desired implementation of mitigation measures requires a well thought strategy. Implementation of mitigation measures, therefore, has to be multi-pronged: adoption wise attractive and cost wise comfortable.

The Strategy for mitigation measures for the typical effects of earthquake involves.

- Training of A, B, C, D, E, F, G, H and M; Architects, Builders. Contractors, Designers, Engineers, Financers, Government functionaries and masons.
- Awareness generation among the houseowners about what details to look for or insist upon about the building, household fittings and equipment, in the houses they own or intend to purchase.
- Computer based information dissemination about the area –wise nature of soil, the kind of construction appropriate in the area, the certifications about the house/flat one is about to buy.
- The empanelment of specialist architects, trained engineers and masons by urban bodies and works departments for building earthquake resistant structures.
- TheCertificationofcommercialbuildingsbyFireDeptandurbanregulatorybodiesbothatthe planning and completion stages.

But, all these put together shall not be sufficient to make mitigation measures people-centred and motivating enough to observe norms. It can, however, be done through

- Awareness among the stakeholders about the need to build/rebuild earth quake resistant houses/structures and keeping safe neighborhood.
- Capacity building of Architects/Engineers/Builders and even masons for construction of earthquake resistant houses/structures.
- Formulation of suitable building bye laws in urban areas and enforcement thereof.

Flood

Floods are temporary inundations of land with water caused by rains, overflowing of rivers, discharges released from large reservoirs, cyclones, tsunami, melting of glaciers and sea tides. It may come gradually and take hours and days together to recede or may even happen suddenly due to heavy rains, breach in embankments, failure of dams, cloud bursts, storm surge etc. Except for flash floods, there is usually a reasonable warning period. In a land-locked district like- Palghar, floods are caused by either overflowing of rivers due to excessive rains in its catchment or excessive discharge released from reservoirs. The floods cause either breach in embankments or excessive erosions. As chance would have it, out of the four causes & consequences of floods—excessive rains, excessive discharge, excessive erosion, siltation and breach in embankments—only two of them can control and manage. The rest of the two are beyond the control of the administration. The district can however control excessive erosion, siltation and breach in embankments.

Normally, floods are quantified and analyzed on the basis of depth of water and duration for which flood water stays. Velocity of water causes erosion of river banks and– or destroy and damage habitations and other structures. Rate of rising of water level and timing of floods vis–a–vis agricultural activities determine damages resulting from floods.

The damages caused by floods consist of the flooding of land leading to-

- Crop damage, collapsing of mud houses, buildings, endangering human lives,
- Livestock and other public and private property.
- People, standing crop and livestock are liable to perish by drowning.
- Utilities such as sewerage, water supply, communication lines, road network and power supply get damaged, disrupted or destroyed; clean drinking water becomes scarce.
- Food shortage is caused due to loss of harvest & spoiling of stored rains.
- Then agriculture gets affected due to deposition of course and layers over the ground or on set of salinity or water logging for considerably long period.

On the whole, floods damage houses /human settlements/ crops/ infrastructure, endanger human and cattle lives, fragment families, destroy wealth, jeopardize livelihood base and causes migration. It literally wipes out the socio-economic development achieved so far in the state and drives it to rewrite everything and begin from the beginning: response, relief, restoration, rehabilitation, reconstruction, and redevelopment are needed on a very large scale. All precious investment is reduced to almost naught. All precious efforts made before go largely waste.

Flood Mitigation Measures

The flood mitigation measures may again be structural or none—structural. Mapping of flood prone areas is a primary step involved in reducing the risk of the region. Historical records give the indication of flood inundation areas and the period of occurrence and the extent of the coverage. The basic map is combined with other maps and data to form a complete image of the flood -plain. Warning can be issued looking into the earlier marked heights of the water levels in case of potential threat. In the coastal areas, the tide levels and land characteristics will determine areas liable to inundation. Flood hazard mapping will give the proper indication of water flow during floods.

The structural mitigation measures

- The revival and maintenance of traditional practices of dam, reservoir and ponds system for diverting and storing flood water and making use of the same for multipurpose activities including irrigation, restoration of water tables etc. For this, larger involvement of senior citizens from the local areas will be required who have better understanding and knowledge about the system.
- The conversion of rivulets and tributaries into reservoirs for storing flood water for a desired period and for later use. For this, major river-based GIS mapping would be required. Besides the bed of the rivulets and tributaries would have to be properly structured and meticulously maintained.
- Using base flow and flood flows of the perennial rivers to generate hydroelectricity by putting generating units of 5 MW, 10 MW or even 20 MW may be planned. This will help both better river management as well as water conservation for productive utilization. Asitis, we take care of and maintain anything which is productively utilized. Thus, if we start generating power, the rivers will in the process get maintained and managed.
- Attempt to modify Dams and Reservoirs, Embankment, Drainage Improvements, Channel Improvements, Diversion of Flood Waters and Using Natural Detention Basin.

- Storing Flood Water in reservoirs may help in reducing flood intensity, but the sedimentation caused by the stored flood water may subsequently reduce the capacity of the reservoir. As such, smaller reservoirs are often better choice than larger ones. For, then desilting of small reservoir becomes possible and can be undertaken periodically by the beneficiaries themselves.
- Channel Alterations help in reducing the gushing of flood water and these should again be done with provisions for regular maintenance of the slopes in the channel, removing of debris and other obstructions, using natural vegetation for strengthening the sides of the channels and for using it as a source of promoting fisheries etc.
- Watershed Management measures reduce overland runoffs from agricultural lands to streams or other water bodies by improving infiltration of rainfall into the soil, minimizing run-off and reducing the sedimentation that can clog stream channel or storage reservoirs. The measures to avoid it include maintaining trees, shrubbery and vegetative cover, slope stabilization etc.

Non- Structural Measures:

- Attempts to modify susceptibility of Flood. Flood plain zoning: It aims to regulate the development sin the flood plains, so that it is compatible with 'Flood Risk'. It recognizes the basic fact that the flood plains are essentially the domain of the river, and as such all developmental activities must be compatible with the flood risk involved.
- Flood forecasting: Involves observing and collecting hydrological and meteorological data, transmission and then processing the data with a view to work out the likely level to be achieved at a particular site, i.e. to give advance warning. Stay in touch with IMD and CWC. Establishing infrastructure for flood warning and dissemination.

Measures to be adopted at District Level

Following measures should be taken at District level by the collector on whom the implementation of DDMP rests. Action plan of relevant line departments should be put into order.

- Convening a meeting of District Level Disaster Management Committee before the onset of monsoon in the month of April/ early May.
- Arrangement for functioning of control room. Specific charge should be given at Taluka level to listen to weather bulletins from radio and television to monitor the warning relevant to the Taluka.
- A joint inspection team at Taluka level will inspect river embankments in the month of March and April. A summary report will be sent to the Sub-Division and District accordingly.
- When monsoon breaks, District will send the daily/ weekly report regularly from the report received from village and gram panchayat levels and to the Sub-Divisional Officer. Dissemination of weather report and flood bulletins to lower level.
- Installation of temporary police wireless stations and temporary telephones in flood prone areas. Identification of the owners of country mechanized boats with address and contact numbers.

Fire

Fires are the accidents which occur most frequently. It has whose diverse causes that require a range of intervention methods and techniques adapted to the conditions and needs of each incident. The fire risk can arise either from industrial processes, accidents in storage go downs or closely built timber framed buildings

Depending on the type of fire (nature of the material ablaze), meteorological conditions (wind) and the effectiveness of the intervention, material damage can be limited to a small area, or affect wide areas like forests or agricultural fires, hydrocarbons, gas or other highly flammable products, storage or piping installations, and rail or marine transport equipment. Fires are an important disaster to focus on as they can arise in response to other disasters like earthquakes or landslides. As fire disasters can be primary or secondary focus has to be on ensuring that fire services are able to respond despite disturbances caused by another disaster that has just occurred.

As a part of mitigation strategy, efforts should be made to

- Make fire fighting services available to rural areas outside the local municipal limits.
- Assist municipal authorities that don't have fire brigades to establish such a service.
- Encourage agricultural marketing committees and cooperatives in rural areas to establish their fire services.
- Evolve methods of coordination between municipal fire services and industrial safety departments.
- Undertake community education and preparedness for fire fighting in areas where fire services will not easily available.
- In industrial towns, fire services should be equipped with protective clothing and firefighting devices including masks, gloves etc. for dealing with chemicals and toxic materials.
- Specialburnswardsshouldbeestablishedineverycivilhospitalandinthehospitalsnearthe industrial estates.
- Equipping fire services with communication facilities like wireless etc. and wherever such facilities exist, these should be upgraded.
- Computerized data management system should be introduced to keep the record of all fires including frequency, extent, fatality, economic losses etc.
- The roles and responsibilities of district administration, police, fire services and medical services should be clearly laid down.

Epidemics

An epidemic is the rapid spread of infectious disease to a large number of people in a given population within a short period of time, usually two weeks or less. An epidemic can be the consequence of other disasters like storms, floods, droughts etc. Strengthening surveillance programmes and warning systems go a long way in controlling epidemics.

Steps towards mitigating the risks from epidemic include the following –

- Identification of areas endemic to certain epidemics must be routinely updated to access field requirements
- Identification of appropriate locations for testing laboratories
- Ensuring continuous flow of field data from both government establishments and private medical personnel.
- Collating and analyzing the data at regular intervals to assess epidemiological monitoring requirements.

- Creating awareness among the general population to encourage preventive measures that can help in controlling epidemics.
- Quality monitoring of piped drinking water supply and water.
- Vector Control programmes as a part of overall community sanitation activities which include surveillance of water bodies and canal distribution network for control of diseases like malaria.
- Promotion of personal and community latrines
- Introduction of sewage, drainage and solid waste management systems
- Promoting and strengthening community hospitals with adequate network of para professionals to improve the capacity of the Public Health Department (PHD) for surveillance and control of epidemics.
- Establishingtestinglaboratoriesatappropriatelocationsindifferentdivisionswithinthedistrictstoreduce the time taken for diagnosis and subsequent warning.

Industrial and Chemical Accidents

Industrial and chemical accidents refer to incidents originating from technological or industrial accidents, dangerous procedures, infrastructure failures or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

- Major accidents involving chemical substances have local effects, but in some circumstances, they can affect whole regions because of factors like the weather conditions during the time of the accident. Prevention of such incidents must be the priority, but a positive result can only be assured if there are strict guidelines for using and handling of dangerous chemicals.
- When an accident involving chemical substances that could endanger life or the environment occurs in a chemical works or installation, those in charge of it should implement the safety measures which will minimize its consequences.
- They should immediately inform the relevant local authorities of the accident who will be responsible for informing the public and deciding upon the instructions to be followed by them.
- Theco-ordinated use of the civil and military means required to deal with the disaster should been sured.
- All industrial concentrations should be encouraged to establish MARG for management of industrial accidents.
- Industries involved in the production or transportation of inflammable, hazardous and toxic materials should have a mandatory responsibility for preparing an off-site plan and communicating the same to the District Collector. Simulation exercises should be undertaken in the adjoining communities.
- Poison centers should be established in every civil hospital and in the hospitals near the industrial states with facilitiesfordetoxification.
- All transport of hazardous and toxic materials should be communicated totheRTO.
- All pipelines carrying hazardous and toxic materials should be equipped with devices to check any leakage ormetalfatigue.
- Small-scale industries releasing toxic wastewater should be encouraged to set up common effluent treatmentfacility.
- A common format for chemical data sheets should be devised which should be used to collect information from all industries in the district and the same should be available with fire brigade and police.

Mitigation Measures/ Activities and Responsibility of line departments at variousstages of Disaster Cycle of VariousHazards

Flood

Task	Activities	Responsibility
Development of techno- legal regime/ regulations	❖ Prohibition of development in wetlands, flood zone and lowlying areas ❖ Encourage for flood proofingstructures in floodproneareas ❖ Build new water and sewagesystems andutilitylines	❖ RevenueDept. ❖ IrrigationDept. ❖ UD Dept. Panchayat and RuralHousing ❖ Local Governments
	❖ Prescribing standards for different flood prone zones onfloodplains ❖ Enactment and enforcement oflaws regulating development activitiesin floodplain ❖ Specific building by-laws forflood plains	❖ PWD

Safe dwelling in flood hazard areas

Task	Activities	Responsibility
Arrangement of safe dwelling in flood hazard areas	❖ Development of floodhazardmap ❖ Study of past history on floods occurred and estimated loss anddamage ❖ Assesthe vulnerability of risk elements ❖ Build houses in safer zones	❖ RevenueDept. ❖ IrrigationDept. ❖ UD Dept.Panchayat andRuralhousing ❖ LocalGovernments ❖ PWD

Development and Redevelopment Policies

Task	Activities	Responsibility
Development and redevelopment of flood preventive policies	❖ Develop long term flood policies to protect natural resources, property andlives. ❖ Legislativeand regulatory requirements	❖ RevenueDept. ❖ IrrigationDept. ❖ UDDept. ❖ Panchayat &Rural Housing ❖ LocalGovernments ❖ PWD

Modifying floods

Task	Activities	Responsibility
Modifying flood by construction works	❖ Construction of dams and reservoirs, dikes, levees, and floodwalls, channel alterations, high flow diversions, storm water management, coastline protection works and watershedmanagement. ❖ Development of catchment area of the floodplain • Forestationandvegetation	❖ RevenueDept. ❖ IrrigationDept. ❖ UD Dept.Panchayat & RuralHousing ❖ LocalGovernments ❖ PWD
	• Land sloping and smallcheck damconstruction	

Flood Forecasting and Warning System

Task	Activities	Responsibility
Updating of flood forecasting and warning system	❖ Strengthening and up gradation of existing flood forecasting system ❖ Stay in touchwith IMDandCWC ❖ Establish infrastructure for flood warning and dissemination ❖ Ensure proper communication betweendistrict authority and SEOC.	❖ DDMAAuthority ❖ IrrigationDept. ❖ CWC ❖ IMD

Non-structural Measures

Task	Activities	Responsibility
Capacity Building	❖ Preparedepartmental flood contingency plan ❖ Establish rain gauge recording station with trained manpower in the state ❖ Train the flood rescue teams and ensure theyhave functionalrescue Materials.	❖ RevenueDept. ❖ DDMAAuthority ❖ IrrigationDept. ❖ LineDept.
	❖ Conduct demos/ mock drills in flood prone areas time to time and ensure that rescue teams are properly trained and equipped ❖ Organizetrainings for various stakeholders involved inflood mitigationand management	
	❖ Organize mockdrills on floodrescue	

Awareness Generation	❖ Undertake public awareness activities in flood affected areas and let people know what to do and what not to do after, before and during flood. ❖ Design and develop the IEC materials in local language and ensure their storage and distribution amongpeople. ❖ Motivate all families in flood prone areas to preparethefamily kit ofemergency materials	❖ RevenueDept. ❖ DDMAAuthority ❖ IrrigationDept. ❖ InformationDept. ❖ LineDept.

Earthquake

Structural measures

Zoning and Building codes

Task	Activities	Responsibility
Zoning and Building codes	❖ Conduct micro-zonation study and prepare seismic map in earthquake prone locations ❖ Identify the Vulnerablestructures ❖ Adapt building code and suggestions given by micro zonation study and doconstruction worksaccordingly	❖ RevenueDept. ❖ DDMA ❖ UDDept. ❖ PWDDept. ❖ GramPanchayats ❖ LocalUrbanBodies ❖ HousingDept.

Development of safe siting and Earthquake Resistant Structure

Task	Activities	Responsibility
Safe siting in earthquake areas.	❖ Select rock or stiff soil for building construction ❖ Avoid constructing thecapital-intensive infrastructure, hazardous facilities	❖ RevenueDept. ❖ UDDept. ❖ PWDDept.

	and important buildings in Seismic fault areas	
Develop earthquake resistant structures	❖ Adopt earthquake resistant structure in all construction works ❖ Incorporate the earthquake resistant design in all houses build by government departmentsand privateagencies	❖ GramPanchayats ❖ LocalUrbanBodies ❖ HousingDept.

Retrofitting of weak structures

Task	Activities	Responsibility
Retrofitting the weak structures	❖ Develop a database of existing private and govt. building in thestate ❖ Identify the buildings needretrofitting ❖ Preparea project/scheme for retrofitting	❖ RevenueDept. ❖ UDDept. ❖ PWDDept. ❖ GramPanchayats ❖ Local Urbanbodies ❖ HousingDept.
Avoid use of very weak/ risk structures	❖ Identifythevery weak/ oldstructures ❖ Put notice not to use andvacate	

Instrumentation for monitoring of seismic activity

Task	Activities	Responsibility

Regular monitoring of seismic activities	❖ Set up seismic recording stations in seismic prone areas with modern equipment's ❖ Ensure regular study and research work in this field by technical groups ❖ Ensuredissemination of dataand information toall concerned	❖ Science and technologyDept. ❖ Localurbanbodies

Non-structural measures

Task	Activities	Responsibility
Capacity Building	❖ Strengthening of Techno- legalregime ❖ Organize trainings on earthquake resistant structures for engineers, architects, masons and other working in construction industry. ❖ Preparedepartmental earthquake contingency plan, action planandSOP ❖ Carry out structural safety audit of all critical Infrastructures and keyresources ❖ Motivate disaster insurance of buildings ❖ Improvement of emergencyresponse	❖ Education & technical Education Dept. ❖ RevenueDept. ❖ DDMA ❖ LineDept.

Awareness Activities	❖ Organizeschool Programs, public awareness campaigns on earthquake safety. ❖ Organize Drop. Cover Hold demo in Schools ❖ DevelopIEC Materials and distribute	❖ InformationDept. ❖ DDMA

Fire

Structural Measures

Task	Activities	Responsibility
Develop fire infrastructure and other fire facilities	❖ Extend coverage of fire and emergency services to rural areas	❖ Fire and emergency servicesdept. ❖ Industrial safety department ❖ Urbanlocalbodies
	❖ Involve the new stakeholders ❖ Strengthen coordination between municipalities and industrial safety department ❖ Equip fire stations with modern fire engines and other equipment's ❖ Provide fire proof devices to fire fighters ❖ Insurance coverage forfirestaff ❖ Make provision for special fire burn ward inthehospital	❖ HealthDept.
	❖ Ensure that all fire stations are connected to effective communication system	

Non-structural measures

Task	Activities	Responsibility
Capacity Building	❖ Impart fire management training to fire staff and strengthen their workingskill. ❖ Organize regular demo for fire brigade to familiar them withfireequipment's ❖ Conduct mock drills to check up the departmental preparedness	❖ Urban Development Disaster ManagementUnit
Awareness Generation	❖ Organize awareness programs on fire safety in Schools, Colleges andoffices. ❖ Disseminate fire safety tipsamong public through print and electronic media ❖ Develop IEC materials on dosand don'ts for public distribution	

Industrial and Chemical Accidents

Structural measures

Task	Activities	Responsibility

Industrial safety measures	❖ Set up Emergency response Centre (ERC) ❖ Strengthen Mutual Aid Response Group (MARG) ❖ Form and strengthen the crisis Groups at District and local levels. ❖ Industries not to be allowed in Hazard proneareas ❖ Develop on-site and off-siteplans ❖ Set up toxic water treatmentfacility ❖ Set up leakage checkupdevices ❖ Purchase, store and keep functional all necessary industrial safetyequipment's. ❖ Make Provision for poison ward in Civil hospital	❖ IndustrialDept. ❖ MIDC ❖ DistrictAuthorities ❖ LocalAuthorities
Techno – legal regime	❖ Implement the Acts and Rulesrelatedto industrial safety firmly.	❖ IndustryDept. ❖ MIDC ❖ LocalAuthority

	❖ Ensure structural safety inspection/ auditinspection/audit bycompetent Authority.	
Strengthening EOC and warning systems	❖ Establish/ strengthen EOCs atalllevel ❖ Set up on siteandoff – site warning dissemination system	❖ NodalAuthority ❖ MIDC ❖ Dist.Collector ❖ Municipal Commissioner

Non-Structural Measures

Task	Activities	Responsibility
Emergency Planning	❖ Prepare/ update emergency onsite andoffsiteplan ❖ Regular monitoring of safety activitiesin all thefactories/ industries	❖ Nodal Authority: MIDC ❖ Dist.Collector ❖ Municipal Commissioner
Organize Capacity Building	❖ Organize industrial safety trainings for officers and staff working in the factories ❖ Set up an on –site and off –site monitoring team to check up all safety measures ❖ Conduct mock drills inregularinterval ❖ Encourage disaster insurance	❖ Nodal Authority: MIDC ❖ Dist.Collector ❖ Municipal Commissioner

Awareness Activities	❖ Organizecommunity awareness programs for the communities residing near the factories andlet people know whatto do what not to do in case of industrial disaster ❖ Develop IEC materials on local language and distribute them in schools and local communities ❖ Organize School level awareness activities andensure studentsparticipation in large number	❖ Nodal Authority: MIDC ❖ Dist.Collector ❖ Municipal Commissioner ❖ DDMA

Epidemics

Structural Measures

Task	Activities	Responsibility
Surveillance and warning	❖ Identify the epidemic proneareas ❖ Establish mechanism for regular monitoring of such locations ❖ Set up testing laboratories with trained manpower if required ❖ Collect dataand disseminateto concerned authorities	❖ PublichealthDept. ❖ Local Govt.Bodies ❖ Municipal Authorities
Preventive and promotive Measures	❖ Ensure clean drinking water, personal toilets, and proper sanitation facilities inepidemic proneareas ❖ Ensure safe drainage and proper waste managementsystem	❖ PublichealthDept. ❖ Local Govt.Bodies ❖ Municipal Authorities

Strengthening Institutional infrastructure	❖ Organize Capacity building trainings for healthstaff ❖ Establish testing labs with modern equipmentsand trainedmanpower	❖ PublicHealthDept. ❖ LocalGovt.Bodies ❖ Municipal Authorities

Non-structural Measures

Task	Activities	Responsibility
Capacity Building activities	❖ Identify the primary stakeholdersof currentepidemic ❖ Organize epidemic management trainings for all stake holders ❖ Provide necessary safety devices to health staff who manage and workin epidemicareas	❖ HealthDept.
Awareness Programme	❖ Organizepublic campaigns toaware them on what to do and what not to do to controltheepidemic ❖ Use both electronic and print media to disseminate the safety measures and the actions government takento checktheepidemic	❖ HealthDept.

Road Accidents

Structural Measures

Task	Activities	Responsibility
Strengthening Intuitional capability	❖ Make provisions for special enforcement wing ❖ Set up traffic posts and trauma care centersonHighways ❖ Set up hotline and speed monitoring technology ❖ Keep equipments for removal of accident Vehicles ❖ Fix a lead agency for monitoring ❖ Make provision of special route for hazardousVehicles	❖ TransportDept.
Strengthening Road Infrastructure	❖ Avoid parking at any point on National andstatehighways ❖ Make special provision for parking with food, water, fuel andotherfacilities ❖ Show excavation locations with barricades ❖ Put road dividers, speed breakers, information sign boards and men at railwaycrossings ❖ Keep machines for removal of debrisin emergency	❖ TransportDept.

Improving Regulations	❖ Insuranceregulation ❖ Strictly use protective materials by two wheeler drivers ❖ Special rules for schoolbuses ❖ Training for drivers carrying hazardous materials ❖ Use blinkinglights forStationary Vehicles	❖ TransportDept.

Non – Structural Measures

Task	Activities	Responsibility
Capacity Building	❖ Organize capacity building training to all stakeholders involved in road transport, andtraffic management. ❖ Strengthen the management skill of traffic police and RTO staff organizing mock drills inregular interval	

Chapter -5

PREPAREDNESS

Identification of Stakeholders Involved in Disaster Response

Community is the first responders in case of most of the disasters. This shows the importance of VDMP as well as Village Task Force and their training. Local people who can do search and rescue operations should be identified and given training. But not every levels of disasters can be managed by village task force. Highly trained professionals are needed for response. It includes swimmers, divers etc. They can be identified at Taluka level and given training at village level.

Response and evacuation of disabled population is very important as they are highly vulnerable. Training can be given for the rescue workers for rescuing them or evacuating them during emergency. Fire brigade are adequately trained in this and carry people using different cradle carry method, firemen carry method, blanket carry method etc. The Taluka level rescue workers should be trained in it.

Formation of teams
For different activities in Rescue and relief activities different teams should be formed so that the activities can be carried out easily during the time ofd isasters.

Forecasting and early warning

Early warning helps to plan the course of recue and relief operations, helps to move the population to safe shelters and also helps to disseminate the knowledge to the public so that mortality rates can be reduced. Early warning system is not available for every hazard. But for most of the hazards early warning can be issued. It includes heavy rain, flood, landslides, tsunami etc. At district level DDMA can receive the early warning from nodal agencies or from other sources and can plan the rescue and relief operations. There are nodal agencies that can give warning for different disasters.

Table 13 – Showing the Nodal Agency for Early Warning

Sl. No	Hazards	Nodal agencies
1	Cyclones, Floods, Drought	India Meteorological Department
2	Floods	Central Water Commission of the Ministry of Water Resources
3	Landslides	Geological Survey of India
4	Tsunami	INCOIS

Showing the Nodal Time Period before Incident and Early Warning

Sl. No	Hazard	Time period
1	Cyclones	Days
2	Tsunami	Minutes/Hours
3	Droughts	Months
4	Landslides	Days
5	Floods	Hours / Days

After receiving early warning, the information should be disseminated to various departments of preparedness as well as to the public for safety. It is the responsibility of DDMA and TDMA. The information's from nodal agencies or from SDMA should be disseminated to TDMA, VDMA, Panchayat office, line department officials and to public based on the ground situation.

The warning can be disseminated through various means such as

1. Telephone
2. Fax
3. VHF
4. PoliceWireless
5. Internet(e-mail)
6. Websites
7. Radio/TVnetwork
8. Mobile Phones(SMS)

Search and Rescue

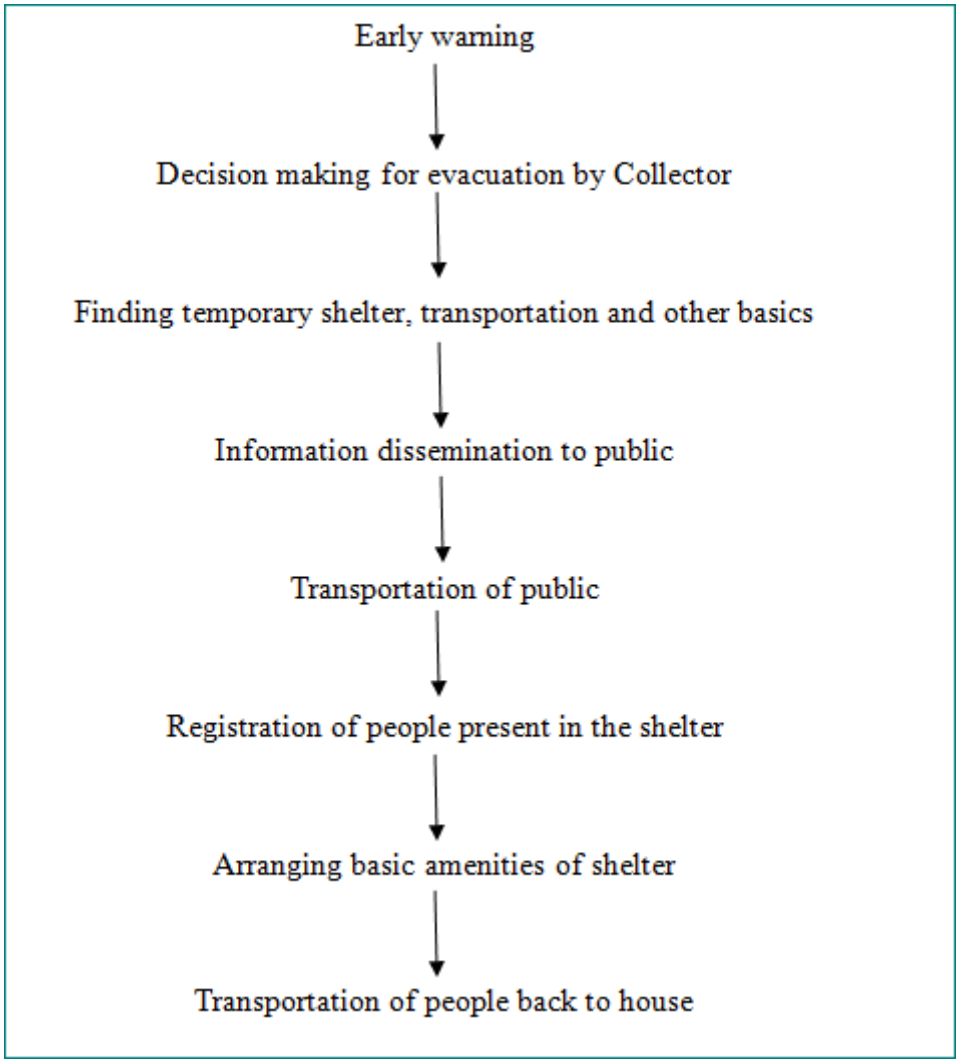
Search and Rescue operations are an important part of relief activities to save the life of victims. Experts are needed fording search and rescue operations. Search and Rescue operations are usuallycarried out by Fire and Safety brigade, Coast Guard, Police, NDRF etc. Also volunteers can also be used for rescue operations if sufficient experts are not available. Training should be given to SAR team and mock drills and exercises should be doneregularly.

Preparedness for Search and Rescue will be done based on the type of disaster in the region. In flood, swimmers and divers are more needed. While in building collapse debris removal and tracking the people trapped in the debris is moreimportant.
Aspartofpreparedness, theSearch andRescueteamsshouldbeformedindistrictandTalukaleveland training should be given. The team comprisesof

1. Firefighters
2. Policemen
3. CoastGuardofficers
4. Swimmers
5. Medicalprofessionals.

Evacuation

Evacuation can be done for those disasters where early warning is available and the level and efficiency ofthe evacuation will be based on the time availability after forecasting the disaster. Evacuation needs proper planningandpreparation orthatitselfcanbecomehazardous.Evacuationcanbeoftwotypes. Itcan beaftera hazard where the survivors in a hazardous situation can be evacuated or it can be after an early warning where time period for evacuation will bethere.



For the process of evacuation, temporary shelters should be identified outside the vulnerable location, mostly in schools or barren land (in case of earthquakes). The safety and security of the temporary shelters should be monitored. In case of vulnerable people like physically disabled, special attention should be given to their needs. Basic amenities such as water, food, sanitation, medical attention etc should be addressed. In case of winters special care should begiven. Evacuation procedure will not becompleted until relocating the people to safe permanent location or their ownplace.

Damage and Loss Assessment

Damage and loss assessment should be done immediately after rescue operations. It helps to understand the extent of damage in the region. Data regarding the following details should be collected, including the extent of damage such as partial or complete.

Showing the Format for Damage Data Collection

Type	Number	Remarks
Number of affected population		
Number of affected families		
Loss of life		
Injured		
Missing		
No of house fully damaged		
No. of house partially damaged		
Crops fully damaged (acre)		
Crops partially damaged (acre)		
Fully damaged educational institutions		
Partially damaged educational institutions		
No of water sources damaged/not functioning		
No of latrine damaged		
Loss oflivestock's (no.)		
Embankment Fully damaged(km)		
Embankment partially damaged (km		

Activation of IRS in the district

The District Collector automatically becomes the head or the Chairperson of the DDMA, and hence he is appointed as the Responsible Officer of the district. Some of the responsibilities may be passed on to the Additional District Collector for management and supervision of any incident that occurs in the district, as he is the Chief Executive Officer of the District. The District Emergency Operation Centre and the Incident Commander will make him aware of all the developments and progresses of responses activities in the district.

Protocol for seeking help from other agencies

The line departments and their head will perform different roles and responsibilities based on the nature and kindofdisaster.Theseresponsibilitiesofthelinedepartmentsshallbeclearlydefinedbasedondifferenttypes of disasters in the DDMP, which will be further approved by the StateGovernment.

Army, Air Force & Central Paramilitary Forces

The Chairman of the DDMA will report to the State Home Department which will further ask for military help to the Central Home Ministry, who will take the subject with the concerned departments for the requisition of Army, Air force and Central Paramilitary Forces.

National Disaster Response Force

The DDMA can immediately make arrangements for requisition the NDRF team or battalion directly, if there are cases of sudden onset of disasters in areas, where early warning systems may not be present. The DDMA will maintain a close association with the NDRF Commander in Chief of the NDRF located nearest to the district (Palghar), for the rapid deployment of the team in case of threatening disastrous situations.

State Disaster Response Force

The DDMA will write to the State Disaster Management Authority who will consult further with concerned ministries for requisition of SDRF, if it exists in the State.

Mechanisms for checking and certification of logistics, equipments andstores

The DDMA will write to the concerned Logistic Section Chief (LSC) in the Revenue Department, to further carry out the responsibility of checking and making certifications of logistics, equipments and stores.

Operational check-up of Warning Systems and EOC

TheDDMAwillconduct operationalcheck-upsofwarningsystems,EOCandalsotheequipmentsavailableat the EOC, periodically. The pre-monsoon preparedness meeting also leads to checking of warningequipments.

Seasonal inspection of facilities and critical infrastructure

The DDMA shall coordinate along with the Public Work Departments, to conduct a seasonal inspection of facilities and critical infrastructures like bridges and Highways, especially before the onset of monsoons.

Command and coordination

The head or the Chairperson will coordinate meetings regularly with all the departments and stakeholders and even include various NGO's and groups for effective management and preparedness of summer seasons and monsoons.

NGO and other stakeholders

The NGO which are working in development sector as well as disaster management sector can be used for different purposes such as Post Disaster Need Assessment. The NGO workers or volunteers should be trained regarding their work during L0 phase of disasters and during the issue of warning, NGO officials can be communicated and can be used. Also in case f temporary shelter preparation, water and sanitation etc can be managed by NGO with the support and monitoring of government officials.

Seasonal preparedness

The DDMA can make seasonal preparednessby:

- ***Identifying Risks***: Listing out various risks from hazards like floods, fire to the infrastructures and facilities.Thiswilldecreasethegeographicalsusceptibilityofthestructure.Identifyingvulnerabilityof the objects and structures are also an important process of the preparedness. Hence this identification process will focus on the prevention and mitigation of any damages that can take place inthefuture.

- ***Identifying Resources***: The DDMA shall identify resources available in the district, for assistance in a disastrous situation and sources which can lower the damage andtherisks.

- ***DecreasingRisks***: Once the list of risks and vulnerabilities are prepared and specified, then the DDMA shall conduct and formulate a program making arrangement of activities that can decrease the risks. This can be done with the help and association of various linedepartments.

- Preparedness

IDRN: India Disaster Resources Network
DDMO: District Disaster Management Officer.
SDMD: State Disaster Management Department
DDMD: District Disaster Management Department
DDMA: District Disaster Management Authority

Community Preparedness

Community preparedness play sacrucial part in disaster management.Community is one seem to be one of the exposed entity in any disaster risk. The two main elements to be explored in the community preparedness are community based and people centric. Community based disaster management is believed to have direct involvement of community in every phases of disaster. It is vital that community members themselves are awareand self reliantingetting the knowledge and information of the risks and vulnerabilities of the area.The core activities where community people could get involvedare

Risk Knowledge	• Knowledge abouthistoricalhazards. • Identification of hazards and disasterproneareas. • What are the pattern and frequencyofdisaster?
Dissemination and communication	• Develop community based earlywarningsystem. • Dissemination of information tovulnerablecommunities • Dissemination of information to personwithdisability.
Monitoring	• Parameters for the development ofearlywarning. • Parameters for structural developmentandimplementation.
Response Capabilities	• Take all the prevention, mitigation andpreparednessmeasures. • Capacity building andawarenessprograms. • Provide support to conduct post disasterassessmentstudies.

Sensitization of community about the needs of person with disability

Peoplewithdisabilityare someofthemostlikelyimpactedgroupsduringanydisasterwithhighrisk ofdeath, injury, additional impairment. Various initiatives have been taken to deal with the group and make things accessible to them. Among them one of the initiatives is sensitization of communities about the needs of disabled people. Even in disaster risk reduction measures disability- inclusion is one of the important point. Some of the following measures are to be taken for person with disability in communitypreparedness.

Task	**Activity**
Identification	• Identification of person with disability in communitywith the kindofdisability. • Making the area of stay and work inthevillage.
Awareness and dissemination of Information	• Awareness programs related to disasters andvulnerabilities intheirarea. • Capacity building training with on rescue andemergency exits • Conducting mock drills including peoplewithdisability.

Monitoring	• Basic provisions for person with disability in Safeshelter with light,toilet,sanitation. • Accessibility of the safe shelter through rampsforthem. • Ensuring safety evacuation doorsforthem.

Knowledge Management, networking and sharing

Knowledge management is all about getting right knowledge, in right place and at the right time. Preparedness is to develop, support and enhance the organizational knowledge process of knowledge creation, storage, retrieval, transfer and application. The management focuses on capturing, organizing and converting organizational knowledge into common database, for further effective retrieval of relevant contents through advanced searches from the data base. At the lower end organizations focuses on learning, sharing and collaborating through physical interactions, workshops, documentation of experiences or sharing through web portals. The networking comprises of all the SDMD, DDMD, and administrative traininginstitutes.

Task	Activity	Responsibility
Knowledge Management	• Disaster management activities carried out atvariouslevels. • Documentation and dissemination of information tolinedepartments. • Training andawarenessprograms • Government, community and private organizationresourcemapping. • Recording of best practices, lessons learnt, work experience and sharing with stakeholders inmeetings, Workshops andseminars.	• Revenue Department • DDMA • Technical Department.

Uploading of information on resources on IDRN

IDRN is a web based common information system for managing the inventory of equipments, skilled human resources and critical supplies for emergency response. It manages the district level resource database throughout the nation. The primary focus is to enable the decision makers to find answers on availability of equipments and human resources required to combat any emergency situation. This database also enables the organization to assess the level of preparedness for specific vulnerabilities.Total 266 technical items are listed in the resource inventory. The districts have been given the username and password through which they can perform data entry and data updating on IDRN for resources available in the district. The IDRN network has functionality of generating multiple query options based on specific equipment, skilled human resources and supplies with their location and contact details. Every year the resource inventory has been updated at the district level by DDMOs. Whereas NIC provide its technical assistance by updating it in website.

Media management/ Information dissemination

Mass media and communication system plays vital role in predicting and dissemination of information in

advance. The communication system has significantly developed to a great extent in predicting and Disseminating information about the disaster, there has been an impact on how public learns of and perceives the impact of disasters. Both the electronic and printing media has been linked to the disaster preparedness in awareness programs, warning dissemination, and evacuation, alerts government officials and in coordination with various stakeholders. Communication virtually links all the hazards mitigation process. The capabilities of communication, data gathering and data management technology have leaped forward in parallel with the increase knowledge about the origin and behavior of natural hazards. The advancement in mass and telecommunication with technology had major contribution in forecasting and dissemination of information.

Medical Preparedness and mass casualty management

For medical preparedness, the details of all the hospitals available in the district should be made available in the DDMA or Control room. In preparedness phase, the hospital authorities, management, doctors and other staffs should be trained in emergency management. Details of medical equipments and manpower available in eachregionshouldbemadeavailableandincaseofemergency,thetransportationofinjuredpeopleshouldbe made accordingly. During emergency, first aid for injured and triage in case of heavy causality is the duty of medical professional in the Taluka or district level. Based on the need for critical care facilities, Surgical Services, Trans fusion Services etc. victims should be allotted to different hospitals as per the available resources.

Chapter- 6

Response and Recovery

District Information Office

Actions on receipt of Early Warning

- To monitor the situation and direct the officers of all levels in the department, for highlevel preparedness to ensure the safety of buildings of the department andotherassets.
- To appoint one nodal officer to coordinate with the emergency control room of the disaster management department and provide support and regular help to district magistrate and other subdivisionofficers.
- Togive information to relevant offices and people about daily weather and also is suingapressbulletin.
- Support in dissemination of Early Warning information once approved by DDMA through themeans of telecommunications, i.e. electronic messages tothesociety.
- Establish coordination with flood information center at the district level before theseasonalfloods.
- The nodal officer for disaster management in the department shall be responsible for coordination with EOC, ESF nodal and support agencies and other departments. Appoint additional staff to support him as required for thesituation.
- If EOC at district level declares it as an emergency situation and Unified Response is activated, disseminate the information to all staff, keystakeholdersetc.
- Call for a coordination meeting of key officer to take stock of the situation, impact of disaster on department capacity, immediate actions for response like need and damage assessments, coordination with DDMA and Incident responsesystem.
- Develop periodic situation report and share with EOCandDDMA.
- Organiseinitial assessment of damages and immediate, short term and long term needs as per the format enclosed and share it with EOC and other keystakeholders.
- In consultation with EOC/DDMA and support agencies, plan response actions as per immediate, short term and longtermneeds.

During emergency response

- Coordinate with respective disaster management committee for monitoring situation and ensure community participation in monitoring and surveillanceactivities.
- To disseminate the information and orders available from theDDMA.
- To be in coordination with district administration and provide the right information to media if any disaster or calamity occurs during the event. Also, to spread authorized information, collected from the concerned official department, among people through news, messages, SMS, Social Media and FM Channels. To make people aware of thetruth.
- To frequently provide all the details regarding news being published by various newspapers and channels to the district administration. And, to publish official clarifications of the administration as per thenecessity.
- DIO also ensures adequate directions to local cable channels and newspapers for not publishing any kind of news or information that can cause communal or religious discordamongpeople.
- Togivereliableinformationabouttheneedsofthereliefmaterialintheareasandmotivatingthe

general public for their support.

- To ensure the damage and lossassessment of the department equipments and resource material, finances, etc. and recouped it as soonaspossible.

Health Department

Activities on Receipt ofWarning

- Appoint onep ersonas "NODAL OFFICER" from the department to coordinate with DDMA and other localbodies.
- Review and update precautionary measures and procedures, and review with staff, the precautions that have been taken to protect equipment and the post disaster procedures tobefollowed.
- Stock emergency medical equipment which may be required afteradisaster.
- Determine type of injuries/illnesses expected and drugs and other medical items required, and accordingly ensure that extra supplies of medical items be obtainedquickly.
- Provide information to all hospital staff a bout the disasters, likely damages and effects, and information about ways to protect life, equipmentandproperty.
- Equipment supplies such as candles, matches, lanterns and extra clothing should be provided for the comfort ofthepatients.
- Surgical packs should be assembled and sterilized. A large enough number should be sterilized to last four to five days. The sterilized surgical packs must be stored in protective cabinets to ensure that they do not get wet. Covering the stock with polythene is recommended as an addedsafetymeasure.
- All valuable instruments, such as surgical tools, opthalmoscopes, portable sterilizers, CGS, dental equipments, etc., should be packed in protective coverings and store rooms considered to be the most damage-proof**.**
- Protect all immovable equipment, such as x-ray machines, by covering them with tarpaulins or polythene.
- Check the emergency electrical generator to ensure that it is operational and that a buffer stock of fuel exists. If an emergency generator is not available at the hospital, arrangeforone.
- If surgery is to be performed following the disaster, arrange for emergency supplies of anaes the ticgases.
- Check stocks of equipments and drugs which are likely to be most needed after the disaster. These can be categorized generally as: Drug used in treatment of cuts and fractures, such as tetanus toxoid, analgesics and antibiotics. Drugs used for the treatment of diarrhoea, water-borne diseases and flu (including oral rehydrating supplies). Drugs required treating burns and fighting infections. Drugs needed for detoxification including breathingequipments.
- Assess the level of medical supplies in stock, including: Fissure materials, Surgical dressings, Splints, Plaster rolls, Disposable needles and syringes, local antiseptics, prepare an area of the hospital for receiving a large numberofcasualties.
- Develop emergency admission procedures (with adequate record keeping). Orient field staff with standards of services, procedures including tagging. Hospital administrators should establish work schedules to ensure that adequate staff is available for in-patient needs. Organize in-house emergency medical teams to ensure that adequate staff is available at all times to handle emergency casualties. Set up teams of doctors, nurses and dressers for visitingdisastersites.
- DMHO to prepare and circulate in vulnerable areas, a list of precautions to be taken by the public before, during and after the disaster to ensure that they maintain normal health under adverse conditions.
- Planmethodsforquicktransportationofseriouslyinjuredandsickpersonfromdisasterareasto

specialties hospitals for effectivetreatment.

- After receiving the first flood warning, alert Dist. Medial Health Officer (DMHO) to plan and keep in readiness mobile hospitals, emergency field medical teams, Para medicalteams, surgery facilities,first

aid kits etc. with sufficient equipment's and medicines at Dist. Hospitals and PHCs. They should be in a position to move to the affected areas at short notice.

- Plan for establishment of field medical centres, mobile clinics, emergency operation centres and trauma counselling centres at vulnerable areas onshortnotice.
- Plan for stocking sufficient quantities of blood of different groups at nearby Blood banks. Update the list of Govt. /private doctors and supporting staff whose services can be utilized during emergencies. Instruct them to be in readiness to move atshortnotice.
- Direct the officers of all levels in the department for high level preparedness and provide support and help to district magistrate, sub division officers, and other localbodies.
- Support in dissemination of Early Warning information once approved by DDMA and appoint a departmental person as a nodal person to coordinate withtheEOC.
- Ensure that important contactsnumbers, transportmeans, firstaid box, essential drug kits, delivery kits and medical equipment and supplies, stretcher etc. are available in sufficientquantity.

During emergency response

- If EOC at district level declares it as an emergency situation and Unified Response is activated, disseminate the information to all staff, keystakeholdersetc.
- DMHO will be in regular touch with District Collector and Control room to know the severity of situation and extend medical services accordingly in the affected areas. A medical control room at district and division levels shall be established withhelplines.
- Call for a coordination meeting of key officer to take stock of the situation, impact of disaster on department capacity, immediate actions for response like need and damage assessments, coordination with ESF and Incident responsesystem/EOC.
- Develop periodic situation report and share with EOCandDDMA.
- Organizeinitial assessment of damages and immediate, short term and long term needs as per the format enclosed and share it with EOC and other keystakeholders
- WhereevernecessaryseriouslyinjuredandsickpersonsareshiftedtoDist./State/Referralhospitalsfor specialist services. If roads are blocked, a method should be established to requesthelicoptertransport.
- Providefirstaidand medicalassistanceforinjuredandsickpeople.Specialcareshouldbetakenforthe aged and disabled people, children and pregnantwomen.
- DMHO will move maximum number of medical and Para medical teams, ambulances and mobile hospitalswithadequateequipment's,medicinesetc.totheaffectedareaandprovidemedicalassistance round the clock to the people. Each team should be allotted specific place in the disaster area and specified reliefcentres.
- DMHO should take all measures to ensure that replenishments are made continuously. DMHO will requisition the services of medical teams from unaffected Districts for use in disaster affected areas. DMHO will liaise with State for providing additional specialists teams and equipment's from State headquarters andotherStates.
- The provision of medical services should be coordinated by the CMO with district control room. Procedures should be clarified between Peripheral hospitals, Private hospitals, Blood banks, General hospitals and Health services established in transit camps, relief camps &affectedvillages.
- Maintain check posts and surveillance at Transport depots and all entry and exit points from the affected area, especially during the threat/ existence ofanepidemic.

- Aninjuryanddiseasemonitoringsystemshouldbedevelopedtoensurethatafullpictureofheal thrisks ismaintained.
- Monitoringshouldbecarriedoutforepidemics, waterand foodqualityand disposalofwasteintransit and relief camps, feeding centers andaffectedvillages.
- Plan for emergency accommodations for auxiliary staff from outsidethearea.
- Information formats and monitoring checklists should be used for programme monitoring and development and for reporting to Emergency Operation Center. This is in addition to the existing reporting system inthedepartment.
- Seek security arrangements from district police authorities to keep curious persons from entering the hospital area and to protect staff fromhostileactions
- Establishment of a public information center with a means of communication to assist in providing an organized source of information. The hospitalis responsible for keeping the community in forme dofits potential & limitations indisastersituations.
- Ensure to provide psychological first aid to people in acute distress and implement preventive, responsive and remedial measures to reduce the risk of sexual violence.

Post Disaster Activities

- Ensure that DMHO and ot herm edicalauthoritiesat District and Block levels are inconstant touch with Control rooms, know the latest situation and expand medical facilities accordingly. Ensure continuation of educating people on precautions to be taken for maintaining hygiene and health inadverseconditions.
- DMHO to continue provision of medical facilities in the affected areas and relief camps till the people return to their places. Ensure adequate measures to continue for preventing break of epidemics by using disinfectants andchlorination.
- DMHO will obtainin formation on the medical relief provided indisaster areas, quantities of medicines used, the quality of services provide by medical and Para medical taff, the adequacy of medical facilities available in vulnerable areas and forward to State forfutureaction.
- Maintain a record of persons treated with full details and particulars for reference ata later date.Update and send plans for additional requirement of facilities, infrastructure to be created in vulnerable areas. Prepare a document on the event and send to State authorities for referenceinfuture.
- Ensure continuation of educating people on precautions to be takenfor maintaining hygiene and health inadverse conditions. DMHO to continue provision of medical facilities at the affected area sand relief camps till the people return totheirplaces.
- Ensure adequate measures to continue for preventing break of epidemics by using disinfectants and chlorination. DMHO will obtain information on the medical relief provided at disaster areas, quantities of medicines used, the quality of services provide by medical and Para medical staff, the adequacy of medical facilities available at vulnerable areas and forward to State forfutureaction.
- Vector borne like malaria, filarial, dengue, chikungunia, Japanese encephalitis, sprinkling ofbleaching power and lime on the drains and roads to prevent gastro enteritis with the help ofSanitationteam.
- During the natural calamities the immune states of the children will reduce naturally. Hence there is need of Post disasters immunization like Polio, Measles andVitamin-A.

Animal Husbandry Department

Actions on receipt of early warning

- To immediately contact the District Control Room and will assist inthework.
- To ensure that the staff is on duty attheheadquarters
- To assign the work to be done to the subordinate officers and staff and send them totheirsites.
- To receive instructions from the district liaison officer and dotheneedful.
- To ensure the availability of resources included in the DDMP and will make necessaryarrangements to obtain thoseduringemergency.
- To consult the Liaison Officer to prevent the probable pidemicamong the cattle and also for the safety measures.
- To make groups having vehicles for emergency work and will assign the areastothem.
- To set up a temporary control room for the exchange of information for emergency work and will appoint a nodalofficer.
- Ensure that flood warnings and precautions are properly received by the vulnerable communities and prepare them to face thedisaster.
- Cattle rearing community at vulnerableplaces will be advised not to go for heavy animals, since shifting them during disaster period would be difficult. Move cattle, sheep, goats, pigs etc. to safer cattle yards from vulnerable areas and provide fodder andwater.
- Ensure that boats and other equipment's of fishermen are moved to safer places and secured in association with fisheries department. Staff meant for emergency duties will be sent to their respective places of work and will be ready to undertake rescue andreliefmeasures.
- Chalkout as trategy to deal with drought situations as to ensure continuous supply off odderand water to theanimals.

During disaster response

- Blocks and Villages will arrange for shifting fishermen staying at low lying areas and near to dams to safer places and relief camps. Ensure that boats and other equipment's of fishermen are moved to safer placesandsecured.
- Arrange for providing medical help to distressed animals. Ensure sufficient quantities of medicines and vaccines are stored at places nearer to the vulnerable villages. Arrange for visits of veterinary doctors to affectedvillages.
- To maintain record keeping and maintenance of regular flow ofinformation.
- Coordination with villagers to search and rescue trappedanimals.

Post DisasterActivities

- Ensure that control rooms and flood-warning centres at Blocks will continue sending messages to the affectedvillages.
- Issuing death certificates against insureddeadanimals.
- Distribution of disinfectants where animalswereburied.
- Provide sufficient food/fodder/water for animals kept at safe yards. Coordinate for veterinary helpto distressedanimals. Ensure supply of medicines and vaccine sat places nearer to the vulnerable villages.
- Maintain recordkeeping.

Agricultural Department

Actions on receipt of early warning

- To appoint one nodal officer from the department to coordinate with the emergency control roomof the disaster management and other localbodies.
- Ensure that regular feedback is provided by Blocks indicating seriousness of disaster, level ofdistress, position of standing crop andlikelylosses.
- Assigntheworktohissubordinateofficersandstafftheworktobedoneregardingagricultureunder DDMP and send them to theirsites.
- Receive instruction from the district liaison officer and takenecessaryaction.
- Ensure the availability ofresources included in the DDMP and will make due arrangement to getthose duringemergency.
- Make groups having vehicles for emergency work and will assign the areastothem.
- Set up a temporary Control Room for the dissemination of information foremergencywork.
- Prepare initial damage assessment report and share it withDDMA.

Duringdisasterresponse

- Coordinate with Blocks and Village stoget feedback on seriousness of disaster, level of distress, relief provided, steps taken for saving maximum standing crop, extent of flooded agricultural lands and estimated lossofcrop.
- Move and position the staff meant for disaster management duties at their pre-decided places. They shouldmoveinvillagesandadvisefarmersonprecautionstobetakenforprotectingthestandingcrop.
- The nodal officer should ensure that suitable instruction sareissued to their field of ficersi ncluding their duties and function before, during and afterdisasters.
- Inspect the sub-ordinate offices, other centers and sub-centers under his control, which are damage prone.

Post Disaster Activities

- Village level team should visit the vulnerable crop pedareaand give suitable technical advices received fromDAO.
- Ensure that adequate and timely relief/credit is made available to farmers for purchase of agricultural inputs through Govt. /private and easy loansthroughbanks.
- Seeds, fertilizers and pesticides should be provided atsubsidized rates. Ensure all relief measures, credit facilities and inputs are made available continuously to farmers till their next crop isharvested.
- Develop data base villagewise crop wise, irrigation, sourcewise, insurance details, credit facilities tec., with an objective of forecast of damages due todisasters.
- Fodder should be supplied in sufficient quantities atlowprices.
- The enumeration team while enumerating the crop loss, should also record the names of the tenant farmers,alongwiththeownersname. Theyshouldalsorecordextentcultivatedbytetenantfarmer.

MSEDCL

Actions on receipt of early warning

- To monitor the situation and direct the officers of all levels in the department, for high level preparedness to ensure the safety of buildings of department andotherassets.
- To appoint one nodal officer from the department to coordinate with the emergency control room of the disaster management department and provide support and regular help to district magistrate and other subdivisionofficers.
- Support in dissemination of Early Warning information once approved by DDMA through the means of telecommunications i.e. electronic messages tothesociety.
- Establish coordination with flood information centre at the district level before the seasonalfloods.
- To ensure that trees and branches have been cleared which have fallen onelectricallines.
- If EOC at district level declares it as an emergency situation and response is activated, disseminate the information to all staff, keystakeholdersetc.
- Call for a coordination meeting of key officer to take stock of the situation, impact of disaster on department capacity, immediate actions for response like coordination with ESF and Incident response system/EOC/DDMA.
- To give wide publicity that household should arrange lanternsand battery light forusein case of power cut-off during emergency times. Develop periodic situation report and share with EOCandDDMA.
- Assistthestateauthoritiestomakearrangementsforstandbygeneratorsinthefollowingpublicservice offices from the time of receipt ofalertwarning-

    1. Hospitals
    2. WaterSupplyStations
    3. Collectorate
    4. Policestations
    5. Telecommunicationsbuildings
    6.

- Fill departmental vehicles with fuel and park them in aprotectedarea.
- Check emergency tool kits, assembling any additionalequipmentneeded.
- Immediately undertake inspection from the time ofreceiptof-

1. Hightensionwires
2. Towers
3. Substations
4. Transformers
5. Insulators
6. Polesand
7. Otherequipments

- Organise initial assessment for damages and immediate, short term and long term needs as perthe format enclosed and share it with EOC and otherkeystakeholders.
- In consultation with EOC/DDMA and support agencies, plan response actions as per immediate,short

term and long termneeds.

During disaster response

- Restoration of power lines on priority to hospitals, water supply, control room, railway station and other lifelinestructures.
- Presence of engineers in theaffectedarea.
- Live wires on the ground should be removedimmediately.
- Damagedelectricalpoles shouldbeimmediatelyreplaced/repairedandiffallenonroadshouldbe removed.
- Support with search and rescue, relief programs etc. by connecting with nodalagencies fordifferent essentialsupportfunctions.

Public Works Department

Actions on receipt of early warning

- Establish communication with DDMA, District Magistrate and otherlocaladministration.
- To instruct all officials to keep manpower and materials prepared for protection and repair ofpublic works.
- Dispatch extra vehicles to be stationed at strategic posts along routes likely tobeaffected.
- Move heavy equipments such as front end loaders, to areas likely to bedamaged.
- Inspect all roads, road bridges by a bridge engineer, including under water inspection offoundation and piers. A full check should be made on all concrete andsteelworks.
- Secure works under construction ropes, sandbags and cover with tarpaulinsifnecessary.
- If people are evacuating the area, the evacuation routes should be checkedandassisted.
- Establish a priority listing of roads which will be opened first, the most important being roads to hospitalsandmaintrunkroutes.Giveprioritytattentiontourgentrepairworksindisasteraffected areas.
- Identify locations for setting up transit and relief camps, feeding centers and quantities of construction materials required and inform theDCRaccordingly.
- Emergency tool kits must be made available and should include
  Crosscutsaws
  1. Crosscutsaws
  2. Axes
  3. Powerchainsaw
  4. SharpeningFiles
  5. Chains andtighteningwrenches

6. Pulley block with chainandrope

During disaster response

- All works teams should be issued two-way communication link. Provide a work team carrying emergency tool kits, depending on the nature of the disaster, essential equipments such as Towing vehicles, Earth moving equipments,Cranesetc.
- Adequate road signs should be installed to guide and assistthedrivers.
- Begin clearing roads. Assemble casual laborers to work with experienced staff and divide into work gangs.
- Mobilize community assistance for road clearing by contacting community organizations. Undertake repair fall paved and unpaved road surfaces including edgemetalling, potholepatching and any failure of surface, foundations in the affected areas and keep monitoringtheirconditions.
- Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disastervictims.
- Undertake clearing of ditches, grass cutting, burning, removal of debris and the cutting of dangerous trees along the roadside in the affected area through maintenanceengineer'sstaff.
- Undertake repair of all paved and unpaved road surfaces including edge metalling, potholes patching and any failure of surface, foundations in the affected areas by maintenance engineer's staff and keep monitoringtheirconditions.
- Undertake construction of temporary roads to serve as access to temporary transitand relief camps and medical facilities for disastervictims.
- As per the decision of the district control room, undertake construction of relief camps, feeding centre's, medical facilities,cattlecamps.
- An up-to-date report of all damages and repairs should be kept in the district office report book and communicate the same to the districtcontrolroom.
- If possible, review of the extent of damage (by helicopter) should be arranged for the field Officer-in-Charge, in order to dispatch most efficiently road clearing crews, and determine the equipments needed. As per the decisions of the State/District Emergency Operations Center. Undertake construction of temporary structures required, for organizing relief work and construction of relief camps, feeding centers, medical facilities, cattle campsandSOC/s.
- Provide assistance to damage assessment team for survey of damage to buildingsandinfrastructure.
- Zonation of affected areas and estimate the total losstobuildings.

Post Disaster Activities

- To analyze the damage assessment and ensure the departmental resources like equipments, construction material, building resource material, finances etc. used for disaster response purpose are accounted and recouped as soonaspossible.

BSNL

Vulnerable and critical network components

- According to hazard profile of the area, TSPs will identify vulnerability of their respective telecom infrastructure and accordingly prepare plan for emergency situations. All the vulnerable critical network components should have sufficient redundancy including transmission links and power backups in terms of battery storage capacity and diesel /fuelavailability.

- Low power consumption equipment should be preferred at all vulnerable /criticallocations.

Actions on receipt of Early Warning

- To monitor the situation and direct the officers of all levels in the department, for high level preparedness to ensure the safety of buildings of department andotherassets.
- To appoint one nodal officer from the department to coordinate with the emergency control room of the disaster management department and provide support and regular help to district magistrate and other subdivisionofficers.
- Support in dissemination of Early Warning information once approved by DDMA through the means of telecommunications, i.e. electronic messages tothesociety.
- Establish coordination with flood information center at the district level before theseasonalfloods.
- If EOC at district level declares it as an emergency situation and Unified Response is activated, disseminate the information to all staff, keystakeholdersetc.
- Call for a coordination meeting of key officer to take stock of the situation, impact of disaster on department capacity, immediate actions for response like need and damage assessments, coordination with ESF and Incidentresponsesystem/EOC.
- Develop periodic situation report and share with EOCandDDMA.
- Organize initial assessment of damages and immediate, short term and long term needs as per the format enclosed and share it with EOC and otherkeystakeholders.
- In consultation with DDMA/EOC and ESF nodal and support agencies, plan response actions as per immediate, short term and longtermneeds.

During disaster response

- Coordinatewiththerespectivedisastermanagement committeeformonitoringsituationandensure community participation in monitoring and surveillanceactivities.
- Provide setup for the web-conferencing or audio conferencing for thedistrictadministration.
- Immediately restore the communication system in theaffectedarea.
- Ensuring that the affected communities are able to contact their relatives indistantplaces.
- Toconductthedamageandlossassessmentlikeequipmentsandresourcematerial,finances,etc.and recover and recouped itsafterdisaster.
- Keep a vigil also on the areas not affected bythedisaster.

Post Disaster Activities

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- Check if all the necessary life saving measures is in place and there is no further risk to life propertyandenvironmentduetoinfrastructureofBSNL.GivestatusreporttoEOC /DDMA.
- Ensure that the maintenance of communication system etc. has been owned by private companies,communitylevelcommitteesandadequatemonitoringmechanism sareinplace.
- ToconductthedamageandlossassessmentandsubmitthereporttoDDMA.

Forest Department

Actions on receipt of Early Warning

- Toimmediatelycontactthedistrictcontrolroomandwillassistinthework.
- To ensure that the staff at the headquarterisonduty.
- To assign the work to be done by the subordinate officers and staff regardingtransportation under DDMP and to send them totheirsites.
    - To arrange for wireless, telephones, manpower, forest guard in advance to disseminate information of the disaster in the damage prone areas and will play a key role with the district administration to warnthepublic.
    - Tomakeadvancearrangementforfuelwoodandbamboos,gravelsforpriorityareas.

During Disaster Response:

- To follow the instructions of District Disaster ManagementAuthority.
- To carry out the duty assigned for search andrescuework.
- To engage the resources and manpower available to managethedisaster.
- To prepare a primary report of damage for theaffectedareas.
- Totakeactionstoprovideelectricity,waterandsanitationtothetemporaryshel tersinthe forestareas.
- Tosendtaskforceswithvehicles,treecutters,ropes,floodlight,generatorincaseo fclosure of roads due to felling of trees.
- Open the forest land for free grazing when flood waters enter villages, and there is not enough fodder available.
- Allow the transportation off odder from forest areas, when the fodder is not freely available.
- Providewoodenpolesandbambooforreliefandreconstructionatsubsidizedrat e.Provide these materials to all the technical departments, which needthem.

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List of Earthquake Villages

Sr.No.	Taluka	Village
1	Jawhar	Valwanda Gavthan
2		Kashivali 1
3		Kashivali 2
4		Shiroshi
5		Sakadpada
6		Valwanda (Khandipada)
7		Valwanda (Fanaspada)
8		Valwanda (Umbervangan)
9		Chowk And All Pada's
10	Dahanu	Dhundalwadi
11		Paradi
12		Saswand
13		talothe
14		Punjave
15		Chinchale
16		Nagzari
17		Bodgaon
18		Ambesari
19		Gangngaon
20		Jitgaon
21		Dhamangaon
22		Kombgaon
23		Bahare
24		Bramhanwadi
25		Ghadne
26		Vankas
27		Dapchari
28		Haladpada
29		Varkhande
30		Khubale
31		modgaon
32		Tornipada
33		Ambivali Tarfe Bahre
34		Shisane
35		Pandhartara gaon
36		Karanjveera
37		Dhanivari

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38		Dahigaon
39		Deur
40		Osarveera
41		Kandarwadi
42		Vivlvedhe
43		Khaniv
44		Sonale
45		Avdhani
46	**Talasari**	Savane
47		Vadvali
48		Karajgaon
59		Kawada
50		Zari
51		Vasa
52		Talasari
53		Kurze
54		Udhava
55		Vevji
56		Sutrakar
57		Kodad
58	**Vikramgad**	Kongaon
59		Vehelpada
60		Medhi
61		Khuded
62		Ambeghar tarfe Darampur
63		Chabke Talavali
64		Kondgaon
65		Karsud

MODAKSAGAR PROJECT

LIST OF VILLAGES ON BOTH FLANKS OF VAITARANA RIVER COMING UNDER PROHIBATIVE ZONE, RESTRICTIVE ZONE, CAUTION ZONE

Sr. No.	Taluka	Name of Village	Total Nomber of Houses	Total Population
1	Wada	Dadhare	96	426
2	Wada	Joshipada (Dadhare)	32	142
3	Wada	Nishte	128	219
4	Wada	Pathre Pada (Nishte)	22	150
5	Wada	Kalambhe	248	1157
6	Wada	Shele (Ghatalpada)	110	513
7	Wada	Sonale Khurd	163	732
8	Wada	Kapari	94	399
9	Wada	Kalambholi	84	252
10	Wada	Balivali	92	410
11	Wada	Vadavali	110	630
12	Wada	Tilse	193	859
13	Wada	Kasghar	117	603
14	Wada	Moj	226	942
15	Wada	Shirsad	148	685
16	Wada	Pimproli	211	991
17	Wada	Sonshiv	149	616
18	Wada	Dhindepada (Sonshiv)	22	107
19	Wada	Gale	89	416
20	Wada	Pethranjani	46	200
21	Wada	Vilkos Tarfe Wada	69	359
22	Wada	Ainshet	153	670
23	Wada	Tuse	347	1548
24	Wada	Sarashi	169	755
25	Wada	Malonda	10	60
26	Wada	Gandhare	372	1677
27	Wada	Kone	218	899
28	Wada	Koyna Vasahat (Kone)	70	288
29	Wada	Shirish Pada (Kone)	92	377
30	Wada	Gates Budruk	259	1134
31	Wada	Sarasohal	184	618
32	Wada	Vilkos Tarfe konpati	114	874
33	Wada	Shil	125	725
34	Wada	Gates Khurd	202	881
35	Wada	Konsai	214	900
36	Wada	Abaje	201	949
37	Wada	Alman (Pingeman)	149	630
38	Wada	Vaitaran nagar	158	671
39	Wada	Pimplas	377	1785
40	Wada	Ambiste Budruk (Vikaspada)	270	1165

Sr. No.	Taluka	Name of Village	Total Nomber of Houses	Total Population
41	Wada	Ambiste Kh	207	1311
42	Wada	Kharivali Tarfe Kohoj	387	1748
43	Wada	Takalipada (Kharivali)	60	271
44	Wada	Khutal	99	549
45	Wada	Borande	126	499
46	Wada	Apati	117	448
47	Wada	Gorhe	512	2303
48	Wada	Vasuri Budruk	260	1169
49	Wada	Avandhe	134	629
50	Wada	Kombadkhop (Sange)	56	266
51	Wada	Sange	123	585
52	Wada	Avachit Pada (Sange)	58	276
53	Wada	Nane	297	1397
54	Palghar	Savare	530	2886
55	Palghar	Pachudhara (Savare)	42	229
56	Palghar	Embur - Erambi Pada	313	1603
57	Palghar	Khadaki pada (Embur)	54	275
58	Palghar	Dalavipada (Embur)	38	194
59	Wada	Galtare	449	2474
60	Wada	Kurle	112	514
61	Wada	Guhir	180	767
62	Wada	Dhusal Pada (Guhir)	46	196
63	Wada	Hamrapur	189	913
64	Wada	Kanjar Pada	216	1050
65	Palghar	Ten	346	1743
66	Palghar	Durves	568	2766
67	Palghar	Takvahal	336	1646
68	Palghar	Nandgaon Tarfe Manor	289	1455
69	Palghar	Manor	2206	10421
70	Palghar	Saye	75	342
71	Palghar	Tamsai	254	1125
72	Palghar	Udharpada (Pochade)	165	741
73	Palghar	Haloli	741	3206
74	Palghar	Bahaloli	364	1573
75	Palghar	Bot	279	1220
76	Palghar	Dahisar Tarfe Manor	560	2363
77	Palghar	Devanipada (Dahisar)	46	194
78	Palghar	Khamloli	322	1534
79	Palghar	Vishrampur (Khadkoli)	479	2126
80	Palghar	Sakhare	388	1652
81	Palghar	Navajhe	435	1998
82	Palghar	Lalthane	187	818
83	Palghar	Tandulwadi	425	1829
84	Palghar	Nagave Tarfe Manor	100	325

⁄. No.	Taluka	Name of Village	Total Nomber of Houses	Total Population
85	Palghar	Girle	222	956
86	Palghar	Pargaon	392	1597
87	Palghar	Unchavali	64	294
88	Palghar	Sonave	501	2400
89	Palghar	Korichapada (Sonave)	52	250
90	Palghar	Penand	266	1206
91	Palghar	Dahivale	148	699
92	Palghar	Ghatim	176	709
93	Palghar	Darshet	146	679
94	Palghar	Khon Pada (Darshet)	62	288
95	Palghar	Umberpada Tarfe Manor	95	503
96	Vasai	Chimane	62	245
97	Palghar	Navghar (Belpada)	279	1179
98	Vasai	Doliv	115	690
		Total	21883	100738

Wada = 59
Palghar = 37
Vasai = 02

98

Tansa Project Dist- Palghar

List of villages on oth flanks of Tansa River Coming under prohib tive Zone, Restrictive Zone, Caution Zone

Sr. No.	Taluka	Name of Village	Total no. of House	Total Population
1	Wada	Nehal pada	90	375
2	Wada	Vehlonde	135	864
3	Wada	Khaire Ambiwali	179	1079
4	Wada	Varnol	50	325
5	Wada	Devchole	121	760
6	Wada	Kondale	434	1002
7	Wada	Dinkar Pada (Kondale)	383	957
8	Wada	Usar	272	361
9	Wada	Uchat	124	475
10	Wada	Nare	388	1965
11	Wada	Met	268	789
12	Wada	Ghonsai	310	763
13	Wada	Dakivali	200	1437
14	Wada	Chambale	408	1204
15	Wada	Kelathan	450	1702
16	Wada	Gorand	263	1678
17	Wada	Nimavali	140	633
18	Vasai	Kalambhon	215	797
19	Vasai	Vadaghar	171	675
20	Vasai	Khaire Pada (Vadghar)	56	405
21	Vasai	Ambode	35	255
22	Vasai	DongriPada (Ambode)	35	255
23	Vasai	Sayavan	52	412
24	Vasai	Medha	171	720
25	Vasai	Bhinar	107	336
26	Vasai	Devki pada (Medha)	27	86
27	Vasai	Ghateghar	322	2257
28	Vasai	Shiravali	212	1591
29	Vasai	Adane	445	2800
30	Vasai	Parol	384	2160
31	Vasai	DongriPada (Parol)	84	145
32	Vasai	Talyacha Pada	96	724
33	Vasai	Usgaon	421	2374
34	Vasai	Patil pada (Usgaon)	47	104
35	Vasai	Shivansai	712	1605
36	Vasai	Bhatane	1298	4058
37	Vasai	Chandip	708	2869
38	Vasai	Navasai	106	1131
39	Vasai	Mandavi	104	510
40	Vasai	Bhalivali	215	884
41	Vasai	Shirsad	1185	2361
42	Vasai	Khanivade	541	2386
43	Vasai	Kashid, Kopargaon	623	2360
44	Vasai	Kopargaon	350	1250
45	Vasai	Hedavade	132	683
46	Vasai	Khardi	132	683
47	Vasai	Chimane	62	245
48	Vasai	Doliv Pada	18	100
49	Vasai	Kandul Pada	18	100

Wada = 17
Vasai = 32
Total = 49

Offsite Emergency Response & Coordination Committee (OERCC)

Sr. No.	Name	Designation	E-mail ID	Telephone Numbers		Address
				Office	Residential	
1	Shri. Govind Bodke (IAS)	District Collector,	Collector.palghar@maharashtra.gov.in	02525-253111	9730684666	Collector Office, Palghar
	Mr. Bhausaheb Phatangle	Additional Collector, Palghar (Stationed at Jawhar)	ardcjawhar@gmail.com	02525-253111	9757496446	Add. Collector Office, HQ Jawhar
	Alternate -2 Mr. Subhash Bhagade	Resident Deputy Collector, Palghar	rdc.palghar-mh@gov.in	02525-253111	9423043030-	Collector Office, Palghar
2	Mr. Vivekanand V. Kadam	District Disaster Management Officer, Collector Office, Palghar	ddmapalghar@gmil.com	02525-297474	9158760756/ 9322938937	District Disaster Control Room, Collector Office, Palghar
3	Mr.Balasaheb Patil (IPS)	SP Palghar	sp.palghar@mahapolice.gov.in	02525-251100 Fax-255100	8669604100	SP Office, Palghar
	Mr. Prakash Gaikwad	Ad. SP Palghar		02525-251100	9823943123	SP Office, Palghar
4	Mr. Bhushan Harshe	Executive Engineer, MIDC, Palghar	eethanedn1@midcindia.org	022-25822163	8422948771	MIDC Sub-Divisional Office , Takinaka, Boisar
	Mr. Mukesh Lanjivar	Dy. Engineer, MIDC,Boisar, Dist-Palghar	detarapurmaint@midcindia.org	02525-272369/02525-271069	7798322907	MIDC Colony,Wagale Industrial area, Near

						TJSB Bank, Thane(W)
5	***Mr. Nilesh Bhageshwar***	***Superintending District Agriculture Officer, Palghar***	dsaopalghar@rediffmail.com	***02525-241927***	***9405660981***	***DSAO Office ,Palghar, Tal.Dist.Palghar***
	Mr Vinayak Pawar	***Director ATMA Office Palghar***	pdatmapalghar@gmail.com		***9421379621***	***DSAO Office, Palghar, Tal.Dist.Palghar***
6	***Dr. Sanjay Shinde***	***District Animal Husbandry Officer, Palghar***	dahopalghar@gmail.com	***02525-257990***	***9404685785***	***Administrative Building B Collector Office premise Kolgaon Palghatr***
	Dr. Madhuvanti Mahajan	***Asst. Commissioner Animal Husbandry. Palghar***		***-***	***7741056593***	***Administrative Building B Collector Office premise Kolgaon Palghatr***
7	***Mr. Dinesh Patil***	***Asst. Commissioner, Fisheries, Palghar***	acfthanepalghar@yahoo.in	***02525-252215***	***9420424769/ 8605420139***	***Office of the Asst Commissioner Fisheries thanepalghar, 4, Royal Point-2, Kacheri Road, Palghar***
	Dr Sandip Patil	***Asst. Fisheries development Officer***		***02525-252215***	***9665312180***	
8	***Mr. Rajendra Jagtap***	***Divisional Controller MSRTC, Palghar***	dcpalghar@gmail.com	***02525-254942/ 02525-252027***	***8830783042***	***Gajanan Sai Apt. Phase- I, B-Wing, Room No. 2, Mahim Road, Palghar***
	Alternate Mr. Mehendra Bhisare	***Add. Divisional Control (Traffic Officers)***		***02525-252985***	***9404637363***	
9	***Mr. Dasharat***	***Dy. Regional Transport***	dyrto.48-mh@gov.in	***-***	***9130042999***	***Chandansar-Bhatpada Virar (E)***

	h Waghule	***Officer, Palghar***				
	Alternate Mr. N. N. Patil	***Asst. Regional Transport Officer, Palghar***		***-***	***8108145999***	
10	***Dr. Sanjay Bodade***	***Civil Surgeon, Palghar***	cspalghar@gmail.com	***02525-256635***	***9004421199***	***Kacheri Road Palghar Tal.& Dist.Palghar***
	Alternate Dr. Prabhakar Bhoye	***Add. Civil Surgeon, Palghar***			***9096468500***	
11	***Dr. Dayanand Suryawanshi***	***District Health Officer, Zilla Parishad, Palghar***	dhopalghar@rediffmail.com	***02525-25227***	***9004814412***	***Health Dept. ZP Palghar , Palghar,Tal & Dist - Palghar***
	Dr. Shashikant Salunkhe	***Addl. District Health Officer, Zilla Parishad, Palghar***	dhopalghar@rediffmail.com	***02525-252257***	***8308261717***	
12	***Mr. Naresh Devraj***	***Industrial Safety &Health Services***	***jddish.palghar-mh@gov.in***		***7977312780***	***06/ Ground Floor Administrative Building B, Collector Office Premise, Kolgaon***
	Alternate Mr. Amol Bait	***Dy Director DISH***			***7738111450***	
13	***Mr. Ketan Joshi***	***Divisional Engineer, BSNL, Palghar***	gmdkyn@gmail.com	***02525-253352***	***9428888880***	***Telephone Exchange building, Ambamata Road, Palghar(W)***
	Alternate Mrs. DeMello	***Sub Divisional Engineer BSNL, Palghar***		***02525 254933/25***	***7588590089***	

14	Mr. Vijay Jadhao	Deputy Controller Civil Defence, Tarapur	dccd.tarapur@gmail.com	02525-264678	81082657 67	Administrative Building A Tal & Dist-Palghar
	Alternate Mr. Anil Gavit	Asstt. Dy.Controller, Civil Defence		02525-264678	94033360 95	
15	Mr. Anjum Mulani	(I/C) Chief Fire Brigade Officer, Palghar	Palgharnagarparishad@gmail.com	02525-253101	86001743 91	Municipal Council, Palghar
16	Mr. Rahul Bhalerao	District Information Officer, Palghar	diopalghar@gmail.com	02525-255333	98692097 11	08/Ground floor, Administrative Building B Kolgaon
	Alternate Mr. Jamnik	Cleark	diopalghar@gmail.com	02525-255333	95036954 72	
17	Dr. Santosh Jadhav,	Programme executive, All India Radio, Mumbai	saozonalmumbai@gmail.com	022-22026242 /022-22029614	94208914 51	All India Radio, Mumbai-400020
	Alternate Anita Patel	Asst director of Programmes, All India Radio, Mumbai			99698507 14/ 97696459 54	All India Radio, Mumbai-400020
18	Dr. Sandip Sood,	Programme executive, Doordarshan Kendra, Mumbai	adgcrdmum@gmail.com	022-24908050 /022-24938444 / 022-24949706	98700473 73	Doordarshan Kendra, Worli, Mumbai
	Alternate Kapilkumar Dhore	Asst director of Programmes Doordarshan Kendra Mumbai			95946413 04	

19	Mr. Ashok Kumar Mishra	General Manager (W. Rly.)	gm@wr.railnet.gov.in	022-22005670	022-23525086	Western Railway, Churchgate, Mumbai-400020
	Alternate Mr. Ujjwal	Dy. General Manager	dgm@wr03@gmail.com	022-22097499		
20	Mr Bhanudas Palve (IAS)	Chief Executive Officer, Zilla Parishad, Palghar	ceozp.palghar@maharashtra.gov.in	02525-250800	7350266713	Zilla Parishad, Palghar
	Alternate Mr. Ravindra Shinde	Addl.Chief Executive Officer, ZP, Palghar		02525-250800	9833389999	
21	Mr. Popat Omase	District Supply Officer, Palghar.	dsopalghar2014@gmail.com	02525-253111	9689901395	Collector Office, Palghar
22	Mr. Surendra Navale	(IC)Sub Divisional Magistrate, Palghar	palgharsdo@gmail.com	02525-261111/02525-297272	7304697743	Office of Sub-Divisional Ofiicer Palghar, Kolgaon Dairy-I Palghar-Boisar Road, Kolgaon
	Alternate Mr. Sunil Shinde	Tahasildar, Palghar	tahpalghar@gmail.com	02525-254930	9820537823	Tahasil Office,Palghar Kacheri Road, Palghar
23	Mrs. Sanjeeta Mahapatra	SDO, Dahanu Sub Division	sdodahanu@gmail.com	02525-222231	7978504317	SDM Office,Dahanu- Bordi Road, Dahanu. Tal-Dahanu, Dist-Palghar
	Alternate Mr. Abhijit Deshmukh	Tahasildar, Ex.Magistrate, Dahanu	tahdahanu@gmail.com	02525-221182	9158588513	Tahasil Office, Dahanu, At.Dahanu Fort. Tal-

						Dahanu, Dist-Palghar
24	***Dr. Virendra Shingh***	***Regional Officer, MSPCB***	rothane@mpcb.gov.in	***022-25802272***	***9220580953***	***Wagale Estate, Thane***
	Alternate Mr. Gajanand Pawar	***Sub Regional Officer, MSPCB***		***02525-273314***	***9975978200***	***MIDC Office, Tarapur MIDC, Boisar***
25	***Mr. Jarag***	***Executive Engineer, Mahavitaran, Palghar***	epalghar@yahoo.co.in	***02525-273387***	***8830209426***	***Mahavitran switchyard, Saravali, Tal & Dist Palghar, PIN-401502***
	Alternate Mr. Ramesh Kadam	***Addl. Executive Engineer, Mahavitran, Tarapur***	epalghar@yahoo.co.in	***02525-273387***	***9623428575***	
26	***Mr. Madhumita Mina(IFS)***	***Dy. Conservator of Forest, Dahanu***	dycfdahanu@mahaforest.gov.in	***02528-222337***	***7373783473***	***At. Dahanu, Tal- Dahanu, Dist.Palghar***
27	***Mr. A.B. Deshmukh***	***Site Director***	abdeshmukh@npcil.co.in	***02525-244012***	***9427107600***	***Tarapur Atomic Power Station- 3&4***
	Alternate Mr Rajay Patil	***Scientific Officer F TMS***	rajayhpatil@gmail.com	-	***8007982792***	
28	***Mr. Sachin Patil***	***EE PWD Palghar***	ee.pwdpalghar@gmail.com	-	***8779861681***	***PWD Ex-Engr Office, Rest House, Palghar.***
	Alternate Mr Popat Chavhan	***Dy Engineer, PWD Palghar***	ee.pwdpalghar@gmail.com	-	***9833537354***	

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Emergency Contact Numbers

Sr. No	Name	E-mail ID	Telephone Numbers Office
1	***Ministry of Home Affairs (MHA) New Delhi***	iocdm.mha@nic.in	***011-23093563/6/6/71***
2	***National Disaster Management Authority (NDMA) New Delhi***	controlroom@ndma.gov.in	***011-26701728***
3	***National Emergency Response Centre (NERC) New Delhi***	dresponse-nerc@gov.in	***011-23438252/3/4***
4	***State Disaster Management Authority (SDMA)***	director.dm@maharashtra.gov.in	***022-22023039***
5	***National Disaster Response Force (NDRF) Pune***	5bnndrf@gmail.com	***02114-247000/9422315628***
6	***National Disaster Response Force (NDRF) Andheri Kalina***		***9422317684 / 7003900578***

7	***Shri. A. B. Deshmukh, Site Director, TMS***	***akrajput@npcil.co.insdtms@npcil.co.in***	***02525-244085/ 02525-263028***
8	***OFESC located at TAPS-1&2 colony***	-	***02525-264280/ FAX 02525-264030***
9	***SECC at TMS***	-	***BSNL 02525-244033 / FAX 02525-244300***
10	***State Disaster Response Force (SDRF)Dhule***	Sdrf.dhule@gmail.com	***02562-279434/5, 9607081077***
11	***Western Railways***	ctnlchg@gmail.com	***022-23094064 /23070564***

Sub Divisional Officer's

SR. No.	Name	Designation	Contact Number
1	Surendra Navale	Sub Divisional Officer Palghar	7304697743
2	Shekhar Ghadge	Sub Divisional Officer Vasai	8879686222
3	Sajeeta Mahapatra	Sub Divisional Officer Dahanu	7978504317
4	Ayushi Shing	Sub Divisional Officer Jawhar	9140548067
5	Bhavanji Age-Patil	Sub Divisional Officer Wada	9503437263

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Tahsildar's

SR. No.	Name	Designation	Contact Number
1	Sunil Shinde	Tahsildar Palghar	9820537823
2	Avinash Koshti	Tahsildar Vasai	9867646764
3	Mayur Khengale	Tahsildar Mokhada	9623508145
4	Andhare	Tahsildar Wada	9168067777
5	Shridhar Galipelli	Tahsildar Talasari	9689681000
6	Charushila Pawar	Tahsildar Vikramgad	9765108056
7	Asha Tamkhede	Tahsildar Jawhar	9768720750
8	Abhijit Deshmukh	Tahsildar Dahanu	9158588513

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District Disaster Management Authority, Palghar (Maharashtra)