



सत्यमेव जयते

GOVT OF MAHARASHTRA

WORKING PLAN

FOR

**AKOLA FOREST DIVISION
YAVATMAL FOREST CIRCLE**

FOR THE PERIOD 2009-10 TO 2018-19

VOLUME - I

BY

**G.RAMA KRISHNA RAO, I.F.S.
CONSERVATOR OF FORESTS
WORKING PLAN, YAVATMAL**



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**PRELIMINARY
WORKING PLAN**

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INTRODUCTION

This working plan encompasses the entire forest division of Akola including Reserved Forests, Protected Forests, Acquired Land and Unclassed Forests, i.e. Compensatory Afforestation lands and 'E' class forests. The 'E' class forests which were not taken into management in the previous plans are included in the present plan.

The Akola Forest Division was formed out in the year 1964, after bifurcation of West Berar Forest Division into Akola and Buldhana Forest Divisions. The previous Working Plan written by Shri. B.S.Thengdi for a period of 15 years and came in force since 1994-95. The first Preliminary Working Plan Report was presented by Shri.Shailendra Bahadur I.F.S. in State level Working Plan Committee meeting held on 13th March 2007 and approved by the Committee. The second Preliminary Working Plan Report presented by Shri.G.R.K.Rao I.F.S. in the State Level Working Plan Committee meeting on 27th March 2008 at "Van Bhavan" Nagpur. The Committee approved the second Preliminary Working Plan Report for Akola Forest Division. On the basis of the approved Preliminary Working Plan Report, the current Draft Plan has been prepared.

The forest wealth is a natural resource, which requires long gestation period to yield the results. Therefore, there is a need for continuity and consistency in the management of the forests. Working Plan is a scientific document, which aims at consistent management and enforcing the systematic and mandatory regulations for continuous working of the forests. In the early period of Working Plans, the prescriptions oriented towards regulating the harvesting of timber on sustained yield and economic basis. In the subsequent plans the thrust was given on protection of forests, regeneration, needs of people and meeting their demands, cattle grazing regulation and wild life management. In recent times with formulation of 1988 Forest Policy the emphasis has been on people's participation (Joint Forest Management), in all stages of forest management including water-shed management, Bio-diversity conservation and sharing of harvested forest produces. Emphasis is also given on the management of Non-Wood Forest Produce and providing maximum benefits to the large number of

people for all times. In general, the objects of forest management are governed by the National Forest Policies, nature of forests, the local conditions and needs of the people.

The forests of Akola Division extended over Akola and Washim districts comprise mostly poor quality of coppice teak forest with stunted and malformed growth. Majority of forest areas are open, degraded, some times blank and having density less than 0.1 in blank areas, 0.1 to 0.4 in open areas, 0.4 to 0.6 in some better patches of forest and above 0.6 limited to a few patches of forests. The crown density of 0.4 to 0.6 and above are mostly situated in Alegaon, Patur and Manora Ranges. The 'C' class Reserve Forest are mostly open and are subjected to heavy biotic pressure. Babul forest are situated in scattered patches in the midst of agriculture fields or adjoining to the villages which are also subjected to heavy biotic pressure and these forests have been managed under separate Working Circle for the last 100 years. In general the site quality is IV B with a few patches of IV A in remote areas of forest. As these forests are subjected to heavy biotic pressure, frequent fires and harsh climatic conditions, the status of natural regeneration is poor and whatever natural regeneration is coming up most of the seedlings failed to establish due to poor edaphic conditions coupled with factors mentioned above.

The forests of Akola Division were managed as a part of Berar and the main objects of management were, to restore forests by giving them rest and protecting against fire and grazing during the period 1853 to 1912. In 1898 simple provisional Working Schemes for a period of 5,10 and 15 years, were introduced to manage these forests on a systematic and silvicultural principles. 15 Felling Series were formed with "Coppice with Standard" treatment and Babul bans were treated under Agri-Silvi method. A regular Working Plan was introduced in 1912-13 by Shri. Hunt and these forests were managed under this Plan upto 1942. "Coppice with Standard" and Improvement felling systems were adopted for all the forest except Babul forests where in Agri-Silvi plantation method was adopted. Cornclius Plan came into existence in 1943 and continued upto 1952 with systems of "Coppice with Reserves" having 40 years rotation for majority of forests. Argi-Silvi plantation method was followed for Babul bans. S.S.Parasin's Plan was introduced in 1965 and managed till 1980 and

extended upto 1988 in which Coppice with Reserves, for all Miscellaneous forests. Agri-Silvi method for Babul and Fodder improvement for Ramanas were prescribed. In Thengdi's Plan emphasis was given on Conversion of Coppice Forests into High Forests and improvement of degraded and open areas through afforestation.

Growing stock enumeration was carried out by the SOFR unit of Amravati in 2007. The enumeration data supplied to this office by the SOFR unit Amravati and analyzed with the help of the computerized inventory management system evolved by Shri.Dhabekar, ACF in the GIS cell of this office. The enumeration data was sent to Chief Statistician, Office of the Principal Chief Conservator of Forests, M.S. Nagpur. The results of enumeration data provided by Chief Statistician compared with the enumeration data of 1993 and it is revealed that there is overall degradation in growing stock of the division especially in Teak. For the first time these forests were stockmapped by Cornelius in 1942-43 and these stock maps have been updated during the revision of Working Plans. In the present plan the stock maps have been updated with appropriate ground truth verification and assessed with the help of classified vegetation maps and the density maps provided by the RRSSC, Nagpur after analyzing satellite image of P-6 LISS-III (November 2007) data for Akola Forest Division. The inventory management system has been hyperlinked to the digitized maps for easy accessibility of the data. To carry out GIS the RRSSC Nagpur was given to prepare project using GIS application for preparing various feature classes to have different data useful in forest arrangement. The RRSSC Nagpur procured satellite image of P-6 LISS III (November 2007) and analysed. Geo reference village maps showing detailed survey numbers and village boundaries and soil maps were procured from the MRSAC and supplied to RRSSC and these Geo referenced maps have been incorporated in GIS. By using above mentioned maps slope maps were generated and have been incorporated in the GIS as a separate feature class which can be used extensively in preparation of the treatment maps of the coupes. This system facilitates that the entire coupe treatment map can be obtained from the GIS which will be verified on the ground. Whereas feature classes obtained by using GIS, are soil texture, soil depth, soil erosion, ground water potential, site suitability for various applications, forest density, watersheds, etc.

The present Plan aims at achieving objects of National Forest Policy 1988. These aims and objectives are **1.** maintenance of environmental stability through protection of existing forests, **2.** biodiversity conservation, **3.** checking soil erosion and denudation in catchment areas. **4.** improvement in forest cover through plantations in understocked and unproductive areas, **5.** meeting the local demands for fuel wood, small timber and non wood forest produces, **6.** efficient utilization of forest produces, **7.** involvement of local people especially women folk in management of forest at all levels. The present plan deals with an area of 81009.61 ha. The main system adopted to manage the forests is SCI which covers 30779.54 ha constituting 37.99%. The second major system prescribed is Afforestation Working Circle of degraded forest covering an areas of 27067.06 ha constituting 33.41%. The other Working Circles proposed are Catchment Area Treatment Working Circle which includes an area of 9254.49ha, Fodder Improvement Working Circle (10039.37 ha), Babulban Working Circle (1962.59 ha). Additionally, Non Wood Forest Produce (Overlapping) Working Circle covering entire area of the division is proposed.

As per the provisions of National Working Plan Code 2004, the working circles of Joint Forest Management (Overlapping) working circle, Wild Life Conservation (Overlapping) working circle, Forest Protection (Overlapping) working circle and Non Wood Forest Produce (Overlapping) working circle are mandatory, all except Non Wood Forest Produce (Overlapping) working circle have been incorporated as separate chapters in this plan as per the suggestions of Dr. B.N.Mohanty, CCF (Central), Bhopal in the State Level Working Plan meeting on 27th March 2008.

I am extremely grateful to Shri.B.Majumdar, IFS Pricipal Chief Conservator of Forests, M.S.Nagpur & Shri. Jwala Prasad, I.F.S., Ex-Principal Chief Conservator of Forests, M.S. Nagpur for providing valuable suggestions. I am specially thankful to Shri. A.K.Joshi, I.F.S. Addl. Principal Chief Conservator of Forests (Production and Management), M.S., Nagpur for providing valuable guidance and suggestions from time to time. I express my deep sense of gratitude to Shri. Krishna Mohan I.F.S., Chief Conservator of Forests, Working Plans, Nagpur for providing able and valuable guidance along with necessary encouragement in preparing this Plan in its present

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The efforts of all the staff members made to the best of their abilities in the office of the Conservator of Forests, Working Plan, Yavatmal must be appreciated and my sincere thanks are due to all of them also. I wish to put their names on record as below.

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Place : Yavatmal
Dated : 15th January 2009



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AKOLA FOREST DIVISION

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ABBREVIATIONS USED

ACF	:	Assistant Conservator of Forests
AR	:	Artificial Regeneration
Av	:	Average
b.h.	:	Breast height
CA.	:	Compensatory Afforestation
C.A.I	:	Current Annual Increment
C.B.O	:	Cut Back Operation
°C	:	Degree Celsius
cm	:	Centimeter
C.W.R.	:	Coppice With Reserved
C.C.T.	:	Continuous Contour Trench
cum	:	Cubic Meter
Compt.	:	Compartment
CCF	:	Chief Conservator of Forests
CF	:	Conservator of Forests
D.C.F.	:	Deputy Conservator of Forests
Dt.	:	Date
FCA,1980	:	Forest Conservation Act, 1980
F.D.C.M.	:	Forest Development Corporation of Maharashtra
F.L.C.S.	:	Forest Labourer's Co-operative Society
F.S.	:	Felling Series
F.R.H.	:	Forest Rest House
F.Y.O.	:	First Year Operation
GDP	:	Gross Domestic Product
Govt.	:	Government
g.b.h.	:	Girth at breast height
ha	:	Hectare
hrs	:	Hours
i.e.	:	That is
Km.	:	Kilometer
Kg	:	Kilogram
m	:	Meter
MD	:	Man Day
mm	:	Millimeter
Max	:	Maximum
Min	:	Minimum
M.A.I.	:	Mean Annual Increment
M.F.P.	:	Minor Forest Produce
MRSAC	:	Maharashtra Remote Sensing Application Centre
M.S.L.	:	Mean Sea Level
M.T.	:	Metric Tonne
N.A.	:	Not Available
NFAP	:	National Forestry Action Programme
N.T.F.P.	:	Non Timber Forest Produce

N.R.	:	Natural Regeneration
No.	:	Number
NWAP	:	National Wildlife Action Plan
NWFP	:	Non Wood Forest Produce
PB	:	Periodic Block
P.F.	:	Protected Forest
P.P.O.	:	Pre Planting Operation
%	:	Percentage
R.F.	:	Reserved Forest
R.F.O.	:	Range Forest Officer
Rs	:	Rupees
Sq	:	Square
Sr	:	Serial
S.C.I.	:	Selection Cum Improvement
S.Y.O.	:	Second Year Operation
Temp	:	Temperature
T.Y.O.	:	Third Year Operation
W.C.	:	Working Circle
IV th Y.O.	:	Fourth Year Operation

GLOSSARY OF LOCAL NAMES

Bandh gad	:	Earthen mound
Chunkad	:	Soil with nodular pieces of limestone
Geru	:	Red Ochre or Red earth
Gairan	:	A place for herding cattle
Gaothan	:	A site kept reserved for housing
Gully	:	Channel
Jawari	:	A cultivated millet
Jewan	:	Lunch / Dinner
Jungle	:	Forest
Kacha road	:	Temporary road
Kania	:	Coarse ground grains
Kankar	:	Lime nodules
Kartik	:	October
Kharif	:	Monsoon crop
Mandav	:	A shade
Murram	:	A reddish hard soil
Naka	:	Barrier on road for checking forest produce in transit
Nala	:	A water course
Nadi	:	River
Niahali	:	Morning meal
Nistar	:	Forest produce required for bonafide agriculture or domestic purposes
Padit	:	A barren or waste land
Pansthal	:	Waterhole
Parwana	:	License
Pit	:	Jawari flour
Rabi	:	Winter crop
Ramna/Kuran	:	A grass reserved close to grazing
Regur	:	Black cotton soil
Sarbandh	:	Lines between survey number
Shikar	:	Hunting
Siw	:	Village boundary
Taluka /Tahsil	:	A revenue administrative block.
Tambodi	:	Red coloured
Utarwat	:	Sloping surface
Vilayat	:	Evotic
Walsar	:	Soil with excess of sand

**LOCAL AND BOTANICAL NAMES OF PLANTS OCCURRING IN
AKOLA FOREST DIVISION.**

TREES

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Achar	<i>Buchanania lanzan</i>	Anacardiaceae
Ain	<i>Terminalia alata</i>	Combretaceae
Ali/Aal/Bartondi	<i>Morinda tinctoria</i>	Rubiaceae
Amaltas/Bahawa	<i>Cassia fistula</i>	Caesalpiniaceae
Amta	<i>Bauhinia malabarica</i>	Caesalpiniaceae
Apta/Kachnar	<i>Bauhinia racemosa</i>	Caesalpiniaceae
Anoxia/Aonla	<i>Phyllanthus emblica</i>	Euphorbiaceae
Arjuna/Kahu	<i>Terminalia arjuna</i>	Combretaceae
Babul/Babool	<i>Acacia nilotica</i>	Mimoseae
Bakain / Baka neem	<i>Melia azedarach</i>	Meliaceae
Beheda	<i>Terminalia bellerica</i>	Combretaceae
Bel	<i>Aegle marmelos</i>	Rutaceae
Bhirra	<i>Chloroxylon swietenia</i>	Rutaceae
Biba/Bhilawa	<i>Semecarpus anacardium</i>	Anacardiaceae
Bija	<i>Pterocarpus marsupium</i>	Fabaceae
Bistendu	<i>Diospyros montana</i>	Ebenaceae
Bor/Ber	<i>Zizyphus mauritiana</i>	Rhamnaceae
Chandan	<i>Santalum album</i>	Santalaceae
Chichwa	<i>Albizia odoratissima</i>	Mimoseae
Chinch	<i>Tamarindus indica</i>	Caesalpiniaceae
Dahibaras	<i>Cordia macleodii</i>	Boraginaceae
Dhaman	<i>Grewia tilifolia</i>	Tiliaceae
Dhaora/Dahwada	<i>Anogeissus latifolia</i>	Combretaceae
Dhoban/Phansi	<i>Dalbergia paniculata</i>	Fabaceae
Ghoti/Ghot	<i>Zizyphus glaberrima</i>	Rhamnaceae
Haldu	<i>Adina cordifolia</i>	Rubiaceae
Hiwar	<i>Acacia leucophloea</i>	Mimoseae
Hirda/Harra	<i>Terminalia chebula</i>	Combretaceae
Jambhul/Jamun	<i>Syzygium cuminii</i>	Myrtaceae
Karam.Mundi	<i>Mitragyna parviflora</i>	Rubiaceae
Karanj	<i>Pongamia pinnata</i>	Fabaceae
Karu(Cassia)	<i>Cassia siamea</i>	Caesalpiniaceae
Khair	<i>Acacia catechu</i>	Mimoseae
Kusum	<i>Schleichera oleosa</i>	Sapindaceae
Kawat	<i>Limonia acidissima</i>	Rutaceae
Kulu	<i>Sterculia urens</i>	Sterculiaceae
Lendia/Lenda/schena/Asah	<i>Lagerstroemia parviflora</i>	Lythraceae
Lokhandi	<i>Ixora arborea</i>	Rubiaceae
Medsing	<i>Dolichandrone falcata</i>	Bignoniaceae
Moha/Mahuwa	<i>Madhuca longifolia</i>	Sapotaceae
Mokha	<i>Schrebera swietenoides</i>	Oleaceae
Moyen/Mowai	<i>Lannea coromandelica</i>	Anacardiaceae
Neem	<i>Azadirachta indica</i>	Meliaceae
Pipal	<i>Ficus religiosa</i>	Moraceae

Rohan	<i>Soymida febrifuga</i>	Meliaceae
Sag/Sagwan/Teak	<i>Tectona grandis</i>	Verbenaceae
Saja/Ain	<i>Terminalia alata</i>	Combretaceae
Salai	<i>Boswellia serrata</i>	Burseraceae
Semal(Borgu)	<i>Bombax ceiba</i>	Bombacaceae
Shiwan/Siwan	<i>Gmelina arborea</i>	Verbenaceae
Sirus(Black)	<i>Albizia lebbek</i>	Mimoseae
Sirus(White)	<i>Albizia procera</i>	Mimoseae
Sissoo	<i>Dalbergia sissoo</i>	Fabaceae
Sitaphal	<i>Annona squamosa</i>	Annonaceae
Tendu	<i>Diospyros melanoxylon</i>	Ebenaceae
Tiwas/Tinsa	<i>Ougeinia oojeinensis</i>	Fabaceae

SHRUBS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Bharati	<i>Gymnosporia spinosa</i>	Celasteraceae
Chillari	<i>Mimosa rubicaulis</i>	Mimoseae
Chillati	<i>Caesalpinia sepiaria</i>	Caesalpiaceae
Dudhi/Kalakuda	<i>Wrightia tinctoria</i>	Apocynaceae
Dhayati	<i>Woodfordia floribunda</i>	Lythraceae
Kari Korando	<i>Carissa spinarium</i>	Apocynaceae
Karat	<i>Barleria prionitis</i>	Acanthaceae
Kuda, Indrajav	<i>Holarrhena antidysenterica</i>	Apocynaceae
Muradsheng/Marorphal	<i>Helicteres isora</i>	Sterculiaceae
Nirgudi	<i>Vitex negundo</i>	Verbenaceae
Sindhi/Chhindi	<i>Phoenix sylvestris</i>	Arecaceae(Palmaceae)
Tarwar	<i>Cassia auriculata</i>	Caesalpiaceae
Waghoti	<i>Capparis horrida</i>	Capparidaceae
Zingrool/Pharsa	<i>Grewia orbiculata</i>	Tiliaceae

HERBS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Divali	<i>Tephrosia hamiltonii</i>	Fabaceae
Gajargawat	<i>Parthenium hysterophoru</i>	Asteraceae
Gokhru	<i>Tribulus terrestris</i>	Zygophyllaceae
Hamata	<i>Stylosanthes hamata</i>	Caesalpiaceae
Pivla Dhotra	<i>Argemone mexicana</i>	Papaveraceae
Pivili tilwan	<i>Cleome viscosa</i>	Cleomaceae
Rantulsi/Bantulsi	<i>Hyptis suaveolens</i>	Lamiaceae
Rantur	<i>Atylosia scarabaeoides</i>	Fabaceae
Scabra	<i>Stylosanthes scabra</i>	Caesalpiaceae
Tarota	<i>Cassia tora</i>	Caesalpiaceae

D. GRASSES AND BAMBOOS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Bans/Bamboo	<i>Dendrocalamus strictus</i>	Poaceae(Gramineae)
Bhurbhusi	<i>Eragrostis tenella</i>	Poaceae
Duswa/Haryalli/Doob	<i>Cynodon dactylon</i>	Poaceae
Dongri gavat	<i>Chrysopogon montana</i>	Poaceae
Guhar, marwel	<i>Andropogon annulatus</i>	Poaceae
Kans	<i>Saccharum spontaneum</i>	Poaceae
Khas	<i>Vetiveria zizanioides</i>	Poaceae
Kodmor	<i>Apluda varia</i>	Poaceae
Kunda	<i>Ischaemum pilosum</i>	Poaceae
Kusal	<i>Heteropogon contortus</i>	Poaceae
Mushan	<i>Iseilema laxum</i>	Poaceae
Paonia	<i>Sehima sulcatum</i>	Poaceae
Sabai or sum	<i>Ischaemum angustifolium</i>	Poaceae
Sheda	<i>Schima nervosum</i>	Poaceae
Tikhadi/Rusa/Rosha	<i>Cymbopogon martini</i>	Poaceae

E. CLIMBERS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Bhuikand/Baichend	<i>Dioscorea daemonia</i>	Dioscoreaceae
Chilati	<i>Acacia pennata</i>	Mimoseae
Eruni	<i>Zizyphus oenoplia</i>	Rhamnaceae
Gunchi/Gunj	<i>Abrus precatorius</i>	Papilionaceae
Khajkuri	<i>Mucuna pruriens</i>	Fabaceae
Mahulbel/Mahul	<i>Bauhinia vahlli</i>	Caesalpiniaceae
Palasvel	<i>Butea superba</i>	Fabaceae
Piwarvel	<i>Combretum ovalifolium</i>	Combretaceae
Shatova/Satawari	<i>Asparagus racemosus</i>	Liliaceae
Kawavel,Dudhi(Nagvel)	<i>Cryptolepis buchanani</i>	Asclepiadaceae

COMMON AND ZOOLOGICAL NAMES OF WILD ANIMALS AND BIRDS

A. CHECK LIST OF WILD ANIMALS

<u>Common Name</u>	<u>Scientific Name</u>
Panther/Bibta (M) / Tendua(H)	<i>Panthera pardus</i>
Striped Hyena/ Taras (M) / Lakkadbagha(H)	<i>Hyaena hyaena</i>
Jackal	<i>Canis aureus</i>
Indian Fox	<i>Vulpes bengalensis</i>
Jungle cat	<i>Felis chaus</i>
Black buck	<i>Antelope cervicapra</i>
Cheetal	<i>Axis axis</i>
Nilgai	<i>Boselaphus tragocamelus</i>
Wild boar	<i>Sus scrofa</i>
Sloth bear	<i>Melursus ursinus</i>
Common langur	<i>Presbytis entellus</i>
Porcupine	<i>Hystrix indica</i>
Hare	<i>Lepus nigricollis</i>

B. CHECK LIST OF WILD BIRDS

<u>Common Name</u>	<u>Scientific Name</u>
Pond Heron or Paddy bird	<i>Ardeola grayii</i>
Cattle Egret	<i>Bubulcus ibis</i>
White Breasted Waterhen	<i>Amaurornis phoenicurus</i>
Grey Partridge	<i>Francolinus pondicerianus</i>
Jungle Bush Quail	<i>Perdica asiatica</i>
Yellow Wattled Lapwing	<i>Vanellus malabaricus</i>
Rose Ringed Parakeet	<i>Psittacula krameri</i>
Blosson Headed Parakeet	<i>Psittacula cyanocephala</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>
Koel	<i>Eudynamis scolopacea</i>
Crow Pheasant (Coucal)	<i>Centropus sinensis</i>
Spotted owlet	<i>Athene brama</i>
Common Indian Night Jar	<i>Caprimulgus asiaticus</i>
White Breasted Kingfisher	<i>Halcyon smyrnensis</i>
Common Kingfisher	<i>Alcedo atthis</i>
Green Bee Eater	<i>Merops orientalis</i>
Hoopoe	<i>Upupa epops</i>
Indian Roller	<i>Coracias bengalensis</i>
Golden Backed Wood Pecker	<i>Dinopium benghalense</i>
Rufous Backed Shrike	<i>Lanius schack</i>

Golden Oriole
Black Drongo
Brahminy Myna
Common Myna
House Crow
Jungle Crow
Small Minivet
Common Iora
Red Vented Bulbul
Common Babbler
White throated fantail
Paradise Flycatcher
Magpie Robin
Indian Robin
Gray Wagtail
Pied or White Wagtail
Grey Tit
Purple Sunbird
House Sparrow

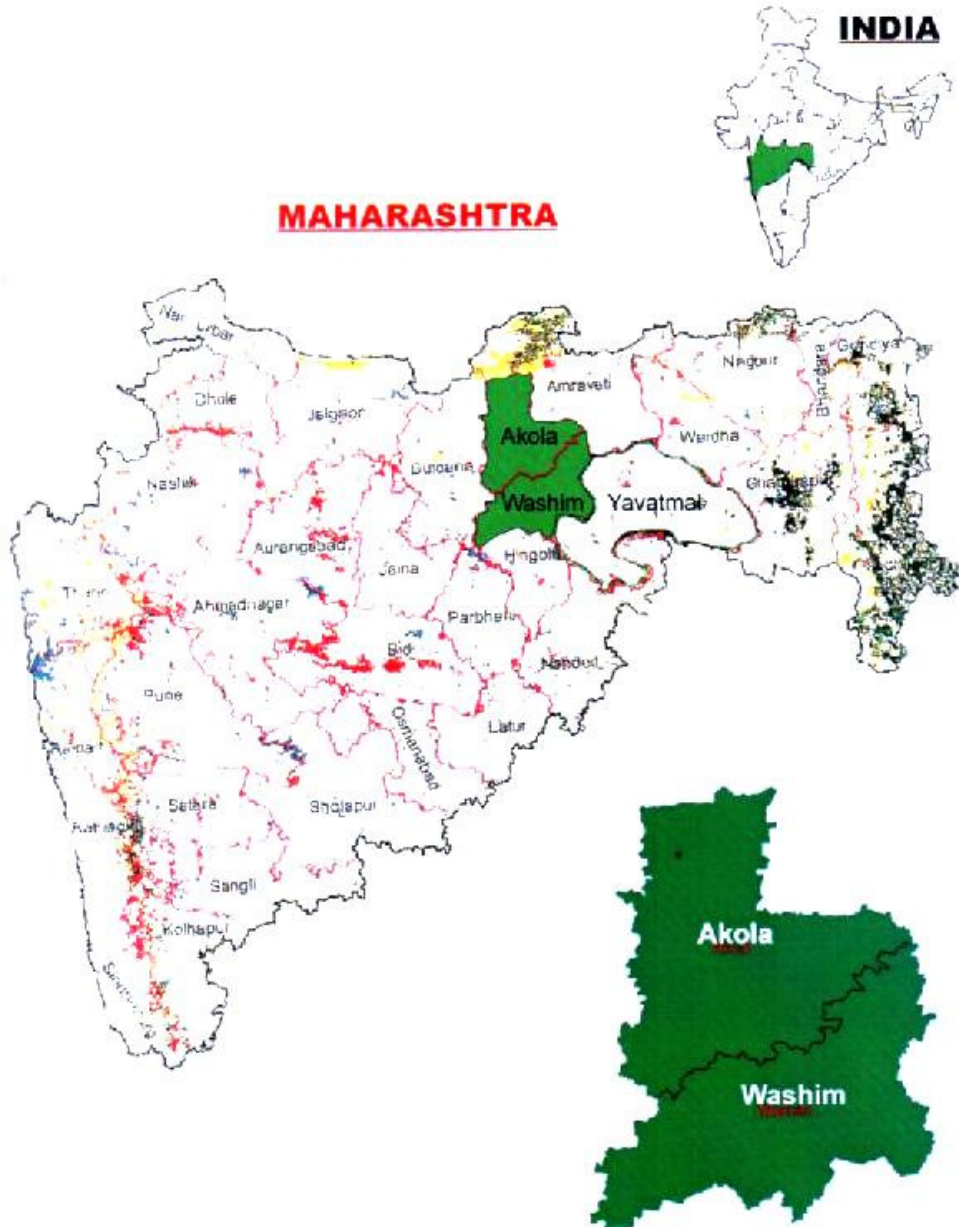
Oriolus riolus
Dicrurus adsimilis
Sturnus pagodarum
Acridotheres tristis
Corvus splendens
Corvus macorthynchos
Pericrocotus cinnamomeus
Aegithina tiphia
Pycnonquus cafer
Turdoides caudatus
Rhipidura albicollis
Terpsiphone paradisi
Copsychus saularis
Saxicoloides fulicata
Motacilla cinerea
Motacilla alba
Parus mauor
Nectarinia asiatica
Passer domesticu



Part - I

**SUMMARY OF FACTS
ON WHICH PROPOSALS
ARE BASED**

Location of Akola Forest Division



Source :-
Geomatics Centre
Conservator of Forests (Working Plan), Yavatmal

Akola Forest Division

CHAPTER – I

THE TRACT DEALT WITH

SECTION I.1: NAME AND SITUATION:

I.1.1. The forest area dealt within this Working Plan consists of all Reserved Forests, Protected Forests and Unclassed Forests of Akola Forest Division at Akola extending over Akola, Alegaon, Patur, Washim, Karanja, Manora, Barsitakli and Malegaon forest ranges. The entire forest area of Akola Forest Division fall within the limits of Akola and Washim civil districts and the boundaries of the division are co-terminus with Akola and Washim civil districts boundaries. The Akola civil district is having 7 talukas and Washim civil district comprises 6 talukas and total talukas in Akola Forest Division are 13. This plan replaces the Working Plan of Shri. B.S.Thengdi's, which has been in force from 1994-95 to 2008-09, duly approved by the Government of Maharashtra, vide letter No./BGT/1095/CR-63/F-2/dated. The new plan will be for a period of ten years as stipulated by Government of Maharashtra in their reference. The entire forest area dealt under this plan is 810.0961 Sq. Km. out of this 740.2225 Sq. Km. is Reserved Forest, 12.3560 Sq. Km. is Protected Forests and 0.5947 Sq. Km is Acquired Forests and 56.9229 Sq. Km. Unclassed Forests.

I.1.2. The area of Akola Forest Division is situated between the plains of the Penganga and the Purna rivers. The forest areas of Katepurna Sanctuary and Narnala Sanctuary, which were included in Thengdi's Plan, have been completely transferred to the Wildlife wing. These two sanctuaries (Narnala Bird Sanctuary and Katepurna Wildlife Sanctuary) have been created in the year 1980 and 1997, respectively. At present the management of the Katepurna Wildlife Sanctuary is with Deputy Conservator of Forests, WildLife, Akola, whereas Narnala Bird Sanctuary is with Deputy Conservator of Forests, WildLife, Akot. For management of these sanctuaries, separate wildlife management plans have been under implementation. It is therefore, the forest areas of Katepurna and Narnala Sanctuaries are not included in this plan. The total geographical area of Akola Division is 10574 Sq. Km. Whereas the forest area can

be computed to 810.0961 Sq. Km. which constitute 7.66% of the geographical area of the division as against the states score of 20.7%.

I.1.3. The forest tract dealt within this Working Plan is situated both in compact blocks as well as in scattered patches. In Aalegaon, Patur the forest areas are situated in compact blocks, whereas in the ranges of Akola, Washim Barshitakli, Manora, Malegaon and Karanja, the forest areas are distributed mostly in scattered patches. The entire forest area dealt with under this Plan lies between the meridians of longitude 76⁰-7''E to 77⁰-44' E and parallels latitude 19⁰-51'' N to 21⁰-17'' N.

I.1.4. BOUNDARIES :- The boundary of the division in the North coincides with Amaravati district boundary and Gawilgad hill ranges in the South coincides with Hingoli and Parbhani district boundaries and in the East, Yavatmal and Amaravati districts boundaries and in the West the boundary of division coincides with Buldhana district boundary. The boundaries of the tract dealt with are :-

North	:	Amravati district and Gawilgad hill ranges
South	:	Hingoli and Parbhani district
East	:	Yavatmal and Amravati district.
West	:	Buldhana district.

Starting from the tri-junction of Buldhana, Amaravati, Akola district the boundary runs Eastward along the foot hills of the Satpuda scarp at an elevation of 400 meters, till reaching the triple hill forts of Narnala, Jafarabad and Teliaghat situated with a fascinating scenic beauty at a height of 1000 meters over a flat plateau over looking Payanghat plains. The boundary then runs downstream the banks of the Pathar river which crosses near the village Popatkhedha continuing to skirt the Satpuda scarp keeping all foot-hill villages within the districts. The boundary turns South just near the village Khirkund (budruk) to follow the Adan nadi initially. Later on its main stream, the Bodli river through a flat featureless country meeting the river Purna near the big

market village of Dahihanda. There after the boundary runs along the river Purna upstream Eastward keeping the left bank villages within the districts till it reaches the confluence of river Pedhi on its left bank near the village Kolsara of Murtizapur tehsil. There after the boundary runs across the country for short distance towards East and then turns South and SouthEast crossing Pedhi river near the village Kurhad and Bombay – Nagpur railway line near Kurum railway station at the mile-stone 615 Km. the boundary then turns towards South keeping the Amaravati and Chandur tehsils of Amaravati district and Ner tehsil of Yavatmal district towards East. Here after the boundary runs through a gently sloping featureless terrain and slowly ascends the slopes of Buldhana plateau and having gained the top level of plateau continuing to run in the same trend till reaching the village of Amkinhi of Mangrulpir tehsil and fort of Shendona nearby. There after the boundary runs towards West along the crestline of hill ridge having at an average elevation of 500 meter for distance around 20 Km. and turns towards South following the edge of a plateau. The boundary of the division descends down to the Penganga valley and run towards West keeping the Hingoli and Parbhani district to its South. There after the boundary follows the river to a considerable distance and deviate from it with near Warud Topha village. It runs in a passion of West-South Westwards till reaching the village Mohojabandi at extreme South West corner of Risod tehsil and keeping Buldhana district to its West. The boundary crosses the Penganga once again and descends down to the Northern slope of Buldhana plateau in the Ghatbori Reserved Forest area and skirts its edge in the North till reaching the Morna river near Lakhanwada Eastwards and following it after down Eastwards till it meets with the Mun river. Thereafter the boundary runs North approximately parallel to the course of Mun river around 25 kilometer and finally joining it near the village Manarkhed and run towards down stream till it meets just with the Purna river. There after, the boundary runs upstream along with Purna river and turns North near the village Wangargaon through a rolling country till reaching the banks of the Wan river just South of Danapur and then it follows the river till the tri-junction at the foot hills of Melghat.

SECTION I.2: CONFIGURATION OF THE GROUND:-

I.2.1. The chief hills of the division are the parts of Ajanta system towards South and Satpudas in the North. The Balaghat plateau situated on the Ajanta hills covers the Southern half of this Division. The surface is undulating with hills and plains having gentle slope towards South. The tract of Akola Forest Division is mostly occupied by the plains of the Purna and Penganga rivers which is known as Payan-ghat plain extend North of Balaghat plateau which covering greater part of Northern half of the Division. The altitude in this division varies from 396.34 meter to 548.78 meter above Mean Sea Level (MSL). The highest point in the division is Narnala forest situated at 930 meters above Mean Sea Level in compartment no. 165. The plateau is characterized by slopes of ridges and intervening with valleys, which are occupied by the main blocks of the forests. As the tract is quite monotonous and its undulations just enough to maintain natural system of drainage.

I.2.2 RELIEF FEATURES :- In this feature the district topographical arrangement can be compared to Buldhana district. The “ relief ” falls into three physical units; a narrow Northern in the Akot tehsil, in the Satpuda foot hills, the distinct Purna plain or Payanghat in the middle, occupying approximately half of the divisional area in the tehsils of Akot, Balapur, Murtizapur and the Balaghat on the top of Ajanta range comprising Washim and Manglurpir tehsils to the South. The landscape of the tract is characterized by hilly and the plains are with forested ghat having a bad land topography joining the Mun river.

I.2.3 HILLS :- Most of the area of the division is occupied by Payanghat plain except Northern extreme part of the division in the foot hills of Satpuda and ghat country through which the land rises from the Purna plain through Balaghat plateau. It isolated broken hill terrain in the extreme South-East, in Mangrulpur tehsil is only of relatively higher elevation.

I.2.4 AJANTA RANGE :- Ajanta range carrying on its platform the Buldhana plateau (Balaghat plateau) In Washim and Mangrulpur tehsils has steep rims facing North and descending to the Purna plains. This hilly ghat is extremely uneven and rough with a ridge of hill masses covered by forests. The average elevation is about 400 meters in this

hilly ghat country. It has a curving trend from West to East. It is highly dissected, carrying every where undissected section of plateaus, forming isolated stretches of Mesa separated by deep river valleys in which the rivers have serpentine courses. This scarp edge comparatively more defined in the Southern part of Balapur and Akola tehsils. Another area of hill terrain comprises in the Southern part of Mangrulpir tehsil especially along the boundaries of Yavatmal districts. The hill masses raising to an elevation of 500 to 600 meters is less dissected in the Northern scarp throughout at a comparatively lower elevation. These slopes at many places is cut into by the tributaries of the Penganga forming deep and entrenched valleys that constitutes main lines of the access and habitation development.

I.2.5 MELGHAT :- Towards North of Payanghat, an elevated natural feature situated in the ranges of Satpuda hills, which is popularly known as Melghat. Only small part of these hills falls in the Akola Forest Division of which the forest have been dealt in this Plan. The slopes of these hill ranges generally steep and precipitous. The average elevation of these hill ranges is 701 meters, whereas the maximum elevation is 928.65 meters above mean sea level. These hill ranges form a linear strip average width of 2 to 5 Kilometer. The only true section of higher elevation in this area which are found within the Division are where the boundaries completely dips North over a distance of 5 kilometer boundary included high level mesa with its over hanging cliff slopes facing South. This situation is noticed at an elevation of 940 meters i.e. Naranala fort having no habitation on its top overlooking Payanghat plain. The ascent through this fort from the plains below is through a spur of hills and ridges to a flat structural level. This foot hill ridge is characterized by hill terrains and gullies that have developed extensive debris slopes at many places.

I.2.6 PLATEAUS : - The Washim and Mangrulpir plateau are in the Balaghat having an elevation about 400 to 500 meters which is gently sloping towards East. This plateau is characterized by a number of residual hills, knolls dotting the plains of terrain. It is along the rim of the plateau that the terrain is much more rugged and even developing a ghat aspect. The areas around washim are much more plain when compared to area of Manglurpir. The plateau is drained Eastwards mainly and to a lesser extent to the North due to the recession of scarp on Northern ridges.

I.2.7 PLAINS :- The plains of Payanghat of Purna valley extended in the middle and Northern part of the Division with an average elevation of 260 to 300 meter gently sloping towards West. The plain extend over 50 Km. wide and bounded in the North by scarp of Melghat in the South Ajanta scarp and it is formed as a result of fault during the recent geological changes as believed by the geologists. These areas are rich in alluvium soil having been brought and deposited by the Purna and its tributaries, which contains kankar nodules and with fossiliferous nature. The thickness of alluvium is to the extent of 4 meter at many places.

SECTION 3 : GEOLOGY, ROCK AND SOIL :-

I.3.1 :- The Akola Forest Division is bounded by Southern foot hills of Gawilgad range of the Satpuda range of hills on the North, and Ajanta and Satmala hills on the South. The entire division is having more or less fertile alluvial tract drained by the Purna, Katepurna, Adan and Penganga rivers. A team from Geological Survey of India studied about ground water problem and total built up of dam site. A brief reference to the geology of the district is made by Blanford (1869) in his publication “On the geology of the Taptee and Narmada valleys and some adjoining districts”. Where in the salient features of the Southern parts of the Gawilgad range and the Purna plain are outlined. Engineering geology and ground water problems of specific area have been dealt with in the unpublished reports of the Geological Survey of India by Jhingran 1950-1951-1952, Krishna swamy (1958-1959), Roy (1951) and Vaidyanathan (1961,1961-62)

But for a small patch of the upper Gondwana sandstones reported by Vaidyanathan (1961) the entire Division is occupied by Deccan basalt flows with intertrappen beds at places river alluvia and soils. The stratigraphic sequence of these rocks is tabulated below :-

TABLE NO. - 1

Formation	Age
Soil, river, calcareous kanker and sand etc.	Recent
Conglomerates	Sub – recent
Trap dykes	
Deccan basalt flows with intertrappen beds ash beds	Cretaceous to Eocene

I.3.2 In this division there are two geological formation are known to occur viz. Purna alluvium and Deccan trap. The Purna alluvium is confined to Purna valley and occurs in considerable deposits over trap which contains mixed with calcareous conglomerates a efflorescence of soda salt occur in some of the patches where Babul forest (*Acacia nilotica*) are situated on the Purna alluvium. The Deccan trap almost covers the entire Division belongs to the creataceious period when sheets of semi-molten trap broke through the creataceious strata and found in this area is more or less horizontal layers fashion. The under laying rock of entire division comprises hot gray basalt and numerous samples of amygdalloids with zeo - litic vesicles may be noticed every where. The Lunar lake in Buldhana Forest Division falls in this region of trap which is a large hollow nearly circular more than 1.6 kilometers in diameter with side precipitous. There are no dykes and no traces of Ash beds of lava flows. Thus there is a total absence of every thing that would characterized as a volcano.

I.3.3 The soil over the entire trap area varies from light reddish sandy loam on the ridges and hill sides to black cotton soil in valley depressions. The reddish sandy loam is characterized by the presence of fragments of the under lying rock in most of the forest area, which cause variations in suitability for the tree growth according to its depth, critical characters and the structure of underlying rock.

I.3.4 In general the soils on the Balaghat plateau are poor and shallow. The alluvium occurs in some of the large valleys in dyno strip having 2 to 3 feet depth on some of the parts of the plateau. The soil varies from murum to light black on slopes and the hill slope flanking are covered with straightening over the surface, and such a condition is very much suitable for the growth of these localities. Basalt is whenever in the form of hard impenetrable rock lies very near the surface, soil is dry shallow quite unsuited to tree growth. In some of the patches granular late rite beds are noticed which are divide of moisture and almost impenetrable by the roots of tree. On such soils the tree growth is scanty stunted and malformed. The Purna alluvium overlies the Deccan trap, which consists of black cotton soil in the calcareous conglomerates that lies immediately below it. The soil of light brown is found along the course of river called kankary, which

contains high percentage of soda salt having depth of 150 feet and more. The width of this belt is roughly 26 Kilometers to the North and 16 kms to the South of Purna river these fertile plains of Purna support good patches of Babul bans or Acacia nilotica forests.

I.3.5. EROSIONAL UNCOMFIRMITY :-

I.3.5.1. UPPER GONDWANA SANDSTONES :-

The out drops of upper Gondwana sand stones have been reported by Vaidyanath in 1961 about 0.3 Km towards Northeast of village Wari (55C/10,21010,76047). These are consists of soft sand stones having strike in N80° E80° W direction and dip of about 30° towards N 10° W. One more outcrop of this rock near the dam site of the Wan river project about 1.6 Km Southeast Wari.

I.3.6. DECCAN TRAP :-

The Deccan trap extends over major parts of the forest and which is Characterized by basalt lava flows which are dark gray in colour and harden and compact the tops of individuals slopes are usually vesicles and zeolitic In this trap a amygdaloidal and Porphyritic glomeroporphyritic textures are noticed locally. These vesicles are filled with secondary minerals like zeolites, quartz, calcite, some earthy ferrogenous material. The massive basalts are characterized by well developed columnar joints and spheroidal weathering. Whethered zeolatic trap occurs in the river beds with bluish gray colour and soft volcanic ash beds are noticed at some places. The basalt sand composed of laths of plagioclase felspars are augite pigeonite glass and miner amounts of opaque ores.

I.3.7. INTER -TRAPPEAN BEDS :-

These belts are formed out of lacustrine or fluviatile deposits intercalated with lava flows presumably laid down during the interval between successive lava eruptions. These types of beds have been reported at following places in Akola tehsil.

From the hills 9.6 Km South of Wahan village ($20^{\circ}29' 50''$: $70^{\circ}9'50''$) close to the Katepurna dam site near the villages Vastpur ($20^{\circ}28'30''$: $70^{\circ}81'$) and Khambora ($20^{\circ}36' 77^{\circ}12'$) and, in the hills close to the village Donad Bujurg (55H/2; $20^{\circ}34' 77^{\circ}10'30''$)

I.3.8 CONGLOMERATES, KANKAR, ALLUVIUM AND SOILS :-

The alluvium tracts is a perilific and it is underlain by layers of falls beded sandy soils conglomerates and hot calcareous and yellowish kankar bed. The Katepurna river flows over a bed conglomerates and sand near Donad buzurg village. The soil is clayey loamy and is characterized by appreciable thickness generally occurs as thin cover over the weathered basalt and murum. The alluvium soil represent both the transported and residual soils and depth of the soil to the extent of 36.6 meter near Dahihanda village as spelt by Dhyanda by Blanford ($20^{\circ}52':77^{\circ}08'$) North of Akola near the Purna river has been described by Blanford (1869) as below :-

- i) Ordinary brown alluvial clay
- ii) Yellow sandy clay
- iii) Reddish clay
- iv) Graval and sand of varying thickness
- v) Tenacious gravelly clay. This is the saliferous stratum on tapping which the salt water rises with great force.

In the area of Mun, Katepurna, Nerguda ekburri – Dam sites in the Akot, Akola, Balapur, Washim tehsils in a large number of bore holes are taken up. The study of the bore holes revealed that the thickness of soil and alluvium cover range from a few meters to as many as 25 meters, which admixed boulders, pebbles of the country rock or Kankar together with some sandy and earthy material.

I.3.9. STRUCTURE :-

The entire divisional area constitutes part of Purna valley having basin shaped depressions in the Deccan trap filled by river deposits. The Northern edge of Purna valley basin is having a contact with satpuda hill and it is suppose to be a faulty line (Roy – 1951) in geological formation, which is covered by boulders and debris derived out of the integration of the trap. The basalt rock in the Narnala and in other hill show more or less East – West alignment display dips towards North and that flows in other areas are almost horizontal in deposition. The valley is free from significant structural disturbances normally, however local faults have been noticed at few places for instant the conglomerates beds in the Katepurna river near village Danad Buzurg is suspected to indicate a fault plane (Krishnamurthy –1959). As the district is not yet been completely mapped geologically the chances of encountering such local disturbances can not be ruled out. The exposures of basalt on high hill as well as the rocks available in boreholes indicate that a large number of joints, both vertical as well as basal. The massive basalt are more conspicuous in columnar joints. A small patch of upper Gondwana sandstone having a fairly high dip of 30° towards N 10° W appears to be an inlier, this also indicates possibility of existence of such inliers in the area which may be deciphered on systematic geological mapping of the district.

I.3.10. GROUND WATER :-

The study of hydrology in the Purna part of valley basin revealed that the Division could be divided into two categories of tracts i.e.

- (i) Fresh water tract
- (ii) The Saline tract

(i) FRESH WATER TRACT :-This tract is extended in the Northern part of the Division nearer to the Gawilgad range covered by the boulders and debris. In these areas fresh water is available at a depth of 3 to 5 meters from the surface. Roy –(1951) studied fresh water availability in this area and has estimated the annual rate of replenishment of ground water of this fresh water tract to the extent of 20 million cubic feet per Sq. mile. (0.22 to million cubic meter per Sq. kilometer) The ground water in potable with chloride contents varying from 8 to 50 parts per million.

(ii) THE SALINE WATER :- The salinity map of the area indicates that the chloride content increases in general towards the Purna river from both edges of the Purna valley. The chloride contents varies between 2000 and 5000 P.P.M. in the inner regions of the valley and the maximum chloride contains is estimated to the extent of 12,917 P.P.M. (Roy – 1951) In general the upper clay do not contain appreciable salt, however at some places brakish water is encountered in shallow wells also. Occasionally the carbonate of soda forms and an efflorescence upon it, but chloride of sodium is obtained from the beds below the graval and calcareous conglomerates. As interpreted by Blanford – 1869 the salt being stratum is to be “ something distinct from the upper fresh water alluvium and it belongs to comparatively older geological age in the formation. The presence of common salt in large quantity may also indicate that the clays containing it are of marine origin. But the absence of marine remains is opposed to the idea of these plains having been delta accumulations on a sea coast. Wells are sunk on both sides of the Purna river for obtaining brine”.

In this division there is no sufficient annual precipitation which may vary between 750 and 1000 mm. and because of insufficient rain fall most of the small stream go dry in summer. The dams are constructed across various rivers might be helpful in partly meeting the requirements of irrigation and drinking water of the population. In general the contacts of successive flows are those with dykes with the country basalt having discordant relationship may be more suitable sites for tapping under ground water.

I.3.11 ECONOMIC GEOLOGY :-

i) BUILDING MATERIAL AND ROAD MATERIAL :-

In this division lot of dense, hard and compact basalt available for utilization as building material and road material and these rocks quite durable and excellent in quality.

ii) SALT :-

The entire tract along the Purna river is exceptionally rich in sodium chloride and a large number of wells are reported to have been sunk in the past due to this nature of soil, the site of well is a little over 0.76 meter wide and each well in general produces

about 725 kilogram salt per month. The brine is very strong and is evaporated by solar heat alone in shallow pans about 7.26 meter long and 1.32 meter wide. In general the other minerals of major economic importance do not appear to be present in this area.

I.3.12. SOIL :-

In this division 17 soil series have been recognised and mapped based on the morphological differences of the soil. A brief statement on important soil texture has been given in appendix –No LIV of volume II. The relevant statement on Hydro – chemical analytical data of soil series are given in appendix No. LV of volume II. 17 soil series have been identified and mapped digitally are listed below :-

Amravati
Chikhali
Chankapur
Datal
Dhanvali
Dhotra
Erode
Kund
Kesarkhedee
Murtizapur
Maroda
Nagardas
Palana
Pattiannarai
Sonala
Sarupkhed
Wadegaon

Majority is of Kund followed by Amaravati, Palana, Nagardas etc.

The soil of the entire tract varies from a light reddish sandy loam on the ridges and hill sides to black cotton soil in valleys and depression. The reddish sandy loam of varying consistency intervene with the rounded fragments underlying rock covers most of

the forest area. This varies in suitability for tree growth according to its depth and physical characteristic and the structure of underlying rock. The soils of Balaghat plateau in general are poor and shallow and the alluvium occur in some of the large valleys in narrow strips and the black cotton soil 3 to 4 feet in depth on some parts of plateau. The soil on hill top and slopes have shallow and medium depth whereas in the low lying areas and depression the soil in general are deep as a result of depression from layers usually, the hills slopes flanking revent are covered with boulders, strewn over the surface which facilitates better growth of tree as these soils accord a sage lagment for seeds and a good foot hold for tree growth.

Wherever, the basalt is in the form of hard impenetrable rock lies near the surface soil is bright and shallow and quite unsuited for tree growth and in such areas the tree growth is poor and open which is witness natural gaps of tree growth. In some localities because of the presence of granular latic belts the soils are almost impenetrable and laccum in moisture which does not support proper tree growth and on such soil in the tree growth is invariably scanty stunted, malformed.

SECTION I.4 : WATER SUPPLY :-

I.4.1 There are two main rivers flow in this division, one is the Purna and second is the Penganga. Katepurna, Shahanur, Morna, Mun, Nod are the tributaries of the Purna river and Uma, Adan, Aran, the Pus, are the tributaries of the Penganga river. The villages which are situated on the banks of these river and their tributaries are generally better placed for drinking water. The other villages have a lot of problem of drinking water especially during the months of summer. Eratic rainfall in the past few years has aggravated the situation of drinking water in this division. In the year 2005 there was lot of scarcity for drinking water in Akola town and a special train was arranged for drinking water supply to Akola city by the district administration. The ground water potential is very poor especially in Akola and Akot tehsils which is aggravated by salt water availability in the ground water. Precipitation is received mainly through South-West monsoon and it is harvested in dams, tanks and wells.

SECTION 1.5 : CLIMATE : -

I.5.1 The climate of Akola Forest Division is characterized by considerable variations especially in summer temperatures in this division. The summer is long and hot. Akola town has got the reputation of being one of the hottest places in India with 48.85°C as the highest temperature recorded in May 1878. The average mean daily maximum temperature is 42.2°C and the average mean daily minimum temperature is 27.5°C. The heat in the summer is intolerable during day time whereas nights are comparatively tolerable. The weather in the plain areas of the division is invariably warm in the daytime even in winter and in summer. The hill taluqas mainly Washim and Mangroolpir have slightly cooler climate than other taluqas of the division.

This area represents pronounced seasonal variation i.e. summer season, rainy season and winter season. The summer starts in the month of March and continues up to June. The rainy season in general starts from second week of June and continues till September of every year. Whereas the winter season commences in the second week of October and continues upto February of every year.

I.5.1.1 : RAIN FALL :

The Akola Forest Division is situated in a less rainfall zone. The precipitation in this area mainly received through South-West monsoon however a little rain fall received through North- East monsoon also. Average annual rain fall in this division is 804.6 mm. The rainfall generally increases from North -West towards South East in the division. The rain fall during monsoon comes to above 85 % of the annual rain fall. July being the rainiest month. The highest average rainfall amounting the 150% of normal rainfall occurred in 1949, whereas the lowest rain fall, which was only 45 % of the normal rain, occurred during August 1920.

The rainfall data of 13 stations from 1994 to 2007 indicate that average rainfall at Malegaon station records high with level 1182.95 millimeter. Whereas average rainfall of Akot station is 618.46 mm which is the loWest average in compared to other stations. The highest recorded rainfall is 1350 mm at Malegaon station in 1994. Whereas

minimum rainfall recorded is 330.40 millimeter at Telhara station in 2004. Maximum average rainfall is recorded in entire division (all stations) is 1002.72 millimeter in the year 2002. Whereas minimum average rainfall of entire division (all stations) is 526.9 millimeter in the year 2004. An average the number of rainy days are 48. This number varies from 42 at Balapur to 52 at Washim, Karanja. The heaviest rainfall recorded in 24 hours any station in entire division was 355.6 millimeter at Washim on 26th June 1994. The average rainfall recorded in all taluqas of Akola Forest Division is as given in the following table:-

TABLE NO. - 2

AVERAGE RAINFALL IN TALUKAS OF AKOLA FOREST DIVISION

Year	Akola	Barshitakli	Akot	Telhara	Balapur	Patur	Murtijapur
1994	970.20	1063.00	907.90	745.00	780.00	1048.00	846.00
1995	634.40	590.00	572.90	1120.80	485.40	581.00	660.00
1996	798.90	676.00	637.00	837.70	619.00	789.00	734.00
1997	708.70	506.00	811.80	864.00	744.00	978.00	788.00
1998	612.30	508.00	551.20	614.40	558.40	756.20	576.40
1999	840.80	688.70	561.00	556.90	819.50	1107.5	881.00
2000	527.10	565.00	538.00	584.30	460.00	750.00	470.00
2001	566.80	542.00	416.90	379.90	673.50	727.60	473.00
2002	683.50	963.00	559.30	678.90	754.50	1198.10	700.00
2003	367.66	612.50	669.25	762.80	427.30	1074.00	459.07
2004	483.08	502.60	399.30	330.40	450.35	853.22	477.00
2005	717.00	730.70	719.70	745.60	502.10	884.20	848.90
2006	1013.30	1152.20	695.70	795.50	808.10	1083.20	881.90
2007	753.60	927.80	934.20	963.60	610.60	932.10	1013.00
Avg.	686.44	699.98	618.46	693.55	621.70	910.00	676.56

AVERAGE RAINFALL IN TALUKAS OF AKOLA FOREST DIVISION

Year	Washim	Malegaon	Risod	Mangrulpir	Manora	Karanja	Average
1994	842.40	1350.00	606.00	946.00	857.00	892.00	911.81
1995	702.40	865.00	765.60	660.00	650.00	845.50	702.54
1996	732.40	1138.00	848.60	1037.00	917.00	668.50	802.55
1997	979.30	1371.00	651.40	722.00	753.00	805.00	821.71
1998	1097.82	1299.00	1834.0	660.10	833.30	641.10	810.94
1999	1262.60	1514.00	1064.4	954.00	1030.0	821.50	930.92
2000	810.60	918.00	674.60	1266.00	813.00	841.50	709.08
2001	1675.40	1533.00	896.60	612.90	739.40	851.00	776.00
2002	2020.37	1691.00	814.40	926.00	1132.8	913.50	1002.72
2003	1173.90	1048.60	612.80	538.50	661.40	734.60	703.26
2004	834.60	617.20	526.30	407.00	461.60	507.00	526.90
2005	1102.20	925.00	711.50	950.00	893.40	1033.0	827.95
2006	1192.10	1108.60	899.40	1123.60	757.50	622.68	933.37
2007	852.00	767.00	859.00	826.40	723.40	949.60	854.79
Avg.	1129.72	1182.95	838.89	831.01	807.65	782.84	804.59

I.5.1.2 : TEMPERATURE :

There is a meteorological observator in the division located at Akola and the data available at this observatory may be taken as representative of the meteorological conditions obtained in this division in general. The temperature rises rapidly after February and continues till May and May is the hottest month of the year. In the month of May the mean daily maximum temperature at Akola is 42.4° C (108°F) and mean daily minimum temperature is 27.5°C (81.5°F). During period from April to June on individual days the day temperature rises up to 46°c and the heat is sometimes relieved by thunders

and showers around mid – June there is considerable drop in temperature with the arrival of South-West monsoon showers and the weather becomes pleasant. After the withdrawal of monsoon the day temperature increases gradually and a secondary maximum in day temperature is reached in October. However the night temperature decreases gradually after September. The temperature of both day and night decreases rapidly from November till December and December is the coldest month in the year. During winter season the mean daily maximum temperature is 29.3°C (84.7°F) and mean daily minimum temperature is 11.9°C (53.4°F). The Western disturbances which occurs North India in the winter months the cold wave from North India affects the division resulting the dropping of temperature to 2° to 4° C during nights sometimes.

The highest temperature recorded at Akola was 47.8°C in May 22 of 1947 and the lowest minimum temperature recorded was 22°C (36°F) on 9th Feb 1887. The average maximum and minimum temperatures recorded in Akola Forests Division is given in the following table :-

TABLE NO. - 3
AVERAGE MAXIMUM AND MINIMUM TEMPERATURE RECORDED

Year	Place	Maximum	Minimum
1994	Akola	45.40	6.80
1995		45.70	7.00
1996		43.80	8.80
1997		43.60	8.90
1998		44.40	8.00
1999		44.40	6.10
2000		44.00	8.30
2001		44.60	9.60
2002		45.00	8.20
2003		44.10	9.80
2004		42.50	9.80
2005		44.40	8.70
2006		43.50	9.00
2007		42.00	12.50

I.5.1.3 : HUMIDITY :-

In general the weather conditions are dry and hot in this region. During the months of South-West monsoon, the humidity fluctuate between 60% to 80 % whereas in summer months the humidity drops down to 20 % or even less.

I.5.1.4 : CLOUDINESS:-

During the South -West monsoon season the sky is heavily clouded in the second half of summer season and the post monsoon season there is moderate cloudiness particularly in the afternoon. In the rest of the year the sky in general clear or lightly clouded.

I.5.1.5 : STROMS AND WINDS :-

Winds are generally light to moderate with some strengthening in speed in the second half of hot season and in the early parts of monsoon season. The winds are mostly from North-East during post-monsoon and early winter season. By February the winds become Westerly or North - Westerly and this phenomenon will continue till June. During the South-West monsoon season winds storm direction between South - West and North-West.

I.5.1.6 : SPECIAL WEATHER PHENOMENON :-

In addition to monsoon depression in the Bay of Bengal and move from West to North-Westward through the central parts of the country. The division experiences strong winds and widespread heavy rains. The thunder storm occurs in all the months of year and their frequencies being the lEast during December and January months and the highest during the month of June, July and September. Sometimes storms and depressions of post monsoon months also affect the weather conditions of the division.

SECTION : 6 : DRAINAGE :-

I.6.1. The drainage system in the division includes two major rivers i.e. The Purna and the Penganga. The other minor rivers are tributaries of the above rivers. They

are the Katepurna, Shahanur, Morna, Mun, Man, Nod and Uma which are the tributaries of the Purna river. The tributaries of Penganga are the Adan, the Aran, Arunawati and the Pus.

1.6.1.1. Purna river : It is a perennial stream of the Payanghat plain which rises in the South facing scarps of Gavilgad hill range in the districts of Amaravati. It flows towards the West of the district, forming Northern boundary of the tehsils Murtizapur, Akola and Balapur and the Southern boundary of Akot tehsil. The Purna river is not navigable though it is a perennial river because of siltation at many places. At many places, its channel is 30 meter deep and 200 meter wide. The bank of the river is generally of soft alluvium. A large number of streams rising in the scarp to its North and to its South, joining the river forming a fairly dense drainage network in this region. Most of the tributaries of the river Purna look like water pools during hot weather and developing swirling floods during rainy season. The river has length of 100 Km in the Division and its banks are badly broken and dissected by a strong rill erosion undercutting of bank. The valley of Purna has many streams developing into a sub - parallel drainage system to the main river before their confluence with the main river. The Katepurna tributary is the most significant out of all the tributaries of the river Purna.

1.6.1.2 Katepurna river : The Katepurna is the most significant tributary, which rises in the Northern slopes of the Ajanta hill ranges about 7 Km. North of Washim at an elevation of approximately 320 meter from MSL. The flow of the river is Northern in a non- perennial channel, having overall turn by sharp bend Westwards and Northwards and the banks are mostly liable for erosion.

1.6.1.3 Uma river : It rises in the extreme Southern parts of Murtizapur tehsil near the village Poho and flows to the North. The river is almost perennial and it has a fairly straight course, braided in section and crossed at many points by fords. It confluence the Purna river near the village Durgavad about 10 Km upstream of the river Katepurna confluence after flowing sub - parallel to main river on its left bank for about 10 Km. The river has low banks throughout the length having a narrow channel and is

liable to flooding during the rains. The river has got length of about 60 Km. entirely flows within the division.

1.6.1.3 Pedhi river : It rises in the Melghat of the Amaravati Districts, which flows South- Westwards in the beginning and then flows Westwards to join the river Purna on its left bank near the village Kolsar. The river is perennial in its lower course and it has got gullies and fragile banks like that of Purna. It has got a total length of 12 Km within the division.

1.6.1.4 Morna river : The river Morna takes its birth in the of Malegaon tehsil of Washim district near Shirpur village and flows through an open and flat country of the plateau, before crossing to the large village of Medsi on the edge plateau. The river goes through the ghats in a romantically picturesque country. Its sharp bends in between interlocking spurs developing a deep valley with a cliff face on the outer bank and wide deep alluvial flats on the inner bank before entering into Payanghat plain. In this section, the Purna – Akola -Khandwa railway line closely passes the river and sticks to the narrow edge adjoining the valley side and crosses the river at no less than four different places to gain foothold from one side of the deep valley to other. Descending down from the scarp the river flows through a fairly gentle sloping country with a perennial channel on its bed. It forms a kind of cut of Akola town just after it will join on its right bank by the tributary, Indrupa. In Its lower course the river has developed extensively meander and cut off loops unlike many other left bank tributaries of the Purna. It develops a sub - parallel course far nearly 20 Km before joining the main river near the village Andura. The total length of the river is approximately 120 Km.

1.6.1.5 Mun river : It rises in the Northern Ajanta scarps of Chikhali tehsil of Buldhana district and flows East through the Ghatbori Reserved Forest area to enter the district of Akola. Another tributary rising the Uttavli scarps in Buldhana District and joining the Mun at foot of scarp near the village Pimpalkura after which the river flows Northerned is cut by another stream the Vishwamitri rising and a similar scarp within the district and flows in Northward direction and confluence North. The river flows through a flat alluvial country making curves and graceful meander. The river Mun flows through

Balapur township and it is joined by a small tributary the Mas river and flows downstream where the river Nirguna and its tributaries join Mun river. Both the Nirguna and its tributary the Bordi river which rise in the Medsi and Patur Reserved Forests of the ghat country and flow North. After its confluence with the Bhuikund the Mun river is crossed by the Mumbai - Nagpur railway line over a bridge which is South-East of Nagzari railway station. The Mun river has got a fragile bank which are highly gullied very much liable for soil erosion which confluence the Purna river near the village of Khajikhed on its left bank. It forms for quite a distance the boundary between the Buldhana, Akola and Washim district.

The tributaries of Purna joining at the right bank from the North are comparatively smaller hill torrents draining the foothill slopes of Melghat. Out of these the Nagzari, the Gautami, the Witruha and the Shahanur are the most important tributaries. The river Shahanur was diverted at Dahihanda at the end of last century in the South-East of the Akot tehsil, so that it joins the Purna immediately after entering the district with a new channel carries the water so rapidly, that it always remains dry except during the short intervals of floods. The total length of this river is 120 km. All these tributaries of Purna by and large are dry in the lower courses and their banks are fragile which are subjected to heavy gully erosion in thick deposits of alluvium therefore the villages located on the bank of these tributaries are subjected to floods during rainy season. Many villages and larger townships are located along the banks of these tributaries and these townships mostly depend upon for drinking water. The left bank tributaries of Mun river are much more important than the right one and the main river itself flows closer to the Northern scarp slopes than the Southern one.

1.6.1.5 Penganga river : The river Penganga rises at the village of Balaghat hills of Buldhana plateau and flows East to enter the division in its South-Western parts of tehsil of Washim district near the village Wakad. The river has an overall length of 100 Km in the division. It flows initially through a rolling plateau country in a narrow channel less than 100 meter wide with a sharp bend which forms a boundary between Washim and Parbhani districts and from the village Warud-Khopa the downstream till it enters into Yavatmal district. The river belt is wide and rugged and the river channel is

itself braided. At many places the river takes sharp bends and the river is a non – perennial which has cut many tributaries in this division. The scarp river is a tributary of Penganga rises in Washim tehsil and flows South to join the Penganga near the village Malsa. The Adol river and the Chandrabhaga are small tributaries of Penganga.

1.6.1.6 Pus river : It rises in the South Eastern of Washim tehsil of the division and descends down the rugged plateau edge through a series of sharp bends controlled by a pentagonal joints in the basalt, before leaving district of Washim to enter Yavatmal district near the village Rui. The scarp and its bank has retreated by paralleled recession to develop wide alluvial flats that are dotted with the villages in the deep valley bottom and are enclosed by hills to remain isolated in many parts. Bopalpandi river is a significant tributary of the river Pus.

1.6.1.7 Adan river : It rises in the Eastern parts of Washim tehsil of the division and then flows Eastward through Northern parts of Manglurpir tehsil and then enters into Darwha tehsil of Yavatmal district. The Arna and the Kupti, Arunavati are the main tributaries of river Adan, which rise in Manglurpir tehsil and flows East in the Southern parts and enter into Yavatmal district.

1.6.1.8 Lakes and Tanks : There are many perennial tanks and lakes especially in the Payanghat plains of the division have a few tanks are found around the villages of Mardi, Punda situated in the foot-hills of Akot tehsil. The villages Banbada-budruk, Kutasa both are in Shahanur valley and Ghusar and Akhatwada which are in minor tributaries on the left bank of the Purna. A few perennial tanks are found in the trap country of the Washim plateau around Mohaja, Bhat, Wakad, and Risod all these are mostly small basins like depressions collecting the rain water from Amphitheatre like basin and supplemented springs. They provide locally drainage system, which are around tanks and lakes.

1.6.1.9 Springs : A number of springs occur on the Southern slope of Balaghat plateau descending down to the Godavari valley. These springs occur at 500 meters MSL formed probably good exposure and intra –trappen aquifer. These springs are uncommon and the Northern scarp slope.

SECTION : 7 : DROUGHT :-

I.7.1. The erratic and scanty rain fall in every year cause drought like conditions in the recent past. The drought affects the growth of plantation establishment of regeneration and also growth of forest crop as the sub-soil moisture is vital ingredient for growth and regeneration.

SECTION :I. 8: FROST :-

I.8.1. In Akola Forest Division injury to due to frost is not seen

SECTION : I.9 : SOIL EROSION :-

I.9.1. Soil erosion is noticed in this area especially along the river Purna and its tributaries, sheet erosion is quite common in this area and gully formation takes place due to erosion along the river banks. Soil erosion in some of the areas expose the roots of trees lead to wind fall of the trees. The intensity of the soil erosion is given compartmentwise in Appendix no. LVI of volume II of this plan.

SECTION : I.10 : FLOODS :-

I.10.1. Heavy floods are not common in this area.

SECTION : I.11 : IRRIGATION :-

I.11.1. Irrigation is one of the most important inputs for development of agriculture. The main sources of water supply are open well irrigation canal, river. Lift irrigation is also quite common in these areas.

There are more than 67 irrigation projects , 9 medium and the remaining are minor projects.

Medium Projects	14. Singdoha	38. Amdari
1. Katepurna	15. Tuljapur	39. Gid
2. Uma	16. Nagri	40. Rui
3. Matsawanga	17. Sawerkheda	41. Hatola
4. Sonal	18. Kandli	42. Adoli
5. Morna	19. Ghoti	43. Hiwerkhed
6. Ekbuji	20. Isapur	44. Zodga
7. Nirguna	21. Maohal	45. Karli
8. Adan	22. Ridhora	46. Khondala
9. Giroli	23. Warla	47. Sulonda
Minor Projects	24. Mokhad Pim.	48. Karhal
01. Januna	25. Shirputi	49. Aslola Ghana
02. Pimpalgaon Hande	26. Borla	50. Jawla
03. Pimpalgaon Ch.	27. Sonkhas	51. Waghi
04. Sisa Udegaon	28. Rishi	52. Kolambi
05. Bargaon Manju	29. Mohari	53. Masla Kh.
06. Wapti Kupti	30. Sawergaon	54. Kalameshwar
07. Adoli	31. Pimpri Kh.	55. Pangri Dhankali
08. Dhanora	32. Fulmari	56. Koyali Tank
09. Ratanwadi	33. Dharur	57. Bargaon
10. Rohana	34. Nandkhed	58. Mohagaon
11. Asola	35. Bhilkhed	
12. Wathod	36. Ghonga	
13. Borwaha	37. Sarsiborha	

The network of canals from dam is to point of utilization of water and lifting of water from dams and wells with the help of electric and diesel pumps are the major sources of irrigation.

SECTION : I.12: DISTRIBUTION OF AREA :-

I.12.1 The total area of the division covered under this working plan is 81009.61 Ha. extended over 13 tehsils in 2 Districts. The Akola Forest Division has been administratively divided into 8 ranges and the range wise distribution of the area is given as under

TABLE NO. – 4

RANGEWISE DISTRIBUTION OF THE FOREST AREA

Sr. No	Range	No. of Comptt	Reserved Forest	Protected Forest	Acquired Land	Unclassed Forest	Total
1	Akola	221	4316.52	0.00	0.00	104.69	4421.21
2	Alegaon	50	10858.50	697.01	59.47	0.00	11614.98
3	Barshitakli	125	13898.15	0.00	0.00	234.28	14132.43
4	Karanja	205	9067.57	0.00	0.00	0.00	9067.57
5	Malegaon	122	8732.89	0.00	0.00	3003.76	11736.65
6	Manora	61	14581.37	0.00	0.00	78.00	14659.37
7	Patur	43	8384.74	538.59	0.00	0.00	8923.33
8	Washim	69	4182.51	0.00	0.00	2271.56	6454.07
	Total	896	74022.25	1235.60	59.47	5692.29	81009.61

The total geographical area of this division is 10,59,586 Ha out of which 80009.27 ha is forest area as per in Shri. Thengdi's Plan which was roughly 8.4% of the total geographical area. The areas of Katepurna and Narnala Sanctuaries have been transferred to wildlife wing therefore the present Working Plan deals with the remaining forest area which is 81009.61 Ha. under the control of Dy. Conservator of Forests Akola Forest Division.

TABLE NO. – 5a

**DETAILS OF THE AREA TRANSFERRED TO KATEPURNA WILDLIFE
SANCTUARY**

Sr. No.	Range	Compt.No	Survey No.	Area Transferred
1	Washim	115, 117		640.19
		118, 119, 122(A)		1168.29
		111, 112, 113, 114, 123, 124		1865.98
			16	150.13
			28, 37(Pt.), 38(Pt.), 39(Pt.), 40, 41, 42(Pt.)	59.96
				3884.55

TABLE NO. – 5b

**DETAILS OF THE AREA TRANSFERRED TO NARNALA BIRD
SANCTUARY**

Sr. No.	Range	Compt.No	Survey No.	Area Transferred
1	Akola	163(a)	---	136.78
		164		249.69
		165		123.83
		166		157.42
		167		143.26
		168		280.85
		169		143.25
				1235.08

TABLE NO. – 5c

DETAILS OF THE AREA OF KARANJA SOHAL BLACK BUCK
SANCTUARY

Sr. No.	Range	Village	Survey No.	Compt. No	Area (Ha.)
1	Karanja	Yesapur	21	B-271	4.43
		Pasaroni	96,97,98,99, 100,101,104	B-265 to B-270	47.23
		Girda	18 to 20, 23 to 24, 29 part 30,31 to 33, 34,35,36,37,38,39 to 41,42,43,44,45,46 to48,49 to 51	B-426	223.73
		Waki	7to 8, 10 to11, 12, 13 to 15, 16 to 18, 21 to 23.	426	126.91
		Mirzapur	16		9.67
		Girda	28		6.27
		Dalgaon	27		11.92
		Pimpalgaon	3,4,5,6,7,9,10, 11, 15, 16, 68, 70, 75, 77, 81, 82, 83, 85.		154.22
		Mohamdabad	6 part to 8, Part 11 to 18, 14, 15, (427 Part) 19 part, 27 to 29, 30 to 32, 33,17,18,26.		178.51
		Januna	20 to 22, (427), 23, 24 to 26, 27 to 29, 30,31,32,33 to 35, 37,38		172.32
		Zolgaon	14 to 16, 17,18, 19, 20, 21 to 23, 24 to 26, 27,28 to 30	427	158.13
		Somthana	10 part, 11 part, 20 part, to 22 part, 23 to 25, 26 to 27 30 part to 32 part 35 part to 37 part, 40 to 42, 43, 44, 49,51, 58,59, 61, 62 to 64.	427	296.29
		Bagapur	19	427	14.19
		Dadgaon	12,16,17,18,19,76		72.64
		Mohamdabad	1Part, 2 part, 3, 37, 39 part.		37.14
		Bagapur	3,6		16.54
		Raikhed	70 to 72		91.38
		Umbarda	72		18.86
					1640.38

The total forest area of the division is covered in 26 toposheets of scale 1:50000.
List of toposheet is given in the table :-

TABLE NO. – 6

LIST OF TOPOSHEET

Sr.No	Sheet no	Sr.No	Sheet no
1	55 C/16 N and S	14	55 H/4 N and S
2	55 D/9	15	55 H/4 N and S (Double)
3	55 D/10 N	16	55 H/6 N and S
4	55 D/11 N and S	17	55 H/7 N
5	55 D/12 S	18	55 H/8 N and S
6	55 D/13 N and S	19	55 H/9 S
7	55 D/14 N and S	20	55 H/10 N and S
8	55 D/15 N and S	21	55 H/11 N and S
9	55 D/16 N	22	55 H/12 N and S
10	55 G/4 N and S	23	55 A/9 N and S
11	55 H/1 N and S	24	55 A/13 N
12	55 H/2 N and S	25	55 E/1 N
13	55 H/3 N and S	26	55 E/5 N

Total number of villages in this division are 374. The digitized geo-reference village maps procured from Maharashtra Remote Sensing Application Centre, Nagpur (MRSAC).

SECTION : I.13: STATE OF BOUNDARIES :-

I.13.1. Total length of boundary is 2121.75 km out of which 21.29 km is natural boundary and 2100.28 km is of artificial boundary. The total length of external boundary of forest is about 1415.94 km including A – class and C – class Reserve Forests and Protected Forests. All the forest lands have been notified in terms of survey numbers adopted by the revenue department. The boundaries of Reserved Forest area have been clearly demarcated in the field which are maintained under five year demarcation programme. As the forest area is distributed in honey- comb pattern within private fields especially the areas of Babul Working Circle, It is difficult to maintain the boundaries in the forest area. The boundary demarcation adjoining to private land is also not possible due to local people. The demarcation of Reserve Forest is very much clear when compared to Protected Forest. In the recent past pre-casted pillars are erected in some of the forest areas after thorough demarcation by DILR and in other areas the precasted pillars are to be erected. The entire forest and private lands need to be demarcated thoroughly and pre-cast pillars erected expeditiously and maintain regularly.

Appropriate demarcation maintenance and regular vigilance have become inevitable in the recent times because of the increasing encroachment and hike in land value

SECTION : I.14: LEGAL POSITION :

I.14.1 The Government forests of originally notified where as state forest under the Berar Forest (Amendment) Law of 1891 or lands declared as unoccupied Government waste lands. In 1911 the Indian Forest Act, VII of 1878 was applied to Berar as a result of Government of India's notification No. 2197- I-B, all the State Forests which were notified under Berar Forest Law. Later on additions and alterations in the Govt. Reserved Forest have been notified under Indian Forest Act XVI of 1927 and was applied to Berar Forest vide Government of India's notification number 719 – I of 13th December 1927. All the Reserved Forests of West Berar Division was notified and defined as 'A' or 'C' class forest depending upon their constitution of area and the classifications were notified

under Indian Forest Act. The changes in 'A' and 'C' class areas were effected by executive orders. The forest area of Akola Forest Division covered under this plan has been notified Reserved Forest and Protected Forest, under the Indian Forest Act 1927, except 6752 ha. Unclassed forest.

SECTION : 15: RIGHTS AND CONCESSIONS :

I.15.1. The 'A' class Reserve Forests are not burdened any adverse rights where as the 'C' – class Reserve and Protected forests are heavily burdened with grazing concessions. Grazing concessions are controlled to the extent of cattle unit i.e. to be allowed as per the " Grazing Policy " of the State Government. Grazing rules have been formed vide Government Resolution no. MFP-1365/132211- Y, dated 6th December 1968 for effective control on grazing in forest area. The Protected and Unclassed forests are burdened with Nistar and Grazing rights as given in Miscellaneous Regulations.

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CHAPTER – II

FLORA AND FAUNA

CHAPTER II A:

FOREST FLORA:

SECTION 1: TREES:

II A.1 1. The major trees species occur in this area are-

Teak (*Tectona grandis*) is principal species and main associates are Dhawada (*Anogeissus latifolia*), Ain (*Terminalia alata*), Tiwas (*Ougenia oojeinesis*), Lendia (*Lagerstroemia parviflora*) and Tendu (*Diospyrous melanoxylon*). Some of the other associates are Satpudi (*Dalbergia paniculata*), Bhirra (*Chloroxylon swietenia*), Kalam (*Mitragyna parviflora*), Rohan (*Soymida febrifuga*), Salai (*Boswellia serrata*), Semal (*Bombax ceiba*), Beheda (*Terminalia bellirica*). Shisham (*Dalbergia latifolia*), Bija (*Pterocarpus marsupium*) and Bel (*Aegle marmelos*). Amaltas (*Cassia fistula*), Aonla (*Emblica officinalis*), Char (*Buchanania Lanzas*), Dudhi (*Wrightia tinctoria*), Ghoti (*Zizyphus xylocarpa*), Palas (*Butea monosperma*), Dhaman (*Grewia tiliaefolia*), Moyen (*Lannea grandis*), Bartondi (*Morinda tinctoria*), Lokhandi (*Ixora parviflora*).

SECTION 2: GENERAL DISCRPTION OF THE GROWING STOCK:

IIA.2.1. As per the classification of forest type of India by Champion and Seth, the forest of Akola Forest Division falls in **Group 5: “Tropical Dry Deciduous Forest”** The forest type further belongs to Sub group **5A – “Southern Tropical Dry Deciduous Forests”** which in the subtypes considerable local variation occur in the crop depending mainly upon edaphic factor, climatic condition, topography, rainfall, frost treatment of the crop. The forest can be sub divided into the following local type.

a) **Dry teak bearing forests - 5A/C1**

b) **Dry mixed deciduous forests - 5A/C3**

c) **Boswellia Forests - 5A/E2**

d] **Babul Forests - 5A/E3**

e] **Southern Thorn Forests type - 6A/C1**

f] **Fodder Reserves with brush wood type - 5D/S4**

Some patches of forest constitute open and mixed patches of forest which can be categorized into Southern Thorny Forest type 6A/C1. Fodder Reserves with bushy woods are mainly grass lands and these can be classified into 5D/S4.

IIA.2.2. In this Division majority of forest area constitutes open and degraded forests except Patur and Alegaon and part of Karanja range adjoining to Pusad Division which are having fairly good quality of forests. The site quality of the area is mainly IV B with some pockets of site quality IVA interspersed in depressions and valleys. Site quality III is seldomed noticed in few pockets of Alegaon range. The natural regeneration of teak and its associates is inadequate due to adverse edaphic, climatic and biotic factors. The natural regeneration in most of the places failed to establish due to combined impact of these factors. The under-storey vegetation is not well defined and undergrowth is scanty except grasses in monsoon. A brief discussion regarding the forest types of the division is as under :-

a] **Dry Teak bearing forests - 5A/C1 :-**

In this type superior Teak forest are found which are confined to area crop, better rainfall, its soil condition and area of favourable climatic conditions. These forests are mainly occur in valleys and gently sloping areas with Northern aspects.

These forests are extended on the plateau surrounding the forest villages of Ambabarwa and Chunkhadi continuing upto mangeri village in Ambaparwa reserve. The site quality varies from IVA to IV B. The crop condition is generally well on sheltered lower slopes of hills and valleys of alluvium soils. The crop density varies form 0.4 to 0.6 with some blank and under stocked patches. The Teak (*Tectona grandis*) is a dominating species, which constitutes upto 80 % in some of the patches. The crop with its natural associates of Ain (*Terminalia alata*), Dhawda (*Anogeissus latifolia*), Lendia (*Lagerstroemia*

parviflora) shiwan(*Gmelina aoborea*), Kalamb(*Mitragyna paoviflora*), Telia, Shisham (*Dalbergia latifolia*), Bija (*Pterocarpus marsupium*) etc. The crop is mainly young to middle aged dominating with malformed crop. In some of the patches, the status of natural regeneration is satisfactory.

The Sandal (*Santalum album*) trees are noticed in Chikalwal round and Narnala forest area. The status of natural regeneration of Sandal is poor. Teak is the most dominating species and with its associates in this forest. The constitution of various species of the crop is given as below :-

Upper Storey: - Teak (*Tectona grandis*) is principal species and main associates are Dhawada (*Anogeissus latifolia*), Ain (*Terminalia alata*), Tiwas (*Ougenia oogeinessis*), Lendia (*Lagerstroemia parviflora*) and Tendu (*Disopyros melanoxylon*). Some of the other associates are Satpudi (*Dalbergia paniculata*), Bhirra (*Chloroxylon swietenia*), Kalamb (*Mitragyna parviflora*), Rohan (*Soymida febrifuga*), Salai (*Boswellia serrata*), Semal (*Bombax ceiba*), Beheda (*Terminalia bellerica*). Shisham (*Dalbergia latifolia*), Bija (*Pterocarpus marsupium*) and Bel (*Aegle marmelos*).

Under Storey:- The understorey consists of trees shrubs, grasses and climbers. The major species are-

Trees:- Amaltas (*Cassia fistula*), Aonla (*Emblica officinalis*), Char (*Buchanania lanzan*), Dudhi (*Wrightia tinctoria*), Ghoti (*Zizyphus xylocarpa*), Palas (*Butea monosperma*), Dhaman (*Grewia tiliaefolia*), Moyen (*Lannea grandis*), Bartondi (*Morinda tinctoria*), Lokhandi (*Ixora parviflora*).

Shrubs:- Bharati (*Gymnosporia montana*), Parijatak (*Nyctanthes arbortristis*), Mororphali – (*Helicteres isora*), Dhayati (*Woodfordia fruticosa*), Raimunia (*Lantana camara*), Tendu (*Diospyros melanoxylon*).

Grasses:- Bhurbhusi (*Eragrostis tenella*), Kodmor (*Apluda varia*), Marvel (*Dilabthium annulatus*), Dub (*Cynodon dactylon*), Paonya (*Ischoemum sulcatum*).

Climbers:- Palasvel (*Butea superba*), Mahul (*Bauhinia vahlii*), Pivervel (*Combretum ovalifolium*), Chilati (*Acacia pinnata*), Iruni (*Zizyphus oenoplia*) Gunj (*Abrus precatorious*), Ran kand (*Dioscorea bulbifera*) Ran draksh (*Vitex tenuifolia*)

b] Dry mixed deciduous forests - 5A/C3

These forests formed as the most important common type, situated generally in dry exposed localities where the layer of soil is superficial and the soil moisture is low with heavy grazing and frequent fires. Majority of this forest conformed to site quality IV B however at a very few places it is found patches of site quality III and IV A, which are confined mostly in sheltered pockets, Nala banks and gentle slope plateau, where soils having a considerable depth. Teak occurs in gregarious patches forming 60 to 80% of over wood. At some places Salai becomes a dominating species and on exposed spurs Dhawda comes under Salai. On many sites of old cultivation and open areas Palas, Ain, Lendia and thorny species appear first and Teak follows rapidly. The natural regeneration of teak is sporadic on lower gentle slopes and decreases along the steeper slopes and very sparse on hill tops. Most of the regeneration of teak is of coppice origin. Due to its endurance against fires and other damaging effects.

Trees:- Salai (*Boswellia serrata*), Dhaora (*Anogiesus latifolia*), Aonla (*Embllica officinalis*), Palas (*Butea monosperma*), Ber (*Zizyphus jujuba*), Ghont (*Zizyphus xylopyra*), Ain (*Terminalia tomentosa*), Ahl (*Morinda tinctoria*), Jamrasi (*Elaeodendron glaucum*), Khair (*Acacia catechu*), Hiwar (*Acacia leucophloea*), Achar (*Buchanania latifolia*), Tendu (*Diospyros melanoxylon*), Amaltas (*Cassia fistula*), Kalamb (*Mitragyna parviflora*), Gongal (*Cochlospermum gossypium*), Mahua (*Madhuca latifolia*), Moyen (*Lannea grandis*) and Behera (*Terminalia bellerica*). Koha (*Terminalia arjuna*) is common along most of the bigger nallas and streams. Other less common associates are :- Bija (*Pterocarpus marsupium*), Tiwas (*Ougenia dalbergioides*), Dhaman (*Grewia tiliaefolia*), Mokha (*Schrebera swietenoides*), Kulu (*Sterculia urens*), Kusum (*Schleichera oleosa*), Reproduction of Teak is often quite good and among other species Dhaora, Palas, Lendia, Ain and Kulu regenerate well. Teak and most other species coppice well. Undergrowth is not dense, except in moist

valleys or along nala banks where Nirgudi (*Vitex negundo*), Marorphal (*Helicteres isora*), and Bhandar (*Colebrookia oppositifolia*), Bharati (*Gymnosporia montana*) are found in dense patches. In dry localities Bharati (*Gymnosporia montana*), Chilati (*Mimosa rubicaulis*), stunted Khair (*Acacia catechu*) occur, and at very few places Lantana (*Lantana camara*) and Kharasi (*Byctanthes arobortristis*) are found. The principal grasses are Sheda (*Schima nervosum*), Ghonad (*Themeda quadrivalvis*), Kusal (*Heterpogon contortus*), Rusa (*Cymbopogon martini*) and Bhurbhusi (*Eragrostis tenella*).

Climbers :- Chilati-choti (*Acacia pennata*), Malkangni (*Celastrus paniculata*), Piwarbel (*Combretum decandrum*), Nagbel (*Cryptolepis buchanani*), Dudhi (*Hemidesmus indicus*), Dhimarbel (*Ichnocarpus frutescens*), Mahul (*Bauhinia vahlii*), Ironi (*Zizyphus oenoplia*).

c] **Boswellia Forest - 5A/E2**

This type of forest covers many reserves in Ambabarwa, Hamdari, Cidona, etc. It occurs almost as a pure crop on dry and exposed soils at mixture with a few scattered Khair, Rohan, Ghont, Chilati, etc. These forests are dominated by Salai and representing of degraded forests. The site quality of Teak is IV B. In many areas Salai crop is mostly malformed and unsound. The reproduction Salai is fairly good whereas natural regeneration of Teak and other species is scanty.

d] **Babul Forest - 5A/E3**

Babul bans found in water logged areas in some of the broader valleys mainly of Morna reserve of Akola Range. In this area Babul bans are found along streams and nalas.

Most of these forest are situated in the Payanghat however some scattered blocks of forest found on the Northern part of Balaghat plateau commonly known as Babul bans. Three main varieties of Babul have been identified – 1) Telia, 2) Kauria, 3) Ramkati.

Ramkati appears like broom with ascending cupressi formed branches. This variety grows faster but occurs in sporadic form of forest and found adjoining to cultivations. Religious sentiment is attached against the felling of this variety.

The other two varieties can be identified with following features :-

Telia	Kauria
1. Bark relatively smooth and lightly cracked	1. Bark rough and fissured
2. Colour of shoots bright brown spines short slender and few	2. Colour of shoots grey spines long, stouter and numerous
3. Pods monoli form	3. Pods flat but little constricted between the seeds.

Both Telia and Kauria prefer deep moist soils. Telia variety grows faster and long lived. Based on economical value Telia variety is considered as much superior for the purpose of timber used for various agricultural implements. The wood of Telia variety is compact, closed grained, durable and seasons well whereas timber of Kauria variety is coarse, brittle and seasons badly and cracks during the process and it is used rarely. Both the varieties have almost equal fuel value.

Babul (*Acacia nilotica*) is a strong light demander and it is not a good coppicer, Karuia variety is much more susceptible to fungus attack. Majority of Babul bans consists of Kauria variety and seeds are being disbursed by floods along streams. The growth of Babul is good on deep soil and well drained alluvium along the bank of rivers and Nalas. Kauria grows well on light black soil and poor on shallow and hard soils, slow stunted growth, hardly achieve 20 feet in height. It germinates well and grows faster.

Babul forests occur almost pure. However, at places following species are found scattered in them:-

Apta (*Bauhinia racemosa*), Ahl (*Morinda tinctoria*), Amaltas (*Cassia fistula*), Bahera (*Terminalia belerica*) Rarely noticed, Chandan (*Santalum album*), Ghont (*Zizyphus xylopyra*), Lasora (*Cordia myxa*), Umbar (*Ficus glomerata*), Chinch (*Tamrindus*

indica), Jamun (*Eugenia jambolana*) along nala banks, Kawit or Kith (*Feronia elephantum*), Katbor (*Canthium parviflorum*), Kalam (*Stephegyne parvifolia*), Koha or Arjun (*Terminalia arjuna*), Lendia (*Lagerstroemia parviflora*), Maharukh (*Ailanthus excelsa*), Palas (*Butea monosperma*), Ain (*Terminalia tomentosa*), Pakar (*Ficus infectoria*), Panjra (*Erythrina suberosa*), Lokhandi (*Ixora parviflora*) and Sitaphal (*Anona squamosa*).

The undergrowth generally consists of Chilati (*Mimosa rubicaulis*), Ber (*Zisiphus jujuba*), Bharati (*Gymnospora montana*), Nirgudi (*Vitex negundo*), Tarwad (*Cassia auriculata*), Tarota (*Cassia tora*), Pachara (*Capparis grandis*), Yelati (*Dichrostachys cinerea*), Takal (*Clerodendron phlomoids*) and a few herbs.

The climbers are Chilati- Choti (*Acacia pennata*), Gunj (*Abrus precatorius*), Ironi (*Zyzyphus oenoplia*), Piwarbel (*Combretum decandrum*), Wassanbel (*Cocculus villosus*), and Kanchkhuri (*Mucuna pruriens*).

The common grasses are :- Bhurbusi (*Eragrostis tenella*), Sheda (*Ischaemum laxum*), Ghonad (*Anthistiria ciliata*), Kunda (*Ischaemum pilosum*), Kushal (*Andropogon contortus*), Marvel (*Dichanthium annulatum*), Paunya (*Ischeomum sulcatum*), Tikhari (*Cymbopogon martini*), Harali (*Cynodon dactylon*), Kusli (*Aristida funicalata*), Musrut (*Iseilma laxum*), Nandbar (*Panicum javanicum*), Pakli (*Apluda-varia*) and Seprut (*Panicum isachme*).

e] **Southern Throny Forest type - 6A/C1 or open mixed forests**

These forests occur intermixed with Teak. Teak occurs in strips of forests in areas adjoining to Teak forest in all the large reserves. Dense patches of better quality mixed crop found along banks of water courses. The site quality is very poor, IV B or lower and are usually situated in soils varying from Murrum, light black cotton to deep black cotton soils. Common species are palas, Dhawda, Amlatas, etc.

f] Fodder reserves with brush wood type 5D/S4

This type of forest consist of Grass Ramnas or fodder reserves. The woody species occur scattered and principally with Bharati (*Gymnosporium montana*), Khair (*Acacia catechu*), Amaltas, Palas, Tendu, etc. The grasses generally found are Kusal (*Aristida funicalata*), Sheda (*Ischaemum laxum*), Paonia (*Ischeomum sulcatum*), Bhurbhusi (*Eragrostis tenella*), Ghonad (*Anthistiria ciliata*), Kunda (*ischaemum pilosum*), etc.

SECTION 3: INJURIES TO WHICH THE CROP IS LIABLE:

IIA.3.1. Man is one of the most important agencies causing considerable damage to the forest crop. The unregulated grazing, illicit felling, encroachment and frequent fires cause damage to the forests. The erratic and scanty rains have also affected the natural regeneration and growth of the forest crop.

I. Man :- Man indulges in illicit felling for fuel, small timber and lopping for thorny hedges is the main source of injury to crop especially the forest adjoining to villages. Such type of damage is very well noticed in Babul bans. As there is huge gap between demand and supply it is very difficult to meet both domestic and commercial needs of people for various forest produces. Growing unemployment is also aggravating illicit felling of forests apart from high price in the market without investment and comparatively with less risk.

II. Encroachment:- In order to cultivate the agricultural crops man indulges in encroachment after clearing the vegetation especially in monsoon season. Forests have become open and barren in certain localities due to encroachment on forest land for agricultural purposes. The 'E' class forest suffered a lot because of encroachment.

TABLE NO. – 7

**DETAILS OF ENCROACHMENT ON FOREST LANDS IN AKOLA FOREST
DIVISION.**

Sr.No.	Year	Area in Ha.
1	1994-1995	65.60
2	1995-1996	3430
3	1996-1997	61.24
4	1997-1998	26.20
5	1998-1999	37.00
6	1999-2000	76.00
7	2000-2001	30.03
8	2001-2002	125.60
9	2002-2003	-
10	2003-2004	219.32
11	2004-2005	509.94
12	2005-2006	397.56
13	2006-2007	144.56
14	2007-2008	89.72

III. Grazing by Cattle :- Unregulated and excessive grazing are fatal to the vegetation especially in drier type of forests. Grazing and trampling by cattle cause serious damage to the forest crop as well as young natural regeneration. Excessive movement by cattle renders soil hard and reduces soil aeration, thus making conditions unfavourable for germination of seed of tree species especially on clay soils. The good quality teak forest have been replaced by poor quality teak forest first and ultimately by scrub forest due to unregulated grazing. Due to heavy grazing much more damage is noticed in browsable species where as in teak mechanical damage has been observed. Grazing is more than that of the carrying capacity of the forests due to local pressure, inadequate infra - structural facilities, poor social awareness and less sensitivity on the part of local staff.

TABLE NO. – 8

CATTLE POPULATION, CATTLE UNITS AND GRAZING FEE COLLECTED

Cattle/Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Buffalow	8429	2104	2481	1636	1993	1884	4530	4840	1693	1900
Cows & Bullocks	19127	29240	24299	25221	23187	22301	13695	13246	25351	19071
Goats & Sheeps	11910	1603	1615	30	894	4009	3459	5693	6420	298
Camel	0	0	0	0	436	0	0	0	0	0
Otheranimal	896	1319	3444	7202	2308	3942	8280	1351	289	0
Total	40362	34266	31839	34089	28818	32136	29964	25130	33753	21269
Total Cattle Unit.	35985	33448	29261	28493	27173	26069	22755	22926	28737	22871
Grazing fee collected	41711	37236	29328	3046	33592	28258	27328	19411	27455	20687

TABLE NO. – 9

STATEMENT OF OFFENCE CASES

Sr. No.	Year	Fire	Grazing	Illicit felling	Others	Total cases
1	1994-95	30	78	1375	119	1602
2	1995-96	29	84	957	172	1242
3	1996-97	31	49	971	180	1231
4	1997-98	12	43	825	108	988
5	1998-99	32	74	823	114	1043
6	99-2000	29	33	827	182	1071
7	2000-01	45	35	1534	131	1745
8	2001-02	5	49	1152	167	1373
9	2002-03	11	63	1212	245	1531
10	2003-04	42	40	503	151	736
11	2004-05	22	7	1215	128	1372
12	2005-06	10	0	1024	345	1379
13	2006-07	41	17	840	325	1379
14	2007-08	89	20	757	336	1202

IV. Fire :- The entire forests of Akola Forest Division is very much prone for fire hazards due to dry atmosphere. Deciduous nature of forest and growing apathy of people towards forest sometimes lead to fire hazards. Fires are mostly intentional, some times accidental also. Intentional fires are mostly put in by local people to collect *Mahua* flowers, fruits and to have new flush of *Tendu* leaves.

TABLE NO. – 10

NUMBER OF FIRE CASES AND AREA BURNT IN HA.

Sr. No.	Year	No. of Fire cases	Area Burnt in Ha.
1	1994-95	30	1269.00
2	1995-96	29	458.50
3	1996-97	31	220.00
4	1997-98	12	321.00
5	1998-99	32	504.80
6	99-2000	29	803.00
7	2000-01	45	496.68
8	2001-02	5	145.00
9	2002-03	11	184.00
10	2003-04	42	760.00
11	2004-05	22	361.00
12	2005-06	10	383.00
13	2006-07	41	356.50
14	2007-08	89	978.80

V. Damage by Wild Animals:- Damage by wild animals is negligible as the forest are poor in wild game. However certain amount of damage caused by Sambar, Blue bulls and Pigs is noticed. Uprooting of young and tender rizomes in Bamboo plantations is also noticed in this forest.

VI. Insects:- The Teak skeletonizer (*Hapalia machaeralis*) and defoliator (*Hyblea puera*) are common in these forests and the growth of Teak is retarded to some extent in case of severe attack.

Psiloptera fastuosa is a long corn beetle causes damage to Babul by boring into the stems and *Celosterna scabrata* a canthared beetle damages by attacking the leaves and bark. However damage caused by these two insects is not considerable.

VII. Fungus :- *Fomes papianus* attacks Babul trees on exposed parts and damage the timber.

VIII. Climbers and Weeds:- Lot of damage caused by Piwarbel, Chilati choti (*Acacia pinnata*), Mahul (*Bauhinia vahlii*) and Palas bel (*Butea superba*).

IX. Natural Phenomenon :-

a) **Drought:-** Drought has been of frequent occurrence in the past and caused damage to Teak and its associates.

b) **Storm :-** Damage due to storm is negligible.

c) **Floods. :-** Floods to Purna river and its tributaries sometimes cause damage to the forest crop especially young regeneration. These floods cause damage to young Babul crop. During floods the damage is noticed in forest crop due to uprooting.

d) **Frost :-** Frost injury is not known in the area.

XI. Soil erosion :- Soil erosion is noticed in the exposed areas of forests, due to trampling by cattle and illicit felling. Soil erosion is very much severe due to nature of banks of various rivers, dam, catchment areas and other water bodies. Those areas are susceptible to soil erosion. In this Division majority of forest area is prone to sheet erosion. The ill-effects of soil erosion can be noticed at places where exposed boulders and poor vegetation which lead to degradation of soil. In this area wind erosion is uncommon.

CHAPTER II B

FOREST FAUNA

IIB.I Akola forests are poor in game due to its nature and spread of the forests and which do not afford a natural abode for a variety of wild animals. Whatever animals found in this forests are confined to remotest pockets of the forests. In this division the forests are interspersed with the habitations and due to which the forests are fragmented without natural corridors for wildlife movement. Therefore the wildlife is distributed in such pockets where habitat are conducive for wildlife.

IIB.I.1 Whatever wildlife that is present is restricted to forest blocks such as Ambabarwa, Narnala, Palodi, Chikalwal, Medsi, Patur, Gheru-metergaon and Amdari region.

SECTION 1: GENERAL HISTORY OF THE WILD LIFE MANAGEMENT:

II B.1.1. In the past wild life used to be protected as per provisions of Wild Birds and Animals Protection Act 1912, Central Berar Provinces Game Act 1935, Restriction on issue of arms licenses under Indian arm rules 1924, Shooting rules made under Sec. 26(1) and 76 (d) of Indian Forest Act detailed in the appendix of C.P. and Berar forest Manual Volume II. The Conservator of Forests in consultation with Divisional Forest Officer used to declare certain block of reserve forest as open for shooting permits then issued by Divisional Forest Officer. There were 6 shooting blocks in Akola Forest Division. The Shooting blocks in Akola Forest Division are given in following table :-

TABLE NO. – 11

LIST OF SHOOTING BLOCKS

Sr.No.	Range	Shooting Blocks		Area in Sq. Miles
		Block No	Block Name	
1	Akola	1	East Morna	22
		2	West Morna	37
2.	Medsi	3	Medsi	25
		4	Patur	22
		5	Chikhalwal	35
3.	Karanja	6	Palodi	27

In 1952 the Indian Board for Wildlife was constituted to co-ordinate the legislative and administrative measures for wild life conservation. In 1961 Bombay Wild Animal and Wild Birds Protection Act 1951 was enforced in Vidarbha. This act provides the salient features to extend the provisions of protection of wild life out side reserve forest area also. The licence holders for game were to get them registered with the wild life preservation officer. Hunting license were categorized into 1) Small Game, 2) Big Game, 3) Special Game, 4) Pet Animals. Unauthorized trading in wild life trophies was prohibited. In 1972 Wild Life Protection Act was enacted for entire India except Jammu and Kashmir and hunting and shooting of all birds have been banned under the provisions of this act. In 1991 the Wild Life (Protection) Act 1972 was amended and made it more powerful. The hunting of all wild animals except as provided in Sec. 11 and 12 and issuing of hunting licence has been banned after amendment. Protection to some special plants has been provided and given in Schedule VI. Trade in all wild animals and trophies and articles have been banned. The punishment of violation of any of the provisions has been enhanced to 3 years imprisonment and fine Rs. 25,000/-.

SECTION 2: DISTRIBUTION OF THE WILDLIFE:

II B.2.1. Narnala and Katepurna forest area of Akola range used to support good population of Carnivores i.e. Tiger, Panther, Hyaena and herbivores like Bison, Sambar, Blue bull, Sloth Bear, Chinkara and occasionally Wild dog used to cross over from Melghat forest. Now for the betterment of wildlife in this area Katepurna Wildlife Sanctuary was declared on vide Revenue and Forest Department No.WLD/ 1087/ 102872/ F-5 dated 8th February 1988 and Narnala Bird Sanctuary was declared on vide Revenue and Forest Department No. WLP. 1096/ DR- 279/ F-1 Dated 2nd May 1997. These sanctuaries were under the control of Dy.C.F. Akola. Subsequently these two Sanctuaries have been transferred to wildlife wing for better management. In Karanja range Karanja – Shohal Black buck Sanctuary was declared in order to give much more emphasis for the improvement of black bucks and other animals. At present the management of this Sanctuary is with the Dy.C.F. Akola Forests Division. A separate management plan for this sanctuary is under preparation.

Animals:- The common animals that are met with in these forests are : Tiger (*Panthera tigris*), Panther (*Panthera pardus*), Sambar (*Cervus unicolor*), Chital (*Axis axis*), Sloth bear (*Melursus ursinus*) and Wild boar (*Sus scrofa*), Bison (*Gaur, Boss gaurus*) is often met with in Ambabarwa reserve of Jalgaon range. Barking deer (*Muntiacus muntjack*), Four horned antelope (*Tetracerus quadricornis*) are also found in Amdari, Geru-Matergaon and Ambabarwa reserves. Blue bull (*Boselaphus tragocamelus*) is common in open forests all over the Division. Hares (*Lepus nigricallis*) and Common squirrel (*Funasulis spp*) are found everywhere in the tract.

Birds:- Birds such as Peafowl (*Pavo cristatus*), Painted partridge (*Francolinus pictus*) Green pigeon (*Crocoupes chilrogaster*) are common all over the forests while Grey jungle fowl, (*Gallus sonnerati*) is found only in Bamboo bearing areas of

Ambarbarwa and Narnala reserves. The other birds found in forests of Akola Division are Grey Heron (*Ardea cinerea*), Cattle Egret (*Bubulcus ibis*), Egyptian Vulture (*Neophron percnopterus*), Indian longbilled Vulture (*Gyps indicus*), Painted Francolin (*Fracolinus pictus*), Common Quail (*Coturnix coturnix*), Redwattled Lapwing (*Vanellus indicus*), Little Ringed plover (*Characrius dubius*), Blue Rock Pigeon (*Columba livia*), Spotted dove (*Streptopelia tranquebaricu*), Asian Koel (*Eudynamys scolopacea*), Greater Coucal (*Centropus sinensis*), Spotted owlet (*Athene brama*), Forest Owlet (*Heterogloux blewitti*), Common Indian Nightjar (*Caprimulgus asiaticus*), Small Blue Kingfisher (*Alcedo atthis*), Indian Roller (*Coracias benghalensis*), Common hoopoe (*Upapa epops*) browncrowned Pigmy woodpecker (*Dendrocopus nanus*), House crow (*Corvus splendens*), Jungle crow (*Corvus macrohynchos*), Redwhiskered Bulbul (*Pycnonotus jocosus*), Redvented Bulbul (*Pycnonotus cafar*), House sparrow (*Passer domesticus*), Baya (*Ploceus phillippinus*)

TABLE NO. – 12

TABLE SHOWING DISTRIBUTION OF WILD LIFE IN AKOLA DIVISION

(As per Census on 2003-04)

Wild Boar	Barking Deer	Nilgai	Chousin ga	Black Buck	Wolf	Jackal
80	08	32	--	70	23	25
Hyaena	Langur	Rhesus Monkey	Hare	Mongoose	Pea-cock	Owl
03	108	--	34	--	36	03

Tiger and panther presence was not reported during the census

TABLE NO. – 13

**WILDLIFE CENSUS REPORT 2007 OF WILDLIFE DIVISION AKOLA
IN KATEPURNA WILD LIFE SANCTUARY**

Sr. No.	Name of Wild Animals	Population
1	Bluebull	99
2	Spotted deer	46
3	Barking Deer	12
4	Langur	398
5	Wild boar	103
6	Hyaena	2
7	Panther	5
8	Jungle Cat	4
9	Porcupine	1
10	Hare	6
11	Jackal	6
12	Mongoose	4
13	Peacock	50

TABLE NO. – 14

**WILDLIFE CENSUS REPORT 2007 OF WILDLIFE DIVISION AKOT IN
NARNALA BIRD SANCTUARY**

Sr. No.	Name of Wild Animals	Population
1	Tiger	3
2	Panther	1
3	Wild – Cat	4
4	Barking deer	2
5	Rhesus macaque – Red mouth	2
6	Langur – Black mouth	54
7	Sambar	8
8	Wild boar	3
9	Hare	2
	Total	79

SECTION 3: INJURIES TO WHICH THE WILDLIFE IS LIABLE:

II B.3.1. Destruction of habitat due to illicit felling, frequent fires and encroachment for cultivation have been affecting the wild animal population and their distribution to a great extent. The Shrinkage in forest cover, scarce and erratic rainfall, resulted in unavailability of water inside the forests in summer have led to decreasing wild animal population over the years. This is coupled with poaching and hunting resulted in further decrease in wild animals

TABLE NO. – 15

STATEMENT OF POACHING/ NATURAL/ ACCIDENTAL DEATHS OF WILD ANIMALS

Year	Offence Cases Booked	Poaching			Natural Death			Accidental Death		
		Tiger	Panth	Other	Tiger	Panth	Other	Tiger	Panth	Other
1994-95	4	0	0	1	0	0	3	0	0	0
1995-96	2	0	0	0	0	0	1	0	0	1
1996-97	10	0	0	0	0	0	6	0	0	4
1997-98	5	0	0	0	0	0	3	0	0	2
1998-99	6	0	0	0	0	0	2	0	0	4
99-2000	0	0	0	0	0	0	0	0	0	0
2000-01	8	0	0	0	0	0	1	0	0	7
2001-02	3	0	0	0	0	0	2	0	0	1
2002-03	11	0	3	0	0	0	2	0	0	6
2003-04	5	0	0	3	0	0	0	0	0	2
2004-05	6	0	0	3	0	0	0	0	0	3
2005-06	10	0	0	0	0	0	0	0	0	10
2006-07	4	0	0	0	0	0	1	0	0	3
2007-08	2	0	0	1	0	0	0	0	0	1

Panth – Panther ; T/ – Tiger , Oth – Other

CHAPTER – III

UTILIZATION OF THE FOREST PRODUCE

SECTION 1: AGRICULTURE, CUSTOMS AND WANTS OF POPULATION:

III.1.1. In Akola Forest Division agriculture is the main occupation of the people. The local population consists of mainly of agriculture of various classes such as Kunbis, Marathas, Andhs, Malis, Banjaras, Korkus, Bhills, Nihals, Mahars, Mangs, Chambhars, Dhangars, Gawlis, Wanis, etc. Out of these classes the Korku, Bhill, Andh and Banjara are the chief inhabitants of forest villages, most of them are good jungle men but poor cultivators. Those who live in forest villages mostly depend upon forest for their daily needs. Jawari is the staple food of the people. Apart from Jawari the other main cultivated crops are Wheat, Cotton, Ground nut, Sugarcane, Rice, Bajra, Gram, Soyabin, Til. At some places Tobacco and Sugar cane crops are also grown Beetle wine plantations and Orange Orchards are also grown by Malis. The agriculture practices are traditional farming with wooden or iron plough and pair of bullocks are prevalent in this area. This type of traditional farming is slowly changing into mechanical farming as some of the farmers adopting advance technology and high yielding varieties in agriculture. The agriculture practice is mainly rain-fed however, in some of the areas irrigation is available through medium and minor irrigation tanks which are connected through canal network to the agriculture fields. Irrigation by wells and tanks is common along Purna river and its tributaries.

III.1.2. Three types of soils have been recognized in this area. 1) Light reddish sandy loamy soils, situated on ridges and hill sides. 2) Soil with uniform structure vary in colour from Black to dark brown generally distributed in valleys and depressions, which is called as Black Cotton soil, 3) Coarse gravilly are loose triable texture with a colour varying from light brown to gray.

III.1.3. The Purna alluvium is rich in Black cotton soil with Calcareous conglomerate which lies immediately below it. It is invariably found along with river courses appear in light brown colour called as kanker having high percentage of soda salts. There is a

marked difference in the alluvium soils of Payanghat plateau and the valleys. The soils are deeper and good in payanghat plain and shallow and poor in valleys.

III.1.4. The local population depends on forests for small timber, fuel-wood, fodder and other Non Wood Forest Produces (NWFP) and their dependency has increased tremendously with the increase in human and cattle population. The fragmentation and shrinkage of forest cover has further worsened the situation.

Teak ballies (31-45 cm girth) had been provided on *Nistar* to the natives in the past. Fuel-wood was also supplied on subsidized rates to the natives through a fire wood sale Depots.

III.1.5. The population in forest area depend upon rain fed agriculture and in some of the areas irrigation is in practice due to medium and minor irrigation projects. Jawari, wheat, cotton, soyabean, rice, groundnut, bajara, gram Moong, Udid, Linseed, Tilli are main agriculture crops in this area. In Kharif season the cultivators generally grows Jawari, Cotton, Toor, Tilli, Soyabean, whereas in Rabi season Wheat, gram, linseed etc. grown by the cultivator . Most common crops in this area are cotton, jawari, in the entire region. The Cultivators having practice of cultivating horticulture crops such as orange, papaya etc. Now a days the cultivators raising some of the forest fruit species like Aonla, char etc. on their agriculture fields. Some of the cultivators have raised Teak plantation, Bamboo plantation in their agriculture fields. It has been observed that though the plantations have not become successful in the establishment due to lack of proper silviculture management practices like thinning, tending etc. The expected results in raising these plantations are not achieved by the cultivator. The local forest staff are required to help the cultivator for better management of these plantations by educating and demonstrating the silvicultural practices to the cultivator.

The irrigation practices are mostly rain fed, however in certain areas, where Medium and Minor irrigation projects are available there irrigated agriculture is in practice. To fetch the water from irrigation tank network of canal system has been developed to the point of utilization of water for irrigation. Apart from irrigation

project, many wells, tanks has been constructed to provide irrigational facilities to cultivators in this area along with especially Purna river system. In general the economic status of rural people is poor and they do not find areas even to grow any tree species or better fodder crops. Therefore, the scarcity of all forest produce exists resulting in huge gap between demand and supply.

In this division Akola and Washim are districts head quarters, where the population density is more approximately 25 to 30 % population live in urban areas where as 70% population is limited to rural areas whose occupation is mostly agriculture. Out of this rural population most of the population is of land less agriculture labourers.

The Industrial development in the division is limited to Akola town. Where as washim district is newly formed district and the industrial establishment is not conspicuous in Washim town. In this division increase in human and cattle population led to much more dependency on available forest. The requirement for forest produce has become multi-folded for fuel wood, small timber, fodder and other non-wood forest produces. Diversion of forest land in the past for agriculture and other purposes, degradation of forest due to excessive biotic pressure, shrinkage of forest over a period of time as a result of various developmental activities have further aggravated the problem of degradation of forests.

In this division there was a practice of supplying forest produce for construction and for agriculture implements such as teak and Miscellaneous ballies fuel wood, thatching grass etc. on Nistar - rates by establishing local depots. But at present there is no such practice of providing forest produce on Nistar rates because of reduction of forest produce.

In Akola forest division, to meet the demand for grazing and fodder development separate working circles have been prescribed since the inception of working plans. In the working plan of S.S. Parasnis open Pasture and Fodder improvement working circles have been prescribed and 26 grazing units were formed to

meet the grazing requirement of local cattle population. In the olden days the cattle population was within the limits of carrying capacity of forests and over a period of time, due to increase in cattle population and reduction of forest area and forest, the cattle population has increased more than the carrying capacity of the forest and more over the grazing is not uniformly distributed and leading to excessive grazing pressure especially the forest areas adjoining to habitations. Where as in some remote areas the population is not to the extent of carrying capacity of the grazing units. Therefore due to such a situation the degradation of forest is much more around the habitations.

In Akola forest division the carrying capacity of forest has been estimated 34571Ha. in all grazing units. In the revised grazing settlement policy as per Shri.Marathe's report, there are 25 grazing units prescribed and the carrying capacity estimated is 29285 ha., which indicates that there is imbalance between the carrying capacity and available cattle population. The Ramna's are closed for grazing with a view that the local people will go for stall feeding of their cattle, but the local people are reluctant to go for stall feeding by cutting the grass in Ramnas or fodder reserve areas.

The total population of the division is 26,50,455 as per 2001 census. The population density is about 250 per Sq. Km. The Schedule caste constitutes 6.41% of population where as 12.31% population constitutes Schedule tribes. The main schedule tribe population are Korkuss, Bhills, Nehals, Gonds, pardhans etc. Male/female sex ratio 1000/938. In this division literacy 71.16%.

Department of Agriculture by way of its intervention improved the methods of cultivation, use of better quality seeds, use of fertilizers and application of insecticides etc. In this area mostly people live in thatched roofs or tin sheds built from stout poles of teak or other miscellaneous species of forests and sometimes plastered with mud or cow-dung. Modern housing patterns are coming up as people are being provided with housing facilities under so many developmental schemes undertaken by the Government.

III.I.6 : As per the districts (Akola and Washim) social and survey reports of 2005-2006 year the land pattern used in the division is as follows. Total geographical area of the division is 10,57,000 ha and forest area 81009.61 ha.

TABLE NO. – 16						
HUMAN POPULATION, SEX RATIO AND LITERACY RATE						
Taluka	Total Population	SC	ST	Other	Sex Ratio	Literacy Rate%
Akola	656746	62660	29324	564762	934	72.81
BarshiTakli	132720	9063	10822	112835	934	65.62
Akot	232493	31940	24524	176029	940	68.03
Telhara	156776	12027	9376	135373.00	937	66.53
Balapur	169159	10397	5366	153396	943	66.94
Patur	120684	10063	13345	97276	946	65.49
Murtijapur	161661	27322	6294	128045	938	71.29
Washim	212644	37213	5954	169477	940	72.40
Malegao	156922	21499	21184	114239	942	70.30
Risod	177123	34893	7971	134259	948	71.97
Mangrulpir	149855	28023	8242	113590	925	85.00
Manora	135132	17297	21756	96079	933	70.10
Karanja	188540	23756	5845	158939	944	78.60
Total	2650455	326153	170003	2154299	--	--

TABLE NO. – 17

CATTLE POPULATION, CATTLE UNITS AND GRAZING FEE COLLECTED

Cattle/Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Buffalow	8429	2104	2481	1636	1993	1884	4530	4840	1693	1900
Cows & Bullocks	19127	29240	24299	25221	23187	22301	13695	13246	25351	19071
Goats & Sheeps	11910	1603	1615	30	894	4009	3459	5693	6420	298
Camel	0	0	0	0	436	0	0	0	0	0
Otheranimal	896	1319	3444	7202	2308	3942	8280	1351	289	0
Total	40362	34266	31839	34089	28818	32136	29964	25130	33753	21269
Total Cattle Unit.	35985	33448	29261	28493	27173	26069	22755	22926	28737	22871
Grazing fee collected	41711	37236	29328	3046	33592	28258	27328	19411	27455	20687

Section 2 : Market and marketable produce :-

III.2.1 The marketable product are Teak, is main timber followed by Ain, Kalamb, Babul, Behda, Dhawda, Mango etc. The other marketable produces are Tendu leaves, Moha flowers and seeds, honey, Bel, Aonla, Char, Bel fruits, flowers of some species, firewood etc. Main places of markets are Akola, Akot, Washim, Manglurpir, Karanja, Murtizapur.

There are two Forest Depot (Timber and Fuelwood) in this division. 1. Medshi Range Patur, 2. Shendurjana, Range Karanja.

In this division most of the forest products that are produced are consumed locally. Better quality timber is produced from Chikhalwal, Pandurna and Sawargaon reserved. The inflow of forest produce is decreasing year by year due to number of reasons, such as unrecorded local consumption, illicit felling, faulty management practices etc.

III.2.1.1. Marketable Produce

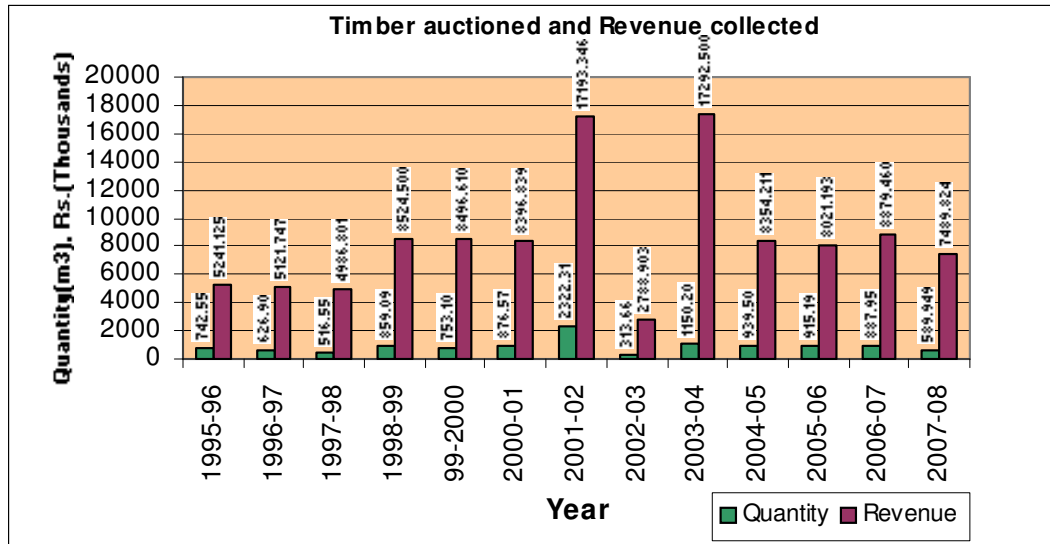
Main requirement for which people depend upon forest are :-

1. Timber:- The demand for Teak timber is very much high in the market and it is saleble in all sizes. The other species in demand are *Ain, Tiwas, Dhaoda, Babul, Bija, Shisam, Kalam, Shiwan, Tendu*. The timber mainly used for construction, furniture making and for agriculture implements by the local people.

TABLE NO. – 18

TIMBER AUCTIONED AND REVENUE COLLECTED

Sr. No.	Year	Timber (Cum.)	Revenue (Rs.)
1	1994-95	NA	NA
2	1995-96	742.55	5241125.00
3	1996-97	626.90	5121747.00
4	1997-98	516.55	4986801.00
5	1998-99	859.09	8524500.00
6	99-2000	753.10	8496610.00
7	2000-01	876.57	8396839.00
8	2001-02	2322.31	17193346.00
9	2002-03	313.66	2788903.00
10	2003-04	1150.20	17292500.00
11	2004-05	939.50	8354211.00
12	2005-06	915.19	8021193.00
13	2006-07	887.95	8879460.00
14	2007-08	589.949	7489824.00



I. Small Timber: Poles of Teak, Dhawada, Ain, Tendu, Shivan, Babul, Neem etc. are widely used for construction of huts and for preparation of agricultural implements. Teak poles are extensively used for hut construction.

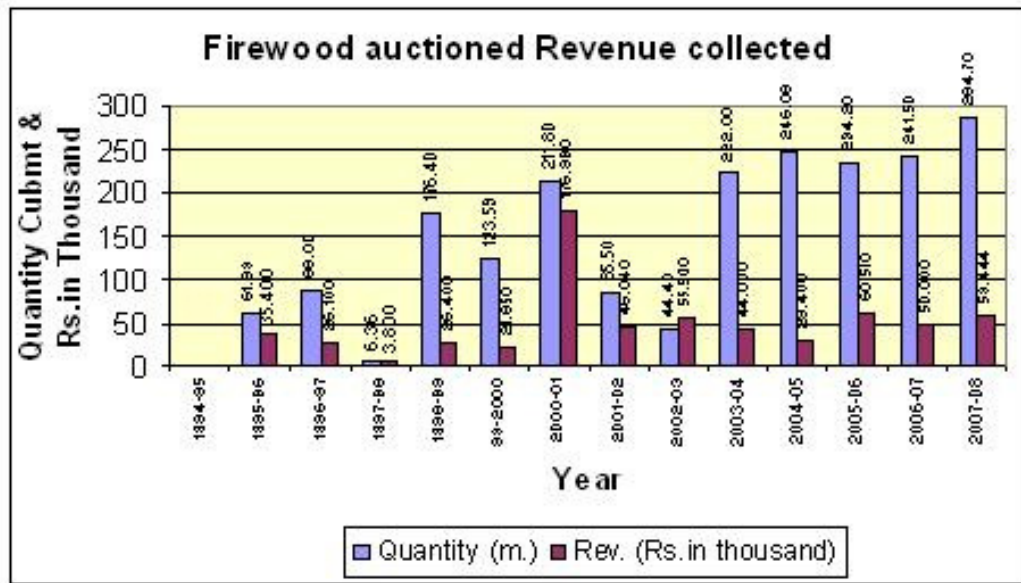
II. Fire wood : The forest dwellers extensively use the fire wood for cooking purpose, for light, for warmth in the houses especially in winters. It is essential for cooking purpose and in some villages fire is kept burning in and around the huts throughout night as this practice keep the hut warm and keep away the wild - animals. The fuel wood of Dhawada, Anjan, Babul, Ain, Khair etc. species preferred to other species. The wood of all species, which is not salable as timber is used as fuel wood. There is a huge gap between demand and supply of fuel wood. The people of many village collect fuel wood illegally from the adjoining forest causing lot of damage to the forest.

With the introduction of modern cooking fuels like LPG-gas, electric implements, charcoal etc., some of the families resorted to modern cooking fuels, however firewood still remains as major source of cooking fuel for most of the villagers as well as Akola and other townships of the division. Where the people who cannot afford modern cooking fuels are depending upon fuel. There are two fuel wood depot in this division located at Medshi Range Patur, Shendurjana Range Karanja. But now, no supply of fuel wood to the local villagers on Nistar system. Illegal consumption of fuel wood is by disbranching of tree in the forests carrying by head loads, by cycle, by bullock-carts is often noticed in this division.

TABLE NO. – 19

FIREWOOD AUCTIONED AND REVENUE COLLECTED

Sr. No.	Year	Quantity (Cum.)	Revenue (Rs.)
1	1994-95	---	---
2	1995-96	61.99	35400.00
3	1996-97	88.00	26100.00
4	1997-98	6.36	3800.00
5	1998-99	176.40	26400.00
6	1999-00	123.59	21850.00
7	2000-01	211.80	176990.00
8	2001-02	85.50	46040.00
9	2002-03	44.40	55500.00
10	2003-04	222.00	44000.00
11	2004-05	246.08	59400.00
12	2005-06	234.20	60510.00
13	2006-07	241.50	50000.00
14	2007-08	284.70	59444.00



III Bamboo: Local people use bamboos for preparation of mats, baskets and used as building material. In this area bamboo production is almost nil except on private farms. Local people when they need bamboo they purchase from local markets or some local farmer those who grow bamboo on their agriculture land.

IV Thatching grass : In some remote areas thatching grass is widely used for thatching the roofs of the huts.

V Fodder : In this region important fodder species are Sheda(*Schima nervosum*) Paunya (*Schima sulcatum*) Marvel (*Andropogon annulatus*) etc are highly palatable to the cattle population found in lesser quantity in the jungle. The coarse grasses such as Kusal (*Heteropogon contortus*) and Bhurbhusi (*Eragrotis tennela*) are abundantly available in the jungle are not that much relished by cattle in especially in summer. The local people are not habitual of stall feeding to their cattle and they allow the cattle to graze in the jungle leading into heavy and unregulated grazing in the forest area, causing lots of damage to the forest.

VI Grazing : Cattle of the villagers mostly graze in the adjoining forest and the forest areas are very much prone to heavy and unregulated grazing especially the areas around the villages.

VII Fruits and flowers: In the remote forest areas the villagers are very poor and they collect flowers of Moha, fruits of Tendu, Char, for their bonafide use or for their religious and customary functions or for sale to earn their livelihood. During Tendu season people will go for collecting of Tendu leaves to earn their livelihood.

VIII Fiber : Roots of Palas are dug and cured to obtain fibre for making ropes. Fibre ropes are also obtained from some climbers. These may be used for tying of agriculture crop during harvest.

IX. Other products : Apart from above mentioned product local people depend upon forest for gums (Dhawda, Babul etc.), flowers of Palas, fruits of Tendu, Bel, seeds of Moha etc. to make their livelihood demand. Bonafide sale even for their livelihood.

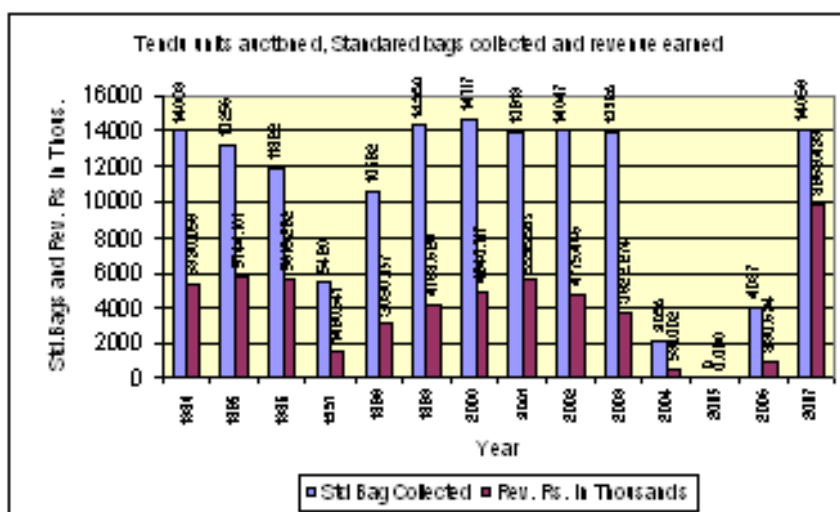
III.2.2. Non -Wood Forest Produce (NWFP):-

III.2.2.1. In this division many varieties of Non Wood Forest Produces are available such as Tendu leaves, Charoli, Moha fruits and seeds, gums, honey, wax, etc. Out of all these Non Wood Forest Produce Tendu is one of the major earning forest produce. There are 14 Tendu units in Akola Forest Division. Tendu trading has significant ups and downs depending upon the market and availability of leaves in the jungle. The revenue earning out of Tendu leaves trade in the division has shown declining trend except in the year 2007. Tendu trees show the scattered distribution limited to certain pockets of the forests. The quality and quantity of Tendu leaves are declining year by year, which perhaps may force the bidder to quote lesser prices. Tendu leaves collected and revenue earned in the past is given below in the table :-

TABLE NO. – 20

**TENDU UNITS AUCTIONED, STANDARD BAGS COLLECTED AND
REVENUE EARNED**

Sr. No.	Year	Unit Auctioned	Standard Bags Collected	Revenue Earned	Remarks
1	1994	14	14003.67	5330058.00	
2	1995	14	13256.11	5744101.00	
3	1996	14	11922.04	5618292.00	
4	1997	14	5420.89	1480541.00	
5	1998	14	10592.50	3090757.00	
6	1999	14	14360.48	4189620.00	
7	2000	14	14717.29	4840717.00	
8	2001	14	13919.21	5596565.00	
9	2002	14	14047.84	4775446.00	
10	2003	14	13926.40	3822274.00	
11	2004	14	2056.98	531002.00	
12	2005	14	0.00	0.00	
13	2006	14	4097.40	990634.00	
14	2007	14	14068.58	9869433.00	



II.2.2.2. Gum : Gum is collected generally from Dhawda, Babul etc. The Division is divided into 19 Gum units, which are sold in open auction. Gum auctioned and revenue collected is given in the following table :-

**TABLE NO. – 21
GUM AUCTIONED AND REVENUE COLLECTED**

Sr. No.	Year	Quantity (Qtl.)	Revenue (Rs.)
1	1994-95	0	0.00
2	1995-96	0	0.00
3	1996-97	56	139074.00
4	1997-98	40	93130.00
5	1998-99	60	120866.00
6	1999-00	45	88750.00
7	2000-01	86	170842.00
8	2001-02	65	131960.00
9	2002-03	25	82300.00
10	2003-04	40	112501.00
11	2004-05	51	116450.00
12	2005-06	50	140030.00
13	2006-07	874	343200.00
14	2007-08	756	425320.00

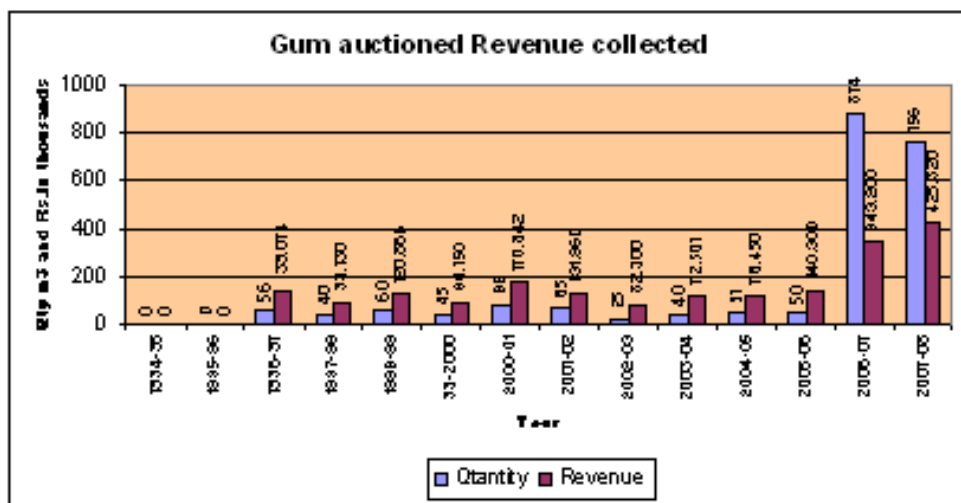


TABLE NO. – 22

LIST OF GUM UNITS IN AKOLA DIVISION

Sr. No.	Range	Name of unit	Remarks
1	Akola	Akola, Chikhalwal, Marsul	
2	Alegaon	Chondhi, Alegaon	
3	Barshi takli	Lohagad, Pinjar	
4	Karanja	Wanoja	
5	Manora	Palodi, Shend-Dhaba, Wirol, Manora,	
6	Malgegaon	Medshi, Mungla, Amana,	
7	Patur	Patur, Malrajura	
8	Washim	Bhar, Washim	

III.2.2.3. Rosha grass (Cymbopogon martini): Rosha grass is available in workable quantity in the forest reserves like Palodhi in Karnaja range, Narnala in Akola range and Rui in Washim range.

The Non Wood Forest Produce like Biba, Hirada, Charoli, Jamun, Aonla, Imli available in very limited quantity.

SECTION 3: DEMAND AND SUPPLY OF FOREST PRODUCES AND PRESSURE ON THE FOREST:

III.3.1. In this Division per capita consumption has been estimated by taking family as unit for its FDA projects and accordingly the requirement is projected depending upon numbers of household in each tehsil or talukas of Akola Forest Division. The demand for forest produces are as under-

Total number of households in the Division :	613503
Total number of land holders :	241612
Number of cattle :	12,36,688

TABLE NO. – 23

CONSUMPTION OF FOREST PRODUCES/ HOUSEHOLDS

Sr. No.	Forest Produces	Consumption Per households	Total requirement
1	Firewood	1.5 MT	920254 MT
2	Small timber	8 poles	498024 poles
3	Agricultural instruments	2 poles	1227006 poles
4	Fodder	3.5/ cattle	74442
5	Bamboo	20 Nos.	1227006 Nos.
6	Moha flowers	30 kg.	18405090
7	Moha seeds	5 kg.	3067515 kg.
8	Gum	5 kg.	3067515 kg.

SECTION 4 : LINES OF EXPORT :

III.4.1. The tract of Akola Forest Division is well connected by railway line and road network. . The Central Railway broad gauge Mumbai-Calcutta line runs West to East through almost middle of the tract. The tract of Akola Forest Division is well served by railway lines From Murtizapur on Central Railway broad gauge line, a narrow

gauge branch line runs to Achalpur in the North-West direction and to Yavatmal in South-East direction. Khandwa-Akola meter gauge and Akola- Hingoli broad gauge branch lines crosses Central Railway broad gauge line at Akola and passes through Akot, Akola, Washim tehasils in the North-South directions.

Total length of railway line network is 354 km. in the tract out of which 83 km. is a broad gauge, 214 km. of meter gauge and 57 km. is narrow gauge.

Road network is very well developed in this tract, having a total length of 3868 km out of which 100 km of National Highway, 728 km of State Highway, 1457 km of district road and 1583 km of other roads. Many roads have been upgraded during the past decade.

Both railway network and road network greatly assists the export and distribution of forest produce to and from of large reserves of forest. Apart from this road network there is also an adequate system of fair weather roads and cart tracts run through the forest.

The roads other than mentioned above that are maintained by Public Works Department, Zilla Parishad and Forest Department serves as a very good internal road network playing very important role in the management of forests and also in transportation of forest produce to the main market centre.

Range wise road network are given below :-

Akola	54.7 Km	
Karanja	56.4 Km	
Washim	41.9 Km	
Alegaon and Patur	} 145 Km	
Total		298 Km.

SECTION 5: METHODS OF HARVESTING AND THEIR COST:

III.5.1. Agency of Exploitation :- Harvesting of timber and fuel-woods from the due coupes is carried out through Forest Labourer's Co-operative Societies (FLCS) and the Forest Department as per the prescription provided in Working Plan. Whereas thinning in old plantations being carried out through Forest Department, as it is a highly technical job, which can not be entrusted to Forest Labour Co-operative Societies (FLCS). There are 5 FLCS working in the Division. The FLCS are given first preference for coupe working and otherwise it is carried out through Forest Department. The cost of harvesting per cubic meter of timber comes to about Rs. 2400/- per cum in case of FLCS working and Rs. 1165/- per cum in case of Forest Department. In this Division total number of coupes worked in the last Working Plan period is given year wise in the following table:-

TABLE NO. – 24

NUMBER OF COUPES DUE AND WORKED BY FLCS AND DEPARTMENT.

Sr. No.	Year	No. of Coupes due	Coupes Worked by FLCS	Department Working of coupes	Remarks
1	1994-95	52	---	---	
2	1995-96	52	---	---	
3	1996-97	52	---	---	
4	1997-98	52	---	8	
5	1998-99	52	---	7	
6	99-2000	52	---	6	
7	2000-01	52	5	6	
8	2001-02	52	8	12	
9	2002-03	52	0	0	
10	2003-04	52	9	12	
11	2004-05	52	10	8	
12	2005-06	52	7	6	
13	2006-07	52	9	6	
14	2007-08	52	8	---	

III.5.2. Harvesting operations are done on by-job as well as on daily wages basis. Fixation of rates for different harvesting operations by circle wage committee headed by the Chief Conservator of Forests (Territorial), Yavatmal and having representatives of FLCS, Forest Dept. Tribal, People representatives etc. The main items of expenditure are Felling, Conversion, dragging to the jungle depot, transportation to main depot, fashioning, supervision etc.

SECTION 6: METHOD OF FELLING AND EXTRACTION:

III.6.1. Felling is done by the saw, logging is mostly done by the saw and the axe is used for a minimum purpose. Extraction from the jungle is mainly by bullock cart, tractor to jungle depot and from jungle depot to main depot by trucks. Fuel wood is mainly transported by bullock carts and tractors.

There are two timber depots in Akola Forest Division at Medshi in Patur range and Shendurjana in Karanja range. Whatever timber and firewood extracted from the coupes are transported to sale depot, where it is sold in open auction.

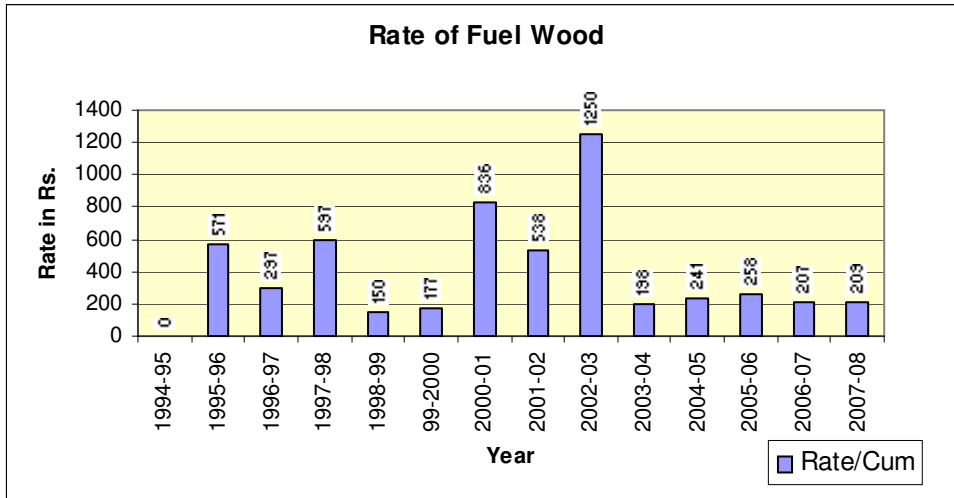
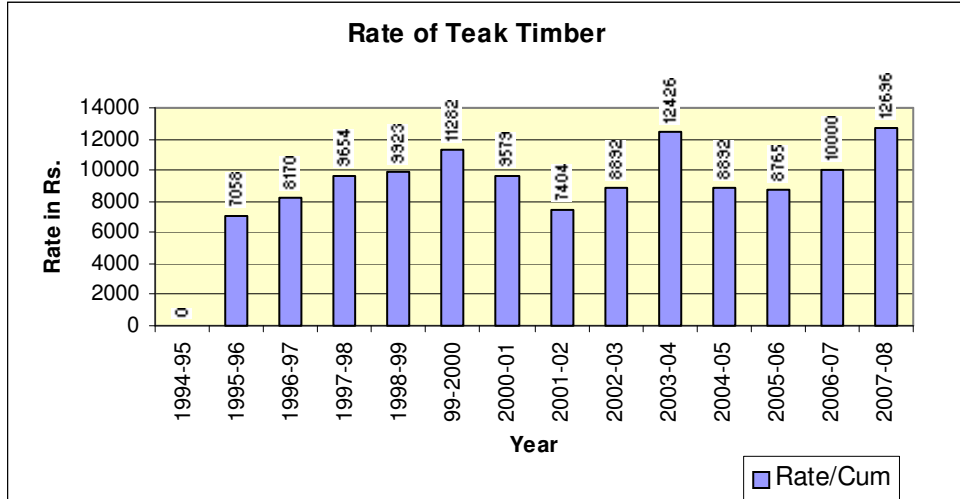
SECTION 7: PAST AND CURRENT PRICES:

III.7.1. The average prices obtained for Teak timber and fuel-wood are given below-

TABLE NO. – 25
AVERAGE PRICE OF TEAK TIMBER AND FUEL WOOD.

Sr. No.	Year	Teak Timber			Fuel Wood		
		Quantity (Cum.)	Revenue (Rs.)	Rate/ Cum	Quantity (Cum.)	Revenue (Rs.)	Rate/ Cum
1	1994-95	0	0	0	0	0	0
2	1995-96	742.546	5241125.00	7058	61.99	35400.00	571
3	1996-97	626.901	5121747.00	8170	88.00	26100.00	297
4	1997-98	516.548	4986801.00	9654	6.36	3800.00	597
5	1998-99	859.091	8524500.00	9923	176.40	26400.00	150
6	99-2000	753.096	8496610.00	11282	123.59	21850.00	177
7	2000-01	876.572	8396839.00	9579	211.80	176990.00	836
8	2001-02	2322.314	17193346.00	7404	85.50	46040.00	538
9	2002-03	313.658	2788903.00	8892	44.40	55500.00	1250
10	2003-04	1150.201	14292500.00	12426	222.00	44000.00	198
11	2004-05	939.498	8354211.00	8892	246.08	59400.00	241
12	2005-06	915.187	8021193.00	8765	234.20	60510.00	258
13	2006-07	887.946	8879460.00	10000	241.50	50000.00	207
14	2007-08	589.949	7489824.00	12696	284.700	59444.00	209

Fuel-wood prices have gone up from Rs. 571/m³ in 1995 to Rs. 1250/m³ in 2003. Timber prices fluctuate between Rs 7000/ m³ to Rs. 12000/m³ depending upon the quantity and quality of the available materials.



CHAPTER – IV

**FOREST DEVELOPMENT CORPORATION OF MAHARASHTRA
HARVESTING AND MARKETING OF FOREST PRODUCE**

IV.1. Impact of Activities by Forest Development Corporation of Maharashtra.

IV.1.1. No area is allotted to FDCM in Akola Forest Division.

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CHAPTER - V
IMPACT OF FIVE YEARS PLANS

V.1.1. The forest was a subject of State List till 42nd Amendments to the Constitution of India in 1976. The State Government used to exercise its power in protection, development and management of state forest resources and earn revenue to the government. The forest management was on scientific lines even before independence to the country and it was in consonance with the Working Plans prepared in the light of scientific management. Before Independence the emphasis in the management of forest was given to the improvement of forest and harvesting of matured and valuable timber species for the production of timber. The Ex-Proprietary forest was also brought under the purview of management after independence for improvement of forest, silvicultural operations were given top priority to achieve healthy forest and these silvicultural operations, timber extraction and afforestation works were carried out with the funds made available under non-plan budget in the early independence period. Till late 70's in the last century, no Plan fund was allocated to forest sector in this area during this period. During this period forest sector was considered as major source of providing employment to the people. The fund under the Non Plan budget provided was also made to meet the expenditure for carrying out various operations of forest management. The funds of the EGS could not be utilized because most of the forestry operations were not identified as part of EGS works. Subsequently Plan funds of this state allocated under District and State Plan with the introduction of Plan and lots of developmental activities have been taken up for management of forests.

V.1.2. FIRST FIVE-YEAR PLAN (1951-1956)

The first Five Year Plan aimed at rehabilitation of degraded forests, introduction of economic species, survey and demarcation of forest area. During this period Akola Forest division was a part of West- Berar Forest Division and the Working Plan prepared by S.A.Cornelius for West Berar Division was under implementation in this area. The impact of first FiveYear Plan is not noticeable, as the flow of funds was never made available to this tract, for requisite achievement of management prescribed in the Woking Plan.

V.1.3 . SECOND FIVE-YEAR PLAN (1957-1960)

In the Second Five Year Plan the management of forest aimed at rehabilitation of degraded forests, introduction of economic species, survey and demarcation. During this period lot of forest land was diverted for agriculture. Silvicultural operations were given priority for the improvement of forest crop. The management was aimed at production of timber. Cornelius Working Plan was under implementation during this period. Plan funds were not allocated for any operation of the forest management.

V.1.4 . THIRD FIVE-YEAR PLAN (1961-1966)

The Third Five Year Plan aimed at increase in productivity of forest through introduction of fast growing species in plantation, scientific assessment of forest and introduction of modern logging system. During this period Cornelius Working Plan was introduced for the forest management. The process of reservation of left over Protected Forest was initiated. The forest lands were allowed to be given to villagers for cultivation for getting the agriculture crop. Silvicultural operations and protection were given top priority, therefore, some improvement works in the forest was taken place. No plan funds were allocated to forestry operations. Management was revenue oriented.

V.1.5 . . POST THIRD-FIVE YEAR PLAN (1966-1969)

During this period S.S.Parasnis Working Plan was under implementation. During this period there was a severe drought in this area. The local people were living under the poverty due to complete failure of agriculture crops, resulted in lack of employment of agricultural labourers has put the government in hardship to provide employment to agricultural labourers. Therefore the government has given thrust to provide employment to the agricultural labourers and civil facilities to the people. The foresters were compelled to follow the orders of government to provide employment to the local people in forestry operations. During this period no plan funds were allocated and the thrust of forest management was revenue oriented.

V.1.6 . FOURTH FIVE-YEAR PLAN (1969 -1974)

During this plan just like 3rd Five Year plan the forest management was aimed at increasing productivity of forest, through introduction of fast growing species in forest, scientific assessment and introduction of modern logging system. S.S. Parasnis's Working Plan was under implementation. During this plan the administration of forest villages brought under Revenue Department and development of these forest villages was entrusted to Revenue Department. After the local people began to alienate from Forest Department and perception of local people changed and kind of apathy started in the minds of local people towards Forest Department and local people started thinking that Forest Department was an obstacle for the development of local area, therefore people resorted to new encroachments upon forest lands for non-forestry purposes. During this period a new approach in the field of forest sector emerged in the form of timber boards to divert revenue for the development of forests resulted in formation of Forest Development Board in 1969 and subsequently re-shaped into Forest Development Corporation in 1974.

V.1.7 . FIFTH FIVE-YEAR PLAN (1974-1979)

The forest sector during this plan was aimed at large scale plantations, social forestry to bring about people's participation in raising plantation on community lands and forest conservation. Social Forestry wing was established during this period to involve people in raising plantation and the lands outside forest area that is community land, government Waste land etc. The State Government introduced Employment Guarantee Scheme to provide employment to local people by which creating assets to the community. During this plan period Teak plantations under General Utility of Timber was introduced and Bamboo and other plantations were taken up under various schemes. No Plan fund were made available during this period.

V.1.8 . ANNUAL PLAN (1979-1980) and SIXTH-FIVE YEAR PLAN (1980-1985)

The aim of the 6th Five Year Plan was social forestry and fuel to save natural forests. The regularization of encroachment was taken by the government on forest land of those land which was encroached by forest dwellers from 1/4/1972 to 31/3/1978. This decision was further aggravated the problem of encroachment and many forest

dwellers resulted to large scale encroachment keeping in mind that these encroachments could be regularized in future. During this period S.S.Parasnis's Working Plan was under implementation as the period of plan was extended. Some Teak plantation taken up for timber production during this period. The better delegation under plan scheme was given but the total budget allocation was even more than 1% of the district budget.

V.1.9 . SEVENTH-FIVE YEAR PLAN (1985-1990)

The basic aim of 7th Five Year Plan regarding to forest management was forest conservation, massive afforestation and waste land development. During this period the clear felling of natural grown trees banned by Government of India, massive afforestation was taken up under EGS scheme and various other plantations were taken up under District Plan Schemes. Infra-structural facilities like communication, transportation and building etc. were improved. The implementation of Forest Act gained momentum and the forest dwellers were of the opinion and the Forest Act for Conservation of Forest for hurdling the process of development in the forest area. Plan funds were allocated for the developmental activities under District and State Plan. The Government of India formulated new Forest Policy in 1988.

V.1.10 . EIGHTTH FIRST-FIVE YEAR PLAN (1992-1997)

The 8th Five Year Plan aimed at protection of forest against fire, oriented in utilization of Waste land for forestry activity. Creation of awareness among the people for forestry through Joint Forest Management (JFM) and conservation of bio- diversity. The World-Bank project was implemented which helped in improving infrastructural facilities in the Forest Department i.e. root-trainer nursery, clonal nurseries, Germ-Plasm bank etc. For implementation of JFM the Government of India and State Government have issued various Government Resolutions (G.R.) from time to time. During this period the impact of overall development in the forest sector was noticed. DPDC funds were allocated for development of various activities like plantations, roads, buildings etc. Under EGS lots of fund were allocated for taking up plantation, soil and moisture conservation works etc. During this period Thengdi's Working Plan came into existence. The areas of Narnala and Katepurna Sanctuaries were transferred to wildlife wing.

V.1.11 . NINETH-FIVE YEAR PLAN (1997-2002)

The aim of 8th Five Year Plan was carried forward to 9th Five Year Plan. As far as the Forest Department was concerned the State Government has initiated different developmental scheme in consonance with the Central Government schemes. The period of the World Bank project came to an end during this period. Plantations of both teak and miscellaneous species were taken up under various schemes. The Plan funds were allocated for various developmental activities of the forest under D.P.D.C. as well as under State Government. During this period Thengdi's Working Plan was under implementation.

V.1.12 . TENTH-FIVE YEAR PLAN (2002-2007)

Thengdi's Working Plan was under implementation. During this plan lot of emphasis was given to implementation of JFM through Forest Development Agency of Government of India. In Thengdi's Working Plan emphasis was given on soil and moisture conservation works and accordingly some of the soil and moisture conservation works were taken up. Many developmental activities were taken up under EGS, Jawahar Rojgar Yojana etc. The flow of Plan funds has come down drastically resulted in slowing down of developmental activities under Plan in forestry sector. The National Forestry Action Programme was formulated to establish linkage between National Forest Policy and National Five Year Plan. In the past there has not been a comprehensive and constant programme structured, therefore it was difficult to get linkages and establish trends. The budget outlay for forestry sector was hardly 0.032% of total outlay in 5th Five Year Plan and increased to 0.94% in 8th Five Year Plan. The forestry sector was given higher allocation was in the 7th Five Year Plan 1.09%. The forest sector is one of the most important sectors of the government, which provides tangible and intangible benefits to the community by conserving and maintaining biodiversity. Such an important sector needs sustainable development and this cannot be achieved through meager budget allocation to the forest sector, therefore the budget outlay of the country for forests should be raised 4 to 5 %. Similarly for this Forest Division also, the Plan allocation must be inconformity with the national perspective to achieve the objectives of the nations as well as forests.

CHAPTER – VI

STAFF AND LABOUR SUPPLY

SECTION 1: STAFF :

VII.1.1. The head quarters of Akola Forest Division is at Akola. It is one of the forest divisions of Yavatmal Forest Circle. This Division is headed by the Dy. Conservator of Forests and the Dy. Conservator of Forests is assisted by 3 Assistant Conservator of Forests, 14 Range Forest Officers for protection, management, development and administration of the forests of Akola Forest Division. There are 36 sanctioned posts of Foresters and 158 sanctioned posts of Forest Guards. The position of the staff and administrative setup are given in the below mentioned table :-

TABLE NO. – 26
STAFF IN AKOLA FOREST DIVISION

Sr. No.	Designation	Pay Scale/ Pay + Grade Pay	No. of Post/ Posts				
			Sanct.	Perm.	Temp.	Filled	Vacant
1	DCF	15600- 39100 + 6100	1	1	---	1	0
2	ACF	9300-34800 + 4600	3	2	1	2	1
3	RFO	9300-34800 + 4400	14	14	---	12	2
4	Forester	5200-20200 + 2400	36	27	9	34	2
5	Forest Guard	5200-20200 + 1800	158	132	26	138	20
6	Chief Acct.	9300-34800 + 4200	1	1	---	1	0
7	Accountant	5200-20200 + 2800	11	10	1	11	0
8	Clerk	5200-20200 + 1900	22	15	7	21	1
9	Surveyor	5200- 20200 + 2400	1	1	---	1	0
11	Driver	5200 – 20200 + 2000	4	4	---	4	0
12	Police with weapon	5200-20200 + 2400	4	4	---	2	2
15	Dafftari	4440-7440 + 1650	1	1	---	1	0
16	Peon	4440-7440 + 1300	5	4	1	4	1
16	Sta.Asstt.	5200-20200 + 2400	1	1	---	1	0
18	Choukidar	4440-7440 + 1300	1	1	---	1	0
			263	218	45	234	29

VI.1.2. Accommodation : The office of Dy. Conservator of Forests, is in the accommodation of the building which belongs to B and C department. The range officers are having their offices in Government buildings are belongs to forest department. In this division accommodation required and available as per Govt. norms is as under.

TABLE NO. – 27
ACCOMMODATIONS AVAILABLE AND REQUIRED

Sr. No.	Designation	Sanction	Office		Residential		Remarks
			Available	Requirement	Available	Requirement	
1	DCF	1	1	--	1	--	By PWD
2	ACF	3	---	3	---	3	
3	RFO	14	5	9	6	8	
4	Forester	36	---	---	5	31	
5	Forest Guard	158	--	--	14	144	
6	Chief Accountant	1	--	--	--	1	
7	Accountant	11	--	--	--	11	
8	Clerk	22	--	--	--	22	
9	Surveyor	1	--	--	--	1	
11	Jeep Driver	4	--	--	--	4	
12	Police with weapon	4	--	--	--	4	
13	Dafftari	1	--	--	--	1	
14	Peon	5	---	---	--	5	
15	Vanmajur	101			64	43	
16	Sta.Asstt.	1	--	--	--	1	
17	Paharekari						
18	Choukidar	1	---	---	1	---	By PWD
	Total	364	6	12	91	279	

VI.1.3. REST HOUSE :- There are two Forest Rest Houses (FRH) one is at Akola and other is at Patur. In addition to these Forest Rest Houses, there are 4 Inspection Huts and 8 Labour Sheds.

The maintenance of accommodation of the staff, offices, Forest Rest Houses, Labour Sheds and other govt. buildings is not upto the mark due to scarcity of funds.

VI.1.4. FOREST COMMUNICATION:- In this division both railway and road network is available for transportation. Mumbai - culcutta railway line runs West to East through this Division from Murtizapur and Central Railway broad gauge line, a narrow gauge runs to Achalpur in North – West direction and to Yavatmal in South-East direction. Khandwa – Akola meter gauge and Akola to Washim broad gauge branch rail line crosses Central Railway broad gauge line at Akola and passes through Akot, Akola, Washim tehsils in the North-South direction.

Internal transport by the network of fair weather roads. The total length of fair weather road is 198 kms. Bus transportation is adequate where as train transport is to the extent of some stations only. Telephone communication is connected to all Range headquarters.

SECTION 2: LABOUR SUPPLY:

VI.2.1. Most of the labour required for various forestry operations is available from the adjoining villages. As the agriculture in this division is mostly rain-fed and the labour scarcity is seen during rainy season. Departmental works such as marking of coupes, Cut Back Operations, 1/5th boundary demarcation, road repairs, plantation works are carried out by engaging local labours both on by-job and daily wages. The labourers of some of the villages are skillful to carry out various forestry operations as they have been carrying these operations since ages.

CHAPTER – VII

PAST SYSTEM OF MANAGEMENT

SECTION.1: GENERAL HISTORY OF FORESTS:-

VII .1.1. In the second half of 19th century, after assigning of Berar, the forests of Akola and Buldhana divisions were grouped into a single forest administrative unit. The forests of Akola were in a very much under developed condition, when the Berar was assigned to British in 1853. Unscrupulous fellings, shifting cultivation, illegal hunting by the villagers of the forest and neighbouring areas were in practice, resulted in degradation of forests and reduction in forest area. A regular forest administration was initiated by the Govt. after appointing of Assistant Conservator of Forests for the Berar in 1865. Initially for the first few years selection and demarcation of various reserves was carried out, for future management. Later on the Berar was split up into Northern and Southern Berar Divisions and Northern Division was headed by Dy.C.F, whereas Southern Division headed by A.C.F. subsequently. The forest management was further systematised by the notification issued by the Revenue and Agriculture Department of the Govt. of India. The notification established the following classification of forests:-

Demarcated State Forests.

District Reserved Forests – Defined as land not to be assigned for cultivation.

District unreserved forests – All other lands which were neither cultivated nor assigned for village purposes, nor included in Izara or Jagir.

In 1881 the Berar became a Conservatorship and the provincial branch of service was organized and staff was strengthened. The forests were reclassified and the classification was legally recognized in 1892 by notification under Sec. 40 (c) of Berar Forest Law. As per this classification the forest were classified into the following categories:-

A. 1. Reserves :- These areas were primarily intended for production of fuel wood and timber.

2. Woods :- Areas suitable for growing Babul.

B.1. Grass Lands :- Areas set aside for production of Grass.

C.1. Grazing Lands :- Areas reserved for pasture.

2. Open Forests :-Lands awaiting excision and until then to be treated as grazing lands.

VII.1.2. This classification fairly worked well till 1900. When after famine land cost was increased and cotton prices were boosted, therefore more and more lands were brought under cultivation, resulted in reduction of grazing lands. The 'C' class grazing land could not sustain increased pressure of cattle population which compelled transfer of some of the areas either from 'A' class or from 'E' class. Some of the forest lands fit for cultivation were disforested and waste lands were afforested and some new 'A' class reserves were formed out of 'C' class. In November 1913 'B' class reserves were transferred to 'A' class.

VII.1.3. The following territorial and internal changes were taken place in the history of these forests:-

VII.1.3.1. In the year of 1870 Akola forest born as a part of Southern Berar Division and A.C.F. was in charge of the Division. Later on, the Southern Berar Division was divided into Wani, Washim and Purna Forest Divisions, when Buldhana forests was included in Purna Forest Division. Where as Akola forest formed part of Wani and Washim forest divisions. Further rehabilitation of these forests was taken place in 1885-86 and constitutes as separate forest divisions i.e. Akola and Buldhana. In 1890 Amba-Barwa reserve was constituted. Since then large tracts of forests from the districts adjoining to Buldhana Division are transferred to Amba-barwa reserve with a view to distribute the workload and at the same time develop the area transferred and to work to the fullest capacity. These objects not being fulfilled and resulted in transferring the restored area to their concerned divisions. Thus in 1901 the forests of Akola Division were included in Buldhana Forest Division, but restored to Akola Forest Division in 1901 and Akola Division was reformed. So much so 5139.16 ha of land from Nimar forest division was transferred to Buldhana Division in March 1924. But again it was restored to Nimar Division in 1926.

VII.1.3.2. In November 1929 the Forests of Barhanpur range of Nimar Division was transferred to Buldhana Division and restored the same to Nimar Division in December 1931. Such kinds of forest of Murtizapur taluqa of Akola district which were a part of Amaravati Forest Division in 1906 were also transferred to Akola Forest Division when it was reborn. In 1925 an internal change was effected in the division resulted in transferring the area of Palodi sub- range of Pangara range to Murtizapur range. In 1931 Pangara range was abolished and its forest distributed among the three remaining ranges Balapur, Murtizapur and Morna of Akola Forest Division. On the 1st April 1932 the Buldhana and Akola Forest Divisions were amalgamated to form West-Berar Division, having head quarter at Akola. Consequently the old Buldhana division became sub-division of the newly formed West-Berar Division. Internal changes of old Buldhana Division was effected. The Purna range of Buldhana Forest Division was split up into Jalgaon, Chikhali and Mehkar ranges. The Mohda reserve and Risod C – Class forests both were situated in Washim taluqa and Akola district were transferred to Buldhana Sub – Division in 1936 and 1938 respectively.

VII.1.3.3. The Jagir Forest of Bhingara, Anaya, RohanKhindki, Salvan of Jalgaon range 9382.41 ha. Asola, Bhanosa, Shekapur of Mehkar range were abolished and declared as Protected forests on 4th June 1957 and presently they are the parts of concerned ranges. In 1957 Protected Forest of Andheri and Adan 190.39 of Aurangabad division were transferred to West – Berar Division and formed part of Chikhwal range. In December – 1959 Washim range was newly created by splitting into the Murtizapur, Morna and Balapur ranges, which formed part of Akola Sub-Division.

VII.1.3.4 In the year 1964 Akola and Buldhana Forest Division were reconstituted as per the resolution of the Govt. of Maharashtra Revenue and Forests Department No.FDM-1363/5718-II-J, Dated 3rd Feb- 1964.

Chronology the working plan by which the forests of Akola forest division were managed in the past : -

1898 to 1912 – A provisional working scheme was approved by Conservator for timber and fuel reserves.

1912-13 to 1941-42 – A Working Plan for Akola forest was prepared by Hunt.

1942-43 to 1951-52 – A Working Plan for Akola forest of the West Berar Division was prepared by S.A. Cornelius.

1965-66 to 1979-80 – A Working Plan for Akola and Buldhana Forest Division was prepared by S.S.Parasins. Extension up to 87-88 was granted.

1972-73 to 1986-87 – Watershed Management plan for KaterPurna Catchment by L.H.Benakatti. Extension upto 89-90 was granted.

Working Plan prescriptions were only given to ‘A’ class Reserved Forests, ‘C’ class Reserved Forests, Protected Forests ‘E’ class forests acquired by department were not given any treatment in the Plan. Afforestation works in a few forest areas have been carried out outside the purview of the past plans.

SECTION.2: PAST SYSTEM OF MANAGEMENT AND THEIR RESULTS :-

A. Pre Working Plan period : (1865 - 1912)

VII .2.1. The forests of Akola were a part and parcel of old forests of Berar. The information regarding forest of Berar is meagre before 1865, though these forests were assigned to British in 1853. During this period the importance in relation to both tangible and intangible benefits were not that much realised by the Govt. prior to 1865. Forests of Akola suffered badly from heavy illicit felling, shifting cultivation, heavy unregulated grazing and repeated fires damaged forests to a large extent. The forests were not managed systematically up to 1865, though the forests were assigned to British in 1853. A regular and systematic working was started in the year 1865, with an object of management to give a complete rest to the forest from felling and to ensure protection against fire and grazing.

VII.2.1.1. Prior to 1865 these forests suffered badly from heavy illicit felling, over grazing and uncontrolled grazing. A regular and systematic working started in the year of 1865 with an object of management to give complete rest to the forest from felling and to ensure protection against fire and grazing. ‘C’ class Reserve Forests suffered to a great extent than that of ‘A’ class forests. In 1891 departmental fellings were carried

out in some of the regions in order to improve the crop conditions. In 1896 it was thought necessary to manage these forests on silvicultural lines to meet the increased demand of timber and firewood. Accordingly in 1898 simple Provisional Working Schemes for period of 5, 10 and 15 years were approved by the Conservator of Forests and were introduced in greater portions of the timber and fuel wood reserves. The system of treatment adopted in the Provisional Working Scheme was “**Coppice - With - Standard**”. 15 felling series were formed under the Schemes and an area of 42 Sq. miles was exploited by 1912 with fairly satisfactory result. In 1902 – 1903 some of the Babul bans of Murtizapur and Morna ranges were clear felled under the provisions of Annual Plan of Operations. Regeneration was done by sowing and broadcasting, without soil preparation after clear felling resulted in a very little success. Subsequently Agri-Silvi method was adopted to regenerate these areas, in which sowing of forest crops in lines together with field crops as it was practiced in Brushwood Working Circle of Amaravati Forest Division under its Working Plan 1902-03 was adopted for these areas of Babul forest 1903-04 and considerable success was achieved. Under this system land was given to cultivators free of cost for raising Babul plantation along with agriculture crop. Under this agri-silvi method forest crops was sown after two years of cultivation. Two lines of Babul were sown six feet apart and in between cotton and tuar were field crops. Regular weedings were carried out for healthy growth of Babul crop. The system has given very good results in raising Babul plantations.

B. Post Working plan period (1912-2009): -

The regular working plan period was started from 1912 and continued till 2009.

VII.2.2.WORKING PLAN FOR AKOLA FOREST BY HUNT(1912-13to1941-42)

A systematic working plan for Akola forest was drawn by Hunt in 1912 and according to Hunt’s Working Plan the following working circles were formed :-

1. Coppice Working Circle :- It covered all the ‘A’ class forest except Narnala, Babul bans and Grass reserves. Treatment adopted was Coppice With Standard with a rotation

period of 30 years. Cut Back Operations were prescribed. Coupes after felling were closed for grazing for 5 years and strict fire protection was introduced.

Results:- It was mentioned that overall condition of the forest was improved due to systematic management of the forest included in this working circle. The system of Coppice With Standard resulted mainly in the increase of teak percentage and teak reproduction and spread up of teak in forest in the growing stock and some of the species like Salai forest being benefited in that direction by factors such as fire protection, regular grazing. Protection and preferential treatment given to the species. It was judged from the standing parent trees. The condition and quality of the crop was improved.

2. Improvement Working Circle :- Narnala reserve was placed in this working circle. A single felling series was formed for the entire working circle. It was worked on a cycle of 10 years. The system of treatment adopted was improvement fellings. Coupes were closed for 5 years after felling against grazing.

Results:- The regular working in this working circle on scientific lines resulted in the improvement of the crop both in composition and condition. The crop was mostly middle aged with teak as dominating species. Stringent fire protection and regulated grazing created conducive atmosphere for healthy growth of crop.

3. Babul Working Circle :- Babul forest of the entire division were placed under this working circle. The system adopted was clear felling followed by artificial regeneration of Babul on Agri-Silvicultural method. Rotation adopted was 30 years. Thinnings were prescribed in 13th, 18th and 24th years.

Results:- The system of raising Babul plantation by means of Agri-Silvi method proved successful.

4. Fodder reserves :- In order to supply grass, fodder reserves were ear-marked and set aside. Grazing of cattle was also permitted under the orders of Divisional Forest Officer from the 1st February to the 31st of May.

VII.2.3. WORKING PLAN BY CORNELIUS FOR AKOLA FORESTS OF WEST BERAR DIVISION (1942-43 to 1951-52)

Hunt's plan for Akola Forest Division was replaced by the Working Plan of S.A.Cornelius in 1942-43. Before preparation of plan inspections of the area were carried out and stock mapping was done in 1939-40 by the Working Plan party. As per Cornelius Working Plan the following Working Circles were formed : -

I. Coppice With Reserves Working Circle: - All the workable forest for timber and fuel wood were included except Babul reserves. In this Working Circle the Silviculture system adopted was “**Coppice With Reserve**”. Rotation period was fixed at 40 yrs. The method of treatment prescribed was clear felling in fully stocked and well stocked patches of low quality. All under stocked and open patches were excluded from felling except removal of dead and dying trees departmentally. Thinnings were prescribed in well grown patches and in better quality areas. Subsidiary silvicultural operations such as removal of brush wood and Lantana interfering with coppice growth. Cut Back Operations were prescribed to remove damaged coppice and broken trees, felling of unfelled, unreserved trees, climber cutting, etc. A mid-rotation thinnings were prescribed for suitable areas for all Felling Series except Nimbhi, Chahogaon, Wagma, Rui and Palodi. A double grazing closure was prescribed one after main felling and the other after mid-rotation thinning.

Results: - During the implementation of the Plan overall crop condition was improved. Advance fellings in Coppice With Reserve Working Circle were carried out to meet the over requirement due to over supplies and increased demand of timber for building construction and industries. Timber prices shoot up appreciably in the market.

II. Babul Working Circle: - All the Babul bans of the entire division were included. In this Working Circle system adopted was clear felling followed by sowing of seeds in rows 18 feet apart under Agri-Silvi method. In 3rd year after permitting the raising of agriculture crop in the 1st two years was prescribed. Rotation period was fixed at 30 years. Thinning prescribed in 6th, 11th and 21st year from the year of lease. To induce natural regeneration in coupes, which were not purchased by contractors, departmental strip felling in strips on a chain width were prescribed. Restricted grazing i.e. one cow unit per acre was permitted in the first seven years. Sheep and goats were not permitted.

Results:- In Babul Working Circle the system adopted to manage Babul bans proved successful. Overall condition of the crop was improved.

III. Bamboo Working Circle (Partly Overlapping):- Annual coupes of Bamboo Working Circle were managed on 4 years cutting cycle and accordingly Bamboos were cut and extracted from annual coupes.

IV. Miscellaneous Working Circle:- Enumeration, thinning of Sandal trees were prescribed on 5 year circle. This prescription seems to have been followed during early years of the period of the plan.

V. Pasture Forests :- Very open unworkable areas mainly of the mixed Anjan (*Hardwickia binata*) type was included in this working circle. Total forest included in this Working Circle was divided into different grazing series and each grazing series was divided into 4 grazing groups which were to be closed on rotations. Closers were fixed for 3 years. Thinnings were prescribed to open up canopy in dense patches for improving the grass crop.

VI. Supply to Defence Department : Due to Second World War lot of advance fellings were carried out in the forest of this division. For supply of war material between 1941 –42 to 1945-46 only teak bullies and Salai wood was supplied to Defence Department. These advance felling were carried out mainly in the coupes of Coppice

With Reserve Working Circle. The material supplied to Defence Department year wise is given below.

TABLE NO. – 28

THE MATERIAL SUPPLIED TO DEFENCE DEPARTMENT YEAR WISE

Sr. No.	Kind of Timber	1941-42	1942-43	1943-44	1944-45	1945-46
1	Teak Ballies	900	15,125	18,875	10,500	2,000
2	Round Salai logs cft	Nil	4,602.8	2,591.7	Nil	Nil
3	Round Babul log cft	Nil	Nil	Nil	603.4	Nil
	Total : -	900	197278	21446.7	11103.4	2,000

The demand for timber was multifold due to war supply, building, construction, and industries resulted in shortage of timber in the market, consequently prices rose appreciably.

Results:- Closer to grazing was effectively carried out but thinning were not done anywhere as prescribed in the working plan.

VII.2.4. WORKING PLAN FOR AKOLA AND BULDHANA FOREST DIVISIONS BY SHRI. S.S.PARASNIS (1965-66 to 1979-80) (EXTENDED UPTO 1987-88) :-

In this plan 'A' class Reserve Forests were dealt with. These forests were Stock mapped. Enumeration, Stem analysis and Stump analysis were carried out in Buldhana Division. The 'A' class forests of 56831.61 Ha of Akola Division were included. As per the Working Plan of Shri. S. S. Parsnis the following Working Circles were formed :-

I. Coppice with Reserve Working Circle:- All the Miscellaneous forests with inferior teak forests capable of producing timber and fuel wood were included in this working circle. Small patches of better quality teak areas, which could not be conveniently separated and put under separate working circle have also been included. Rotation period was fixed at 40 years and harvestable girth was kept at 61 cms. 26 felling series

were formed. Silviculture system adopted was “**Coppice With Reserve System**”. Total area included in this working circle was 44737.35 Ha. Regulation of yield by area. Under this system protection and unworkable areas form improvement fellings and thinnings. In better stocked area heavy fellings were prescribed. Prescriptions were made to reserve some of the trees i.e. 1) Trees required for protection purpose, 2) Trees required for seeds and other silviculture purpose, 3) Healthy edible fruit and flower bearing such as Mahua, Tendu, Char, etc., 4) Sandal trees. For treatment purpose entire coupe area was divided into A,B,C and D.

Subsidiary silvicultural operations like Cut Back in the year after main felling of the coupe. **Cleaning** in the 6th year of main felling, mid rotation thinning i.e. 20 years after main felling and other operations like any growth badly affected by fires will be cutback.

Results:- Due to improper implementations of prescriptions the CWR forests have suffered from deterioration. Deterioration of quality and quantity of forest is mainly due to heavy illicit felling, uncontrolled grazing, and negligence in coupe closer fire line burning. In addition, the coppice regeneration was not up to mark due to faulty implementation of prescription and biotic pressure. In Chinchkheda, Patur part, Shedana part, Palodi part, Wagha, Rui, Karanja and Khowsdri Felling Series most of the forests reduced to malformed and crooked young pole crop. Teak maintains to be principal species constituting upto 80% of the crop. The crop is young to middle aged, old crop can also be seen in remote parts of Chikhalwal and Palodi Felling Series. Most of the area being worked under coppice system approximately since last 100 years therefore the coppice growth was unsatisfactory which resulted in further deterioration of crop.

II. Babul Working Circle: - All the Babul bans of Akola and Karanja ranges were included in this Working Circle. Total area included in this working circle was 2266.14 Ha. 5 felling series were formed. Principal species of the crop is Babul (*Acacia Nilotica*). The system of regeneration adopted was clear felling followed by A.R. through Agri-Silvi method. Rotation was fixed at 30 years. Telia verity of Babul was preferred in plantations. Other species prescribed in regeneration was Prosopis, Khair, Shivan, Neem and Sirus. Yield was regulated by area. Subsidiary silvicultural

operations prescribed were three weeding in 1st year, two in 2nd year, two in 3rd year. Thinnings were prescribed at 6th, 11th and 21st year.

Result:- Babul bans are located nearby villages or in the midst of Agriculture fields. These forests have been subjected to heavy biotic pressure since their locations are near to habitations. The scientific management of the Babul bans has been discontinued since 1974-75 due to repeated failures of Babul plantations. Most of the Babul bans are reduced to shrubby forests. Natural regeneration of Palas, Khair, Bharati, Babul can be seen. These areas have been subjected to heavy grazing and illicit felling.

III. Open Pasture Working Circle: - All open forests of Akola Sub Division which are not capable of producing of timber and fire wood and where the demand of grazing is heavy are included in this Working Circle. Total area included in this working circle is 1659.65 Ha. These areas were treated under rotational grazing system for improvement of palatable grasses and introduction of superior fodder grass species and leaf fodder species. Grass coupes were closed to grazing and sold on rated passes. After removal of grass. Limited numbers of cattle were permitted from 1st December to the discretion of Divisional Forest Officer in times of scarcity.

Results:- In this Working Circle no noteworthy improvement in the quality and quantity of stocking observed. Areas were subjected to heavy grazing pressure. Some of the areas planted with misc. species in the past but most of the plantations failed. The prescriptions of Working Plan such as periodic coupe closure, fire control, grazing control, protections were not followed scrupulously.

IV. Fodder Working Circle:- All the fodder reserves which are locally known as *Ramanas*, included in this Working Circle. Total area included 6354.21 Ha. These areas set apart for production of fodder grass both in quality and quantity. The main object of management is to improve grazing and providing periodic rest to these areas. 1) To achieve improved quality and quantity of fodder grass. Periodic burning of grass ramana's once in 5 year was prescribed. 2) It was also prescribed to sow the seeds of high fodder yielding grasses such as Paunya, Sheda, Mushan, Marvel. 3) Heavy opening

of the growth interfering with growth of grass, 4) eradication weeds and climbers, 5) Introduction of leafy fodder species such as Anjan, Moyen, Pipal etc.

Method of harvesting prescribed was cutting and removal of grass based on leases sold in open auction annually to Gram-panchayat or public bodies as per the rules prescribed by the Government.

Results:- The areas are further deteriorated due to heavy biotic pressure. The prescriptions of Working Plan were not followed in toto. Misc. plantations were taken up in some of the areas but their results were unsatisfactory. The deterioration of these areas mainly due to biotic pressure and adverse climatic conditions.

V. Bamboo (Overlapping) Working Circle:- All the important and workable Bamboo bearing areas were included in this Working Circle and comprises of 13 felling series. Natural Bamboo areas mostly confined to Narnala reserves of Akola range. Main species of Bamboo occurring *Dendrocalamus Strictus*, some of the successful old plantations were also included. Method of treatment adopted was periodic thinnings to obtain maximum yield without considering the vigour of Bamboo clumps and allow their future development. 4 year cutting cycle was adopted. Bamboo plantation up to 5 Acres in suitable areas was prescribed in all ranges.

Results:- Natural Bamboo is on the verge of disappearance. The plantations are very young and they have not put on growth as per their age. Post planting operations of Bamboo were neglected due to this proper clump formation was not taken place.

VI. Sandal (Overlapping) Working Circle:- Areas of old Sandal plantations and some of the suitable areas for raising Sandal were included in this Working Circle. Total 10 Felling Series were formed in Akola division. Each Felling Series was divided into 5 coupes A,B,C,D and E to be worked on a 5 year cycle. Tending of young crop and harvesting of dead trees were prescribed. Plantation of at least 2 Acres in each coupe was prescribed. Artificial regeneration by means of dribbling of Sandal seed on suitable localities where the host plants are available. Cultural operations such as 1) Removal of

dead and seriously diseased trees, 2) Cleaning and lopping of branches of other trees in favour of Sandal growth, 3) Heavy thinings in natural Sandal reproduction areas, 4) Climber cuttings over entire Sandal bearing areas.

Results:- These trees were subjected heavy illicit felling. The prescriptions of Working Plan were not followed scrupulously.

VII. Miscellaneous Working Circle:- Forest villages and few such compartments which were not allotted to any Working Circles included in this area. Narnala forest area in Akola range was maintained as conditional game sanctuary was included in this Working Circle. Area of Misc. Working Circle was 1168.10 Ha.

VII.2.5. WATERSHED MANAGEMENT PLAN BY SHRI. L.H.BENNAKATTI (1972 - 73 to 1986 - 87)

This special plan includes 3080.71 Ha of 'A' class forest in the catchment of Katepurna river valley project. 4 Felling Series were constituted i.e. portion of Ansing, Pangra, Shakhavira and Chohogaon. The total area covered in this plan was 10978.24 Ha. including 279.66 Ha. of 'C' class Reserved Forests. The treatments prescribed (in this plan) for various areas of the plan are as follows :-

I. Improvement Working Circle:- Total area included in this Working Circle is 10551.48 Ha. The 'A' class Reserve Forests capable of producing timber and fuel wood were included in this Working Circle. 15 Felling Series were constituted out of this Working Circle. Each felling series was divided into 15 coupes. Plantation works were proposed after clear felling at suitable areas. Intensive soil conservation measures along with afforestation works were proposed. Subsidiary silvicultural operations prescribed were CBO, Cleaning, etc. Closers of coupe was prescribed for 7 years.

II. Pasture Working Circle:- Compartment number 400 of 'A' class Reserve Forests and the remaining 'C' class area were included in this Working Circle. Preventive measures against soil erosion such as soil working, broadcasting of seeds of soil binders, fertilizer application, grazing closure, etc. were prescribed for improvement.

VII.2.6. REGULATION OF GRAZING :- In the past unrestricted grazing have always been allowed in 'C' class forests where as in A and B class forest controlled grazing was permitted upto 1912 – 1913. Grazing was prohibited in all 'A' class forest when first constituted as State Reserves but in 1884-85 light grazing excluding sheep and goats was allowed and it was continued upto 1888 – 89. Due to famine in the year 1899 – 1900 all reserves were thrown open to grazing and it was continued upto 1904 – 05. Since 1907 steps were taken to gradually reduce, number of cows and bullocks admitted to the extent of permissible limit i.e. 1 cow or 1 bullock to every 1.5 acres of area of 'A' and 'B' class forest. Buffaloes, goats and sheep were totally excluded from grazing in forest. Exploited coupes of all felling series were closed for 10 years. In Babul Working Circle under regeneration prior to Hunt's Plan of 1912, cows and bullocks were allowed to grazing @ 1 animal for every 2 acres.

Prescriptions regarding grazing in Cornelius Working Plan introduced from 1942-43 for Akola Forest Division.

VII.2.6.1. The following clauses to grazing were prescribed :-

- (i) Coppice with Reserve Working circle :** As per the prescriptions of Cornelius working plan all the parts of this Working Circle were closed for grazing for five years after main felling, and for another five years after thinning at mid rotation.
- (ii) Babul Working circle :** Restricted grazing was allowed for a period of 7 years in all the coupes after first felling. The incidence of grazing was permitted one cattle per head for a hectare. Other than cows and bullocks were not permitted.

- (iii) **Grazing regulation in Pasture Forests :-** Pasture forests which contained very open forests, unfit for regular felling of timber and fuel trees were worked in the interest of grass production and grazing. In order to improve the pasture the areas were given a periodic rest from grazing. Each Pasture Series was divided into each of four coupes, each of which was closed for grazing for three years.

The Divisional Forests Officer was permitted to open any time the following closed areas to grazing within the periods mentioned below :-

- (a) Unregenerated coupes closed to grazing (after mid- rotation) from 1st December to 15th June with a restriction in which buffaloes were not permitted.
- (b) Fodder reserves not leased for cutting for grass or grazing from 1st April to 15th June.
- (c) Pasture coupes closed to grazing from 1st December to 15th June.

All the A – class reserves of Akola were divided into 96 grazing units. The maximum number of cattle to be allowed in each grazing units were fixed and the number were not be exceeded without the prior permission of the Conservator. The numbers of cattle were fixed village wise and list was published. In filling vacancies preference was given to cattle coming for daily grazing from the adjoining villages. Goats and sheep were not allowed to graze in any of the above mentioned Working Circles.

The forest areas were categorized as per the guidelines for grazing control in Madhya Pradesh Government Memorandum No.605-284-XV- of 19th July, 1933 under the Plan prepared by S.A. Cornelius for Buldhana and Akola Forest. The classification was as below :-

TABLE NO. – 29

Range	Tree Forests		Scrub forests		Other forests	Total
	A (i)	A (ii)	B(i)	B (ii)		
	Moist type	Dry type	Pasture	Open Pasture		
Medsi	--	42,578	4,072	897	2,469	50,016
Akola	--	15,224	5,228	--	9,286	29,738
Karnja	--	14,619	--	1,802	12,400	28,821
Washim	--	24,496	4,322	1,402	1,636	31,856
Total	--	96,917	13,622	4,101	25,791	1,40,431

VII.2.7. WORKING PLAN FOR AKOLA FOREST DIVISION BY SHRI. THENGDI (1994-95 to 2008-09) :-

The forest of Akola Division was divided into 6 Working Circles in Thengdi's plan.

1. Conversion to High Forest W.C. (17694.80 ha)
2. Afforestation W.C. (33552.48 ha.)
3. Catchment W.C. (18878.64 ha)
4. Babul W.C. (21807.71 ha)
5. Fodder W.C. (7702.64 ha)
6. Non-Timber Forest Produce

(Over lapping) Working Circle - Covers entire area of the division.

The prescriptions for different working circle and their impact are given below.

1. Conversion to High Forest W.C. :- In this Working Circle the forest earlier worked under Coppice With Reserve system, having density more than 0.4, with general site quality IVa and IVb were included. The crop dominated by Teak with minimum 60%, some times upto 80% with its natural associates like Anjan, Salai, Moyen, Ain, Dhawada, Lendiya, Kalam, etc. In general the crop was young to middle age. Natural regeneration was inadequate but fairly satisfactory in some patches of forests and the crop had stunted growth because of loss in coppice vigour due to repeated management

under coppice system. The felling cycle was fixed at 15 years and the harvestable girth was fixed at 75 cm GBH. Total area allotted to this working circle was 17694.80 ha which was approximately 17.75 % of total area. This working circle was divided into 17 felling series with 15 coupes of each felling series. Yield was regulated by area. For working, coupes were divided into **A)** Protection Area, **B)** Understocked or blank area, **C)** Pole crop and Old plantation area, **D)** Well stocked areas. 50% of total teak trees above harvestable girth were to be marked for felling. Intensive soil and moisture conservation works on the basis of watershed management were suggested like Nala bunding, Contour trenches, Check dams etc. Natural regeneration and improvement operations followed by artificial generation were prescribed.

Results :- Out of 17 coupes due in every year and majority of coupes were not worked during prescribed year therefore the prescriptions were not properly followed. The reconnaissance survey reveals that there is no considerable change or improvement in crop quality and composition. The enumeration data provided by SOFR in 2006-07 is given in the following table. Girth classes have shown degradation in the stocking. The forest have further degraded especially in girth classes in 15/30, 30/45 of teak.

TABLE NO. – 30

CONTRIBUTION OF TEAK AND OTHER SPECIES (PER HA.)-2007

Species	Girth Class										Total T
	15_30	31_45	46_60	61_75	76_90	91_105	106_120	121_135	136_150	151&up	
Ain(Sajad)	3.99	2.99	1.42	0.68	0.35	0.14	0.06	0.02	0.01	0.00	9.66
Bija	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Lendia	1.77	1.10	0.58	0.26	0.11	0.02	0.01	0.00	0.00	0.00	3.85
Teak	58.04	58.56	39.95	20.59	9.74	2.94	0.96	0.23	0.08	0.03	191.12
Tiwas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
TOTAL 'A'	63.81	62.65	41.96	21.54	10.20	3.10	1.03	0.25	0.09	0.03	204.66
Groupe B:- SPECIES OF SPECIAL UTILITY											
Beheda	0.41	0.28	0.18	0.09	0.07	0.03	0.01	0.01	0.01	0.01	1.10
Kalamb	0.14	0.24	0.29	0.29	0.28	0.13	0.07	0.04	0.03	0.01	1.52
Khair	2.44	1.29	0.49	0.16	0.04	0.02	0.00	0.00	0.00	0.00	4.44
Salai	0.14	0.29	0.48	0.60	0.78	0.77	0.61	0.35	0.24	0.13	4.39
Shivan	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
TOTAL 'B'	3.14	2.11	1.44	1.14	1.17	0.95	0.69	0.40	0.28	0.15	11.47

Groupe C:- SPECIES OF SPECIAL UTILITY											
Aonla	0.10	0.10	0.11	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.39
Bel	0.09	0.14	0.14	0.11	0.04	0.01	0.00	0.00	0.00	0.00	0.53
Biba	0.04	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.13
Bor	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Char	0.77	0.86	0.73	0.38	0.22	0.08	0.03	0.01	0.01	0.00	3.09
Chinchola	0.04	0.04	0.05	0.04	0.04	0.02	0.02	0.01	0.00	0.00	0.26
Dhawada	20.78	12.81	5.99	2.85	1.37	0.38	0.10	0.03	0.01	0.00	44.32
Medsing	0.19	0.25	0.25	0.13	0.10	0.03	0.02	0.01	0.00	0.00	0.98
Moha	0.05	0.07	0.06	0.07	0.10	0.05	0.03	0.02	0.01	0.03	0.49
TOTAL 'C'	22.09	14.33	7.37	3.65	1.88	0.58	0.20	0.08	0.03	0.03	50.24
Groupe D:- OTHER SPECIES											
TOTAL 'D'	37.90	24.05	12.72	7.06	4.46	1.92	0.87	0.33	0.17	0.14	89.62
G.Total	126.94	103.14	63.49	33.39	17.71	6.55	2.79	1.06	0.57	0.35	355.99

2. Babul Working Circle :- In this Working Circle 1987.39 ha. area scattered in 100 small patches ranging from 2 ha to 50 ha, previously managed under Babul working circle has been included in this working circle. Main species was Babul (*Acacia nilotica*) the crop was young to middle aged and in many patches the natural regeneration is almost absent. 5 Felling Series with 15 coupes each were formed. Rotation period was fixed at 30 years and expected girth aimed at 60 cms at G.B.H. Yield was expected in good patches of Babul crop. Silviculture system adopted was improvement felling supplemented by AR. Cutting Back Operations, cleaning and thinning operations were prescribed in subsidiary silvicultural operations. Soil and moisture conservation measures with AR were prescribed.

Results :- 1. These areas were very much subjected to biotic pressure such as illicit felling, grazing, encroachment and other human interference as these patches are situated in the midst of agriculture fields or adjoining to villages.

2. Most of the Babul ban patches were not at all worked as per the prescriptions of Working Plan. Therefore the prescriptions were not followed. In some of the Babul bans patches plantation activities were taken up with *Prosopis* and other misc. species rather than babul, which clearly indicates about total deviation of prescriptions.

3. This Working Circle has been neglected from the management point of view, which resulted in further degradation of Babul ban patches.

3. Afforestation Working Circle :- In this Working Circle the under stocked patches of less than 0.4 density of forest having site quality IVb with adverse soil conditions without any organic material have been included. The forests were previously managed under CWR and some the 'C' class forest were included. Areas with blank and degraded forest deficient of natural regeneration were included. 33552.48 ha. and about 43.57% of total area was included in this Working Circle. Intensive soil and moisture conservation measures and plantation activities were prescribed. Number of seedlings were to be decided based on Ecological Index.

$$\text{Ecological Index} = \frac{P \times D}{Tr \times Ept}$$

Where - P = Annual precipitation in mm

D = No. of rainy days in a year

Tr = Range of maximum temp average

Etp = Potential of Evapo-transpiration in mm

Results :- It is observed in the field that Afforestation works were not taken up as per schedule given in the Working Plan and the method of Ecological Index was not at all applied to decide number of plants in plantation. Therefore the prescriptions had not been implemented properly. The subsidiary silvicultural operations were not given required attention. The field visits show that most of the plantations in the Division do not come to the level of expected success due to grazing, fire and wrong selection of site and species.

4. Catchment Working Circle :- In this working circle forest areas previously managed under CWR were included. The forest areas falling in the catchments of irrigation projects had been allotted to this working circle. The site quality was IVb. The crop density varies from 0.4 to 0.6, at some places is above 0.6. In this 18878.64 ha area that constitutes 21.25% of area of the Division had been included. 16 Working Series

with 15 coupes each were formed. No felling was prescribed. Drainage treatment and intensive soil and moisture conservation measures on the basis of watershed management were prescribed. Improvement of natural regeneration supported by artificial regeneration where ever necessary. Subsidiary silvicultural operation like thinning, cleaning were prescribed.

Results :- 16 coupes became due for working every year and majority of these coupes could not be worked as per the prescribed schedule. It is observed during the field visits that many coupes were declared as unworkable as there is no yield was prescribed. It is interesting to note that other prescriptions given were also neglected without paying any attention.

5. Fodder Working Circle :- The grass lands previously managed under same system were included in this Working Circle. The areas are open with grasses such as *Kushal*, *Burbushi*, *Sheda*, *Paunya*, *Marvel*, *Mushan*, etc. 7702.64 ha area was included with 69 Ramnans. Treatment prescribed was effective protection from grazing with wire fencing or trenches. Extensive soil and moisture conservation measures were also prescribed and the whole area was to be covered in 20 years.

Results :- No area was fenced with barbed wire. There was no working done as per the prescriptions in coupe, due every year. Cut and carry of grass were not followed as stall feeding is not common in this area. The area was subjected to frequent fires and unregulated grazing which further deteriorated the grass reserves.

6. NTFP (Overlapping) Working Circle :- In this Working Circle improvement and planting of NTFP species prescribed especially *Tendu*, *Mahua*, *Myrabelons*, *Char*, etc.

Results :- The prescriptions in this Working Circle were not scrupulously followed and hence no change in the composition of crop with respect to NWFP species.

VII.2.8. RESULTS OF PAST WORKING :

(A) GROWING STOCK :- The forest of Akola has been brought under regular management after 1865, a systematic working plan was on scientific line was

introduced in 1912 with an object of improving forest crop both in composition and condition. In this direction fire protection, regulated grazing, general protection and the preferential treatment given to Teak has increased Teak reproduction and it spread in Salai and other miscellaneous area. Teak became almost pure crop in dry and exposed localities in these forests of trap zone. The inherent quality of teak to withstand the ill-effects of grazing, fires, and other hard conditions better than its usual associates resulted in pure crop of teak in some pockets of the forests. The situation of forest management was conducive for the improvement of general condition of crop to reach healthy state, up to Cornelius Working Plan. In general the crop was young to middle aged except in remote pockets of forest reserves where a few trees were old and matured.

During the implementation of Parasnis's Plan the forest crop started deteriorating in quality and quantity due to improper implementation of the prescriptions of Working Plan. This is coupled with heavy illicit felling in ranges like Medsi and in the forest adjoining to habitation. Unregulated grazing, negligence in the coupe work, fire line cutting and burning etc. Apart from this the coppice in C.W.R. system in which most of the forest were worked for coppice regeneration was not up to mark due to faulty implementation of the prescriptions of the system. It is interesting to note that these forests were mostly worked repeatedly in C.W.R. system even in S.S. Parasnis's Working Plan the same system was repeated. During the implementation of S.S. Parasnis Working Plan the prescriptions of the system were not followed properly, resulted in deterioration of the crop. In forest pockets like Chinchkheda, parts of Patur, parts of Shendona, parts of Palodi, Wagha, Rui, Karanja and Khowsdara Felling Series most of the forests were reduced to malformed and crooked young pole crop.

In Babul Working Circle, due to heavy biotic pressure the forest have suffered to a great extent, because these forests are situated near by villages or in the midst of agricultural field. Prior to Parasnis's plan Babul plantations were taken up under agri-silvi system and the results were encouraging. During the implementation of Parasnis Plan, the scientific management of Babul forests have been discontinued since 1974-75, due to repeated failures of Babul plantations. Most of the Babul bans were reduced to

shrubby forests, due to excessive biotic pressure. The areas included in Open-Pasture Working Circle, Fodder Working Circle in S.S.Parasnis's Plan have further deteriorated as a result of heavy biotic pressure. Bamboo Overlapping Circle in S.S.Parasnis's Plan, the natural Bamboo almost reached to the stage disappearance.

In Thengdi's Plan most of the forests was included in Afforestation , Catchment and Conversion to High Forest Working Circles. During the implementation of Thengdi's Plan majority of coupes were not at all worked which resulted in further deterioration of the growing stock. Whatever the plantations taken up under various schemes, majority of the plantations were failed to establish and as a result of which the basic aim of Afforestation Working Circle could not be achieved. In Babul Working Circle the forests are scattered in about 100 small patches situated adjoining to habitations, which were subjected to illicit felling, grazing, encroachment and other human interferences. Babul ban patches have not at all been worked as per the prescriptions of Thengdi's Plan which resulted in further degradation of growing stock.

(B) Reproduction : - The site quality of Akola forest confined to mostly IVB and IVA and in very few patches the site quality is of III. The status of regeneration of teak all over the forest division is not satisfactory. The quality of timber is not up to the mark, due to repeated coppice regeneration. Coppice reproduction of other species like Lendia, Dhawda, Ain, Tendu, Tiwas, Palas is satisfactory. The seedling reproduction is good with sporadic nature especially in better quality few patches of division, in other areas seedling reproduction is satisfactory. The seedlings reproduction of Dhawada, Lendiya, Ain, Tendu, Bija etc. are satisfactory, where the soil and moisture conditions are favourable, while it is very scanty in dry exposed localities where the edaphic conditions are unfavorable.

(C) Grazing : Grazing was unrestricted in the Jungle prior to 1912-13 in C- class forest, where as in A and B Class forest controlled grazing was allowed. Grazing of Sheep and goats was always discouraged in the jungle. Grazing control has been exercised since the inception of working plan in the jungle. Forest were divided into different grazing units and the number of cattle was allowed as per the carrying

capacity of such units. To regularise grazing in working circles, a separate working circles such as **Grazing Working Circle**, pasture working circle, fodder working circle were prescribed in the management plan right from the introduction of the working plan. In these forests for the improvement of regeneration, the felled coupes closed for 5 to 7 years in different working plans. Though grazing is regulated and controlled the incidence is quite high in easily accessible areas adjoining to big villages and towns due to increase in cattle population resulted in degradation of forests. Forest soils became hard due to trampling of cattle, where there is heavy cattle population. This is coupled with the tendency of the local people to cause fire and unregulated grazing to their cattle cause heavy damage to the forests.

VII.2.9. Regulation of grazing in the forest :-

The State Government vide Government resolution No./MFP/1365/13211-7, dated 6 December 1968, formulated the grazing policy for the state of Maharashtra. The grazing policy provided for classification of forest on functional basis, formation of grazing unit, permit of grazing etc. In the past during the revision of working plan the working plan officers, used to give special emphasis on grazing policy, formation of grazing unit, carrying capacity of forest for which grazing was to be allowed, closer to grazing, rotational grazing etc.

Prior to 1912-13 the C- class forest had always been opened to unrestricted and unlimited grazing to all animals, whereas grazing in 'A' and 'B' class forest was allowed with some restrictions. All 'A' class forests when constituted as State Reserves, the grazing was absolutely not allowed. In 1884-85 very light grazing excluding sheep and goats was allowed and this continued till 1888-89. In 1889-90 grazing was again stopped and all reserves were closed to grazing upto 1989-99 and due to famine and scarcity of fodder in 1899-1900, all reserves were thrown open to grazing and the same system was continued upto 1904-05 except only exploited compartment being closed to grazing.

In Akola reserves some measures were taken in 1907 to gradually reduce the number of cows and bullocks to a standard of one cow or bullock to every 1.5 Acres of area of 'A' and 'B' class forests available for grazing under annual plan of operations.

During this time sheep, goats and buffaloes were totally excluded from grazing in forest. The areas under “Coppice-with-Standard” system of Nimbhi, Chohogaon, the Wagha felling series of Morna, a three year closer and other felling series of Balapur and Pangara ranges, it was prescribed a ten years closer of coupes after exploitation.

In Babul areas under regeneration prior to Hunt’s plan of 1912-13 cows and bulls were admitted for grazing at the rate of 1-animal for every 2 Acres after the rains are over in the year in which the sowings were made until after 3rd year, when all cattle were allowed grazing at one and half acres per head, where as goats and sheep always being excluded from grazing.

In the Cornelius working plan (1942-43) for Akola forest division closer to grazing was prescribed working circle wise which are given below.

1. **Coppice-with-Reserved working circle** : All coupes were closed for grazing for five years after main felling and for another five years after thinning at mid-rotation.
2. **Babul working circle** : All coupes were subjected to restricted grazing for a period of seven years, after the first felling and the grazing incidence kept one head per acre. Cattle other than cows, bulls and bullocks were not permitted.
3. **Grazing regulation in Pasture forests** : Pasture forests were managed in the interest of grass and grazing. As these areas were unfit for production of fuel and timber. These areas were managed with a object of improving pasture. The areas were given a periodic rest from grazing. Under the system each pasture series was divided into 4 – coupes of each of which was closed for grazing for 3 years, to have proper control over area to grazing within the period.
 - (i) Unregenerated coupes closed to grazing (After Mid-rotation) from 1st december to 15th June in which buffaloes were not allowed.
 - (ii) Fodder reserves not closed for cutting of grass or grazing from 1st April to 15th June.
 - (iii) Pasture coupes closed to grazing from 1st December to 15th June.

During the Cornileous plan all the ‘A’ class reserved were divided into 96 grazing units and the maximum number of cattle allowed in each unit were fixed and it

was not to be exceeded without the sanction of the Conservator of Forests. The number of cattle allowed was fixed and it was listed for all villages.

4. In S.S. Parasnis's Plan proper prescriptions were made for grazing of cattle in the forest area and Akola Forest Division was formed into 26 grazing units, and the following closers were prescribed in each working circle.

(i) **Selection Cum Improvement Working Circle** : All coupes were prescribed to be closed for 5 years after main felling and for another 5 years after the lapse of 15 years and it was prescribed that not more than quarter of area be closed to grazing at a time.

(ii) **Coppice-With- Reserve Working Circle** : All coupes were closed for 5 years after main felling and again for another 5 years after mid-rotation thinning and 1/4th area was closed to grazing at a time.

(iii) **Improvement Working Circle** : Due to unrestricted grazing the areas of this Working Circle suffered a lot in the past . These areas were much deficient in regeneration and therefore a period of 10 years closure after main felling was prescribed and the coupes remaining opened for the rest of the period.

(iv) **Babul Working Circle** : All coupes prescribed were closed to grazing for 7 years from the year of working. In the remaining areas only one cattle head permitted per acre and cattle other than cow, bulls, bullocks were not permitted.

(v) **Open Pasture Working Circle** : Rotational grazing with a closure of 3 – years and 12 years opened for grazing except Geru, Paldhak and Hiwarkhed grazing series which remain permanently opened to grazing.

(vi) **Fodder Working Circle** : The prescriptions were that the total area was closed to grazing and only grass cutting was allowed. However the Divisional Forest Officer was allowed to open grazing in fodder reserves which were not closed from 1st April to 15th June.

In the above mentioned Working Circles neither goats nor sheep were allowed to graze and it was prescribed that the Conservator can extend the period of closure, if the regeneration get affected with the opening of a particular area for grazing. While declaring closure of any area roads formed were taken into consideration and two chains of area on both sides of such part were left from closure.

In Parasnis's Plan the "A" class Reserved forests were divided into 26 Grazing Units and maximum admissible number of cattle were fixed unit wise and any deviation was allowed with the sanction of Conservator. The number of cattle allowed to graze were fixed villagewise and in filling vacancies preference was given to cattle coming daily grazing from the adjoining villages.

Section 3 : Special Works of improvement under taken :

VII.3.1 For the management of Akola Forest Division on scientific lines Working Plan was introduced in the year 1912-13 and these forests have been managed till today, under Working Plans prepared by various Working Plan Officers. During the implementation of Plan special works of improvement have been under taken. Special scheme or as per the need of time these special works of improvement were under taken both in management, development of forests and infrastructural facilities development.

VII.3.1.1. Fire Protection : Fire protection measures were introduced in year 1881. In the forests of Akola, during the implementation of Hunts Working Plan of 1912-13 a complete fire protection of the forest was under taken. Which was subsequently replaced by special and general fire protection systems as laid down Central Province Forests Manual. Special fire protection was applied to all the areas closed to grazing, where as general fire protection to all A -class forest areas allotted to different Working Circles. Forest protection by laws was applied to remaining A-Class and C-class area.

In S.S. Parasnis Plan prescription for fire protection were made as prescribed in paragraphs 86,89 of Central Provinces Forest Manual Volume-I and as per the provisions, the fire protection was classified into class-I, class-II and class-III. Various categories of forests grouped under above classes are given below :-

Class I : Special fire protection of all the coupes closed to grazing after the main felling only. All Agri-silvicultural areas and plantation as long as they are closed to grazing. Any other area prescribed by the Conservator.

Class II : General fire protection all other coupes of the Selection Cum Improvement Working Circle, the Coppice With Reserve Working Circle, the Babul Working Circle , the Improvement Working Circle,all Fodder Reserves, all Bamboo Coupes (Non-Overlapping Bamboo areas), all Pasture coupes closed to grazing.

Class III : Protection by law only.

In Thengdi's Plan same classification of fire protection was continued.

VII.3.1.2. Forest nurseries : For providing plants for regular plantation works and plants for Van Mahostav programme, four permanent nurseries were established in Akola, Medsi and Karanja ranges and maintained.

VII.3.1.3. Sowing and plantings : To develop the forest earliest attempts of sowing and planting were made on a large scale in Karanja range in 1883. Species like Babul, Sissoo, Tiwas, were tried and out of which Babul sowing and planting gave successful result to some extent.

VII.3.1.4. Bamboo Plantation : Natural Bamboo extended along the nalas in some of the pockets of Akola Forest Division To improve Bamboo forests Bamboo plantation was taken up at Yeota in Karanja range in early 1887, where nurseries seedlings were planted up. The plantation had given successful results and seedlings became productive in 1897, and in the same Bamboo plantation light thinning was carried out. Based on the

results of this plantation, regular departmental working of these areas was continued since 1900. Major species of this plantation consists of Katang – Bamboo (Bambusa arundinacea) and Dendrocalamus strictus. Regular sowing of seeds and Bamboo plantation operations started in 1908-09 and continued till 1934-35 in the Reserves of Medsi, Akola and Karnja ranges. For planting, nursery seedlings were used raised 10 x 10 baskets and they were planted in pit. In some cases rhizomes were also planted. Results of this plantation were with partial success.

VII.3.1.5. Sandal Plantation :- Sandal plantations in West- Berar Division was started by B.I.Shama Rao in the year 1916. Seeds were obtained from Mysore and dibbled in suitable areas of all ranges of this division. Seed sowing operation of Sandal was continued upto 1922 and this had given successful results and total area till that time (1033) approximately 418.05 Ha. and in this plantation thinnings were carried out in 1932-33. The results of enumeration of Sandal trees in 1932-33 found about 11390 trees in (346 acres) 140.024 Ha. Seed sowings were again carried out in 1938-39 in coupe number XXVII of Patur Felling Series, coupes number XVI and XVII of Chikhalwal Felling Series, coupe number IX, XIV, XVIII, XIX of Regaon Felling Series, coupe number XXVI of Andharsawangi Felling Series of old Balapur range (at present Akola range.)

VII.3.1.6. Agri-silvicultural Plantation : For raising successful plantation of Teak and other species attempts have been made to raise plantation of Teak, siwan, Sisoo, Prosopis, Neem, Tiwas, Babul, Sisham, Amaltas, Khair and Bamboo along with agricultural crops since 1933-34. Attempts have been made in 84.99 Ha.(210 acres) in Chinakwadi and 121.408 Ha. (300 acres) in Titwa in old Balapur range, in which nursery and root shoot cuttings were tried but little success was achieved. In Chikanwadi the cultivators left their fields due to repeated failure, where as in Titwa plantation was partially successful. In 1927, Shisam seed were sown at Paldhag and in the forests of Borkheir. In 1930-31 Semal, Sisoo, Shisham, seeds sown along with the river Gyanganga at Matergaon but no success. Subsequently Siwan, Semal, Sisoo,

Shisham, Bamboo and Chir-pine and other species seeds were sown but due to heavy floods the seeds were washed away.

VII. 3.1.7. Teak and Semal Plantation : To improve the crop under developmental scheme aiming at replacement of regular species by more valuable species in forests, Teak and Semal plantations have been tried under Five Year Plans in Akola , Medsi and Karanja ranges of Akola Forest Division.

VII.3.1.8. Afforestation of catchment areas :- During the Second Five Year Plan some of the plantations were taken up under “ Afforestation of catchment area scheme” with an object of clothing the denuded hill slopes forming catchment areas to ensure permanent vegetative cover. Species tried in the afforestation works were Neem, Siwan, Karanji, Anjan, Babul, Khair, Shemal, Sisoo and Teak out of which Neem, Siwan and Karanji gave quite encouraging results.

VII.3.1.9. Massive Afforestation programme :- In order to achieve National Forest Policy to bring about 33% of area under green cover the State Government launched a new programme called as “Massive Afforestation Programme (M.A.P.). Under this programme taking up of plantation in the forest areas without green cover, on the waste land under Wasteland Development Board and other areas like common community lands, Gram-Panchayat land and where ever the open lands are available. Accordingly in Akola Forest Division plantations on 527 ha. area has taken under Massive Afforestation Programme.

VII.3.1.10. Implementation of World Bank Project : - The World Bank Project has been launched in the State 1993, with a view to increase green cover and productivity of forests, increase infra-structural facilities and review technology in the forestry, especially in nurseries i.e. Root trainee technology, research, especially to raise nursery through clonal technology etc. Lot of Bamboo plantations were taken up under this project and also Infra- structural facilities, building construction for residence and office purposes and vehicles for transportation and wireless for effective communication were

taken up. The re-organisation of the department was proposed and completed during implementation of this project.

VII.3.1.11. Infra – Structural facilities development :

(I) Roads : In the beginning of first working plan the road network of these areas fair weather and metal roads which were connected by cart – tracts. For improvement of communication short -length of Ghat roads have been constructed in some of the forest reserves. Prior to 1960 minor repairs of forest roads maintained by Forest Department. As improvement of road network started taking place in the State, many roads have been upgraded by B and C deptt. The total road length in the Division is 3868 Kms, out of which 100 Km is National Highway, 728 Km State Highway, 1457 Km District Roads and 1583 km of other than District Roads. Many roads have been improved during the period of last decade.

List of road constructed and maintained by the Forest Department is given in Appendix No.VIII of Volume II.

(II) Buildings and Wells : - Since forests are located in interior areas, the forest sub-ordinates are required to stay in remote areas, in the interest of forest protection, management, and development. For the stay of sub-ordinates in the interior pockets, forest accommodation is very much essential. Under the scheme “ Housing of sub-ordinate” new quarters have been constructed under different plan periods in the recent past, number of quarters and office buildings constructed under World Bank programme, in order to provide better accommodation facilities to sub-ordinate staff and to provide better offices to range officers ”. List of buildings available in the Division is given in Appendix VII of vol II.

(II) Forest Village School : - In order to provide educational facilities to forest villagers, “ Forest village school” was established in Goradi forest village in 1951. After the transfer to forest villages to Revenue Department the forest school also transferred.

CHAPTER – VIII
STATISTIC OF GROWTH AND YIELD

SECTION 1: STATISTIC OF GROWTH RATE OF TEAK :

The crop of forest of Akola Division almost similar to adjoining forests of Buldhana Forest Division and Jalgaon Forest Division. These divisions are comparable to a large extent in many qualities such as crop composition and quality, site quality and climatic conditions. The statistic of growth rate of teak has arrived on the basis of stem and stumps analysis obtained from Ambabarwa reserves as per of S.S.Parasnis's Plan is given below for comparison. During the revision of the Parasnis's plan by shri. Thengdi stem analysis was conducted by obtaining teak slices from the trees, from Umarwadi Felling Series compartment No. - 7 and the results are as follows :-

TABLE NO. – 31

Age (Years)	Girth(Cm.)	Age(Years)	Girth(Cm.)
10	16.68	28	42.08
14	22.61	30	45.22
16	25.12	32	48.36
18	27.63	34	51.50
20	29.52	36	54.64
22	32.66	38	59.03
24	35.80	40	60.92
26	38.94	--	--

The results obtained from stump and stem analysis of teak trees selected from Ambabarwa reserves as per S.S.Parsnis Plan are given below :-

TABLE NO. – 32

Age(Years)	Total Height(m)	DBH(OB) cms.
10	04.80	01.02
20	08.10	11.18
30	10.20	16.76
40	11.70	20.83
50	12.90	23.05
60	13.80	25.70
70	14.17	25.40
80	15.60	29.20
90	---	---
100	---	---

During the revision of the present plan studies have been conducted by the office of the Conservator of Forests, Working Plan, Yavatmal in 2008 with the help of its officers and staff. The stem analysis of Teak (*Tectona grandis*) carried out by selecting representative teak trees of site quality IV with different origin i.e. teak trees of seedling origin from Alegaon range compartment No.12 and the number of trees selected were 4 and Patur range compartment No. 47, one tree and compartment No. 48 two teak trees were selected as representative samples and total number of seedling origin trees selected were seven. For coppice origin the representative samples were selected from Alegaon range compartment No. 20, and number of trees selected were four and from Patur range one teak tree was selected from compartment No. 47 of Akola forest division. The total number of trees selected for stem analysis were twelve from four compartments. The results obtained out of stem analysis have been computed and the following curves were drawn.

- A. Age/ Diameter curve at breast height over bark.
- B. Height/ Age curve
- C. Age/ Volume curve

The details of teak trees felled for stem analysis including territory, site quality and the team leader are given below.

TABLE NO. – 33

Sr No	Stem Analysis for teak	Range	Round	Beat	Compartment .No	Team leader
1	Site quality - IV	Patur	Medsi	Kala Kamtha	47 and 48	Shri. A.R. Zanzad R.F.O. W.P. Yavatama l
2	Site quality - IV	Alegaon	Chikhalwal	Wasali -II	12	
3	Site quality - IV	Alegaon	Chikhalwal	Chikhal – wal	20	

The data obtained is utilised in this Plan. The data of girth at breast height in centimeters, height in meters, Volume in cubic meters. C.A.I. (Current annual increment) and M.A.I. (Mean annual increment) are given in the following table:-

STEM ANALYSIS FOR TEAK OF SITE QUALITY IV (COPPICE ORIGIN)

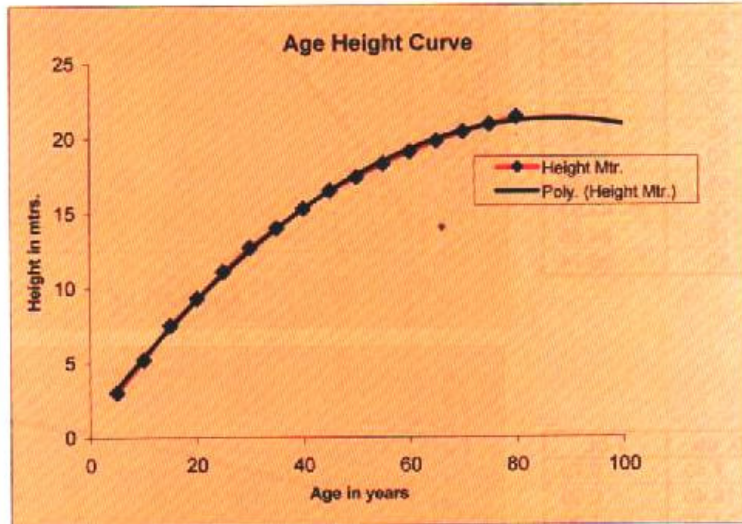
Range : f Alegaon & Patur

Compt.No.: 20 & 47

Maker : Shri. A.R. ZANJAD, R.F.O.W.P.Yavatmal

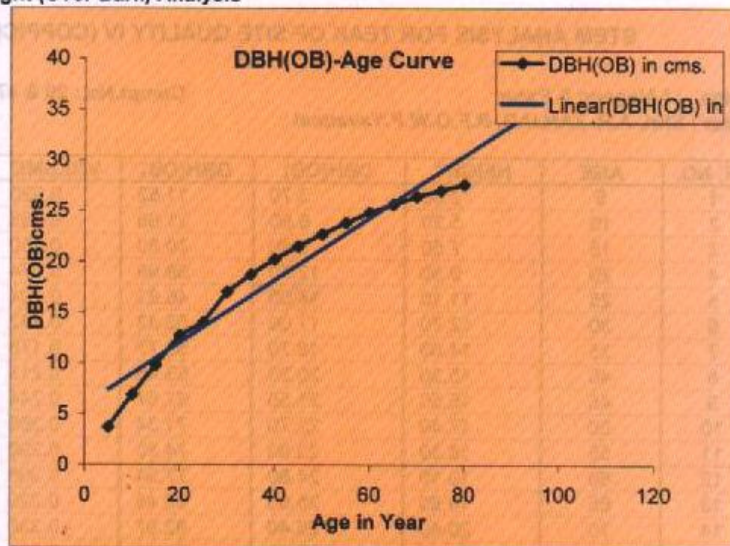
SR. NO.	AGE	HEIGHT	DBH(OB)	GBH(OB)	VOLUME	CAI	MAI
1	5	3.00	3.70	11.62	0.020	—	0.0040
2	10	5.20	6.90	21.68	0.033	0.0026	0.0033
3	15	7.50	9.80	30.80	0.050	0.0034	0.0033
4	20	9.30	12.70	39.99	0.074	0.0048	0.0037
5	25	11.10	14.00	46.83	0.104	0.0060	0.0041
6	30	12.70	17.00	53.43	0.142	0.0076	0.0047
7	35	14.00	18.70	58.77	0.178	0.0072	0.0050
8	40	15.30	20.20	63.48	0.213	0.0070	0.0053
9	45	16.50	21.50	67.57	0.244	0.0062	0.0054
10	50	17.40	22.70	71.34	0.269	0.0050	0.0054
11	55	18.30	23.80	74.80	0.290	0.0042	0.0052
12	60	19.10	24.80	77.94	0.306	0.0032	0.0051
13	65	19.80	25.60	80.46	0.320	0.0028	0.0049
14	70	20.40	26.40	82.97	0.330	0.0020	0.0047
15	75	20.90	27.00	84.86	0.338	0.0018	0.0045
16	80	21.40	27.60	86.74	0.344	0.0012	0.0043

Age in year	Height Mtr.
5	3.00
10	5.20
15	7.50
20	9.30
25	11.10
30	12.70
35	14.00
40	15.30
45	16.50
50	17.40
55	18.30
60	19.10
65	19.80
70	20.40
75	20.90
80	21.40

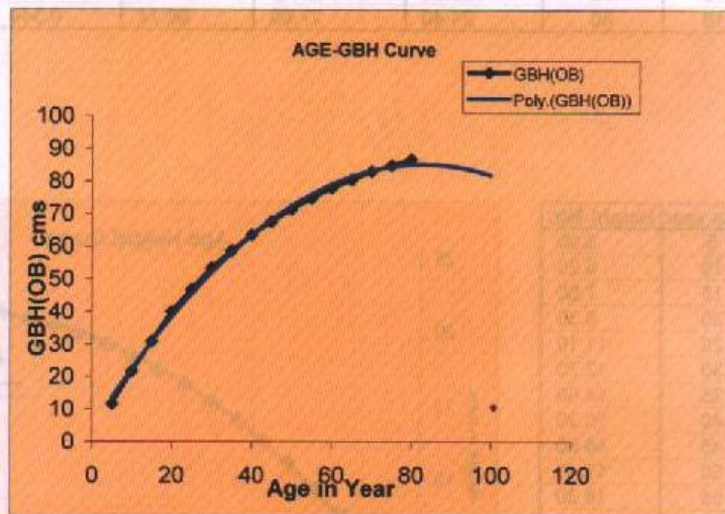


Age Girth and Breast Height (Over Bark) Analysis

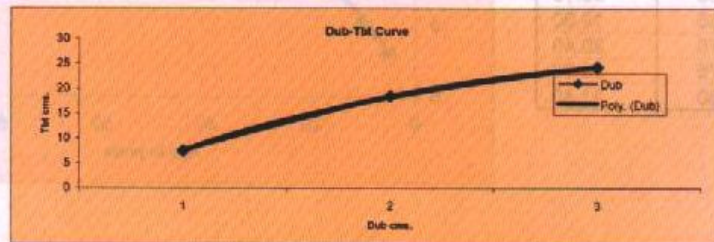
Age in Years.	DBH (OB) in cms.
5	3.70
10	6.90
15	9.80
20	12.70
25	14.00
30	17.00
35	18.70
40	20.20
45	21.50
50	22.70
55	23.80
60	24.80
65	25.60
70	26.40
75	27.00
80	27.60



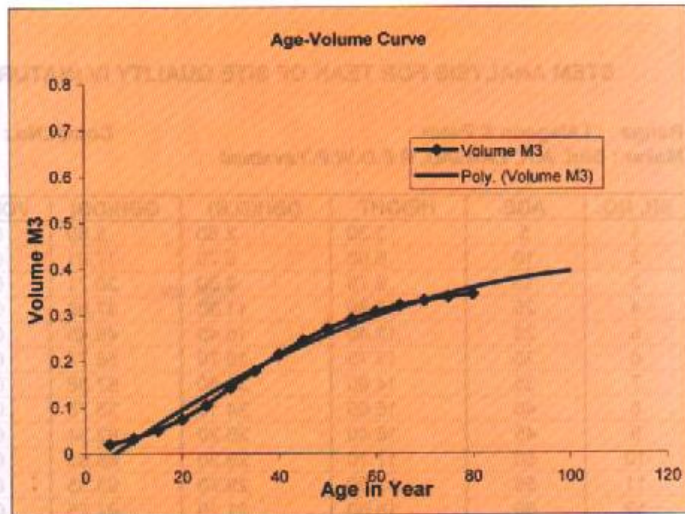
Age in Year	GBH (OB)
5	11.82
10	21.68
15	30.80
20	39.99
25	46.83
30	53.43
35	58.77
40	63.48
45	67.57
50	71.34
55	74.80
60	77.94
65	80.46
70	82.97
75	84.86
80	86.74



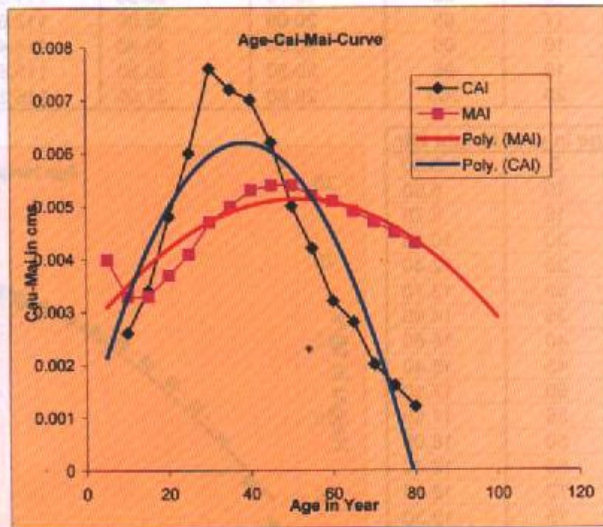
D. ub	T.bt
7.40	0.70
18.40	0.90
24.20	1.00



Years.	Volume M3
5	0.020
10	0.033
15	0.050
20	0.074
25	0.104
30	0.142
35	0.178
40	0.213
45	0.244
50	0.269
55	0.290
60	0.306
65	0.320
70	0.330
75	0.338
80	0.344



AGE	CAI	MAI
5		0.0040
10	0.0026	0.0033
15	0.0034	0.0033
20	0.0048	0.0037
25	0.0060	0.0041
30	0.0076	0.0047
35	0.0072	0.0050
40	0.0070	0.0053
45	0.0062	0.0054
50	0.0050	0.0054
55	0.0042	0.0052
60	0.0032	0.0051
65	0.0028	0.0049
70	0.0020	0.0047
75	0.0016	0.0045
80	0.0012	0.0043



STEM ANALYSIS FOR TEAK OF SITE QUALITY IV (NATURAL OR SEED ORIGIN)

Range : I Alegaon & Patur
 Maker : Shri. A.R. ZANJAD, R.F.O.W.P.Yavatmal

Compt.No.: 12,47& 48

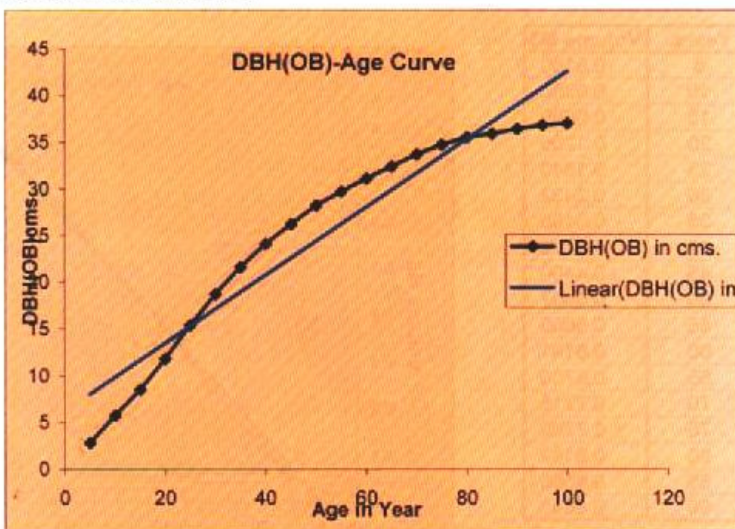
SR. NO.	AGE	HEIGHT	DBH(O.B)	GBH(OB)	VOLUME	CAI	MAI
1	5	3.30	2.80	8.80	0.0180		0.0036
2	10	6.00	5.70	17.91	0.0360	0.0036	0.0036
3	15	8.70	8.50	26.71	0.0680	0.0064	0.0045
4	20	10.80	11.80	37.08	0.1206	0.0105	0.0060
5	25	12.40	15.40	48.40	0.1840	0.0118	0.0073
6	30	13.70	18.70	58.77	0.2432	0.0126	0.0081
7	35	14.80	21.60	67.88	0.3100	0.0133	0.0088
8	40	15.60	24.10	75.75	0.3772	0.0134	0.0094
9	45	16.40	26.20	82.34	0.4400	0.0126	0.0098
10	50	17.10	28.20	88.63	0.5007	0.0121	0.0100
11	55	17.50	29.70	93.35	0.5600	0.0119	0.0102
12	60	18.00	31.10	97.75	0.6191	0.0118	0.0103
13	65	18.40	32.40	101.83	0.6700	0.0102	0.0103
14	70	18.90	33.70	105.92	0.7215	0.0102	0.0103
15	75	19.30	34.70	109.06	0.7700	0.0097	0.0102
16	80	19.70	35.50	111.57	0.8182	0.0096	0.0102
17	85	20.00	35.90	112.83	0.8550	0.0074	0.0100
18	90	20.30	36.40	114.40	0.8840	0.0058	0.0098
19	95	20.50	36.80	115.66			
20	100	20.80	37.00	116.29			

Age in year	Height Mtr.
5	3.30
10	6.00
15	8.70
20	10.80
25	12.40
30	13.70
35	14.80
40	15.60
45	16.40
50	17.10
55	17.50
60	18.00
65	18.40
70	18.90
75	19.30
80	19.70
85	20.00
90	20.30
95	20.50
100	20.80

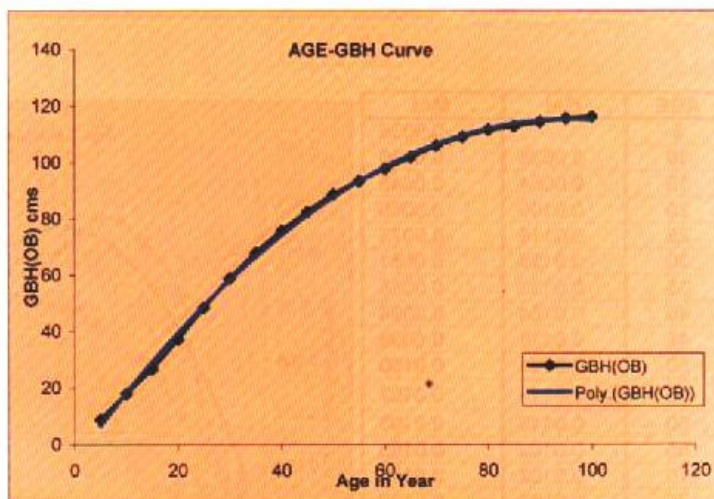


Age Girth and Breast Height (Over Bark) Analysis

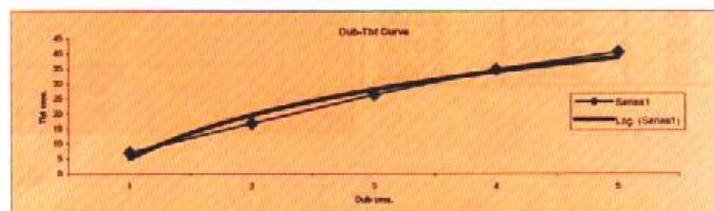
Age in Years.	DBH (OB) in cms.
5	2.80
10	5.70
15	8.50
20	11.80
25	15.40
30	18.70
35	21.60
40	24.10
45	26.20
50	28.20
55	29.70
60	31.10
65	32.40
70	33.70
75	34.70
80	35.50
85	35.90
90	36.40
95	36.80
100	37.00



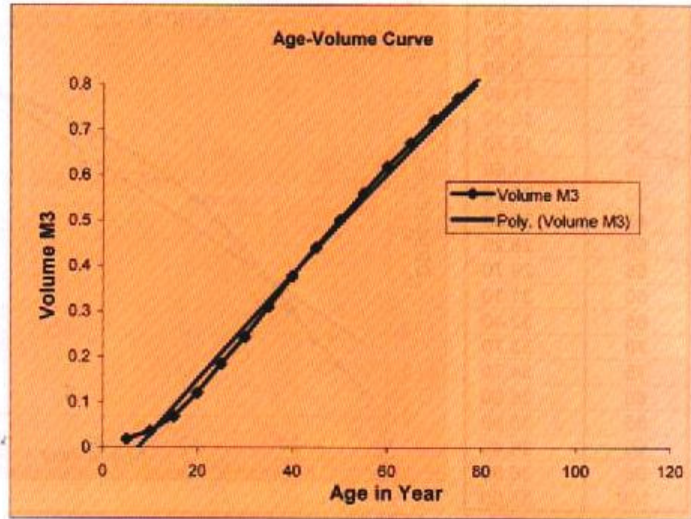
Age in Year	GBH (OB)
5	8.80
10	17.91
15	26.71
20	37.08
25	48.40
30	58.77
35	67.88
40	75.75
45	82.34
50	88.63
55	93.35
60	97.75
65	101.83
70	105.92
75	109.06
80	111.57
85	112.83
90	114.40
95	115.66
100	116.29



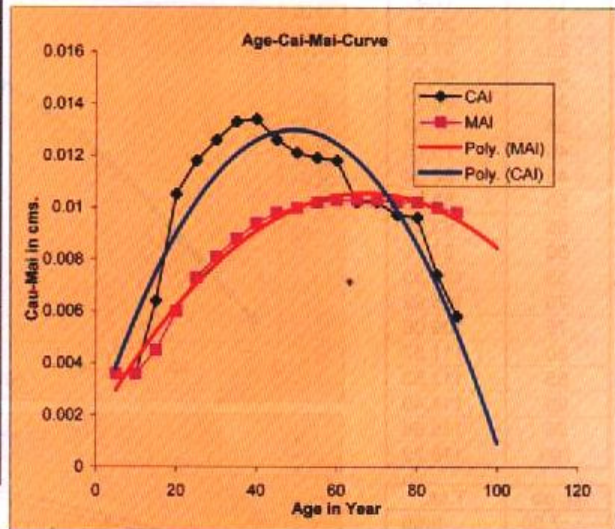
D. ub	T.bt.
7.00	0.80
16.70	0.90
26.20	1.00
34.60	1.10
40.50	1.16



Years.	Volume M3
5	0.0180
10	0.0360
15	0.0680
20	0.1206
25	0.1840
30	0.2432
35	0.3100
40	0.3772
45	0.4400
50	0.5007
55	0.5600
60	0.6191
65	0.6700
70	0.7215
75	0.7700
80	0.8182
85	0.8550
90	0.8840



AGE	CAI	MAI
5		0.0036
10	0.0036	0.0036
15	0.0064	0.0045
20	0.0105	0.0060
25	0.0118	0.0073
30	0.0126	0.0081
35	0.0133	0.0088
40	0.0134	0.0094
45	0.0126	0.0098
50	0.0121	0.0100
55	0.0119	0.0102
60	0.0118	0.0103
65	0.0102	0.0103
70	0.0102	0.0103
75	0.0097	0.0102
80	0.0096	0.0102
85	0.0074	0.0100
90	0.0058	0.0098



SECTION VIII.2: ENUMERATIONS :- Before creation of S.O.F.R. Units for estimation of growing stock Working Plan wings used to carry out enumeration of the growing stock for the estimation of growing stock. With the creation of S.O.F.R. units enumeration of forests has been entrusted to these units. In Akola Forest Division enumeration was carried out by the Forest Resources Survey Unit of Amaravati in the years 2005-06 and 2006-07 with a sampling intensity of 1%. In E- class forests, Babul bans and C- Class forests the enumeration of growing stock was carried out by this unit.

SECTION VIII.2.1: METHOD OF ENUMERATION: The method of enumeration was systematic with part survey and intensity of sampling is 1%. The sample plots are laid down by taking grid of 600 x 600 mts. In each corner grid, the sample plot of 60 x 60 meter for tree enumeration and 20 x 20 meters plot for shrub enumeration. Apart from trees and shrubs enumeration, the regeneration survey was also carried out by laying down sample plots 20 x 20 meters. The tree enumeration was conducted girth classwise with 15 x 15 meter in each girth class. The data on regeneration status of teak and other species (seedling and coppice shoots) was also collected from each sample plot. On the height of the plant the regeneration is categorized into R1- 30 cms to 1 meter, R2- 1 to 3 meter and R3 – above 3 meters.

TABLE NO. – 34

AVERAGE NUMBER OF RECRUITS - SEEDLINGS/ HA

HEIGHT OF SEEDLING	NO. OF RECRUITS - SEEDLINGS /HA
30 cm to 1 meter (R1)	53.85
1 meter to 3 meter (R2)	21.95
Above 3 meter (R3)	6.36

SECTION VIII.2.2 : ANALYSIS OF DATA :- The enumeration data was analysed by using Forest Inventory Management System developed by Shri. Dhabekar, R.F.O. in the office of the Chief Conservator of Forests, Working Plan Nagpur by using software for data feeding and compartment wise and specieswise data was processed in Excel sheet in the office of the Conservator of Forests Working Plan, Yavatmal. The results of

analysis obtained from Chief Statistician, M.S. Nagpur. The results obtained out of this analysis shows that total growing stock on an average is 356.02 trees/Ha. Out of which 191.12 trees/ha are of Teak and 164.90 trees/ha are of Miscellaneous species. The results obtained during analysis of enumeration data of Akola Forest Division is given in the following table :-

TABLE NO. – 35

COMPOSITION OF TEAK AND OTHER SPECIES (PER HA.)-2007

Species	Girth Class in Cm										
	15_30	31_45	46_60	61_75	76_90	91_105	106_120	121_135	136_150	151&up	Total T
Groupe A :- Species of General Utility											
Ain(Sajad)	3.99	2.99	1.42	0.68	0.35	0.14	0.06	0.02	0.01	0.00	9.66
Bija	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Lendia	1.77	1.10	0.58	0.26	0.11	0.02	0.01	0.00	0.00	0.00	3.85
Teak	58.04	58.56	39.95	20.59	9.74	2.94	0.96	0.23	0.08	0.03	191.12
Tiwas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
TOTAL 'A'	63.81	62.65	41.96	21.54	10.20	3.10	1.03	0.25	0.09	0.03	204.66
Groupe B:- SPECIES OF SPECIAL UTILITY											
Beheda	0.41	0.28	0.18	0.09	0.07	0.03	0.01	0.01	0.01	0.01	1.10
Kalamb	0.14	0.24	0.29	0.29	0.28	0.13	0.07	0.04	0.03	0.01	1.52
Khair	2.44	1.29	0.49	0.16	0.04	0.02	0.00	0.00	0.00	0.00	4.44
Salai	0.14	0.29	0.48	0.60	0.78	0.77	0.61	0.35	0.24	0.13	4.39
Shivan	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
TOTAL 'B'	3.14	2.11	1.44	1.14	1.17	0.95	0.69	0.40	0.28	0.15	11.47
Groupe C:- SPECIES OF Minor Forest Produce											
Aonla	0.10	0.10	0.11	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.39
Bel	0.09	0.14	0.14	0.11	0.04	0.01	0.00	0.00	0.00	0.00	0.53
Biba	0.04	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.13
Bor	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Char	0.77	0.86	0.73	0.38	0.22	0.08	0.03	0.01	0.01	0.00	3.09
Chinchola	0.04	0.04	0.05	0.04	0.04	0.02	0.02	0.01	0.00	0.00	0.26
Dhawada	20.78	12.81	5.99	2.85	1.37	0.38	0.10	0.03	0.01	0.00	44.32
Medsing	0.19	0.25	0.25	0.13	0.10	0.03	0.02	0.01	0.00	0.00	0.98
Moha	0.05	0.07	0.06	0.07	0.10	0.05	0.03	0.02	0.01	0.03	0.49
TOTAL 'C'	22.09	14.33	7.37	3.65	1.88	0.58	0.20	0.08	0.03	0.03	50.24
Groupe D:- OTHER SPECIES											
TOTAL 'D'	37.90	24.05	12.72	7.06	4.46	1.92	0.87	0.33	0.17	0.14	89.62
G.Total	126.94	103.14	63.50	33.39	17.72	6.55	2.79	1.06	0.58	0.35	356.02

Enumeration results have been computed separately for each working circle and have been discussed in the chapters of respective working circles. Stem density, basal area and frequency of each species have been calculated girth- classwise and given in the Appendix No. XXXV and species distribution in various working circles is given in Appendix No. XXXVe of volume II of this Plan.

SECTION VIII.2.3 : RESULTS OF ENUMERATION OF PREVIOUS PLAN :-

The enumeration data of Parasnis's Plan (1964): Cornelius Working Plan was replaced by the Working Plan of S.S. Parasnis. During the revision of Cornelius Plan S.S. Parasnis conducted forest survey of growing stock in Amba-barwa reserve to estimate growing stock of these forests. The total enumeration was conducted in 8371.21 Ha. The enumeration data was related to limited species i.e. Teak, Shisham and other of misc. species such as Tinsa, Haldu, Bija, Shemal Ain, Dhawada, Salai, Moyan and Kakad.

The analysis of the data reveals that the young to middle aged classes are predominating contributing to almost 2/3rd of total number of trees excluding young regeneration below 15 to 30 cm. girth at breast height. Total number of Teak trees per ha. was 239.38 and miscellaneous trees were 187.14, amounting 426.52 trees per ha. of above mentioned 11 species only.

TABLE No.- 36
SPECIES WISE GROWING STOCK (PARSNIS'S PLAN)

Tinsa/ Tiwas	Haldu	Bija	Semal	Saja (Ain)	Dhawa da	Salai	Moyan	Kakad	Shisham	Teak	Total
71.58	0.08	2.75	2.63	32.18	23.23	12.83	4.93	30.83	6.10	239.38	426.52

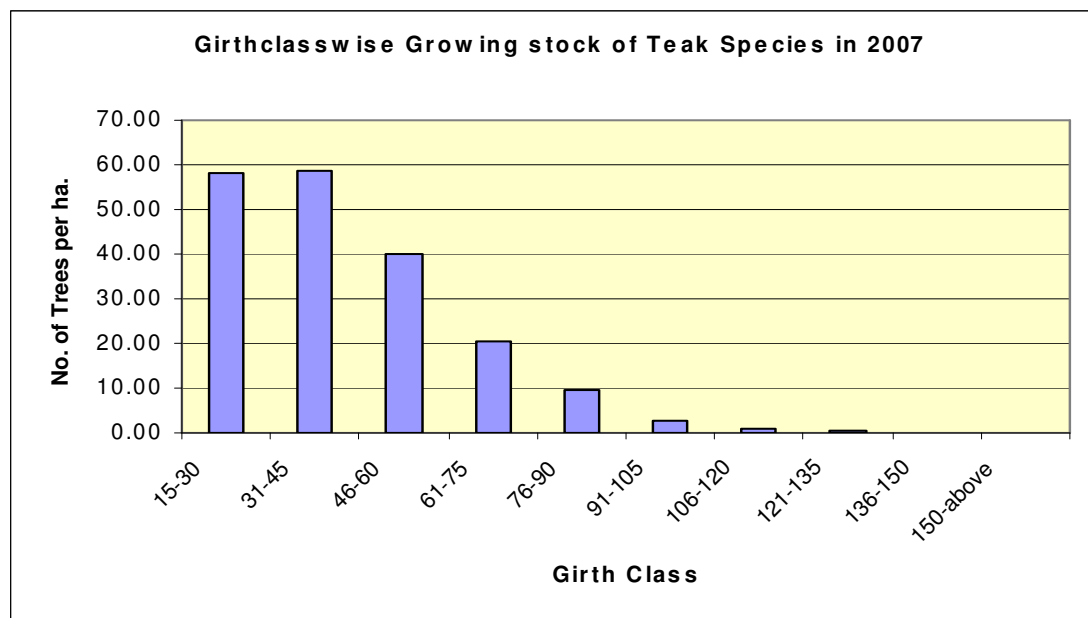
The enumeration data of Thengdi's Plan (1993):- In Thengdi's Plan the enumeration data of 1993 carried out by SOFR was used for analysis of the crop. The enumeration was carried out working circle wise and compartment wise by following the stratified random line plot sampling with 1% systematic sampling. From the analysis of data it is revealed that the growing stock of Teak, Tinsa, Shisham, Haldu, Bija, Shemal, Ain, Dhawada, Salai, Moyan and Kakad. in Thengdi's Plan was decreased when compared to the growing stock of same species of Parasnis Plan. Average growing stock of species

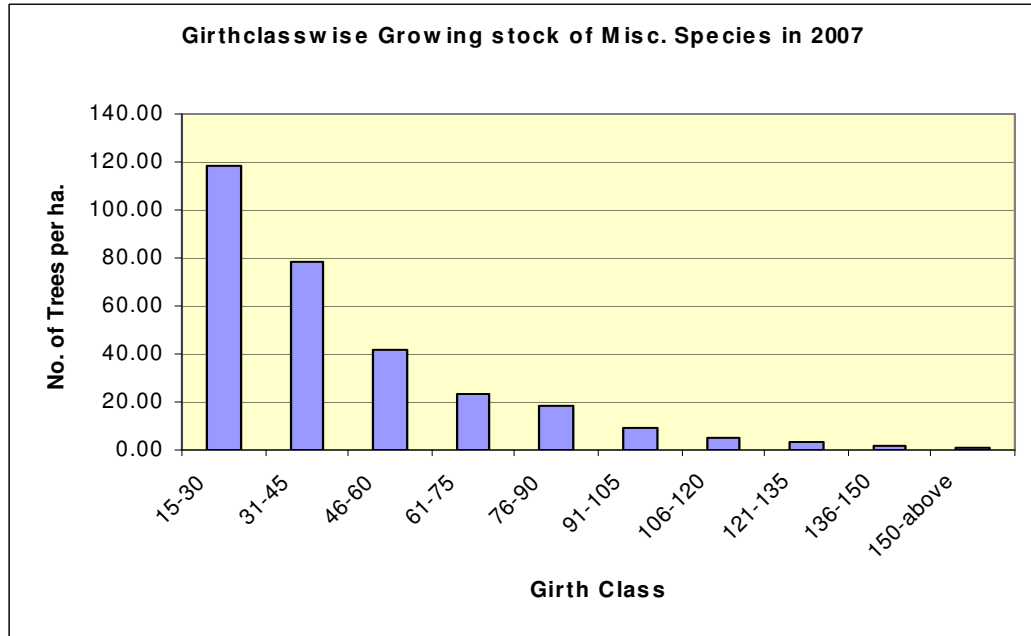
mentioned above of 1993 enumeration is 362.01 per ha out of 283.13 Teak trees/ha and 75.33 trees/ha of other species mentioned above.

The over all growing stock of the species in Thengdi’s plan was 601.26 /Ha. out of 283.13 Teak trees/ha. and 318.13 trees/ha. of Miscellaneous species. As the enumeration related to all the species in the forest is not available the comparison of over all growing stock between Thengdi’s Plan and Parasnis’s Plan is not possible. Therefore the comparison of growing stock of species Teak, Shisham, Tinsa, Haldu, Bija, Shemal Ain, Dhawada, Salai, Moyen and Kakad of Parasnis’s Plan and the same species of Thengdi’s Plan has been carried out and given in section VIII.2.5 of the same chapter.

SECTION VIII.2.4 RESULTS OF ENUMERATION OF 2007 :-

The observations made out of analysis of enumeration data provided by SOFR Amravati unit reveals that the average growing stock is 356.02 trees/ ha out of which teak constitutes 191.12 trees/ ha (53.68%) and miscellaneous 164.90 trees/ ha (46.32%). The crop is predominated by young to middle aged girth classes amounting to 2/3rd of the growing stock excluding the young regeneration of girth 15-30 cm girth. In Teak the 7.31% of crop of harvestable and above harvestable girth classes.





SECTION VIII.2.5 COMPARISON OF GROWING STOCK BETWEEN PARASNIS’S PLAN (1964), AND THENGDI’S PLAN (1993) RELATED TO SPECIES TINSA, HALDU,BIJA, SEMAL, SAJA, DHAWADA, SALAI,MOYEN, KAKAD, SHISHAM AND TEAK:-

The overall growing stock of above mentioned species is 426.52 per ha. in Parsnis’s Plan (Ambabarwa reserves) whereas in Thengdis Plan the growing stock related to these species is 362.01 per ha., which clearly indicates that there was considerable degradation in the stocking of the forests. The stocking of Teak was improved which may be because of management interventions. In case of miscellaneous species considerable degradation was taken place.

In case of Dhawada considerable improvement in growing stock is noticed, where as in case of Ain Substantial degradation is witnessed between the Parasnis’s Plan and Thengdi’s Plan. In case of Tiwas and Kakad substantial decrease in number witnessed between the Parasnis’s Plan and Thengdi’s Plan.

COMPARISON OF GROWING STOCK (SPECIESWISE) BETWEEN PARSNIS PLAN (1964), THENGDI'S PLAN (1993) :-

TABLE NO. – 37

Species	Parsnis's Plan 1964	Thengadi's Plan1993
Tinsa/ Tiwas	71.58	1.97
Haldu	0.08	0.00
Bija	2.75	2.40
Semal	2.63	1.24
Saja (Ain)	32.18	13.37
Dhawada	23.23	38.49
Salai	12.83	6.46
Moyen	4.93	13.20
Kakad	30.83	0.17
Shisham	6.10	1.58
Teak	239.38	283.13
Total	426.52	362.01

SECTION VIII.2.6 :- COMPARISON OF GROWING STOCK BETWEEN PARSNIS PLAN (1964), THENGDI'S PLAN (1993), 2007 ENUMERATION DATA RELATED TO SPECIES TINSA, HALDU, BIJA, SEMAL, SAJA, DHAWADA, SALAI, MOYEN, KAKAD, SHISHAM AND TEAK:-

TABLE NO. – 38

Species	Parsnis's Plan	Thengdi's Plan	Current Plan 2007
Tinsa/Tiwas	71.58	1.97	1.52
Haldu	0.08	0.00	0.00
Bija	2.75	2.40	0.03
Semal	2.63	1.24	0.69
Saja(Ain)	32.18	13.37	7.07
Dhawda	23.23	38.49	36.12
Salai	12.83	6.46	4.03
Moyen	4.93	13.20	3.44
Kakad	30.83	0.17	3.47
Shisham	6.10	1.58	1.25
Non Teak (10spp.)	187.14	78.88	57.62
Teak	239.38	283.13	191.12
Total	426.52	362.01	248.74

VIII.2.6.1. Comparison between the results of enumeration data of Parasnis's plan and 2007 data related to species Tinsa, Haldu, Bija, Semal, Saja, Dhawada, Salai, Moyen, Kakad, Shisham and Teak species.

1. The growing stock of Teak and other miscellaneous species mentioned above in Parasnis's Plan is 426.52/ha. where as in 2007 the number 248.74/ha. which clearly reflects there is considerable degradation in growing stock of these species.
2. In case of Teak 20.17 % of reduction is observed, where as in case of miscellaneous species 69.22 % of reduction has been noticed.
3. Substantial reduction of growing stock in Ain, Salai, Kakad, Shisham, Moyen has been noticed in 2007 enumeration data, whereas considerable improvement has been noticed in case of Dhawada species.

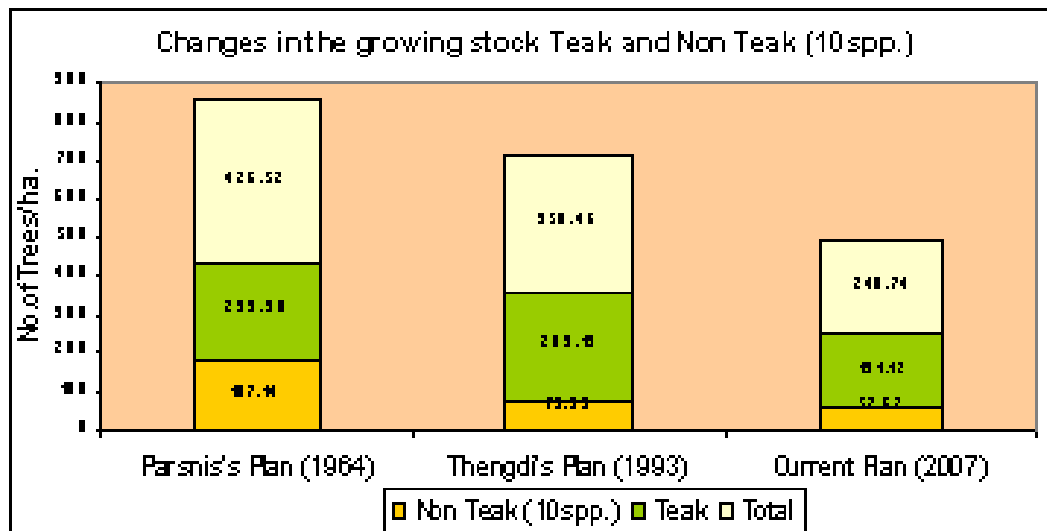
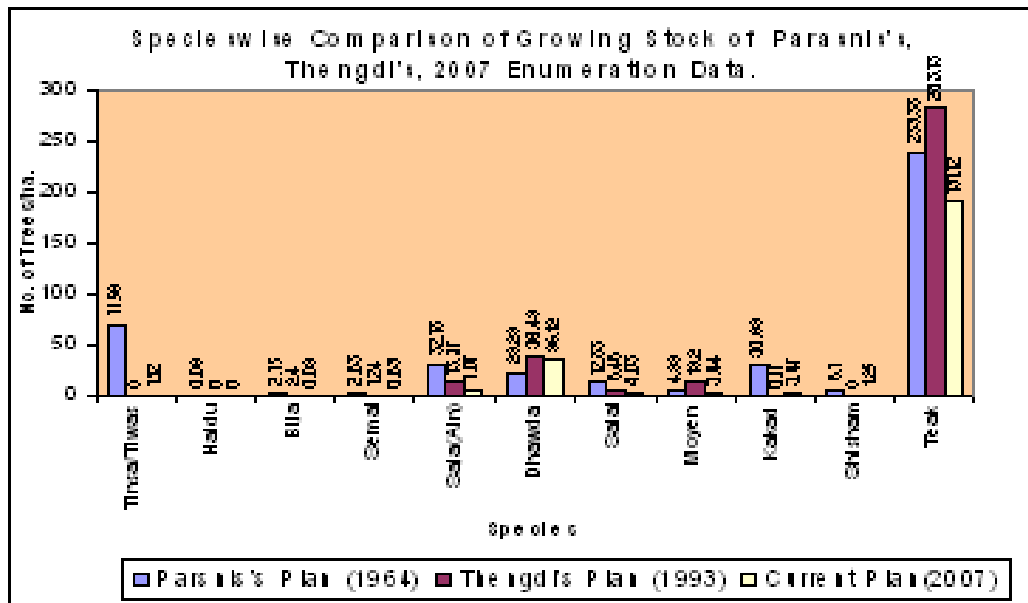
COMPARISON OF GROWING STOCK BETWEEN 1993 and 2007 :-

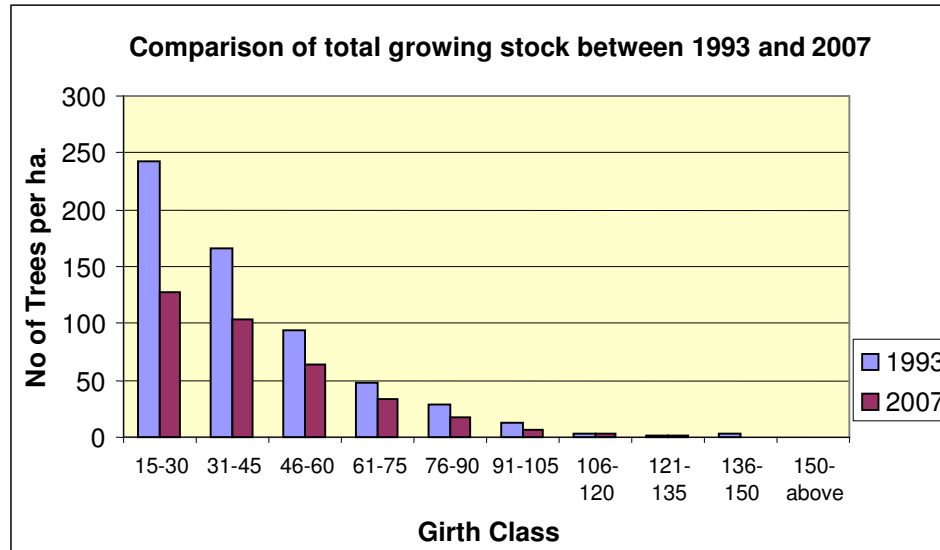
The results of analysis of growing stock between Thengdi's Plan (1993) and present Plan (2007) indicate that there is reduction in growing stock of both teak and misc. In 2007 the total growing stock of both Teak and miscellaneous is 356.02 per ha. where as in Thengdi's Plan it is 601.25 per ha. The percentage of reduction is 40.74%.

TABLE NO. – 39

COMPARISON OF GROWING STOCK BETWEEN 1993 AND 2007

Girth Class	Enumeration data number of trees per ha.		Difference in growing stock
	Thengdi's Plan (1993)	Current Plan (2007)	1993 and 2007
15-30	241.86	126.94	114.92
31-45	165.40	103.15	62.25
46-60	94.86	63.49	31.37
61-75	48.46	33.39	15.07
76-90	29.07	17.72	11.35
91-105	13.16	6.55	6.61
106-120	3.56	2.79	0.77
121-135	2.03	1.06	0.97
136-150	2.85	0.58	2.27
150-above		0.35	0.35
Total	601.25	356.02	245.23





- 1) In 1993 the estimated growing stock as per the Thengdi's plan is 601.25 ha. out of which Teak constitutes 283.13 / ha. and Miscellaneous species represent 318.13/Ha.
- 2) The enumeration data of 2007 reveals that the total growing stock is 356.02 Ha. out of which Teak constitutes 191.12 / ha. and its contribution is 53.68% in the total growing stock.
- 3) In the analysis the observations made that there is a over all reduction in all girth classes, all the growing stock.
- 4) In case of Teak there is substantial reduction in the girth class 15/30, 31/45, 46/60 when compared to the growing stock of Teak in Thengdi's Plan.
- 5) In case of Miscellaneous species the over all reduction is noticed in almost all the girth classes, a substantial reduction of miscellaneous species is noticed in 15/30, 31/45, 46/60, 61/75, 76/90, 91/105.

TABLE NO. – 40
CHANGES IN THE GROWING STOCK OF TEAK

Girth Class in Cm	Number of Teak Trees per ha.	
	Thengdi's Plan (1993)	Current Plan (2007)
15-30	118.53	58.04
31-45	79.40	58.56
46-60	46.32	39.95
61-75	22.08	20.59
76-90	11.13	9.74
91-105	4.07	2.94
106-120	1.11	0.96
121-135	0.39	0.23
136-150	0.11	0.08
150-above		0.03
Total	283.13	191.12

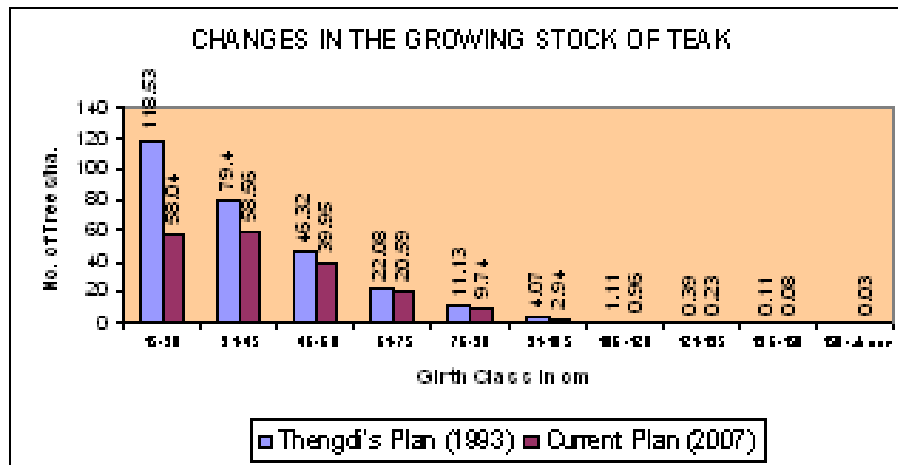
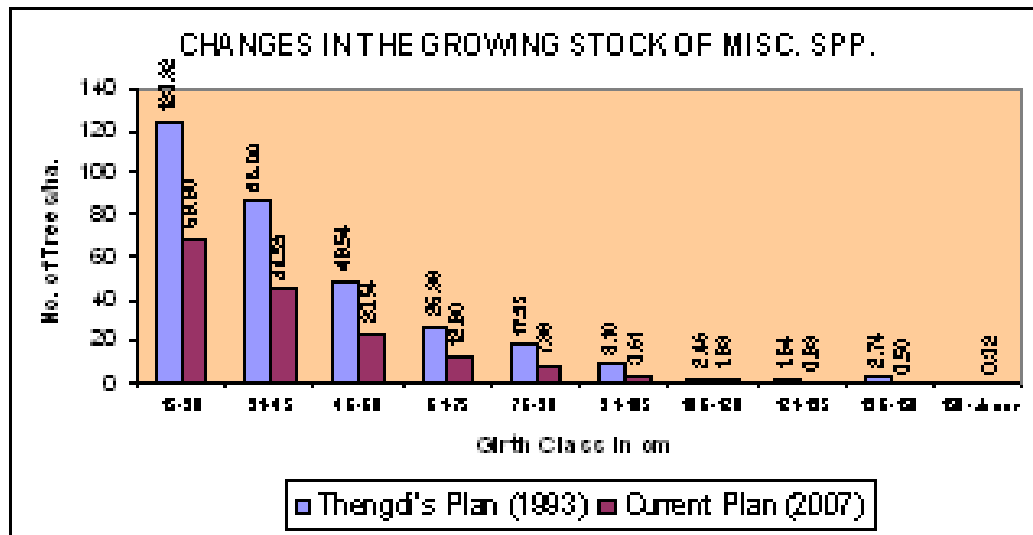


TABLE NO. – 41
CHANGES IN THE GROWING STOCK OF MISC. SPECIES

Girth Class in Cm	Number of Misc. Trees per ha.	
	Thengdi's Plan (1993)	Current Plan (2007)
15-30	123.33	68.90
31-45	86.00	44.59
46-60	48.54	23.54
61-75	26.38	12.80
76-90	17.95	7.98
91-105	9.10	3.61
106-120	2.46	1.83
121-135	1.64	0.83
136-150	2.74	0.50
150-above		0.32
Total	318.13	164.90



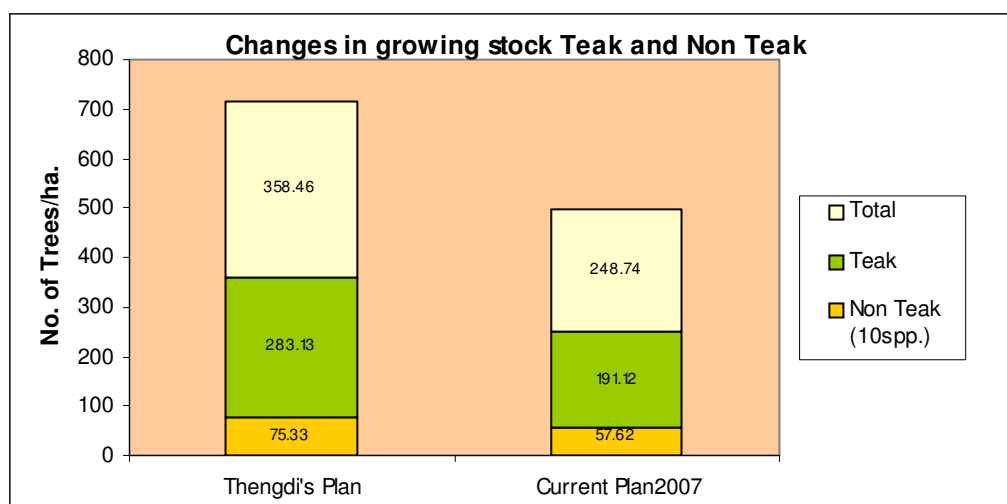


TABLE NO. – 42

GIRTHCLASS WISE GROWING STOCK/HA IN 2007

Species	15-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	150 above	total
Teak	58.04	58.56	39.95	20.59	9.74	2.94	0.96	0.23	0.08	0.03	191.12
Non Teak	68.90	44.59	23.54	12.80	7.98	3.61	1.83	0.83	0.50	0.32	164.90
Grand Total	126.94	103.15	63.49	33.39	17.72	6.55	2.79	1.06	0.58	0.35	356.02

The trend of growing stock clearly indicates that the forests are subjected to degradation may be because of various biotic pressures such as, illicit felling, uncontrolled and heavy grazing, frequent fires, encroachment, etc. which adversely affected the regeneration of the growing stock.

SECTION VIII.3. STOCK MAPPING :-

In Akola Forest Division the forest was stock mapped by Shri. S.A.Cornelius for the first time in 1942-43. These stock maps were updated by S.S.Parasnis during the revision of S.A.Cornelius Plan and these stock maps were further updated by Shri. Thengdi during the revision of Parasnis's Plan. These stock maps have been updated

and revised during the revision of Thengdis Plan in 2006-07 and 2007-08 by caring out stock mapping of this division by the staff of office of the Conservator of Forests, Working Plan, Yavatmal. The results of stock mapping are given in below table :-

TABLE NO. – 43
RESULTS OF STOCK MAPING

SITE QUALITY	AREA IN HA.	% AREA WRT WP AREA
IV A Teak	191.50	0.24
IV B Teak	23688.22	29.99
IV A Misc.	59.67	0.08
IV B Misc.	4170.24	5.27
Under Stocked	9419.62	11.91
Blank, Eroded and Scrub, Water Bodies etc.	41573.80	52.51
Total	79103.05	100
Areas transferred to other Departments	1906.56	
Total	81009.61	

The stocking has also been assessed with the analysis of satellite imagery data of LISS-III (November 2007)- at Regional Remote Sensing Service Center, Nagpur. The satellite imagery of LISS-III data analyzed and classified the patches of forest according to density and this data is more or less comparable to normalized density vegetation index (NDVI) Mapping. The enumeration data of S.O.F.R has been linked up with the compartment map in the G.I.S. environment showing stocking and management details. The maps prepared in G.I.S. environment are cartographically more accurate than traditional stock map. The data based on comparison of LISS-III data, NDVI maps and manual stock mapping have been fairly standardized in the G.I.S. cell of Conservator of Forests, Working Plan, Yavatmal.

Section VIII. 4. Density Slicing :-

The satellite imagery pertain to Akola Forest Division of November – 2007 was systematically analysed by the R.R.S.S.C. Nagpur and the results obtained are given in the following table. In this forest division many compartments are having village forest areas as well as village areas together. So that it is not possible to separate the agriculture land of the village and forest area under cultivation (encroachment) and the natural blank area. However the minute details of analysis carried out in R.R.S.S.C. Nagpur is compared with stock mapping carried out by the staff of this office by carrying out appropriate ground truth verification, reveals that the satellite imagery density slicing data is more or less comparable to the stock mapping carried out manually.

TABLE NO. – 44
DENSITY DISTRIBUTION OF AREA

CROWN DENSITY	AREA IN HA.	% AREA WRT WP AREA
> 0.6	1528.73	1.93
0.4 to 0.6	17724.48	22.40
0.1 to 0.4	24282.34	30.70
Blank	35567.50	44.96
Total	79103.05	--
Areas transferred to other Departments	1906.56	--
Total	81009.61	--

CHAPTER – IX

WILD LIFE PRESERVATION

SECTION 1 : PRESERVATION OF WILD LIFE :

IX.1.1. Akola Forest Division is poor in wild life. Most of the forests are open and scattered in small patches and surrounded by human habitat except a few patches of forests in alegalon and patur ranges. The situation of forests is not in a position to support rich wildlife, throughout breaking of corridors of wild animals by human habitation and agriculture fields. Whatever wildlife i.e. present in this division is confined to the remotest pockets of forests such as Narnala, Palodi Shendona Chikalwal Medsi, Patur and Amdari reserves. The population of wildlife is dwindling day by day due to indiscriminate poaching, shikar by poacher etc. The other important factors for dwindling of wild life is due to issue of guns for protection, various developmental activities that have been under implementation in this area. Common animals that are found in the forest are as under :-

1. Carnivores :- Panther (*Panthera pardus*), Hyaena (*Hyaena hyaena*), Jungle cat (*Felis chaus*), etc.

2 Herbivore :- Nilgai (*Boselaphus tragocamelus*), Sambar (*Cervus unicolor*), Cheetal (*Axis axis*), Sloth bear (*Melursus ursinus*), Wild boar (*Sus cristatus*), Langur (*Presbytis entellus*).

IX.1.2 : DISTRIBUTION OF FAUNA:- The forest fauna is restricted to the remotest pockets of the forests especially those forest adjoining to water courses. The wild animals were frequently found in the past and recently present in this areas as follows :-

Mammals:-Panther (*Panthera pardus*). **Hyaena** (*Hyaena hyaena*) Jackal (*Canis aureus*). **Indian fox** (*Vulpes bengalensis*). **Jungle cat** (*Felis chaus*) are common among the carnivores and **Black buck** (*Antelope cervicapra*), **Spotted deer** (*Axis axis*), **Blue bull** (*Boselaphus tragocamelus*) **Sloth bear** (*Melursus ursinus*) **Wild boar** (*Sus*

scrofa), common langur (*Presbytis entellus*) and Indian hare (*Lepus nigricollis*) among the herbivores.

Birds:- The area supports rich avi-fauna. Apart from common birds Pea fowl (*Pavo cristatus*). Grey Jungle fowl (*Gallus sonneratii*), Painted partridge (*Francolinus pictus*), Common quail (*Coturnix coturnix*) and Crow pheasant (*Centropus sinensis*) Grey Heron (*Ardea cinerea*), Cattle Egret (*Bubulcus ibis*), Egyptian Vulture (*Neophron percnopterus*), Indian Longbilled Vulture (*Gyps indicus*), Painted Francolin (*Fracolinus pictus*), Redwattled Lapwing (*Vanellus indicus*), Little Ringed plover (*Characrius dubius*), Blue Rock Pigeon (*Columba livia*), Spotted dove (*Streptopelia tranquebaricu*), Asian Koel(*Eudynamys scolopacea*), Greater Coucal (*Centropus sinensis*), spotted owlet (*Athene brama*), Forest Owlet (*Heterogloux blewitti*), Common Indian Nightjar (*Caprimulgus asiaticus*), Small Blue Kingfisher (*Alcedo atthis*), Indian Roller (*Coracias benghalensis*), Common hoopoe (*Ocyceros epops*) browncrowned Pigmy woodpecker (*Dendrocopus nanus*), House crow(*Cirvus splendens*), Jungle crow (*Corvus macrohynchos*), Redwhiskered Bulbul (*Pycnonotus jocosus*), Redvented Bulbul (*Pycnonotus cafar*), House sparrow (*Passer domessicus*), Baya (*Ploceus phillippinus*) have been regularly sighted in the forest areas.

Reptiles:- Red sand boa (*Eryx conicus*), Indian cobra(*Naja naja*), Python (*Python molurus*), Rat snake(*Ptyas mucosus*), Varanus sp, Chameleon sp.

(d) **Fish:-** Catla (*Catla catla*),Rhou (*Labio rhoita*), Carp (*Cyprinus carpio*),

IX.1.3 : General History of Management :-

The wildlife protection was ensured by implementing the Indian Forest Act 1927 prior to the formation of state. The shooting rules were framed by Govt. and detailed in the Appendix of C.P. Berar and Wild life Manual Volume- II, combined with Wild Birds and Animal Protection Act 1912. The Conservator of Forests in consultation with Divisional Forest Officer used to declare certain blocks of Reserve Forest as open for shooting. Then the shooting permits were issued by the Divisional Forest Officer.

In 1952 the Indian Board for Wild life was constituted with an object of devising methods and means for the conservation of wild life through coordinated legislative and practical method. Subsequently the Bombay Wild Animals and Wild Birds Protection Act 1951 was enacted and it was considered as the most comprehensive legislation which was made applicable to Vidarbha region in 1961. This Act did not propose any significant changes in the management of the game, however it was important as its provisions allowed to operate even in the areas out side the Reserve Forests. As per the provisions laid down in this Act the arms licence holders had to register themselves with the Wild life Preservation Officer. The hunting licence was categorised into 4 kinds i.e. 1. Small game, 2. Big game, 3. Special Big game and 4. Pet animals. The provisions of this Act did not allow to carry any trade in wild life trophies without a separate trophy dealer licence. The entire Akola Forest Division was divided into 6 forest blocks.

Akola, Medsi and Karanja ranges were divided into five ranges during the reorganization of Forest Department. New ranges are Akola, Washim, Karnja, Alegaon and Patur.

SECTION IX.2. SHOOTING AND GAME :-

IX.2.1 For the purpose of shooting the wild animals were classified into 2 categories

1) Big Game :-

(1) TIGER (*Panthera tigris*) :- This animal is almost absent in this division, because it was not reported by Dy. Conservator of Forests, in the last census. However there are evidences that tigers from Narnala occasionally cross over to this division.

(2) PANTHERS (*Panthera pardus*) :- It is also a very less common animal in this division. No panthers reported during the last census by the Deputy Conservator of Forests, Akola. Panthers are limited to certain pockets of forests of the division and these are noticed in Shendurjana village of Shendurjana round of Manora range, Rajakinhi of Washim range, around Morna project of Medsi round of Patur range, Chikhalwal of Alegaon range and Akot, Sakharvira, Pinjar, Mahan of Akola range.

(3) CHEETAL (*Axis axis*) :- Cheetal are found in many places of this division. 20 to 30 Cheetal form into herds and move in the forest, however in census of report of 2003-04, these animals not reported.

(4) BLUE BULL (*Boselaphus tragocamelus*) :- Blue bull is found in entire tract of this division. More often these animals are located in Alegaon, Patur, Karanja and Washim ranges. These are mostly move around human habitation, and cause lots of damage to agriculture fields. Reported figure as per wildlife census is 32.

(5) BARKING DEER (*Muntiacus muntjak*) : They are found in Washim and Akola ranges mostly reported number is 8 as per 2003-04 wildlife census.

(6) SLOTH BEAR (*Melursus ursinus*) : This is a very dangerous animal in the forest and people are very much afraid of this animal. As it attacks unprovoked. Sloth bear are found in Alegaon, Patur and Popatkhedha of Shahanur beat of Akola range.

(7) **WILD BOAR** (*Sus scrofa*) : These animals are commonly found in this area and some times they cause lots of damage to agriculture fields. The local farmer always complaint about the crop damage caused by these animal. Wild boars move in scroll. Reported figure as per the wildlife census is 80.

(8) **BLACK BUCK** (*Antelope cervicapra*) : These animals are commonly found in this area. Almost distributed in entire forest tract of the division. Sometimes these animals are noticed in open agriculture field. These animals made agriculture fields as their abode at certain places, best example is the village Chandas, where people do not cause any harm to these animals because of religious sentiments and more over they protect these animals because of such sentiment.

(9) **Wolf** (*Canis lupus pallipus*) : Wolves are not common in this division and these are mostly restrictated to Karanja, Rajakinhi, Malegaon, Chandas. Wolves some times cause damage to the lambs of goats and injuries to human beings.

2) **Small Game** :- Squirrels, Jackal, Hyaena, Common Langur all over the tract. The other small game found in division consist of the following birds :-

I) Peafoul (*Pavo cristatus*), Blue rock pegin (*Clumbia Livia*), Gray partridge (Titar: *Fraucolinus pandicherianus*), Painted patridge (*Francolinus pictus*), Common quail (*Coturnix Coturnix*) and Crow pheasant (*Centropus sineusis*).

IX.3. Legal Position: -

The forest area of this division was a part and partial of C.P.and Berar State. The provisions in Berar Forest Law in 1886 were passed on Oct. 22nd 1886. There was no separate act regarding protection of wild life in voge at that time. It was, under Sec. 3, Sub rule (7), the definition of the forest produce included “Skins, tusks, bones and Horns”. Under Section 8 of the said Act “any person who acts in contravention of the said Act in the State Forests was punishable with the fine which may go up to Rs.50/- when the damage resulting from his offence amounts to more than Rs.25/-, to double the amount of such damage”. “Under Sec.10, Sub Sec (4) of the said Act the residency by

orders may regulate any part of the State Forest for the hunting, shooting, fishing, poisoning of water or setting trap or snares". The Berar Law of 1886 was amended by the Berar Forest Law of 1891. The scope of the Act was extended. The sec 7 (b) clearly states that forest produce including the following found in, brought from a forest i.e. to say wild animals, Skins, Tusks, Horns, Bones, Cocoons, Honey, Wax and all other parts or produce of animals or forest produce. Sec. 7(2) (B) states that punishable with the fine which may extend up to Rs.50/- or when the damages resulting from the offence amounts to more than Rs.25/- to double the amount of such damage.

This Act empowered the resident to frame the rules in relation to regulation of hunting, shooting, fishing, poisoning of water and setting traps and snares. In the year 1911 vide notification No/GIFD/2197-1-B; Dt. Oct 30th 1878 was made applicable. The definition of Wild Life as forest produce was included under sec 2 (B) (III). Under sec. 25 (1) of the said Act that any person in contravention of any rules made under this Act, which local Government may from time to time prescribed. Whoever kills or catches elephants hunts or shoots, poisons water or sets traps shall be punishable with imprisonment for a term which may extend to 6 months or with the fine not exceeding Rs. 500/- or both in addition to compensation for the damage done to the forests.

After the enactment of Indian Forest Act 1927, rules related to wild life regulations were framed under sec. 26 (1), 76 (d), which was essential to regulate hunting of wild animals and were given in the Appendix VIII of Madhya Pradesh Forest Manual Volume II.

Wild Birds and Animal Protection Act 1912 as amended in 1935 also ensured protection to certain animals and a check of hunting of animals. Shooting block system was initiated in the year of 1947 under the provisions of these two Acts. The Conservator of Forests in consultation with the Divisional Forest Officer concerned used to declared the areas having abundant game as open to hunting, and the Divisional Forest Officer accordingly issued shooting permits were in the type of game and the number allowed to be hunted together with the other relevant conditions.

The Bombay Wild Animals and Wild Bird Protection Act 1951 the protection of wild animals was extended to Vidarbha region, which has enhanced the scope of management of game out side Reserved, and Protected Forest also. Under the provisions of this Act regulations were made for registration of armed licence holders, categorization of game into small game, big game, special big game and pet animals and also regulated transaction in trophies and other wild life products. Under this act the statutory Wild life Advisory Board was constituted in order to advice the Government on various important matters regarding wild animals. In 1952 the Indian Board of Wild life was constituted with the main object of devising ways and means for conservation of wild life through coordinated approach of legislative and political measures and sponsoring the measures to reconstitute National Parks and Wild Life Sanctuaries. The comprehensive and unified National and State Park Act of 1971 was passed to provide for appointment of any advisory committee to advise in continuation and declaration of National Parks and Sanctuaries and formulation of administrative policy.

In 1972 the parliament enacted the Wild Life (Protection) Act 1972 which came into force in the State since 1st of June 1973, and superseded all other Acts related to Wild Life Protection and Management in the State. The subsequent rules were made under the act are as follows:-

1. The Wild Life (Stock Declaration) Rules 1973. (came in force in the State since 1st of June 1973)
2. The Wild Life (Transactions and Taxidermy) Rules 1973 (came in existence since 1st June 1973).
3. The Wild Life (Protection) Rules 1975 (came in force since 6th March 1975).
4. The Wild Life (Protection), Licencing (additional matter consideration) Rules 1983 became effective since 14th April 1983.

The Wild Life (Protection) Act is a comprehensive legislation that facilitates for effective protection and preservation of wild Life, more over it enabled restrictions on

hunting and regulation of trade in wild animals as well as the articles made out of wild animals.

Hunting of wild animals strictly prohibited unless specially permitted as per laid down procedure. Under this Act wild animals have been categorized into V Schedules and those animals which are included in scheduled I, II and III received the privilege stringent protection.

The wild animals included in the scheduled or permitted to eliminate if they became threat to or cause damage to life or property and the animals included in Scheduled II have become disabled completely or diseased beyond recovery. Whereas, only vermin included in scheduled V were excluded from strict protection.

Hunting of young and female of any wild animals other than vermin is strictly prohibited unless permitted (Sec. 15). The persons who possesses any wild animal trophies are required to declare in a specified pro-forma under the provisions of this Act. The Government of India specified vide letter Dt. 18th Sept 1975 that the management authorities are vested with the control over the tanks and rivers in National Parks and Sanctuaries.

The delegation of powers and duties of the Chief Wild Life Warden to the Police Sub Inspector for the purpose of Sec. 41 (1) and sec. 55 of the Wild Life (Protection) Act 1972 was granted by G.R. No. WLP-1973/197578 –F-1, Dt. 5th April 1976. The Schedules are revised by the Government from time to time as it was required under Sec. 61 of the Wild Life (Protection) Act 1972. The Government of Maharashtra framed rules under Section 64 of Wild Life (Protection) Act 1972 vide its no. WLP-1679/95507 / F-5.

The Wild Life (Protection) Act was again amended herein after called as Wild Life (Protection Amendment) Act 1986 and became effective since 25th November 1986. Under Section 44 of the Wild Life (Protection) Act 1972 the Government vide letter No/WLP/1682/100208/CR-43(1)/F-5 permitted the trapping of Cobra and Russel's vipers by a licensed dealer for the purpose of extracting venom. Under the

power conferred under sub section (1) and sub section (2) of the section 64, the Government of India vide letter no. WLP/1682/10020 (iii)/F-5 framed the new rules called Wild Life (Frog Leg Industry) Rules 1987 and it came into force from November 25, 1987. The Government of India vide letter no. F. no. 1-2/91/WL/I, Dt. October 21, 1991 and further amended the Wild Life (Protection) Act 1972. Subsequently Wild Plant, have been brought under the provisions of this Act. The Zoos and Circus have been defined and included in this Act whereas the Game Reserves have been completely dropped. A total ban has been imposed on hunting of wild animals specified in Scheduled II, III, IV and I except as provided under Section 11 and 12 by amending section 9 of Wild Life (Protection) Act 1972.

The Government of India has passed Wild Life (Protection) Amendment Act 1991 with effect from October 2nd 1991. The main features of this amended act are given below :-

The words “Game Reserve”, “Big game” and “Small game” have been deleted from the Act. Hunting of Wild Animals included in Scheduled I, II, III and IV of the Act has been prohibited except as per the provisions of section 11. Specified plants have been included in a new Scheduled for the protection of the same by introducing Chapter 3 A.

The Section 29 has been amended which prohibit any exploitations in National Parks and Sanctuaries.

A new section has been added in the Act to provide that no new armed licence would be issued within the 10 Km of Sanctuary without prior permission of the Chief Wild Life Warden of the state.

Imposed ban on dealing with imported ivory and articles made there from.

Introducing new Chapter IV A for Central Zoo Authority and recognition of Zoos.

The penalties to related to wild life offences have been enhanced substantially. Section 39 of the Act has been amended to the effect that have been used for committing an offence and have been seized shall become the property of Government.

Section 61 (1) of the act has been amended which provides the power to make any change in the Schedules of the Act vests only with the Central Government.

In 2003 comprehensive amendment was made to impose heavy penalty and stringent punishment in case of wild life offences. Under the provisions of Section 17 of Wild Life (Protection) Act, the following acts are prohibited:-

- (1) Hunting of Wild Animals from or by means of wheeled or mechanically propelled vehicles in water or on land or by air craft.
- (2) Use of mechanically propelled vehicles for the purpose of stampeding any wild animals.
- (3) Use of chemicals, explosives, pit falls, poisons, poisoned weapons, snares or traps except related to capture of wild animals under wild animal trapping license.
- (4) Hunting of special game or big game other than with a Rifle unless specially authorized by the licensee.
- (5) Setting fire to vegetation for the purpose of hunting, using artificial light for the purpose of hunting except when specially authorized to do so under license in the case of carnivore over a kill. Hunting during night time except when specially authorized.
- (6) Hunting of any animals on water whole or a salt-lick or other drinking places or on path or approaches to the path except water birds or sand goose
- (7) Hunting of any wild animals on any land not owned by the Government without the consent of the owner or his agent.
- (8) Hunting during closed period under Section 16. Hunting with the help of dogs, any wild animals except water bird, partridge or quail.

SECTION IX . 4 : RIGHTS AND CONCESSIONS

No rights and concessions or privileges are granted to any person over wild life except a person of Scheduled Tribes can pick up or collect or possess in the district in which he resides any specified plants or plant derivatives thereof for his bonafide personal use subject to the provisions of Chapter IV of Wild Life (Protection) Act. The Chief Wild Life Warden can grant the permits with prior approval of the State Government for special purposes of education, scientific research and collection of specimen for recognized zoos, Museums and Scientific institutions.

SECTION IX . 5: OTHER METHODS ADOPTED FOR PROTECTING WILD LIFE :-

Apart from legal methods under the Wild Life (Protection) Act 1972 the following measures have been introduced to protect wild life from time to time:-

Payment of compensation to the owner whose cattle are killed by Tiger in the forest areas as per the G.R. No. WLP/1570/224482- X-11, dt. September 30, 1971, No.MSC-1075/113554/F-1, Dt. March 25, 1977 and No. WLP/1579/6200/4/F-1, Dt. May 29, 1979. This provision was extended to the cattle killed by the Panther also and the killing by Tiger or Panther outside the forest areas was also included vide G.R. No.WLP/1581/ 11697/F-5, Dt. August 22, 1984.

Compensation is declared in case of death or injuries to human life caused by wild animals vide G.R. No. WLP/1679/105651/CR-6/F-5, Dt. November 27, 1986 and amended from time to time and the latest revised in 2003 vide G.R. No.WLP/ 1002/ C.N.258 / F-1/ dt. 17.1.2003 and G.R. No. WLP/ 1002/ C.N.258/ F-1/ dt. 20.5.2003. Maximum amount of compensation in case of major injury up to Rs. 50,000/- and for minor injury up to Rs. 7500/- and for death of human being Rs. 2,00,000/-

The State Government has introduced Grant of Reward to the informants in respect of unlicensed shooting provided that the information found to valid and leads to the conviction of offender in order to check illegal shooting of wild animals. Besides the State Government have decided to sanctioned rewards equal to 50% compensation

actually recovered from the offender for illegal shooting to the Gram-panchayat and its office bears or individuals who render co-operation in detecting such illegal shooting.

Creation of public awareness for protection and preservation of wild life through various programmes under Wild Life Week.

Details of cattle lifting injuries or killing of human beings along with compensation paid to the victim families are given in the following table. Apart from above provisions the Govt. started paying Crop damage compensation due to wild life damage as per the G.R.No. WLP/1094/C.N.115/F-1/ dt. 23.5.2004 is Rs. 2000 per ha. upto maximum amount of Rs. 5000 per family being paid.

TABLE NO. – 45
WILD LIFE COMPENSATION

Sr. No.	Year	No. of persons attacked by Wild Animals	Amount of Compensation in Rs.
1	1997-98	4	8000/-
2	1998-99	--	--
3	1999-2000	--	--
4	2000-2001	--	--
5	2001-2002	2	9,500/-
6	2002-2003	2	94,000/-
7	2003-2004	5	69,000/-
8	2004-2005	14	6,25,481/-
9	2005-2006	8	45,108/-
10	2006-2007	12	97,799/-

SECTION IX . 6 :- INJURIES TO WHICH THE WILD LIFE IS LIABLE :-

Poaching is one of the main factors for the destruction of wild life in Akola Division. Destruction of habitat due to illicit felling, fragmentation of area, frequent fires and encroachments for cultivation have been affecting the wild animal population adversely.

Reduction in a forest cover, erratic rainfall resulted in non availability of water inside the forest specially in summer have led to the dwindling of population of wild animal over the years.

Electrocution is a common method for hunting of wild animals. The table showing number of cases of poaching of wild animals from 1994-95 to 2007-08 is given below.

TABLE NO. – 46

STATEMENT SHOWING THE NUMBER OF ANIMALS CAPTURED, HUNT OR NATURALLY DEAD SINCE 1994-95

Year	Offence Cases Booked	Poaching			Natural Death			Accidental Death		
		Tiger	Pant her	Other	Tiger	Pant her	Other	Tiger	Pant her	Other
1	2	3	4	5	6	7	8	9	10	11
1994-95	4	0	0	1	0	0	3	0	0	0
1995-96	2	0	0	0	0	0	1	0	0	1
1996-97	10	0	0	0	0	0	6	0	0	4
1997-98	5	0	0	0	0	0	3	0	0	2
1998-99	6	0	0	0	0	0	2	0	0	4
99-2000	0	0	0	0	0	0	0	0	0	0
2000-01	8	0	0	0	0	0	1	0	0	7
2001-02	3	0	0	0	0	0	2	0	0	1
2002-03	11	0	3	0	0	0	2	0	0	6
2003-04	5	0	0	3	0	0	0	0	0	2
2004-05	6	0	0	3	0	0	0	0	0	3
2005-06	10	0	0	0	0	0	0	0	0	10
2006-07	4	0	0	0	0	0	1	0	0	3
2007-08	2	0	0	1	0	0	0	0	0	1



Part - II

FUTURE MANAGEMENT
DISCUSSED
AND
PRESCRIBED

CHAPTER – I
BASIS FOR PROPOSAL

SECTION : I.1: NATIONAL FOREST POLICY :

For the first time in India the National Forest Policy was enacted in 1894. This policy was oriented towards public benefit, as the main object of the Policy was public forest management. The main focus of the policy was on maintenance of forests in hilly areas for the preservation of climatic conditions and protection of agriculture from hilly torrents. The basic objectives of the 1894 Forest Policy are as under.

- A. To preserve climatic and physical conditions of the country.
- B. To preserve minimum amount of forest necessary for general well being of the country.

The other priorities of the 1894 policy were :-

1. Priority to agriculture for forestry.
2. To meet the local public demands for the forest produce, at concessional rates prior to the revenue consideration.
3. Maximum revenue generation to the Govt. of meeting the local demands.

National Forest Policy 1952 :-

The 1894 National Forest Policy was replaced by the National Forest Policy 1952, formulated by the Indian Republic after its independence. The influence factors behind the formulation of the National Forest Policy 1952 were deteriorating environmental conditions in the country, World Wars, dependence of defence and reconstruction schemes on forestry.

The following needs have been identified while formulating National Forest Policy 1952 :-

1. The need for evolving a system of balanced and complementary land use,” under which each type of land allotted to a particular form of land used in which it would produce to maximum level and deteriorate the least.
2. The need for checking denudation in the mountainous regions and erosion along the tree-less banks of great rivers as well as vast undulating waste lands.
3. Need for establishing tree-lands, for improving physical, climatic and environmental conditions for well being of people of the country.
4. Need for meeting progressively increasing demands for small wood for agriculture implements, fire-wood, grazing, etc. and to release the cattle-dung for manure to staple food production.
5. Need for realization of maximum revenue in perpetuity, consistent with the fulfillment of needs enumerated above.

The National Forest Policy 1952 clearly stated that, it is the State Government’s discretion to regulate and frame the policies for forest administration and legislation for conservation and utilization of forest resources, provided those policies do not adversely affect the general economy and physical balance of adjoining states and in general the Forest policy of the Central Government.

SECTION I.2. NATIONAL FOREST POLICY 1988 :-

The subject of forest has been brought to the concurrent list from the state list, with the effect of 42nd Amendment to the Constitution of India, which enable the Central Government to exercise much more authority in forestry matters. This matter is clearly reflected in the National Forest Policy of 1988. The factors influenced for such changes in the policy were, inadequacy of protection measures, diversion of forest land for non-forestry purposes, tendency of the state Government for maximum revenue realization and growing demands for timber, fire-wood and fodder. The National Forest Policy of 1988 clearly emphasizes that the forests are to be managed for preservation,

maintenance, sustainable utilization, restoration and enhancement of natural environment. The governing objects of the National Forest Policy are as under :-

1. Maintenance of environmental stability, through preservation and restoration of ecological balance, that has been adversely destabilized by rapid depletion of the forests of the country.
2. Conservation of natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna which represents commendable bio-diversity and genetic resources of the country.
3. Substantial improvement in the forests and tree cover in the country through Massive Afforestation and Social Forestry Programmes especially on denuded, degraded and unproductive lands.
4. Checking soil erosion and desiltation in the catchment areas of rivers, lakes and reservoirs through soil and water conservation measures in order to mitigate the problems of floods, drought and siltation of reservoir.
5. Meeting the demands for fuel-wood, small timber, non-wood forest produce, fodder, of rural and tribal populations.
6. Increase the productivity of forests to meet the essential needs of the nation.
7. Efficient utilization of forest produces by introducing modern techniques and restoring to maximum substitution to wood.
8. Creating a massive people movement with the involvement of all women for achieving these objects and to minimize the pressure on existing forests.
9. The policy emphasizes the management of existing forests and forest lands by protecting and increasing in their productivity along with the conservation of total biological diversity by strengthening and improving the network of National parks, Sanctuaries, Bio-sphere Reserves and other Protected Areas by providing sufficient fodder, fuel and small wood in areas adjoining to forests to prevent the depletion and protecting, improving and enhancing the production of Minor Forest Produce, which provides the sustenance to tribal population.

I.2.1. Based upon these objectives the features of National Forest Policy of 1988 are as follows.

- I. Severe restrictions on schemes and projects, which interfere with the forest, that cover steep slopes, catchment of river, lakes and reservoirs.
- II. No working of forests without prior approval of management plans by the Central Government.
- III. Non -introduction of exotic species without appropriate long term trails on scientific lines.
- IV. The rights and concessions including grazing are regulated by the carrying capacity of the forests.
- V. The rights and concessions for forest produce of the tribal should be protected and their domestic needs for fuel, fodder, non wood forest produce and small timber for construction should be provided on priority.
- VI. Forest management plans to take special care about wildlife conservation.
- VII. Appropriate action should be taken to prevent encroachments on forest lands and existing encroachments should not be regularized.
- VIII. Forest based industries to raise the raw material needed by them, making arrangements from private cultivators without depending upon forests.
- IX. Survey of forest resources to be completed on scientific lines for updating information.

SECTION I.3: NATIONAL FORESTRY ACTION PROGRAMME :

In order to reverse the process of degradation and for sustainable management and development of forests, the Government of India has formulated National Forestry Action Plan, which is a (NFAP) compressive strategic plan to mitigate the issues behind the major problems of forest sector. The major role of National Forestry Action Programme is to enhance the contribution of forestry and tree resources for ecological stability and people centered development through qualitative and quantitative improvement in forest resources.

The identified issues in forestry sector :-

The basic objectives of National Forestry Action Programme is to evolve issue based programme on the lines of provisions contained in the National Forest Policy 1988. National Forestry Action Programme was formulated to integrate the forestry development programme in the country within the frame work of National Five Year Plans. The programmes targets the rehabilitation and increase in productivity of the degraded forests and enhance in the areas of forest and tree cover to the extent of 33 % of the total geographical area of the country within 20 years. Under this programme five inter-related basic issues have been identified and these are the basis for the following programme structure :-

- i. Protect existing forest resources.
- ii. Improve forest productivity.
- iii. Reduce total demand.
- iv. Strengthen policy and institutional frame work.
- v. Expand forest area.

Programme : -

(i) Protect existing forest resources : -

There are 3 main sub programme under this programme i.e. 1. Forest protection 2. Soil and moisture conservation. 3. Protected Areas and bio- diversity conservation.

These sub programmes are meant for the works of forest survey, demarcation, mapping, inventory, bio-diversity conservation, Protected Area management, protection against encroachment, fires, poaching etc and other related issues.

(ii) Improve forest productivity : -

Under this programme, 4 sub programmes have been included i.e. 1. Rehabilitation of degraded forests 2. Research and technology development 3. Improvement of NWFP 4. Assisting private initiatives with community work basis.

These sub- programmes include mainly research and improvement in technology, enrichment planting, soil and moisture conservation, regeneration, rehabilitation and afforestation mainly in existing forests.

(iii) Reduce total demand :-

It has three sub programmes for the efficient usage of 1. Fuel-wood and fodder 2. Timber 3. NWFP. This programme include the programme for reduction in demand on the forest through the technology of preservation, seasoning, substitution and other measures or the efficient utilization of forest the forest products and also through extensive bio-mass plantations.

(i) Strengthen policy and institutional frame work :-

It has brought 3 main sub programmes 1. Central Forest administration 2. Central forestry institution 3. State forestry administration and institution.

These sub programmes aimed at development of infra- structural facilities such as buildings, roads, communications etc. and strengthening of field staff through Human Resources Development and Human Resources Management programme, which cover all aspects of capacity building, Forest Policy, public forest administration and organization structure, research, planning, budgeting etc.

(V) Expand forest area :- It includes two main sub- programmes 1. For the tree plantation on forest and non forest lands 2. People's participation, tree plantation and their protection.

These issues include the extension of forestry programme in all kinds of waste lands and marginal farm lands. It also includes the programme of creation of plantation forest through waste land reclamation, afforestation and promotion of agro- forestry.

The objectives of National Forestry Action programme :-

The basic objectives of National Forestry Action Programme are as under :-

- I. To achieve stability of forest and the productivity of forest plantations to be increased at least 3 to 5 cubic meter per Ha. per year by promoting regeneration and enrichment plantations.
- II. Improvement of size of the forest through suitable silvicultural practices in perpetuity.
- III. Efforts to be made to bring about 1/3rd of the geographical area of the country under forest and tree cover by plantations on all categories of waste land and agro forestry.
- IV. Plantations on non forest waste lands to be carried out with mostly fuel wood species as 70 % of the wood produced from the forest is used as fuel wood. Species of pulp wood and other industry wood may be increased in form forestry.
- V. People participation is to be increased in protection and development of degraded forest and fringe forests to be strengthen.
- VI. Protected Area network is to be expanded and managed for bio-diversity conservation.
- VII. Non-wood Forest species to be developed and value addition may be promoted at village level.
- VIII. Grazing in forests to be regulated to the extent of carrying capacity, based on silvicultural needs.
- IX. Infrastructure for forest inventory, research and development, strengthening of HRD should also be improved.
- X. Investment for sustainable development of forest should be rational and in proportionate to the total production.
- XI. Supreme Court rulings and other rules of the land to be scrupulously followed.

SECTION 1.4 : NATIONAL WILDLIFE ACTION PROGRAMME (2002-2016) :

Based upon the decision taken in the 15th meeting of the Indian Board for Wildlife held in 1983. The first National Wild life Action Programme was adopted in the year 1983. The National Wild life Action Programme had out-lined the strategies and action plans for wild life conservation, which are very much relevant in the present day concept of wild life management. As the priorities and needs are changing in the society, some of the problems have become more acute and new concerns have become apparent, which requiring a change in the priorities.

The tendency of increasing commercial use of natural resources growth of human and cattle population, and impact of consumption patterns are causing greater demographic influence on the natural resources. Therefore the bio-diversity conservation has become centre of priorities of management of natural resources.

The National Forest Policy was also formulated in 1988 in which the priority was given to conservation. All above mentioned factors lead to the formulation of new National Wildlife Action Plan 2002-2016.

Overview :-

1. Wildlife includes all undomesticated fauna and uncultured flora. In the nature every species has a right to live and every species must be protected to prevent its extinction.
2. Water, wilderness and wildlife are inseparably inter-linked. As result of mounting pressure on agriculture, industry and population growth, the wilderness areas which are the richest repositories of wildlife and bio-diversity have either shrunk or disappeared. Their continuous existence is much essential for long term survival of bio diversity and the ecosystem supporting them.

3. In the nature effective ecosystem conservation is the fundamental for long term ecological stability. The forest, wildlife habitats and natural process recharge and maintained water regimes having reasons and more over the impact of natural calamities such as floods, drought and cyclones, there by they ensure food security and regulate climatic change. They also provide a source of food, fodder, fuel and other products supplement the needs of local communities.
4. India ranked 6th position out of 12 mega bio-diversity countries in the world. Bio-diversity conservation is directly linked with conservation of eco- system there by with water and food security, which continues a meagre plank of Indian economy.
5. Frequent occurrence of natural disasters, the loss of facilities and fast degradation of our fresh water resources have forced a crippling financial burden on the nation. This problem has forced to reeling the development priorities to take into account ecological imperative including the protection of wild species, which sustain and enhance natural habitat over as they depend on such areas of their survival.
6. The infrastructural facilities in the name of rural development for communities inhabiting forest lands and other wildlife regions have suffered both from inadequate resources and inappropriate measures. The process of development has failed to address their strong dependency upon natural Bio-mass resources, vis-a-vis the shrinkage and degrading resource base. On the other hand the farm productivity has declined due to inadequate support causing encroachment and enhanced pressure upon natural resources. Such an imbalance forced the communities to pay even a greater price. Bio-mass of the forest resulted in wide spread elimination of people from the goals of nature conservation apart. National planning has not taken into consideration about adverse ecological consequences of shrinkage and degradation of wilder ness from population and commercialization which resulted in alarming erosion for our natural heritage of rivers, aquifers, forests grass lands, mountains, waste lands, port lands habitat,

Arid lands and deserts. This situation has also affected natural phenomenon such as breeding, ranging and migration of wildlife and geo-morphological features.

7. In the process of development of habitat the loss caused by development of projects such as dams, mines etc., multi-folded the problems of wildlife conservation.
8. The constraining impact of habitat loss has been compounded by illegal trade, aggravated by an increase in demand for wildlife products and the lucrative prices in the international markets.

POLICY IMPERATIVES :-

1. Ecological Security :-

The national development agenda must recognize the imperatives of identified protected and natural eco-systems from excessive utilization, contamination and degradation in order to protect the long term ecological security of India. In doing so, the short term economic gains must not be permitted to undermine the ecological security.

2. Priority to Conservation :-

Conservation must be given high priority, both at the levels of State Government and Central Govt. which is an integration in all developmental programmes evolving appropriate funding mechanism, enhancement of financial allocation and provision of adequate personnel with requisite expertise has to be ensured to arrest the on going trend of degradation and to restore the wildlife and its habitat.

3. National Land Use Policy :-

Conservation of wildlife cannot be restricted to National Parks and Sanctuaries. The areas, outside Protected Area network are vital ecological corridor links and must be protected to prevent isolation of fragments of bio-diversity otherwise wildlife will

not survive in the long run. Such a situation clearly indicates that the N.W.A.P. cannot be implemented in isolation. Land and water use policies are required to accept the imperatives of strictly protecting ecologically fragile habitat and regulating this elsewhere.

4. Primacy For Water and Sustenance:-

In the nature water must be recognised as a prime products of forest first, and it shall be managed to optimize and protect hydrological system. With this imperative the National Forest Policy of 1988 emphasizes conservation of our natural heritage in the form of natural forests, flora and fauna. A critical imperative is also to recognize forests waste land and other natural habitat as a source of survival for million of people in particular as a source of NWFP and aquatic resources.

6. In -Situ Conservation : In wildlife conservation priority must be accorded to in-situ conservation rather than ex-situ conservation. Ex-situ conservation measures may be adopted to protect depleting wild life resources by way of zoological parks and gene banks.

7. People's Support For Wildlife :

Local communities traditionally live in the natural habitat in general, depend upon natural Bio-mass and they must therefore have first lien on such resources. Such benefits must be subjected to assumption of basic responsibility to protect and conserve these resources by suitably modifying unsustainable activities. Conservation programmes must attempt to reconcile livelihood security with wildlife protection through creative zonation and by adding new protected areas in consultation with the local communities such as an inviolative core, conservation buffer, community buffer and multiple use area.

8. Man –Animal Conflict :

Due to shrinkage fragmentation and deterioration of habitat resulting in man- animal conflict which caused restriction of wildlife and generated animosity against wild animals and Protected Areas and it is therefore a crucial management issue, which needs to be addressed through innovative approaches.

Strategy For Action Plan :

Adopting and implementing strategies and the needs out lined above will require action for covering the following parameters

1. Strengthen and enhancing the Protected Area network.
2. Effective management of Protected Area.
3. Conservation wild and endangered species and their habitats.
4. Restoration of degraded habitat out side Protected Areas.
5. Control over poaching, taxidermy and illegal trade in wild and plant species.
6. Research and monitoring.
7. Human resources development and personal planning
8. Increase of people participation in wildlife conservation.
9. Conservation awareness and education.
10. Wildlife tourism.
11. Domestic legislation and international convention.
12. Enhancing financial allocation for ensuring fund flow to the wild life sector.
13. Integration of National Wildlife Action Plan with other sectoral programmes.

Section 1.5 Maharashtra Forest Policy – 2008

In consonance with National Forest Policy 1988, the Government of Maharashtra have formulated, Maharashtra State Forests Policy - 2008 vide No.TRs-1098/ C.R..No.190/F-6/ Dt.22/9/2008, with basic objectives to protect, conserve forest that are existing in the State and to fulfil local needs for forest produce.

The primary objectives of Maharashtra State Forest policies are as under:-

- i. To conserve the natural forests as well as man - made forests by adopting technical forest management principles on scientific lines in order to maintain environmental balance.
- ii. Afforestation of degraded and unproductive areas in order to conserve soil and water on the basis of watershed.
- iii. To increase large scale plantation on private as well as community lands through Social Forestry and Agro- Forestry with the cooperation of local people, especially land less, poor and woman folk.
- IV. To control floods and drought and to avoid soil erosion and siltation of rivers, tanks and other water bodies by taking up intensive soil and moisture conservation measures on the basis of watershed so that infertility of the land and barren land can be protected from further degradation.
- V. To increase forest land and productive capacity of forests.
- VI. To meet the basic demands for forest produce such as fuel wood, small timber, Non wood forest produce, grazing for cattle of poor people and tribal people of rural areas and to reduce the gap between supply and demand of the same forest produce.
- VII. To create awareness among people to use alternatives to timber, timber products to large extent and to promote optimum utilization of forest produce and to reduce burden on forests.
- VIII. To protect and develop wildlife and bio-diversity through action plan and long term schemes.

In the Maharashtra Forest Policy – 2008 some important principles for forest management included are as under:-

1. Enhancement of productivity of forest by complete protection of all existing forests and harvesting of forest produce on sustain yield basis. The forest cover

will be increased on hilly areas and rivers, tanks, water-bodies; sea-coast and deteriorated and all degraded lands on watershed basis and the forests and forest cover will be increased watershed wise.

2. The areas of existing National Parks and Sanctuaries and other Protected Areas will be increased and these areas will be strengthened to have complete representative species. The areas and the boundaries of Protected Areas will be revised and the conflict arise out of revision of boundaries of bio-diversity conservation areas and Protected Areas will be prepared in such a way, so that the man- animal conflict will be minimized.
3. Special emphasis will be given in the areas, where there is less forest cover to large scale, increase of forest cover through Social Forestry and Agro- Forestry by obtaining peoples co-operation.
4. The forest will be protected by involving forest dwellers and people living around forest, especially through Joint Forest Management and cooperation of Joint Forest Management Committee members and women folk will be involved. The habitual offender who caused loss to the forest produce will be dealt with strong action as per Forest Act.
5. Special efforts will be made to take up large scale plantation in order to increase productivity of the forest produce so that the demands of forest dwellers and tribal people for small timber, fodder, fuel wood, non wood forest produce will be made available.
6. To increase Non Wood Forest Produce (medicinal plants, fodder etc.) to meet the daily need of tribal people and forest dwellers and those who live around forest. Providing employment to the local people by completely protecting forest produce and increasing the standard of forest produce through private organizations. In this connection suitable and qualitative organization will be considered for establishment.

Working strategies :-

All possible efforts will be made by the State Government to achieve 33% of forest cover of the total geographical area of the State, as per the guidelines of National Forest Policy 1988. In order to achieve 33% of forest cover, district-wise schemes will be prepared. The following strategies have been designed to achieve 33% of cover of total geographical area :-

1. Afforestation through social and community forestry.
2. Protection and management of Natural/ Man made forests.
3. Wildlife and Bio - diversity conservation
4. Forest research
5. Forest publicity and extension
6. Human Resource development and training
7. Tribal and Forests
8. Joint Forest Management
9. Eco - Tourism
10. Forest based industries
11. Management Information System
12. Reduction of use of timber and other forest produce
13. Building and infrastructure development
14. Financial support for forest policy
15. Forest Development Corporation of Maharashtra.

SECTION 1.6 Maharashtra Eco- Tourism Policy – 2008

1.1 **Introduction:-** Eco-Tourism is a new concept of state forest management. The state Government declared “ **Maharashtra State Eco Tourism/Nature Tourism Policy**” vide GR.No. WLP/1002/C.No.53/F-1/ Dt. 20th FEB 2008, in consonance with the Eco-Tourism Policy of Government of India.

The forest area in the state is 61865 Sq.Km, which constitutes 20.01% of total geographical area of State. There are 6 National Parks and 35 Sanctuaries having an area of 15331 Sq. Km, Which constitutes 5% of the total forest area. Eco-Tourism is based on natural landscapes and natural scenic beauty of various irrigation projects and other natural resources.

Role of Forest Department :- Forest department will facilitate the centers of Eco-tourism with controlled and accessible points at strategic places. To attract tourists, the department will provide lodging and boarding facilities. Eco-tourism management plan will be prepared with all details by the forest department and while implementing Eco-tourism management plan, the forest department will see that there should not be any violation of Indian Forest Act 1927. The forest department must keep in mind that the tourist of Eco-tourism will be a messenger of importance of forests and wildlife.

Maharashtra Eco-Tourism Promotion Board :- The main aim of this Eco-Tourism Promotion Board is to handle nature tourism on commercial basis under the control of Forest Department. It will develop the areas outside Protected Areas on its own or on B.O.T. basis for promoting Eco-tourism. It will closely co-ordinate with Maharashtra Tourism Development Corporation for providing better facilities to the tourist of Eco-Tourism.

Private Tour Management :- In the Eco-Tourism Policy of the State Government a provision has been made to involve private tourist operators for the development of eco-tourism through their active involvement in providing various facilities including stay, fooding without disturbing the nature and they can make an arrangements for tourist outside Protected Areas either in their private areas or revenue areas.

1.4. **State Government :-** The State Government have declared in December 2006 the Maharashtra Tourism Policy – 2006, in which para – 4 Sr. No.4 states that the financial and other facilities will be applicable to the eco-tourism projects.

Procedure for Implementation of Nature rules :-

Site selection :- Areas if National Parks, Wildlife Sanctuaries, Forest Parks, forest areas with proper density, big- water bodies, hill-stations areas and other famous tourist places shall be selected. In such areas include old plantation areas, modern nurseries, preservation plots, where nature tourist can be attracted.

Role of Stake-holders :- The stake holders have a definite role to play in eco-tourism, development and management. The stake holders are as under.

1. Local people
2. Forest Development
3. Maharashtra Eco-Tourism Promotion Board
4. Maharashtra Eco-Tourism Development Corporation
5. Private tour management.

Adoption of working strategies :- For identification, development and management of Eco-tourism, the following working strategies has been adopted :-

- 1 Tourist spot selection
- 2 In the interest of Tourist
- 3 Residential arrangements
- 4 Information and publicity
- 5 Development and publicity
- 6 Capacity building

SECTION 1.7 : NATIONAL BAMBOO MISSION :-

BACKGROUND :- The Planning Commission of Government of India, brought out a report titled “ **National Mission on Bamboo Technology and Trade Development ” in 2001-2002** with a view to harness the potential of bamboo in the country through a multi-disciplinary approach. Subsequently National Bamboo Mission was established and it is a 100% Centrally sponsored scheme in which the Central Government contribute 100% funding. The scheme shall be implemented by the Division of

Horticulture under the Department of Agriculture and cooperation in the Ministry of Agriculture, New Delhi.

Objectives of National Bamboo Mission :- The main objectives of the mission are as follows :-

1. To promote holistic growth of the bamboo sector through area based regionally differentiated strategies.
2. To increase the coverage of area under bamboo both in forest and non-forest areas with appropriate varieties to enhance yields.
3. To promote marketing of bamboo based handicrafts.
4. To establish convergence and synergy among stake-holders for development of bamboo.
5. To promote, develop and disseminate technologies through a seamless brand of traditional wisdom and modern scientific knowledge.
6. To generate employment opportunities for skilled and unskilled persons, especially unemployed youths.

Strategy :- To achieve the above objectives, the Mission would adopt the following strategies :-

1. Adopt a specific approach covering production and marketing to assure appropriate returns to growers/producers.
2. Promotion of Research and Development (R and D) of technologies for production.
3. Enhanced acreage (in forest and non-forest areas) and productivity.
4. Adopt a coordinated approach and promote partnership, convergence and synergy among R and D marketing agencies in public as well as private sectors, at all levels.
5. Promote cooperatives and self-help groups to ensure support and adequate returns to farmers.

6. Facilitation of capacity –building and Human Resource Development.
7. Setting up of National, State and Sub-State level structures, keeping in view the need for getting adequate returns for the produce of the farmers and eliminating middlemen to the extent possible.

Mission Structure :- The National Bamboo Mission is structured at two level for functioning.

(1) National Level :- Under this two committees are formed.

(a) National Level Apex Committee :- The National Level Apex Committee at the national level under the Chairmanship of Union Minister of Agriculture. The Apex Committee will be the policy making body giving overall direction and guidance to the Mission, and also the committee will monitor and review its progress and performance. For this purpose the Apex Committee will meet once in every year.

(b) National Steering Committee :- This Committee is formed under the Chairmanship of the Secretary of Agriculture and Cooperation of Government of India, with its member. This committee is empowered to reallocate resources across the States and component and approve projects on the basis of the approved subsidy norms.

(2) State Level :-

(C) State Level Bamboo Steering Committee :- At the State Level, Bamboo Steering Committee is formed under the Chairmanship of Secretary Horticulture/ Environment and Forests/ Agriculture as decided by the State Government. With its member secretary as director of above mentioned department. This committee shall be responsible for approving the Action Plan, effective implementation and monitoring of the scheme.

(d) State Level Agencies :- The bamboo plantation programme will be undertaken through Forest Development Agencies (FDA) and the Joint Forest Management Committees (JFMCs) on the Government forest land. Where as in case of Non-Forest

Areas, the funds will be released by Ministry of Agriculture/Horticulture to the Bamboo Development Agencies (BDA) for onward disbursement to the beneficiaries. At the operational level the State Government can nominate or create a suitable autonomous agency to be registered under the Societies Registration Act for implementing the mission programmes at the State and District levels. Moreover the Panchayat Raj institutions existing in the state would be fully involved in the implementation of the programme.

(3) District Level :-

(e) Non – Forest Areas :- The Bamboo Development Agency of every state will constitute a District Level Committee under the Chairmanship of District Horticulture Officer, Which will scrutinise all proposals received for implementation from various agencies. This committee will also oversee, coordinate and control all activities at the district level.

(f) Forest Areas :- The Forest Development Agencies (FDAs) will take the lead in carrying out the activities of the National Bamboo Mission. The Forest Development Agencies will scrutinise all the proposals from J.F.M.C. and it will oversee, coordinate and control all activities at the district level for the forest areas.

(4) Technical Support Group :-

(g) Bamboo Technical Support Group (BTSG) :-

To cater the new and emerging area, the experts will be formed into BTSG group to support technically, for the implementation and management of the programme to the National Steering Committee. The State Level Steering Committee can also set up State Level Technical Support Group (TSG) for project formulation, appraisal and monitoring. The BTSG will have the following role and functions :-

- (a) To visit the concerned States frequently to provide guidance in policy, organizational and technical matters.
- (b) To compile materials for conduct of regional workshops in respect of Bamboo plantations, handicraft, Bamboo marketing and exports.

- (c) To conduct studies on different aspects of Bamboo
- (d) To assist the States in capacity building programmes.
- (e) Under take publicity campaigns to promote the Mission objectives
- (f) To document and disseminate case studies of success stories.
- (g) To conduct specialized training programmes at the regional level
- (h) To network with various stake holders and Institutes/ Organizations/ Agencies, both in India and abroad.

(5) Procedure for Approval and Implementation :-

State will prepare a Bamboo Development Mission Document (BDMD) projecting a plan of action for the X Plan and XI Plan periods, and this action plan will form the basis for annual action plan by considering areas potential for Bamboo development, available infra-structure for implementation and monitoring, available unspent balance out of previous release and absorb the funds in taking up activities. The District Level Committees will prepare and submit the Annual Action Plan to Bamboo Development Agency and which in turn will submit to the State Level Steering Committee.

(6) Mission Interventions :- The Key elements of the National Bamboo Mission are as follows :-

1. Research and Development for bamboo development.
2. Establishment of new Nurseries to raise bamboo seedlings
3. Raising high yielding Bamboo plantations on commercial basis in Forest and Non forest areas
4. Improvement of bamboo plantations, pest and disease management of Bamboo.
5. Handicrafts, Bamboo marketing and exports
6. Capacity building and human resource development of farmers and personnel
7. Establishment of Bamboo markets and new marketing strategy for Bamboo
8. Meticulous monitoring, evaluation and reporting Database generation, compilation and analysis.

In consonance with the National Bamboo Mission a draft on “**Maharashtra Bamboo Policy – 2007**” has proposed by Revenue and Forest Department Government of Maharashtra and circulated to various wings of the department for comments/suggestions/remarks and it is under active consideration of the Government.

SECTION 1.8: NATIONAL MEDICINAL PLANTS BOARD :- The National Medicinal Plants Board was set up under a Govt. Resolution vide No.z.18020/19/97-M.P.C on 24th November 2000 under the Chairmanship of Union Health and Family Welfare Minister.

Aims and objectives of the Board are to established an agency which would be responsible for co-ordination of all matter relating to medicinal plants including,

- (b) Drawing up policies and strategies for conservation.
- (ii) Proper harvesting
- (iii) Research and development.
- (iv) Processing and marketing of raw material in order to protect, sustain and develop this sector.

There are 6 committees established which supports the functioning of the Board with administrative and technical support. These committees are

- (c) Standing Finance Committee.
- (i) Committee on Demand and Supply
- (ii) Committee on Cultivation of Medicinal Plants including Conservation of Rare and Endangered Species.
- (iii) Committee on Export/Import
- (iv) Committee on Research
- (v) Committee on Patents/IPR

Functions of the Medicinal Board :- The functions of National Medicinal Board are :-

1. Assessment of demand/supply position relating to medicinal plants both within the country and abroad.
2. Advise concerned Ministries/Departments/Organizations/State/UT Government on policy matters relating to schemes and programmes for development of medicinal plants.
3. Provide guidance in the formulation of proposals, schemes and programmes etc. to be taken up by agencies having access to land for cultivation and infrastructure for collection, storage and transportation of medicinal plants.
4. Identification, inventorisation and quantification of medicinal plants.
5. Promotion of ex-situ/in-situ cultivation and conservation of medicinal plants.
6. Promotion of co-operative efforts among collectors and growers and assisting them to store, transport and market their produce effectively.
7. Setting up of data-base system for inventorisation, dissemination of information and facilitating the prevention of patents being obtained for medicinal use of plants which the public domain.
8. Matters relating to import/export of raw material, as well as value added products either as medicine, food supplements or as herbal cosmetics including adoption of better techniques for marketing of product to increase their reputation for quality and reliability in the country and abroad.
8. Undertaking and awarding scientific, technological research and cost-effectiveness studies.
9. Development of protocols for cultivation and quality control.
10. Encouraging the protection of patent rights and IPR.

On the lines of National Medicinal Plants Board the Govt. of Maharashtra moved a proposal to establish **Medicinal Plants Development Corporation** which is under active consideration of the Govt. The basic objectives behind proposed Medicinal Plant Corporation are conservation of food species, collection, plantation, process, evaluation and marketing of medicinal plants that are available in the State. The proposed aims of Medicinal Plants Development Corporation are

1. By doing survey and collecting authentic database of the medicinal plants in the area.
2. In- situ protection, conservation of medicinal plants for medicare, natural colour, edible, perfumed species.
3. By planting selected species of medicinal plants on contract basis, to increase green cover the area.
4. To increase and make availability of medicinal plants in the market.
5. To provide the natural foods diet to the local people at a very low cost.
6. Emphasis will be on eco-tourism, highway tourism, agriculture- tourism, health tourism in order to attract to tourist from within country and outside the country.
7. To propose organic cultivation of medicinal plants on barren lands
8. To increase revenue of State Govt. and country.
9. To increase self employment and cottage industries
10. To increase Indian medicine (Aurvedic) by keeping in proportion of quality. Make it available within country and outside country to encourage Aurvedic medicine.
11. To increase productivity of forest lands and acquired lands.
12. To increase the role of Joint Forest Management Committees
13. To generate employment.

SECTION I.9 : FACTORS INFLUENCING THE GENERAL OBJECTS OF MANAGEMENT :-

The main factors influencing the general objects of management are given below.

1. These forests were repeatedly managed under Coppice With Reserve system under the previous Plans resulted in degradation in quality of forests. Due to loss of coppice vigour coupled with illicit felling, heavy uncontrolled grazing, poor coppice regeneration leads to under stocked, and open forests. The status of regeneration is unsatisfactory in many patches of the forests. These forests may be restored if they are restocked under afforestation schemes along with soil and moisture conservation works and strict protection from grazing, fire, illicit felling, encroachment etc.
2. In general the site quality is poor and the crop density is also low in large chunks of forest. In this division large tracts of forests are open, under stocked and degraded, which requires vast improvement in quality and stocking.
3. Soils are very compact due to heavy biotic pressure, devoid of humus and sub-soil moisture, which requires treatment with appropriate soil and moisture conservation works.
4. The increases in demand by increasing population for firewood, small timber, fodder and grass in thickly populated areas have affected the forests. Adequate provisions have been made in the plan for meeting the demands and alternatives provided for demand beyond carrying capacity.
5. The state of natural regeneration of teak and miscellaneous is poor due to low site quality, excessive biotic pressure, repeated fires, adverse climatic conditions, especially in the forests near by habitations. More over it is noticed that whatever natural regeneration comes up is not established due to above mentioned factors. Provisions to mitigate the problem of natural regeneration will have to be made in the plan for soil working and tending and protection of nature regeneration, which would help to establish.
6. The forests areas located nearby thickly populated habitations are open under stocked and degraded which need improvement in their stocking by tending nature regeneration and rooted stock supplemented by artificial regeneration. The forest tract constituting catchments of various irrigation projects required improvement in crop quality and drainage. These catchment areas will have to be treated by intensifying soil

and moisture conservation works, to check soil erosion and to protect catchment of the projects.

7. Majority of forests tract are undulating with fragile drainage system and the areas along water courses are liable for soil erosion, hence provisions to be made in the plan to check the same.

8. There is increasing demands for timber of teak and other important species in the markets.

9. In this forests Teak (*Tectonagrandis*) constitute more than 60 % of the crop and at some tracts of forests the crop is of poor Teak, hence there is need to improve misc. species in the forests.

10. Fodder, Bamboo and other NWFP require an augmentation of scientific management and harvesting. Adequate provisions will have to be made for the improvement of such forest produce.

11. In this division medicinal plants diversity and abundance required to be protected and managed on scientific lines in selected pockets.

12. Grazing, illicit felling, encroachment, fire and other protection problems are required to be tackled efficiently for better protection and management of forests and forest areas.

13. The population of wild animal needs to be conserved through habitat improvement measures and effective protection.

14. Restoration of degraded environment required to be augmented through various management skills.

SECTION I.10: GENERAL OBJECTS OF MANAGEMENT :-

Important factor which influence the general object of management is the rapid depletion of growing stock especially around thickly populated habitations due to different causes, given in section I.5.1. In consonance with the National Forest Policy 1988 and other directives issued by the State and the Union Govt. and ruling of Apex Court, the following general objects of forest management are identified :-

1. To preserve forest cover on hill slopes, along stream, water courses and water bodies, in order to prevent soil erosion and to check siltation in tank and to maintain their essential protective and life supporting functions including regulation of water within and to maintain ecological balance, to preserve the catchments of rivers originating within Akola and Washim districts.
2. To preserve and enrich the growing stock in natural forest and to restore all under stocked and degraded areas of the forests with the better stocking by taking of soil and moisture conservation measures and reforestation.
3. To effectively protect the forest and forest area with the help of local people and better infra structural facilities.
4. Replace poor and less vigorous stock gradually with better vigorous stock by continuous induction of better germ plasm.
5. Preservation and improvement of forests in order to obtain progressively increasing yield of small timber, fire wood, poles, and fodder to meet the demands of local people and to provide grazing areas to local cattle.
6. To check ill-effects of soil erosion where ever it is already started and to prescribe preventive measures.
7. To increase the production and availability of non-wood forest produce specially medicinal plants by protecting in the forest areas and undertaking their plantations.
8. To meet the expectations of wildlife protecting and bio-diversity conservation with a view to conserve and maintain the gene pool in the natural forests and to achieve appropriate wildlife management with an emphasis of rare and endangered species like Tiger, Panther, Sloth-bear and Wild-dog etc.
9. To provide ecological services to the area by protecting and improving the forests.

SECTION I.11 ANALYSIS AND VALUATION OF THE CROP :-

In this division enumeration of growing stock has been carried out by Survey of Forest Resources unit Amaravati. The results of enumeration have been given in Appendix No. XXXV of Volume II of the Plan.

The analysis of stock mapping and satellite imageries reveals majority of forests area of Akola Division is less than 0.4 density and out of which sizable portion of the forests appears to be blank also. Most of the areas of Patur and Alegaon ranges are confirmed to 0.4 to 0.6 density. Out of total area the forest above 0.6 density forms approximately 1.93 %. The forest of the density between 0.4 to 0.6 is 22.40%, less than 0.4 density is 30.70% and total blank area of the division is 44.96%. The enumeration data of 2006-07 provided by SOFR Amravati reveals that the pattern of crop is mostly young to middle aged. The average number of trees per ha. is about 356.02. Out of this 134.26 are in the girth classes lower than 75 Cms and 10.36 of trees are in the girth classes above 100 cms girth classes. Teak constitutes approx. 53 % of the total crop. The crop density estimates of various compartments have been worked out from satellite imagery of IRS P6 LISS-III data (November- 2007) and analysed by R.R.S.S.C. Nagpur. The data pertaining to various Working Circles of on going Working Plan has been given in the following table –

TABLE NO. – 47

THE STATUS OF STOCKING IN RELATION TO DENSITY IN DIFFERENT WORKING CIRCLES IN PRESENT PLAN

Sr. No.	Working Circle	Area/ Percentage	Total Area in ha	Density			
				0.6 and above	0.4 to 0.6	0.1 to 0.4	Blank
1	Selection Cum Improvement working circle	Area	30779.54	1351.00	10610.49	11727.98	7090.07
		Percentage	37.99	4.39	34.47	38.10	23.04
2	Afforestation Working Circle	Area	27067.06	0	3723.98	6747.36	16595.72
		Percentage	33.41	0	13.76	24.93	61.31
3	Catchment Area Treatment Working Circle.	Area	9254.49	177.73	2344.44	3042.45	3689.87
		Percentage	11.42	1.92	25.33	32.88	39.87
4	Fodder Improvement Working Circle	Area	10039.37	0	554.35	2068.63	7416.39
		Percentage	12.39	0	5.52	20.61	73.87
5	Babulban Working Circle	Area	1962.59	0	491.22	695.92	775.45
		Percentage	2.42	0	25.03	35.46	39.51
6	Area transferred to other Department.	Area	1906.56	0	0	0	0
		Percentage	2.35	0	0	0	0
Grand Total			81009.61	1528.73	17724.48	24282.34	35567.50

The analysis of data of growth and growing stock reveals that there is a decrease in the growing stock when compared to enumeration of 1993. The possible reasons for decrease in growing stock may be improper protection, non- implementation of some of the prescriptions of Working Plan, excessive biotic pressure etc.

In the growing stock misc. species constitutes approximately 47% of the total growing stock. The crop is predominated by young to middle age girth classes amounting to 2/3rd of growing stock excluding the young regeneration below 15-30 cms girth.

In Teak crop the percentage of crop of exploitable and above exploitable girth class constitutes 7.31 % of the total Teak crop. In the Teak crop the percentage of reduction taken place in lower girth classes especially 15/30, 31/45 girth classes may be because of illicit felling by local people to meet their demands for poles and small timber. The analysis of crop further reveals that there is no considerable damage in the Teak crop of girth classes 46/60 and above. In case of misc. crop there is no considerable damage has reveals in the analysis of enumeration data of 2007 and 1993 provided by SOFR unit Amaravati.

TABLE NO. – 48

COMPOSITION OF TEAK AND OTHER SPECIES (PER HA.)-2007

Species	Girth Class										
	15_30	31_45	46_60	61_75	76_90	91_105	106_120	121_135	136_150	151&up	Total T
Group A :- SPECIES OF GENERAL UTILITY											
Ain(Sajad)	3.99	2.99	1.42	0.68	0.35	0.14	0.06	0.02	0.01	0.00	9.66
Bija	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Lendia	1.77	1.10	0.58	0.26	0.11	0.02	0.01	0.00	0.00	0.00	3.85
Teak	58.04	58.56	39.95	20.59	9.74	2.94	0.96	0.23	0.08	0.03	191.12
Tiwas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
TOTAL 'A'	63.81	62.65	41.96	21.54	10.20	3.10	1.03	0.25	0.09	0.03	204.66
Group B:- SPECIES OF SPECIAL UTILITY											
Beheda	0.41	0.28	0.18	0.09	0.07	0.03	0.01	0.01	0.01	0.01	1.10
Kalamb	0.14	0.24	0.29	0.29	0.28	0.13	0.07	0.04	0.03	0.01	1.52
Khair	2.44	1.29	0.49	0.16	0.04	0.02	0.00	0.00	0.00	0.00	4.44
Salai	0.14	0.29	0.48	0.60	0.78	0.77	0.61	0.35	0.24	0.13	4.39
Shivan	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
TOTAL 'B'	3.14	2.11	1.44	1.14	1.17	0.95	0.69	0.40	0.28	0.15	11.47
Group C:- SPECIES OF MINOR FOREST PRODUCE											
Aonla	0.10	0.10	0.11	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.39
Bel	0.09	0.14	0.14	0.11	0.04	0.01	0.00	0.00	0.00	0.00	0.53
Biba	0.04	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.13
Bor	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Char	0.77	0.86	0.73	0.38	0.22	0.08	0.03	0.01	0.01	0.00	3.09
Chinchola	0.04	0.04	0.05	0.04	0.04	0.02	0.02	0.01	0.00	0.00	0.26
Dhawada	20.78	12.81	5.99	2.85	1.37	0.38	0.10	0.03	0.01	0.00	44.32
Medsing	0.19	0.25	0.25	0.13	0.10	0.03	0.02	0.01	0.00	0.00	0.98
Moha	0.05	0.07	0.06	0.07	0.10	0.05	0.03	0.02	0.01	0.03	0.49
TOTAL 'C'	22.09	14.33	7.37	3.65	1.88	0.58	0.20	0.08	0.03	0.03	50.24
Group D:- OTHER SPECIES											
TOTAL 'D'	37.90	24.05	12.72	7.06	4.46	1.92	0.87	0.33	0.17	0.14	89.62
G.Total	126.94	103.14	63.50	33.39	17.72	6.55	2.79	1.06	0.58	0.35	356.02

TABLE NO. – 49
RESULT OF STOCK MAPPING

QUALITY	AREA IN HA.	% AREA WRT WP AREA
IV A Teak	191.50	0.24
IV B Teak	23688.22	29.99
IV A Misc.	59.67	0.08
IV B Misc.	4170.24	5.27
Under Stocked	9419.62	11.91
Blank, Eroded and Scrub, Water Bodies etc.	41573.80	52.51
Total	79103.05	100

TABLE NO. – 50
DENSITY DISTRIBUTION OF AREA

DENSITY	Area in ha.	% AREA WRT WP AREA
> 0.6	1528.73	1.93 %
0.4 to 0.6	17724.48	22.40 %
0.1 to 0.4	24282.34	30.70 %
Blank	35567.50	44.96 %
Total	79103.05	100 %
Area transferred to other Department	1906.56	
Grand Total	81009.61	

SECTION 12: FUNCTIONAL CLASSIFICATION OF FORESTS:

I.8.1. As per the GR MRF-1365/1322/11/Y dated December 6, 1968 issued by the Govt. of Maharashtra the forests are broadly divided into **I Protection forests; II Tree Forests; III Minor forests; IV Pasture lands; V Miscellaneous Forests** based on their functions.

I. Protection Forests:- This category includes the forest situated on very steep slopes, along river banks. The forests that are degraded as a result of maltreatment and heavy biotic pressure. Their further exploitation will accelerate soil erosion and adversely affect the agricultural productivity in the lower plains. The guiding principals of management shall aim at improvement in vegetation quality and quantity and soil and moisture conservation measures to improve water regime and physical and climatic conditions.

II. Tree Forests:- These forests are situated in remote areas having negligible biotic pressure and are capable of producing commercial timber and products of economic values.

III. Minor Forests:- These forests are situated in interspersed pattern with cultivated lands. These forests are subjected to high biotic pressure and capable of producing small timber, fuel-wood and other forest produces to meet the demands of local population.

IV. Pasture Lands:- The forest include in this category are highly degraded, open or scrub forests that have ceased to yield even small timber but conveniently situated for providing grazing to the cattle.

V. Miscellaneous Forests:- These category of forests include (I) Grass reserves – which are situated as the small patches of forests amidst intensively cultivated tracts with scrubby growth and capable of producing good fodder grasses and (II) Remaining areas- These includes the remaining areas include the areas required for other works.

TABLE NO. – 51
FUNCTIONS OF FORESTS AND AREA ASSIGNED

Sr. No.	Type	Area in ha
1	Protection Forests	16438.39
2	Tree Forests	10916.40
3	Minor Forests	37375.65
4	Pasture Land	7650.89
5	Miscellaneous Forests	8628.28
	Total	81009.61

SECTION 13 : METHOD OF TREATMENT:

I.9.1. The method of treatment of each kind of forests depends upon their requirements. The method of treatment is influenced by various factors such as situation and condition of forests. Status of regeneration needs of local people, availability of labour force, staff and resources. The broad outlines proposed for treatment are given below for treatment of various types of forests site suitability for different categories given in Appendix No. LII of Volume II.

Protection Forests :- This type of forest occurs in small and scattered patches throughout the division. These areas are treated under type of area “Area A” category in the respective working circles. The patches of Protection Forests are situated in all ranges especially falling in catchments of various irrigation projects proposed to be treated under Catchment Area Treatment Working Circle. Principal treatment in this area is extensive soil and moisture conservation works alongwith gap population where ever it is required. In these areas no felling is prescribed, any activity leading to soil erosion shall not be taken up.

Tree Forests:- These forests are mostly situated in Patur,Alegaon and Malegaon ranges, small portion of Washim range adjoining to Katepurna Sanctuary and small portion of Karanja range adjoining to Pusad Division. These patches of forest shall be treated under Selection Cum Improvement Working Circle. Tending of natural regeneration where ever it is adequate and intensive soil and moisture conservation works and plantation of timber species in blanks and in the areas were natural regeneration is inadequate are methods of treatment.

Minor Forests:- In Akola Forest Division majority of forest areas fall in this category. The site quality is IV B and these areas dominated by Teak. These forests are situated in Karanja, Akola, Barshitakli, Manora, Washim, part of Malegaon, Part of Patur and Part of Alegaon ranges. These forests are capable of producing small timber and fuel wood only. The method of treatment to be adopted is SCI where ever well stocked areas are available and intensive soil and moisture conservation works along with plantation of

suitable species as per the site requirement or some other methods of treatments. The minor forests that had good crop in the past have become degraded now due to biotic pressure proposed to be managed under afforestation.

Pasture Lands:- These are scrub forests that have ceased to yield even small timber but these are conveniently situated for providing grazing to the cattle. These pasture lands and grass reserve proposed to be managed under Fodder Improvement Working Circle.

Miscellaneous Forests:- The areas transferred to other departments in the past and yet to be disforested are proposed to be treated under Misc. Working Circle. Some of the areas handed over to other departments under FCA – 1980.

TABLE NO. – 52
WORKING CIRCLEWISE DETAILS ABOUT VARIOUS TREATMENT
TYPES (IN HA.)

Working circle	A			B		C + D	Total
	A1	A2	A3	B1	B2		
1	2	3	4	5	6	7	10
SCI	8978.35	2492.84	7954.75	4619.65	3132.01	3601.94	30779.54
AWC	2760.91	2285.05	6207.37	3388.18	10357.19	2068.36	27067.06
CATWC	2066.36	824.19	2014.30	1645.96	2126.55	692.88	9254.49
BABUL	123.11	136.39	366.83	408.46	566.78	361.06	1962.59
FIWC	351.42	771.34	2476.72	1276.45	4877.27	286.17	10039.37
TOTAL	14280.15	6509.81	19019.97	11338.70	21059.80	7010.41	79103.05
Area transferred to other department							1906.56
G.Total							81009.61

NOTE A-1 type Area having more than 25⁰ slope, A-2 type Twenty m. wide strip on both sides of stream, A-3 type Area susceptible to excessive erosion (Very severe), B-1 type Open forests (density < 0.4), B-2 type Under stock Area including blank area. C type Areas having pole crop D type Areas having density 0.4 and over.

The working circle wise and compartment-wise details about various treatment types is given in Appendix no. LII of volume II of this Working Plan.

TABLE NO. – 53
WORKING CIRCLEWISE DETAILS ABOUT THE SITE SUITABILITY FOR
DIFFERENT APPLICATIONS (in ha)

Working circle	Waterbody	Protection areas	Massionary/Cement/Earthen Dam	Bamboo plantation (Seeding)	Percolation tank	Teak plantation	Miscellaneous plantation	Reforestation/Afforestation	Medow development/aromatic grasses	Gap filling/Enrichment planting	Tending/selection felling	Fodder Improvement	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sci	53.47	17844.21	22.69	1317.50	145.37	652.23	965.53	1016.75	29.69	4676.55	3646.63	408.92	30779.54
AWC	368.56	9005.97	160.68	1417.93	1168.70	1208.65	3376.57	4607.04	18.80	3407.29	1898.79	428.08	27067.06
CAT	49.15	4281.37	56.79	454.08	297.78	257.51	529.12	895.66	13.81	1596.27	692.57	130.38	9254.49
FIWC	107.42	2207.15	57.64	443.06	481.83	383.13	2100.64	2122.83	4.60	1472.82	521.19	137.06	10039.37
Babul wc	88.48	397.04	77.14	53.27	286.80	32.37	176.56	71.76	1.72	407.76	338.80	30.89	1962.59
Total	667.08	33735.74	374.94	3685.84	2380.48	2533.89	7148.42	8714.04	68.62	11560.69	7097.98	1135.33	79103.05
Areas transferred to other Departments													1906.56
G. T.													81009.61

The working circle wise and compartment-wise details about the site suitability for different applications is given in Appendix no.LIII of volume II of this Working Plan.

TABLE NO. – 54
WORKING CIRCLEWISE DETAILS ABOUT SOIL DEPTH (in Cm.)

Working circle	Habitation	Shallow to very shallow (<10)	Shallow (10-25)	Moderately deep (25-50)	Deep (50-100 Cm)	Very deep (> 100)	Waterbody	Total
1	2	3	4	5	6	7	8	9
SCI	27.98	1268.40	15660.81	10683.51	1698.59	1323.33	116.92	30779.54
AWC	81.30	1406.09	14144.57	6196.07	2100.73	2745.52	392.78	27067.06
CATWC	5.60	354.84	4782.95	2665.84	815.95	509.31	120.00	9254.49
BABUL WC	4.00	49.51	396.90	293.30	147.82	963.40	107.66	1962.59
FIWC	13.34	496.09	5361.29	2194.01	1061.30	786.02	127.32	10039.37
TOTAL	132.22	3574.93	40346.52	22032.73	5824.39	6327.58	864.68	79103.05
Areas transferred to other Departments								1906.56
G.Total								81009.61

The working circle wise and compartment-wise details about soil depth is given in Appendix no. LIV of volume II of this Working Plan.

TABLE NO. – 55

WORKING CIRCLE WISE DETAILS ABOUT SOIL TEXTURE (in ha)

Working circle	Habitation mask	Sandy clay loam	Gravelly sandy loam	Gravelly sandy clay loam	Gravelly clay	Gravelly clay loam	clayey	clay loam	Silty clay	Silty loam	Water body Mask	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sci	28.01	1297.34	7149.10	10015.28	4720.05	3917.57	2059.49	1338.76	0.00	27.91	104.52	121.51	30779.54
AWC	115.13	2125.10	3100.64	4441.88	3173.86	6690.05	5401.46	1525.14	82.16	86.31	222.61	102.72	27067.06
CAT	12.56	611.56	1349.80	2676.69	1632.02	1725.42	807.11	190.55	0.0	69.77	133.66	45.13	9254.49
FIWC	52.01	739.74	483.78	496.91	1868.51	2812.93	1215.08	71.76	15.78	95.92	97.30	9.29	10039.37
Babul wc	2.41	22.68	21.52	53.68	241.30	118.99	2835.97	555.94	0.00	71.21	115.54	3.71	1962.59
Total	210.12	4796.42	12104.84	17684.44	11635.74	15264.96	12319.11	3682.15	97.94	351.12	673.85	282.36	79103.05
Areas transferred to other Departments												0.00	1906.56
G. T.													81009.61

The working circle wise and compartment-wise details about soil texture are given in Appendix No.LV of volume II of this Working Plan.

TABLE NO. – 56

WORKING CIRCLE WISE DETAILS ABOUT THE AREAS PRONE FOR SOIL EROSION (in ha.)

Working circle	Habitation Mask	Slight	Slight to moderate	Moderate	Moderate to severe	Severe to very severe	Very severe	Water body Mask	Total
1	2	3	4	5	6	7	8	9	10
SCI	28.04	1272.37	1675.41	25.43	15792.09	11879.18	0.00	107.02	30779.54
AWC	87.09	3528.33	3546.19	372.93	12412.32	6518.56	242.75	358.89	27067.06
CAT WC	6.04	484.07	592.13	0.00	5156.90	2895.68	0.00	119.67	9254.49
BABU L WC	2.46	637.40	564.11	17.63	247.67	374.16	0.00	119.16	1962.59
FIWC	9.62	749.46	1869.15	0.00	4914.34	2389.94	0.00	106.86	10039.37
TOTAL	133.25	6671.63	8246.99	415.99	38523.32	24057.52	242.75	811.60	79103.05
Areas transferred to other Departments									1906.56
G. Total									81009.61

The Working Circle wise and compartment-wise details about the areas prone for soil erosion is given in Appendix No. LVI of volume II of this Working Plan.

TABLE NO. – 57

**WORKING CIRCLE WISE DETAILS ABOUT THE GROUND WATER
POTENTIAL (in ha.)**

Working circle	Excellent	Good	Moderate	Moderate to poor	Poor	Poor to nil	Habitation and Waterbody	Total
1	2	3	4	5	6	7	8	9
SCI	0.00	220.87	1447.86	81.30	28482.90	405.62	14099	30779.54
AWC	0.00	1004.05	2939.48	19.68	21116.81	1522.18	464.86	27067.06
CATWC	0.00	159.96	806.84	18.99	7817.73	325.85	125.12	9254.49
BABUL WC	0.00	302.32	793.48	118.48	267.69	28.90	142.36	1962.59
FIWC	0.00	330.02	1038.09	0.67	8540.07	10.03	120.49	10039.37
TOTAL	0.00	2017.22	7025.75	239.12	66225.20	2292.58	993.82	79103.05
Areas transferred to other Departments								1906.56
G.Total								81009.61

The Working Circle wise and compartment-wise details about the ground water potential is given in Appendix No. LVI of volume II of this Working Plan.

SECTION 14 : FORMATION OF WORKING CIRCLES:

I.14.1. Depending upon the objects of management and methods of treatment, the following working circles have been proposed :-

- I.** Selection Cum Improvement Working Circle.
- II.** Afforestation Working Circle.
- III.** Catchment Area Treatment Working Circle
- IV.** Babul Ban Working Circle
- V.** Fodder Improvement Working Circle.
- VI.** Non-Wood Forest Produce (Over Lapping) Working Circle.

The areas assigned to each working circle is given as under :-

TABLE NO. – 58

WORKING CIRCLES AND AREA ASSIGNED

Sr. No.	Working Circle	Area in ha.	Percentage
1	Selection Cum Improvement WC	30779.54	37.99
2	Afforestation WC	27067.06	33.41
3	Catchment Area Treatment WC	9254.49	11.42
4	Fodder Improvement WC	10039.37	12.39
5	Babulban WC	1962.59	2.42
	Total	79103.05	
6	Areas Transferred to other Department	1906.56	2.35
		81009.61	100.00

I. Selection Cum Improvement Working Circle:- It includes the forests previously managed under Coppice with Reserved Working Circle (CWR), Selection Cum Improvement Working Circle (SCI), Fodder Reserved Working Circle. In Thengdi's Plan these areas were managed under Conversion to High Forests, Catchment Area Treatment and Fodder Working Circles. These areas have good as well as degraded forests mixed together at all the places and are capable of producing small timber and fuel-wood. The basic aim is to improve the conditions of the crop by tending natural regeneration and supplemented it by artificial regeneration wherever required. The mature trees (above exploitable girth) in good quality patches will be harvested if those trees are available silviculturally. The site specific soil and moisture conservation works will be proposed in order to improve site quality, consequently the crop conditions. These areas will meet the demands of local people for small timber and firewood. Total area included in this working circle is about 30779.54 ha. which belongs to 'A class' Reserve Forests.

II. Babul ban Working Circle:- This working circle includes all the Babul bans of Akola and Karanja ranges. These Babul Bans are situated in scattered patches. The principal species of the crop is Babul (*Acacia nilotica*). These Babul bans have come up as a result of artificial regeneration by Agri-Silvi method. Other species generally seen in Babul bans are *Prosopis juliflora*, Shivan (*Milona harboria*), Kala Siris (*Albizzia*

lebbak). Three varieties of Babul have been identified i.e. Telia, Kauria and Ramkati. Telia and Ramkati prefer deep moist soil and well drained alluvium especially along river, nala banks, etc. In general, Babul forests occur almost pure, some times with above mentioned species. Area included in this working circle is about 1962.59 Ha.

III. Afforestation Working Circle:- In this working circle the major portion of 'C' class RF. Some portions of 'A' class RF, Protected Forest and acquired land have been included. These forests were previously managed under Coppice With Reserved Working Circle, Fodder Working Circle, Selection Cum Improvement Working Circle, Improvement and Fodder Reserve Working Circle. In Thengdi's Plan these forests were managed under Afforestation Working Circle, Catchment Working Circle and Fodder Improvement Working Circle. The basic objective is to increase vegetation cover, both in quality and quantity and to meet the local demands for small timber, fuel-wood, fodder and other forest produces by undertaking plantations in under stocked and blank areas. The site quality generally IV B. Total area included in this Working Circle is about 27067.06 ha.

IV. Catchment Area Treatment Working Circle:- It includes forest of 'A' class and 'C' class Reserve Forest which were previously managed under SCI working circle, Afforestation working circle and Catchment Area Treatment working circle. In Thengdi's Plan these areas were managed under Conversion to High Forest, Catchment Area Treatment, Afforestation and Fodder Improvement working circle. Those forests area which are directly falling in the catchment areas of irrigation, drinking water projects and directly draining into water bodies and reservoirs. Most of these forests were managed under Catchment Area Treatment working circle in Thengdi's plan. The main objectives of this working circle is to control siltation into irrigation, drinking water projects, water bodies and reservoirs, consequently to prolong the life of these projects. Total area included in this working circle is about 9254.49 ha. The Catchment Area Treatment includes soil and moisture conservation method, drainage treatment and improvement of vegetation cover to prevent soil erosion and to check run off in catchment areas.

V. Fodder Improvement Working Circle- It includes portion of 'A' class and 'C' class Reserve Forest which were previously managed under Fodder Improvement Working Circle having open and sparsely stocked forests and not capable of yielding timber any more. These areas were under Fodder Improvement, Conversion to High Forest and Catchment Area Treatment in Thengdi's plan. The main objective to include in this working circle is to create Grass Ramna's and to provide fodder of improved quality and quantity to the local cattle population. Total area included in this Working Circle is about 10039.37 ha.

SECTION 15 : BLOCKS AND COMPARTMENTS :

The total area of Akola Forest Division is 81009.61 Ha. excluding the area of Narnala Bird Sanctuary and Katepurna Wild Life sanctuary. Out of total area 'A' class Reserve Forest constitute to the extent of 49895.34 Ha. The Reserved Forests blocks and Compartments of Thengdi's Plan have been continued for the convenience of management and for easy identification by the field staff. The average area of each compartment is 211.42 ha. and total number 'A' class Reserved Forest compartments is 236.

The 'C' class Reserve Forest is situated in scattered patches, the total area of this category is 21946.06 and this area is included in 229 compartments. The compartments number are not given in any plans so far and in the present plan compartments number are given for the first time in entire 'C' class Reserved Forest.

The Protected Forest situated in three villages, which are formed into 3 compartments in the interest of management. The total area of Protected Forest is 1235.60 Ha.

1) Acquired Land (Deemed Reserved Forest) :-

Acquired land having area of 59.47 Ha. and in village Pandhurna of Alegoan Village, the compartment number given is 704.

The unclassed forest is having two categories :-

i) Area Received for Compensatory Afforestation

The total area under this category is 409.87 Ha. in seven villages. The entire area is divided into eight compartments and the number are given from 705 to 712 .

ii) 'E' class forest

For the first time these areas have been included in management plan. Total area of this 'E' class is 5282.42 Ha. The entire area divided into 126 compartments since this area is situated in scattered patches and compartment number are given.

In Akola Forest Division total number of compartments is 896 out of which 'A' class compartments 236, 'C'- class compartments 229, Babul ban compartments 293, Protected Forests Compartment 3, Acquired areas - 1 and Unclassed Forests compartments 134.('E' class and compensatory afforestation area.)

SECTION 16 : PERIOD OF PLAN

The period of this working plan is for 10 years, which will commence from 2009-2010 to 2018-2019. The mid-term review can be under taken after 5 years i.e. in 2014-2015 if the situation demands and the proposal moves by the concerned Chief Conservator of Forests Territorial.

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CHAPTER – II

WORKING PLAN FOR THE SELECTION CUM IMPROVEMENT WORKING CIRCLE

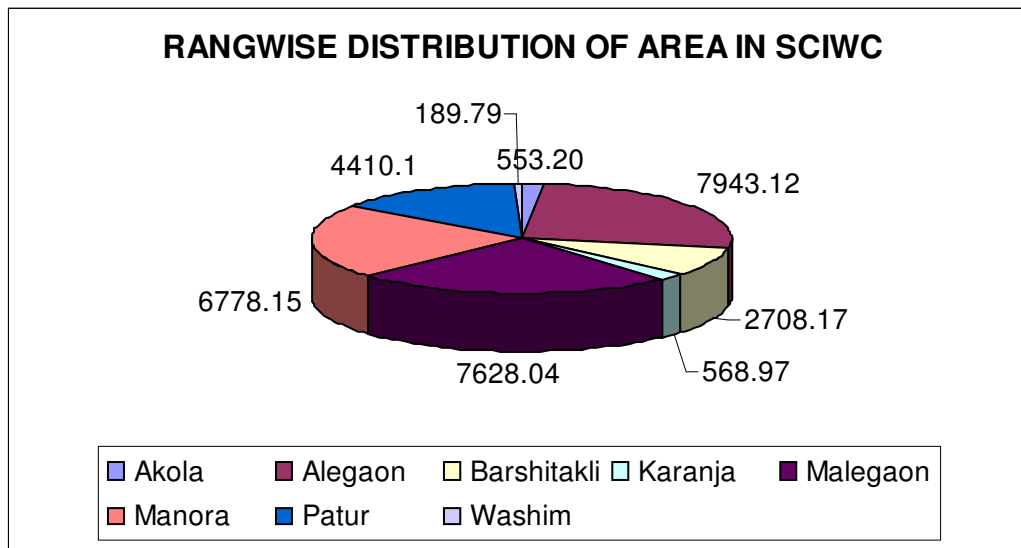
SECTION 1: GENERAL CONSTITUTION:

II.1.1. This working circle includes the well stocked areas of forest of the division i.e. majority of the area of Alegaon, Patur, Malegaon, Manora ranges. Apart from these areas small portions of Akola, Karanja and Washim ranges, which are having potential for producing timber, poles and fire wood are included in this working circle. These forests managed under Coppice with Reserve, Selection Cum Improvement, Fodder and Pasture Working circles in Hunt's Plan (1912-13 to 1941-42) followed by Cornelius Plan (1942-43 to 1951-52) under Coppice with Reserved system and in Parasnis Plan (1965-66 to 1979-80). In Thengdi's plan (1994-95 to 2008-09) these areas were treated under Conversion to High Forest and Catchments Area Treatment, Afforestation, Silvi-Pasture Working Circles. The total forest area proposed to be included in this working circle is about 30779.54 ha. Range wise distribution of area of SCI working circle under different categories is given in the following table:-

TABLE NO. – 59

RANGEWISE AND CATEGORYWISE DISTRIBUTION OF AREA IN SELECTION CUM IMPROVEMENT WORKING CIRCLE

Sr. No.	Range	Area of Range	Area allotted (ha.)					% to the area of the Range	% to the area of WC
			RF	PF	Acquired Land	Un-classed Forests	Total		
1	Akola	4421.21	553.20	0.00	0.00	0.00	553.20	12.51	1.80
2	Alegaon	11614.98	7943.12	0.00	0.00	0.00	7943.12	68.39	25.81
3	Barshitakli	14132.43	2708.17	0.00	0.00	0.00	2708.17	19.16	8.80
4	Karanja	9067.57	568.97	0.00	0.00	0.00	568.97	6.27	1.85
5	Malegaon	11736.65	7186.59	0.00	0.00	441.45	7628.04	64.99	24.78
6	Manora	14659.40	6778.15	0.00	0.00	0.00	6778.15	46.24	22.02
7	Patur	8923.33	4410.10	0.00	0.00	0.00	4410.10	49.42	14.33
8	Washim	6454.07	189.79	0.00	0.00	0.00	189.79	2.94	0.62
Total		81009.61	30338.09	0.00	0.00	441.45	30779.54		100.00



II.1.2. The reasons for assigning the area to **Selection cum Improvement working circle (SCI)** earlier treated under Conversion to High Forest, Catchment Area Treatment and Fodder Reserve working circles in ongoing Thengdi's plan are as under

1. In Thengdi's plan the area was treated under Conversion to High Forest with a view to allow the healthy coppice to mature and subsequently allow selective removal based on exploitable girth and to encourage regeneration of seed origin. As such the areas were not assigned to any periodic blocks which reflects more or less similar to **Selection cum Improvement working circle**.
2. The pattern of crop is uneven aged without any uniformity in crop quality, density and regeneration. The crop is having mixture of all age classes and girth classes in entire forest with varying soil conditions.
3. The analysis of enumeration of data provided by SOFR reveals that more than 8.26% of trees in girth class above 75 cms. and these can be harvested on sustained basis in **Selection cum Improvement** system along with improvement fellings to promote natural regeneration.
4. Conversion of these forest to High Forest of seed origin would require lot of time since these forest are basically of coppice origin. As most of these areas were treated under Coppice With Standard and Coppice With Reserve systems in the past since last 100 years it is prudent to bring them now under Selection cum

Improvement system with preferential treatment to remove coppice crop by seed origin crop. The prescriptions of treatment made by Shri Thengdi in Conversion to High Forest such as categorization of area into A,B,C,D determining exploitable girth, marking techniques, regeneration techniques and post felling operations are nothing but the replica of Selection cum Improvement prescriptions.

5. Some of the areas that were included in Catchment Area Treatment Working Circle in Thengdi's Plan previously managed under CWR working circle of S.S.Parsnis plan capable of producing timber. Moreover many compartments that were included in Catchment Area Treatment working circle are having plain areas and not directly draining into catchments of irrigation projects or water bodies.

SECTION 2: GENERAL CHARACTERS OF VEGETATION:

II.2.1. Better quality Teak forest are included in this working circle in which Teak constitutes about 60% of the crop. In general site quality confirmed to IVb with some patches of site quality IVa. A very few patches of site quality of III and IVa are noticed mostly in sheltered pockets, along nala banks or frequently on gentle sloping plateau which have retained black cotton soil to a considerable depth. The natural associates of Teak are *Dhaoda, Moha, Ain, Lendia, Salai, Bhirra, Kalam, Char, Hiwar, Tendu, Khair, Palas, Aonla, Ghont* etc. Another associate *Arjuna* spreads along nalas, of some streams. The other less common associates are *Dhaman, Mokha, Kulu, Tiwas, Kusum. etc.* These forests belongs to “**Southern Tropical Dry Deciduous Teak Forests Type**” **5A/C1.**

The status of natural regeneration in general is poor. However, it is satisfactory, in patches containing well drained soils where the biotic interference is comparatively less especially in the remotest pockets of the forests. But this regeneration does not get established completely due to repeated fires and other biotic interferences. The regeneration of other species is unsatisfactory. The growth of coppice of Teak has become stunted due to loss of coppice vigour as these areas were managed under repeated Coppice With Reserve system. These forests have suffered from heavy grazing, frequent fires and illicit felling. The coppice regeneration of other species is not satisfactory. The density of the crop varies 0.4 to 0.8 with some under stocked and blank patches. Lantana is noticed in some of the areas especially in Alegaon range. The Teak is mostly coppice origin which occur in gregarious patches forming 60 to 80 % of

the overwood in some patches. These forests are largely be grouped in to “**poor quality Teak forests**”

SECTION 3: COMPARTMENTS AND FELLING SERIES:

II.3.1. The compartments allotted to this working circle and various felling series are given in the following table:-

TABLE NO. – 60

Sr. No	Range		Felling Series	Comptt. No.	Total Area of F.S. (ha)	Total Area allotted from each Range
1	2	3	4	5	7	8
1	Akola	1	ANSING(Pt.)	162a, 170a	553.20	553.20
2	Alegaon	2	UMARDARI	8, 9, 12a, 13a, 14a, 15.	1505.82	7943.12
		3	SAWERGAON	2, 3, 4, 5, 6a, 7.	1645.10	
		4	CHIKHALWAL	16, 17, 19, 20, 21, 24a.	1652.72	
		5	SONUNA	22, 23, 26, 27, 28, 29, 30.	1719.06	
		6	PANDHURNA(pt.)	31, 32, 58, 59, 60.	1420.42	
3	Barshitakli	7	PANGRA(pt.)	87, 88	455.85	2708.17
		8	AMANA(pt.)	93, 95	456.88	
		9	WAGHA(pt.)	125, 126, 127, 128a, 129, 130, 131.	1795.44	
4	Karanja		WAGHA(pt.)	121a	187.36	568.97
		10	KAWARDARI(pt.)	116	381.61	
5	Malegaon	11	KOLGAON	39, 40, 41, 42, 43, E110, E111, E113, E116, E117.	1694.07	7628.04
		12	ANDHARSAWANGI (pt.)	46, 47, E104.	977.57	
			PANDHURNA(pt.)	35	269.52	
		13	MEDSHI(pt.)	51a, 52.	491.28	
		14	SAKHARVIRA(pt.)	89	237.14	
			PANGRA(pt.)	86, 90, 91.	1064.32	
			AMANA(pt.)	94, 96, 97, 100, 101, 102, 400.	1147.88	
			ANSING(pt.)	161	340.74	
			WAGHA(pt.)	99	72.03	
			KAWARDARI(pt.)	103, 104, 105, 106, 107, 108, 109, 110.	1333.49	

Sr. No	Range		Felling Series	Comptt. No.	Total Area of F.S. (ha)	Total Area allotted from each Range
6	Manora	15	KHAPARDARI	139, 140a, 141, 142, C149, C150.	1650.38	6778.15
		16	PALODI	147, 148, 149, C143, C144, C145, C146	1663.13	
			ANSING(pt.)	153	269.11	
		17	SHENDONA	144b, 145a, 145b, 150, 151, 152, C220.	1720.49	
		18	MANORA	143a, 143b, 144a, 146, C140, C141.	1475.04	
7	Patur		ANDHARSAWANGI (pt.)	44, 45	640.21	4410.10
			MEDSHI(pt.)	48, 50, 53, 54, 55.	1055.81	
			SAKHARVIRA(pt.)	64, 68, 69, 72.	1171.55	
		19	CHIKHALKHED	56, 57, 65, 66, 67, C189, C190, C191.	1542.53	
8	Washim		ANSING(pt.)	155	189.79	189.79
	Total	19	Felling Series	129 Compartments.	30779.54	30779.54

SECTION 4: SPECIAL OBJECTS OF MANAGEMENT:

II.4.1. The special objects of management are:-

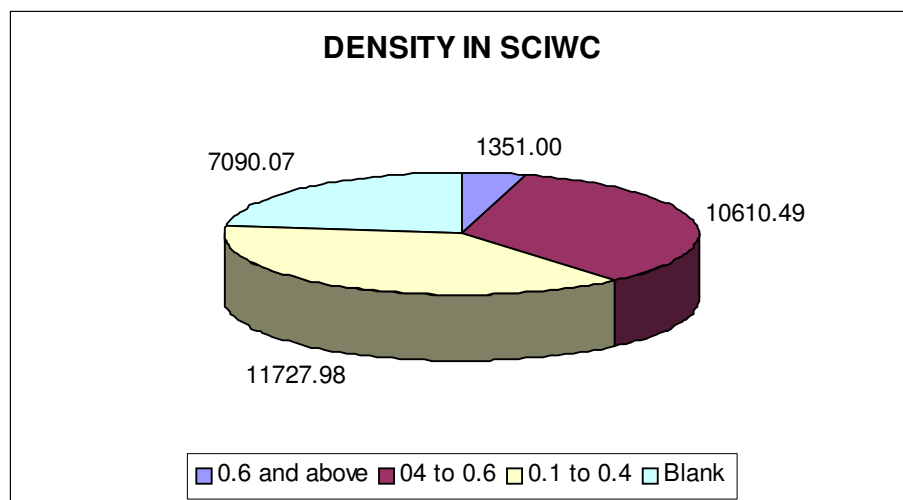
- a. To improve the general stocking of the forest in terms of crop density, composition, quality and regeneration.
- b. To gradually replace low vigour and stunted coppice growth with High Forest of seed origin through encouragement of natural regeneration, supplemented with artificial regeneration by introducing selected germplasm.
- c. To maintain balanced proportion of miscellaneous and NWFP species in growing stock.
- d. To maintain and improve sufficient soil cover through intensive soil and moisture conservation measures.
- e. To check soil erosion specially in the catchments areas so as to enhance the life of water reservoirs.

SECTION 5: ANALYSIS AND VALUATION OF THE CROP:

II.5.1. The existing stock maps of the ongoing working plan are updated. It is assessed with the help of classified vegetation maps procured from FSI with adequate ground truth verification. It is also assessed with the help of satellite imagery of LISS – III of Nov. 2007 and the analysis carried out with the help of R.R.S.S.C. Nagpur. The forest is mixed type with well stocked patches at some places, moderately stocked at other places, or under stocked or even open type in some places through out the area. The details of stock assessed from the satellite imagery analysis indicate that out of 30779.54 Ha. of SCI, 1351.00 ha. is having above 0.6, 10610.49 ha. area having density between 0.4 to 0.6, 11727.98 ha. represent density of 0.1 to 0.4 and the remaining area of 7090.07 ha. falls in category of blank area.

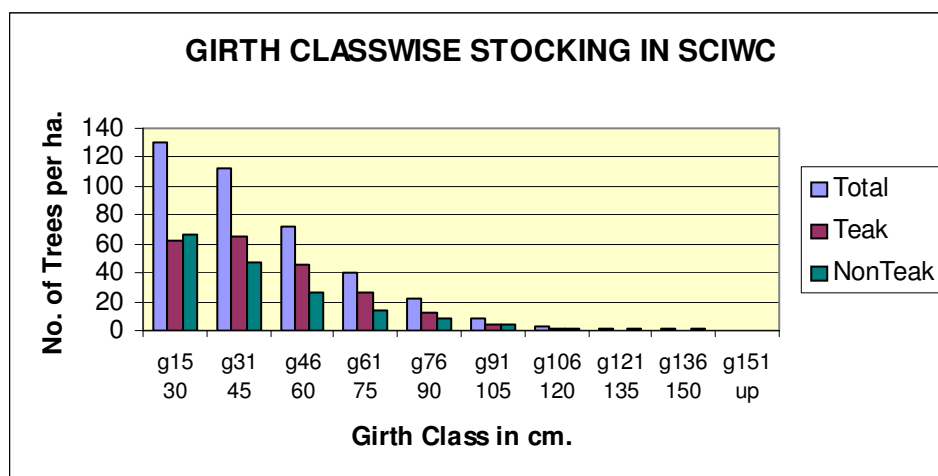
TABLE NO. – 61
DENSITYWISE AREA IN SCI WORKING CIRCLE

Sr. No.	Name of Working Circle	Area/ Percentage	Total Area in ha.	Density			
				0.6 and above	04 to 0.6	0.1 to 0.4	Blank
1	Selection Cum Improvement WC	37.99	30779.54	1351.00	10610.49	11727.98	7090.07
		Percentage	100.00%	4.39	34.47	38.10	23.04



II.5.2. The enumeration of the growing stock was carried out by the SOFR unit Amravati. The sample plots were laid compartment wise and the enumeration was carried out. The enumeration data supplied to this office. The analysis of the data reveals that the crop patterns and site quality differ from plot to plot even in the same compartment. The variations in the crop pattern are much more in those compartments where the degree of degradation is high. The results of analysis of enumeration data (Girthwise) in this working circle is given in the following table

TABLE NO. – 62									
ENUMERATION DATA (GIRTH CLASSWISE) IN SELECTION CUM IMPROVEMENT WORKING CIRCLE									
Sr. No.	Girth Class in Cm	Teak			Others			Total	
		No.	%age wrt Total Teak spp.	%age wrt Total stock	No.	%age wrt Total Misc. spp.	%age wrt Total stock	No.	%age wrt Total stock
1	15-30	63	28.90	16.2	67	39.18	17.22	130	33.42
2	31-45	65	29.82	16.71	47	27.49	12.08	112	28.79
3	46-60	46	21.10	11.83	26	15.20	6.68	72	18.51
4	61-75	26	11.93	6.68	14	8.19	3.6	40	10.28
5	76-90	13	5.96	3.34	9	5.26	2.31	22	5.66
6	91-105	4	1.83	1.03	4	2.34	1.03	8	2.06
7	106-120	1	0.46	0.26	2	1.17	0.51	3	0.77
8	121-135	0	0.00	0	1	0.58	0.26	1	0.26
9	136-150	0	0.00	0	1	0.58	0.26	1	0.26
10	151 above	0	0.00	0	0	0.00	0	0	0.00
		218	100.00	56.05	171	100.00	43.95	389	100.00



SECTION 6: SILVICULTURAL SYSTEM / METHOD OF TREATMENT:

II.6.1. The areas included in this working circle were managed repeatedly under Coppice With Reserve system in the past resulted in deterioration of the crop in quality, density, composition, coppice vigour and establishment of natural regeneration. As Teak is a good coppicer, when compared to the species of its natural associates coupled with the system of treatment in the past resulted in increase of percentage of Teak in the growing stock. However the analysis of enumeration data of 2006-07 provided by SOFR unit Amaravati, indicates that stocking of miscellaneous species has shown slight increase in the recent past, and not shown any substantial increase in composition of the crop due to poor coppice nature. By keeping above factors in mind the need for change in silvi- cultural system is necessitated. In the previous plan the Silvi-cultural system was “ Conversion to High Forest” aiming at converting the crop through a system based on coppice regeneration to the system based on seedling regeneration by protecting and tending the seedlings of natural regeneration supplemented by artificial regeneration, where ever necessary. But it was observed that seedlings raised out of young recruits do not get established due to unfavourable soil conditions, biotic interference and repeated fires, therefore the idea of sacrificing coppice regeneration while retaining only seedlings of seed origin is not favoured. In light of above discussion, the silviculture system favoured and adopted is “**Selection Cum Improvement**” aiming at protecting and tending seedling regeneration while creating desirable gaps to increase natural regeneration by harvesting matured trees as per silvicultural principles.

SECTION 7: METHOD OF TREATMENT:

II.7.1. Encouragement of natural regeneration by improving site quality conditions through site specific soil and moisture conservation works. The Teak trees of above harvestable girth, which are silviculturally available will be marked for felling. Removal of dead, diseased and malformed under improvement fellings is prescribed. Miscellaneous species and species of NWFP importance and fruit species shall be retained during working and their representation in crop composition is increased by encouraging natural regeneration assisted by artificial regeneration.

1. The silvicultural system adopted is SCI which aims at protecting and tending seedlings regeneration while creating gaps to encourage natural regeneration by harvesting the matured trees. The promising coppice regeneration shall be retained based on site requirement and quality of coppice.
2. The Teak trees of exploitable girth and above, that are silviculturally available and available coppice trees will be marked for felling.
3. Natural regeneration will be encouraged through improvement of site quality conditions by taking up suitable site specific soil and moisture conservation measures.
4. Thinning of coppice crop shall be under taken depending upon the site and crop requirement.
5. Improvement felling such as removal of dead, diseased and malformed will be under taken.
6. The miscellaneous species of NWFP value and fruit species shall be retained during working and their representation in crop composition increased by encouraging natural regeneration and supplemented by artificial regeneration if necessary.
7. Natural regeneration shall be supplemented with artificial regeneration wherever necessary and efforts will be made to plant suitable species with 50% of Teak and 50% of miscellaneous keeping total natural regeneration and artificial regeneration seedlings 625 to 700 per ha. Natural regeneration constitutes the young recruits of less than 15 cms girth and established seedling of 15 to 30 cms girth. Only established seedling shall be considered while supplementing with artificial regeneration.

SECTION 8: FELLING CYCLE:

II.7.1. The felling cycle is fixed at 20 years based on the quantum of work, available infrastructural facilities, possible budget provision, site quality and nature of crop.

SECTION 9: CHOICE OF SPECIES:

II.9.1. The species of plantation shall be decided depending upon the site requirement, as well as the preference of local people especially JFM Committes. Based on site conditions 50% Teak and 50% miscellaneous species shall be planted. The

priority shall be given to species of Non Wood Forest Produce in comparison to the existing miscellaneous species. The species of medicinal value, fodder and edible fruit species to the extent of 20% in the total planting stock shall be planted. While planting care shall be taken to plant the species suitable to that site based on soil texture and soil conditions.

SECTION 10: HARVESTABLE GIRTH:

II.10.1. In Thengdi’s plan the harvestable girth for Teak was fixed at 75cm at breast height for site quality IV, on the basis of stem analysis carried out by Shri. Thengdi. To carry out stem analysis two Teak trees were selected from Umarwadi felling series compartment No. 7 and the results are as follows :-

<u>Age (years)</u>	<u>Girth (Cm)</u>	<u>Age (years)</u>	<u>Girth (Cm)</u>
10	16.88	28	42.08
14	22.61	30	45.22
16	25.12	32	48.36
18	27.63	34	51.50
20	29.52	36	54.64
22	32.66	38	59.03
24	35.80	40	60.92
26	38.94		

During the revision of the present plan studies have been conducted by the office of the Conservator of Forests, Working Plan, Yavatmal in 2008 with the help of its officers and staff. The stem analysis of Teak (*Tectona grandis*) carried out by selecting representative Teak trees of site quality IV with different origin i.e. Teak trees of seedling origin from Alegaon Range, compartment No. 12, number of tree selected are 4 and Patur Range, compartment No.47, one Teak tree and compartment No. 48 two Teak trees were selected as representative samples. For the Coppice origin the representative samples were selected from Alegaon Range compartment No. 20, numbers of trees are 4 and from Patur range, one teak tree was selected from compartment No. 47 of Akola Forest Division. Total number of Teak trees of seed origin is 7, where as coppice origin is 5.

The observations made during the stem analysis of the above mentioned Teak trees of both seedling origin and coppice origin have shown different trends in culmination of C.A.I. and M.A.I. In case of seedling origin, the stem analysis reveals that the C.A.I. and the M.A.I. culminate at the age of 69 years, represents the girth of 105 Cms at the breast height. Where as in case of Coppice origin the C.A.I. and the M.A.I. culminate at the age of 52 having girth of 73 cm. at breast height. As Teak crop in Akola Forest Division is mostly of coppice origin, it is not possible to prescribe two different harvestable girths for seedling origin Teak trees and coppice origin Teak trees. Therefore uniform harvestable girth is prescribed by considering coppice Teak trees is at 75 cm. girth breast height. Moreover, the Coppice Teak trees will tend to form hallowness after 73cm. girth breast height and the hallowness increases with the increasing girth. In the light of above discussion a separate harvestable girth is not prescribed for seedling origin Teak trees, since their contribution is very meagre in the Teak crop. More-over, while marking of Teak trees, the coppice origin will be marked first, whereas the seedling origin Teak trees will be retained as a seed bearers. Therefore, the harvestable girth is prescribed 75 cm. at breast height for Teak trees in site quality IV.

SECTION 11: FORMATION OF FELLING SERIES AND COUPES:

II.11.1. The entire working circle is divided into 19 felling series and each felling series shall consists of 20 coupes. The details of the felling series and coupes are given in Appendix XLI b of Vol. II of this Plan.

SECTION 12: REGULATION OF YIELD:

II.12.1. Annual coupes shall be regulated by area, and the efforts made for making annual coupes as equi-productive as possible.

II.12.1.1. For yield calculation in Selection Cum Improvement working circle, the method of Sagreiya's modification of Brandis formula has been utilized in this plan.

II.12.1.2. Mathematical analysis for K.P. Sagreiya's modification of Brandis' Method of determining the maximum sustained yield out of trees of exploitable girth from all age class forests is given as below;

- (i) The number of trees in Class I (Exploitable Girth Class) is S_1 ;
- (ii) The number of trees in classes II, III ... are s_2, s_3, \dots ;
- (iii) The fraction of the trees of classes II, III, ... that survive and are eventually available for harvesting as class trees are x_2, x_3, \dots , so that $x_2 s_2 = S_2$; $x_3 s_3 = S_3$; ...
- (iv) The trees take Y_2, Y_3, \dots years in classes II, III, ..., so that the average annual recruitments in the class periods are-
 $S_2 / Y_2 = R_2$
 $S_3 / Y_3 = R_3, \dots$
- (v) The overall average annual recruitment for the entire enumeration period, i.e.,
 $(S_2 + S_3 + \dots) / (Y_2 + Y_3 + \dots) = S / Y$ is say R .
- (vi) The felling cycle adopted is f years and
- (vii) The accruing average annual recruitment during the 1st, 2nd, ..., Cycles is R', R'', \dots , so that the recruitments, accruing in successive cycles, i.e. $f R', f R'', \dots$ are given by as follows:

$$f R' = a R_x + (f - a) R_{x+1}$$

$$f R'' = b R_y + (f - b) R_{y+1}, \dots$$

Then the realizable recruitments R_{r1}, R_{r2}, \dots in cycles I, II, Will be

$$R_{r1} = \frac{1}{2} [f R' - a (R' - R_x)],$$

$$R_{r1} = \frac{1}{2} [f R'' - a (f R'' - R_y)], \dots$$

Therefore, the prescribed yield should be –

$$1/f [S_1 + f R'/2 - a (R' - R_x)/2],$$

$$1/2f [S_2 + f (R' + R''/2) - b (R'' - R_y)/2], \dots$$

According as the stock in hand has to be liquidated in 1, 2, ... cycles, to obtain the maximum sustained yield, while the actual recruitment is still less than R .

From this it follows that if the overall annual recruitment R is to be realized on a sustained basis even while the realizable recruitment in a cycle is less than fR , there must be a stock in hand of –

$$S_I = f [R - R'/2] + a (R' - R_x)/2],$$

$$S_{II} = f [2 R - (R' + R''/2)] + b (R'' - R_y)/2], \dots$$

According as the deficiency continues for 1, 2, 3, ... felling cycles.

For the tract dealt with, in Selection Cum Improvement working Circle consisting of all aged forests:

We have girth wise distribution of trees, years to cross the class according to stem analysis of Teak tree of Site Quality – IV and selection girth fixed is 75 cm.

TABLE NO. – 63

	Teak	Non Teak	
Girth class	Stems/ha	Stems/ha	Years in class
16-30	63.45	100	7
31-45	64.65	53	6
46-60	46.40	27	11
61-75	25.52	17	14
76-90	12.50	12	25
91-105	3.85	4	-
106-120	1.27	2	-
121&up	0.44	2	-
Total	218.1	217	63

TABLE NO. – 64

TABLE SHOWING THE PERIOD IN YEARS FOR WHICH A TREE REMAINS IN GIRTH CLASS

Class	Girth Class in cm	Years in class	Symbol
A	B	C	D
	91& UP	--	--
I	76-90	--	--
II	61-75	14	Y ₂
III	46-60	11	Y ₃
IV	31-45	6	Y ₄
V	16-30	7	Y ₅
Total period		38	Y

Percentage of trees of different size classes that will attain exploitable size and silviculturally available for removal will be as follows in table :-

TABLE NO. – 65

Class	Girth Class	Trees/ha	Symbol	% of trees available as Class I	Symbol	Trees available as Class I	Symbol
A	B	C	D	E	F	G	H
	91& up	--	--	--	--	--	--
I	76-90	--	--	--	--	--	--
II	61-75	25	S ₂	48%	x ₂	12	S ₂
III	46-60	46	S ₃	26%	x ₃	11.76	S ₃
IV	31-45	64	S ₄	18.75%	x ₄	12.00	S ₄
V	15-30	63	S ₅	19.04%	x ₅	11.97	S ₅
	Total	198				47.93	S

As the total recruitment for the enumeration period Y is S the mean yearly recruitment S/Y , say R is 47.93/38=1.26 per ha. The average annual recruitment during the size class period namely, $S_2/Y_2=R_2$, $S_3/Y_3=R_3$, ... will be as follows in table :-

TABLE NO. – 66

Class	Girth Class in cm	No of trees / ha	Years in class	Symbol	Annual recruitment to next class	Symbol
A	B	C	D	E	F	G
	91& UP					
I	76-90					
II	61-75	25	14	Y ₂	0.85	R ₂
III	46-60	46	11	Y ₃	1.08	R ₃
IV	31-45	64	6	Y ₄	0.75	R ₄
V	15-30	63	7	Y ₅	1.71	R ₅
	Total	198	38	Y	1.26	R

It is obvious that although there is stock in hand of 12class I trees/ha and there will be a recruitment of 47.93 trees/ha in the 38 years and thus theoretically annual yield of $(47.93+12)/38= 1.57$ trees/ha is obtainable. In practice, as the existing stock is assumed to be distributed uniformly and one ha of the forests to be worked in a year, the total class I trees available in it at the end of the first year will be only (S_1+R_2) .

Of these, all the S₁ existing class I trees will be available for removal, but when felling proceed from one end of the annual area to the other, only half of the recruitment of R₂ /2 trees that will come into class I in one year over the whole coupe, will be realizable, remaining trees will be passing into class I after the fellings have gone past a

particular spot. In other words the total realizable yield from the years coupe will be only $\{S_1 + R_2 / 2\}$ trees / ha. Similarly when 1st coupe area is gone over in the second year, for 2nd coupe, before fellings commence it will have in it S_1 of existing class I trees as also one year's recruitment namely, R_2 trees, all of which will be available for removal. Besides this as in Coupe I one-half of the year's recruitment $R_2 / 2$ will also be available. Thus in 2nd coupe trees available per ha would be $\{S_1 + R_2 + R_2 / 2\}$. And so on.

Thus for one ha. area of each coupe, realizable and accumulating Class I for entire felling cycle trees would be as follows :-

TABLE NO. – 67
FOR PROPOSED PLAN FELLING CYCLE OF 20 YEARS; 'N' TH YEAR OF OPERATION; NUMBER OF TREES PER HA.

Sr No	Coupe No	For coupe area in ha	Nth year of operation	Class I at hand= S_1	Realizable Recruitment = $(n-1/2) R_2$	Accruing Recruitment=
1	I	1	1	12	$\frac{1}{2}R_2 = 0.42$	$14R_2 + 5R_3 + \frac{1}{2} R_3 = 17.84$
2	II	1	2	12	$R_2 + \frac{1}{2} R_2 = 1.27$	$14R_2 + 4R_3 + \frac{1}{2} R_3 = 16.76$
3	III	1	3	12	$2R_2 + \frac{1}{2} R_2 = 2.12$	$14R_2 + 3R_3 + \frac{1}{2} R_3 = 15.68$
4	IV	1	4	12	$3R_2 + \frac{1}{2} R_2 = 2.97$	$14R_2 + 2R_3 + \frac{1}{2} R_3 = 14.6$
5	V	1	5	12	$4R_2 + \frac{1}{2} R_2 = 3.82$	$14R_2 + R_3 + \frac{1}{2} R_3 = 13.52$
6	VI	1	6	12	$5R_2 + \frac{1}{2} R_2 = 4.67$	$14R_2 + \frac{1}{2} R_3 = 12.44$
7	VII	1	7	12	$6R_2 + \frac{1}{2} R_2 = 5.52$	$13R_2 + \frac{1}{2} R_2 = 11.47$
8	VIII	1	8	12	$7R_2 + \frac{1}{2} R_2 = 6.37$	$12R_2 + \frac{1}{2} R_2 = 10.62$
9	IX	1	9	12	$8R_2 + \frac{1}{2} R_2 = 7.22$	$11R_2 + \frac{1}{2} R_2 = 9.77$
10	X	1	10	12	$9R_2 + \frac{1}{2} R_2 = 8.07$	$10R_2 + \frac{1}{2} R_2 = 8.92$
11	XI	1	11	12	$10R_2 + \frac{1}{2} R_2 = 8.92$	$9R_2 + \frac{1}{2} R_2 = 8.07$
12	XII	1	12	12	$11R_2 + \frac{1}{2} R_2 = 9.77$	$8R_2 + \frac{1}{2} R_2 = 7.22$
13	XIII	1	13	12	$12R_2 + \frac{1}{2} R_2 = 10.62$	$7R_2 + \frac{1}{2} R_2 = 6.37$
14	XIV	1	14	12	$13R_2 + \frac{1}{2} R_2 = 11.47$	$6R_2 + \frac{1}{2} R_2 = 5.52$
15	XV	1	15	12	$14R_2 + \frac{1}{2} R_3 = 12.44$	$5R_2 + \frac{1}{2} R_2 = 4.67$
16	XVI	1	16	12	$14R_2 + R_3 + \frac{1}{2} R_3 = 13.52$	$4R_2 + \frac{1}{2} R_2 = 3.82$
17	XVII	1	17	12	$14R_2 + 2R_3 + \frac{1}{2} R_3 = 14.6$	$3R_2 + \frac{1}{2} R_2 = 2.97$
18	XVIII	1	18	12	$14R_2 + 3R_3 + \frac{1}{2} R_3 = 15.68$	$2R_2 + \frac{1}{2} R_2 = 2.12$
19	XIX	1	19	12	$14R_2 + 4R_3 + \frac{1}{2} R_3 = 16.76$	$R_2 + \frac{1}{2} R_2 = 1.27$
20	XX	1	20	12	$14R_2 + 5R_3 + \frac{1}{2} R_3 = 17.84$	$\frac{1}{2}R_2 = 0.42$
	Total	15		240	174.07	174.07
			Average	12	8.70	8.70

Thus overall average number trees per ha above selection girth will be $12 + 8.70 + 8.70 = 29.40$. Out of which available for selection felling would be $12 + 8.70 = 20.70$. Percentage removal would be $20.70 * 100 / 29.40 = 70.40\%$. Following the Guidelines of Government of India regarding the removal of 50% of normal available yield, the average annual yield will be 35.20%. For sake of simplicity say 35% of silviculturally available tree i.e. on average 35% of $20.70 = 7.24$ say 7 trees per ha. In terms of number, 35 out of 100 silviculturally available trees will be marked for felling. Taking form factor of tree in girth class 76-90 as timber = 0.183 cubic meter, we will have average yield per ha of worked coupe = 1.281 cubic meters. We will have average annual yield = $11961.49 \times 1.281 / 20 = 766.13$, say 765 cubic meters per year. The revision of Working Plan is contemplated after 10 years, whatever the stock at hand will be taken as safe guard from the excess removal. In the Selection Cum Improvement coupe the removal of prescribed yield will be having selection trees in the form of accumulated trees and some balance trees. Therefore the structure and composition of crop is maintained after removal of selected trees and sustainable yield is ensured in perpetuity. Since the number of trees as well as yield is varying, it is not possible to give exact yield for coupe. The yield will be estimated only after carrying out 100% enumeration of the trees above selection girth. The yield will also vary depending upon the site quality accordingly the yield will be calculated.

As the percentage of Teak in the composition of crop is 53%, it is recommended to increase the composition of non Teak crop to increase biodiversity. Hence, no non Teak species should be felled.

SECTION 13: AGENCY OF HARVESTING:

II.13.1. The coupes shall be worked departmentally or through Forest Labourer's Co-operative Societies or JFMCs if felling is in their assigned areas or as per the directives and policies of the Government.

SECTION 14: METHOD OF EXECUTING THE FELLING:

II.14.1. Demarcation:- The main annual coupes due for felling will be demarcated one year in advance except coupe No. I, due for working in which demarcation and marking will be carried out in the same year of felling. Demarcation and marking will be carried out as per the prescriptions in Miscellaneous regulations. The coupes shall be divided into 4 sections for effective control over different operations such as felling, extraction and other operations. In general each section shall not exceed more than 20 Ha. leaving section line between two sections.

II.14.2.Preparation of Treatment Map:- Soon after demarcation of coupes a treatment map will be prepared by the Range Forest officer and it will be verified by the Asst. Conservator of Forests, emphasizing the areas of promising natural regeneration, site suitable for plantation, area suitable for taking up soil and moisture conservation works, protection areas, old plantation areas, areas of water bodies, sample plots for research etc.The treatment map shall be approved by the Deputy Conservator of Forest after through discussion with the Range Forest Officer and the Asst. Conservator of Forests and after field inspections. The treatment map shall be prepared with proper care and after intensive field inspection and all features must be shown on treatment map. The data related to categorisation of A,B,C and D is given in the Appendix No. LII of volume II of this Plan to assist the officer, as ready reference while preparing treatment map for treatment of various types of forests site suitability for different categories given in Appendix No. LII of Volume II of this Plan. The treatment map prepared by the range officer shall indicate the following features :-

TABLE NO. – 68

DETAILS ABOUT VARIOUS TREATMENT TYPES IN SCI WORKING CIRCLE (in ha.)

Working circle	A			B		C + D	Total
	A1	A2	A3	B1	B2		
1	2	3	4	5	6	7	10
SCI	8978.35	2492.84	7954.75	4619.65	3132.01	3601.94	30779.54

NOTE A-1 type Area having more than 25⁰ slope, A-2 type Twenty m. wide strip on both sides of stream, A-3 type Area susceptible to excessive erosion (Very severe), B-1 type Open forests (density < 0.4), B-2 type Under stock Area including blank area. C type Areas having pole crop,D type Areas having density 0.4 and over.

The compartment-wise details about various treatment types in SCI Working Circle is given in Appendix No.LII of volume II of this Working Plan.

TABLE NO. – 69

DETAILS ABOUT THE SITE SUITABILITY FOR DIFFERENT APPLICATIONS IN SCI WORKING CIRCLE (in ha.)

Working circle	Waterbody	Protection areas	Massionary/Cement/Earthen Dam	Bamboo plantation (Seeding)	Percolation tank	Teak plantation	Miscellaneous plantation	Reforestation/Afforestation	Meadow development/aromatic grasses	Gap filling/Enrichment planting	Tending/s election felling	Fodder Improvement	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sci	53.47	17844.21	22.69	1317.50	145.37	652.23	965.53	1016.75	29.69	4676.55	3646.63	408.92	30779.54

The compartment-wise details about the site suitability for different applications in SCI Working Circle is given in Appendix No. LIII of Volume II of this Working Plan.

TABLE NO. – 70

DETAILS ABOUT SOIL DEPTH IN SCI WORKING CIRCLE (in ha)

Working circle	Habitat ion	Shallow to very shallow (<10)	Shallow (10-25)	Moderately deep (25-50)	Deep (50-100 Cm)	Very deep (> 100)	Waterbody	Total
1	2	3	4	5	6	7	8	9
SCI	27.98	1268.40	15660.81	10683.51	1698.59	1323.33	116.92	30779.54

The compartment-wise details about soil depth in SCI Working Circle is given in Appendix No. LIV of Volume II of this Working Plan.

TABLE NO. – 71

DETAILS ABOUT SOIL TEXTURE IN SCI WORKING CIRCLE (in ha)

Working circle	Habitat ion mask	Sandy clay loam	Gravelly sandy loam	Gravelly sandy clay loam	Gravelly clay	Gravelly clay loam	clayey	clay loam	Silty clay	Silty loam	Water body Mask	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sci	28.01	1297.34	7149.10	10015.28	4720.05	3917.57	2059.49	1338.76	0.00	27.91	104.52	121.51	30779.54

The compartment-wise details about soil texture in SCI working circle is given in Appendix No. LV of Volume II of this Working Plan.

TABLE NO. – 72
DETAILS ABOUT THE AREAS PRONE FOR SOIL EROSION IN SCI
WORKING CIRCLE (in ha)

Working circle	Habitat ion Mask	Slight	Slight to moderate	Moderate	Moderate to severe	Severe to very severe	Very severe	Water body Mask	Total
1	2	3	4	5	6	7	8	9	10
SCI	28.04	1272.37	1675.41	25.43	15792.09	11879.18	0.00	107.02	30779.54

The compartment-wise details about the areas prone for soil erosion in SCI Working Circle is given in Appendix No. LVI of Volume II of this Working Plan.

TABLE NO. – 73
WORKING CIRCLE WISE DETAILS ABOUT THE GROUND WATER
POTENTIAL (in ha)

Working circle	Excellent	Good	Moderate	Moderate to poor	Poor	Poor to nil	Habitat ion and Waterbody	Total
1	2	3	4	5	6	7	8	9
SCI	0.00	220.87	1447.86	81.30	28482.90	405.62	14099	30779.54

The Working Circle wise and compartment-wise details about the ground water potential is given in Appendix No. LVII of Volume II of this Working Plan.

1. **Category ‘A’ - Protection area** – It shall include the following area.

- (i) Areas with steep slopes i.e. more than 25⁰.
- (ii) Areas eroded or prone for erosion.
- (iii) Twenty meters wide strip on both sides of water courses and other water bodies.
- (iv) The areas which directly draining into water reservoirs of the irrigation / drinking water projects.

2. **Category ‘B’** - It includes the area with crop less than 0.4 density or total blank areas and the area shall not be less than 2 ha at one place.

3. **Category ‘C’** - Old plantation areas and areas of young pole crop of natural regeneration suitable for retention as future crop included in this category. Old plantations with minimum 30% survival and 1 ha area in extent at one place shall be considered.

4. **Category ‘D’ - well-stocked areas** – The areas having density more than 0.4 shall be considered as well stocked areas.

II.14.3.Treatment: The following treatments are prescribed and adopted for various categories of areas. Any activity that leads to breaking of soil, which result in soil erosion shall be discouraged. The activities of harvesting plantation and other management aspects shall be carried out with no or minimum breaking of soil so that these activities may not result in self creating soil erosion problems. Even any activity resulted in soil erosion shall be contained by taking up appropriate soil and moisture conservation measures.

1. Category ‘A’ area- No felling is prescribed. Appropriate soil and moisture conservation works along with gap planting and seeds dribbling shall be taken up in under stocked areas. The plantation areas may vary between 5 to 10 ha.

2. Category ‘B’ area- (i) All dead trees shall be removed, except 2 per ha. which acts as snags and dens for wildlife. (ii) Teak and miscellaneous species shall be planted as per the suitability of site.

3. Category ‘C’ area- (i) No Plantation will be done in these areas. (ii) Marking for thinnings to bring the spacing as per Stand Table.

4. Category ‘D’ area- (i) Felling shall be as per the marking rules. (ii) No plantation in these areas.

II.14.4. Marking Rules:- Marking shall be carried out by a Range Forest Officer under the close supervision of Asst. Conservator of Forests with the guidance of Dy.Conservator of Forests. The Dy. Conservator of Forests will inspect personally as

many coupes as possible and impart proper guidance to the staff so as to avoid any deviations of prescriptions of the treatments.

1. All climbers except that of NTFP importance shall be cut.
2. The trees of exploitable and above girth shall be marked depending upon their silvicultural availability.
3. No tree shall be marked unless it is silviculturally available i.e. the removal shall not create a permanent gap lead to any kind of soil erosion, shall create appropriate gap for improvement of young seedlings of natural regeneration and alternate tree for seed source shall be available.

II.14.5. Category wise marking rules are as follows :-

1. Category ‘A’ – (i) No marking except dead trees and leaving two trees per Ha. as snags and dens for wild life in these areas. (ii) Site suitable soil and moisture conservation works based on micro watershed aspects. (iii) Gap planting and seed sowing with suitable species.

2. Category ‘B’ areas – Felling, marking if necessary shall be carried out as per the marking rules given below.

- (i) All dead trees shall be marked for felling, except two trees per ha.
- (ii) All live high stumps shall be cut closed to the ground and properly dressed.
- (iii) Malformed seedlings shall be cut back and most promising coppice shoots shall be retained one per stool.
- (iv) The unwanted growth hindering the growth of seedling regeneration of desired species shall be removed.
- (v) The gaps of 5 to 10 ha. planted by gap planting with suitable species of 50% Teak and 50% miscellaneous.

3. Category ‘C’ areas –

- (i) No plantation shall be done in these areas.
- (ii) All the dead, diseased and malformed trees shall be marked for thinning.

- (iii) Congested young poles of natural regeneration will be marked for thinning to ensure approximately 1/3rd spacing of the crop height.
- (iv) The multiple poles shall be reduced to 1 per stool retaining the most vigorous one in old plantation and young pole crops. The thinning in old plantations shall be carried out as per the principles of stand table. The following principles shall be applied while carrying out thinning in old plantations.
 - (a) The age and site quality of the crop shall be ascertained.
 - (b) Wedge prism of suitable factor (Generally for young and middle age crop the prism with form factor- 1 is convenient) shall be used and basal area per Ha. of the crop is obtained by averaging 3 to 4 counts at various representative sites.
 - (c) The basal area as obtained shall be compared with the basal area given in the Stand Table and if the basal area more than that of given in Stand Table for corresponding age and site quality, the crop is suitable for thinning.
 - (d) After following above mentioned procedure, the additional basal area required to be removed from those girth classes which are having more number of trees as compared to the Stand Table.
 - (e) The marking for thinning is done accordingly. For cross checking the basal area of thinned crop shall be obtained and again the basal area is to be calculated with the help of wedge prism. Care shall be taken to remove the poles of coppice origin first while retaining the poles of seedling origin.

4. Category 'D' areas – In this category of area the marking for felling shall be carried out as per marking rules.

- (i) All climbers except that of NTFP importance shall be cut.
- (ii) Multiple coppice shoot or poles crop shall be marked to reduce one per stool retaining most promising one.

- (iii) Species of Non Wood forest value such as Hirda, Kulu, Behda, Moha, Tendu, Salai etc. and fruit yielding species shall not be marked for felling.
- (iv) All dead, dying, malformed, diseased trees shall be marked for felling. Malformed tree having straight clear bole exceeding 2.5 meters in height from the ground level will not be felled. A malformed tree with badly shaped and defective stems occupying more space than its future value warrants.
- (v) The Teak trees preferably of coppice origin and that of harvestable girth and above shall be marked for felling as prescribed in Miscellaneous Regulations. Those harvestable Teak trees, which are preventing the development of the seedling regeneration of the desired species, will be removed in preference to others. It is prescribed that 50 % of all the Teak trees of harvestable girth and above, which are silvi-culturally available shall be marked for felling. The sound Teak trees of seedling origin shall be retained first.
- (vi) The felling of trees from the highest girth class to the next lower girth class. Due care should be taken to remove Teak trees of coppice origin in preference to Teak trees of seedling origin as far as possible.
- (vii) No sound miscellaneous trees including the trees, which yield edible fruits, and important Non-Wood Forest Produce shall be marked for felling so as to improve the stock of miscellaneous species in the forests.
- (viii) All dead trees will be marked for felling retaining two per Ha. which will act as dens and snags for wild life.
- (ix) The unwanted undergrowth which is preventing or likely to prevent the establishment and development of seedling regeneration of the desired species, will be removed.

SECTION 15: SOIL AND MOISTURE CONSERVATION WORKS:

II.15.1. The areas of Akola Forest Division are very much prone for soil erosion, due to the nature of terrain and the area is drained by numerous water courses. The activities carried out for forest management especially protection measures, harvesting,

plantation, etc. may lead to breaking of soil result in soil erosion either directly or indirectly. Recurrent fires, heavy biotic pressure and cattle movement lead to the compaction of soil and resulting into poor soil aeration and poor drainage. To encourage natural regeneration and to make site conditions conducive for seedling establishment, soil and moisture conservation measures (nala bunding, inverted bandharas, cement plugs etc.) have been prescribed. Treatment of nalas shall be on the basis of micro-watershed, nala bunding and gully plugging shall be from top to bottom. The soil and moisture conservation measures shall be undertaken in the upper reaches and undulating areas preferably.

SECTION 16: SUBSIDIARY SILVICULTURAL OPERATIONS:

These operations shall be carried out in the subsequent years of the main felling. These works will be carried out departmentally as given below :-

II.16.1. CBO:- The cutting back operations will be carried out in the next year of the main felling. The following operation shall be carried out :-

1. Climber cutting except those of NTFP value over entire coupe area.
2. All standing trees marked for felling but not felled shall be felled.
3. All damaged trees are not likely to recover shall be cut.
4. All malformed advanced growth shall be cut.
5. All unwanted growth of interfering species or likely to interfere with the growth of Teak and valuable miscellaneous species shall be cut.
6. All established multiple coppice shoots or poles shall be reduced to one per stool retaining the most promising one.

II.16.2. Cleaning :- cleaning shall be carried out in the 6th year of the main felling. The following operations shall be carried out.

1. All climbers except those of NTFP value shall be cut in entire area of the coupe if necessary.

2. Damaged and malformed seedlings shall be cutback.
3. Multiple coppice shoot shall be reduced to one per stool or removed if it is found interfering with the establishment of natural regeneration of seed origin.
4. The established natural regeneration of Teak and miscellaneous species shall be thinned for appropriate spacement.
5. All Miscellaneous species including undesirable undergrowth interfering or likely to interfere with the growth and development of seedling of Teak and other valuable species (including medicinal and NWFP) will be cut back.

II.16.3. Thinning:- In natural regeneration thinning shall be carried out to create appropriate spacement of better growth of young poles. Thinning in those areas shall be carried out in such a way, so that 1/3rd spacement of the crop height shall be retained between two adjoining poles. In plantations 1st and 2nd thinnings are mechanical thinnings if the survival percentage in the plantation is more than 80% and these thinnings will be carried out in the 11th and 18th year of the planting respectively. Silvicultural thinning shall be carried out in the 25th and 35th year of planting. These thinnings are based on the principles of Stand Table as given in Miscellaneous Regulations.

SECTION 17: REGENERATION: There are two ways of obtaining regeneration **1.** Natural regeneration **2.** Artificial regeneration.

II.17.1. Natural Regeneration:- Natural regeneration is the best source of getting growing stock provided there is ample regeneration in such areas. Whatever natural regeneration is available it should be well protected and tended. The position of natural regeneration in this division is not satisfactory, due to bad edaphic conditions, biotic interference, frequent fires and environmental conditions. Therefore the young recruits of seed origin, though noticed in some patches of forests of both Teak and miscellaneous species, most of these seedling usually die before getting established.

The worst enemies of natural regeneration are fire and weed growth. The weed growth is one of the serious obstacles in establishment of natural regeneration as it is observed. In these forest areas Lantana especially in Alegaon and Patur ranges spreads like a dangerously weed in many compartments which cause lot of hindering for the growth and establishment of young regeneration. In such areas of natural regeneration of Teak and other species can be secured only by means of systematic weeding in first rainy season and continued here after until the plants are free from the suppressions. Akola forest area generally with less numbers of rainy days and having average annual rain fall of 810 mm. In these areas fire incidences are frequent and the Teak seedlings have suffered to a great extent because of repeated fires.

- (I) The areas of natural regeneration shall be identified and demarcated properly. These areas are rigidly protected from fire incidences through a rigid fire protection scheme applicable to current coupe of working. Most of the areas where the teak is seen lying underground could be induced by opening unwanted undergrowth cutting and burning of undergrowth completely. The seedling which spring up is abundance after cleaning and burning and are to be weeded from the beginning itself and the weeding shall be continued for three years till the plants are established. Wherever Lantana is present, there the weeding out of Lantana will be carried in favour of establishment of natural regeneration successively upto 3rd year.
- (II) Coppice shoots interfering with natural regeneration shall be removed where the natural regeneration is established.
- (III) The natural regeneration should be cleared-off weeds within a diameter of one meter. Mulching should be done by spreading around seedling, the twigs and debris to the extent of 15 cm. layer followed by a layer of leaves burnt-up material and sufficient earth over it (about a Ghamela). This type of arrangements will facilitate protection from fire drips from the near by undergrowth and lead to mulching. In the case of natural regeneration misc. species like Ain, Bija, Haldu, Tiwas etc. shall be protected rigidly from fire and

other biotic interferences. Weeding and soil working shall be carried out at least for 3 years till the establishment of seedlings.

II.17.2. Artificial Regeneration : - Supplemented to the natural regeneration, artificial regeneration with suitable species is prescribed as per the soil condition and choice of local people.

1. Choice of Species :- The choice of species shall be based on site condition and preference of local people. Naturally occurring in those areas, fodder species, fruit species and species of non wood forest produce shall be preferred. Some of the indigenous species and preferred species are Arjun, Bel, Behda, Bamboo, Chinch, Dhawada, Jamun, Apta, Anjan, Moha, Bija, Hirda, Kulu, Shivan, Tiwas Ber, Amba etc. In the plantation 50 % teak about 20 % fruit and fodder species and 30 % of other species shall be planted in such a way that it tends towards natural species distribution. Teak will be planted with stumps or poly pot seedlings or root trainer seedlings, based on the performance in the adjoining similar areas. Bamboo can be planted along the nalas and moisture areas at a spacement of 6 x 6 mtr. and species like Jamun, Arjun with a spacement of 3 x 3 mtr. In open and blank areas plantations shall be taken up at the spacement of 2 x 2 mtr. In C and D type of areas no plantation shall be taken up. While taking up plantation existing rooted stock and natural regeneration shall be considered to decide, how many plants required to be planted per ha.

II.17.1.2.1. PRE-PLANTING OPERATIONS: The PPO will be carried out one year before the actual planting works are to be taken. The nursery stock should be raised and tended with great care so that the seedling of various species grow into healthy and hardy planting stock and attains sufficient height when planted out. The seeds obtained for raising nursery stock shall be from known source specially from the plus trees of high forest. Various operations of pre-planting, planting and post-planting have been discussed in details in Artificial regeneration in miscellaneous regulations.

II.17.1.2.2. FIRST YEAR OPERATION :

1. PLANTING : Planting shall be completed within a fortnight from the out break of monsoons. The teak seedlings or stumps shall be planted after first monsoon showers. The polypot plantation will be taken in case of miscellaneous species.

2. WEEDING AND CASUALTY REPLACEMENT:

i. The weeding shall be done in the first year as per the following scheduled.

Ist weeding : by end of July

IInd weeding : by beginning of September

III rd weeding : by mid of October.

ii. Casualty replacement shall be carried out alongwith Ist weeding if required. The Natural regeneration is properly tended as prescribed in section 16.1 of the same chapter.

II.17.1.2.3. SYO AND TYO : In the second year of plantation casualty replacement should be carried out immediately after the on set of monsoon and having sufficient rainfall before mid-July. During second year two weedings, one by end of August and other is by end of October shall be carried out. Mulching shall be done alongwith second weeding. During the time of second weeding mulching with leaves is preferable, especially leaves of leguminous species, which will facilitate recycling of the nutrients in the soil. Effective mulching will be associated in reduction of sub-soil moisture loss and it will facilitate in reducing the evapo- transpiration.

In IIIrd year weeding shall be carried out in the month of September alongwith soil working. One more soil working shall be carried out in the month of October for proper retention of soil moisture. In both these years natural regeneration shall be properly tended as given in section 16.1. In the IIIrd year of the plantation cleaning shall be carried out. Coppice shoots of teak will be removed if AR and NR are successful, otherwise coppice shoots will be cutback to reduce one well growth coppice

shoot per stool. The established advanced growth if any in that area of teak and other valuable species will be spaced out suitably.

SECTION .18. OTHER REGULATIONS :-

(I) FIRE PROTECTION :- The main felling coupes and plantation sites shall be fire traced and rigidly protected from fire. These areas will remain closed for grazing for a period of five years from the main felling. In the month of October/November after the fire tracing is over all the undergrowth of lantana will be cut. The area shall be cleared off all the dry and cut bushes, leaves etc. by end of February to avoid fire hazard to well growing crop, NR and AR. Effective protection shall be ensured against fire during the fire seasons so that the survival and establishment of the seedlings for development in future growing stock can be achieved.

(ii) Fire protection shall be achieved successfully by involving the members of Joint Forest Management Committee. Therefore the Dy. Conservator of Forests shall involve the active participation of Joint Forest Management Committee members by means of continuous persuasion. To ensure effective fire protection the workable fire protection scheme should be chalked out in which huge share of people (Joint Forest Management Committee members) those who have effectively protected forest from fire shall be given. A meaningful participation and modalities shall be worked out to protect forest from fire and impart training to members of JFM Committee shall be one of the important responsibilities of Dy. Conservator of forests concerned.

The techniques of fire protection will be adopted as given in Chapter No. XII : Forest Protection in the tract. The forests of Akola are very much prone for fire hazard and NR of species being is biggest casualty due to fire. This economic source of regeneration should rigidly be protected from fire so that the productivity of the crop can be enhanced. A comprehensive fire protection scheme shall be chalked out so that effective fire fighting force created for protection of forest for the period from 15th February to 15th June and 24 hours duty on the suitable area from where areas can be tackled easily in protecting fires.

(II) GRAZING :-

A. CLOSER TO GRAZING AND RAISING FODDER :-

The areas of main felling coupe shall remain closed to grazing for five years from the year of main planting. While taking up plantation in the understocked areas, Palatable fodder grasses, suitable for that area will be sown or planted by tussocks so that a palatable grasses will be available at the end five years for the cattle and the coupes shall be opened for grazing. The villagers will have enough fodder for their cattle on rotational harvest basis from such coupes. The rotational harvest or grazing will facilitate the opening up of area on rotational basis. The closed areas should specially be mentioned in the grazing licence and the villagers shall be communicated of such closers by suitable means such as drum beating, notices at common places, village panchayat places, panchayat offices etc.

CHAPTER NO. III

WORKING PLAN FOR AFFORESTATION WORKING CIRCLE

SECTION 1. INTRODUCTION :-

III.1.1 In this working circle, the forest areas included are open, degraded, understocked and at some places with blank patches. Regeneration and improvement of existing vegetation of highly eroded and degraded areas in the dry zone have been a difficult and a challenging task due to infertile soils, inadequate rainfall, inhospitable climate conditions and biotic interferences.

III.1.2 There is a wide range of variation in the nature of properties and potentialities of soils with different texture, structure and depth. The existing techniques of afforestation could not be applied uniformly throughout forests. The Trench Cum mount (T.C.M.) for the protection of plantation from cattle as well as wild animals could not give encouraging results in this working circle. It has been experienced that no single species nor any particular technique could be uniformly applied to all these areas. The afforestation techniques and selection of species should always be in relation to the potentiality of soil. In afforestation generally the number of seedlings to be planted suggested are 2500 per Ha. which may vary depending upon the afforestation scheme. There are many seedlings could not establish in moisture deficient dry zone like Akola forests areas. In such dry zones, soil moisture is one of the most important limiting factors for the establishment of seedlings and success of plantation. While taking up plantation in such dry zones one should judiciously select the type of species suitable in afforestation. Usual practice of planting 2500 seedlings per Ha. without considering local factors like rainfall, range of temperatures and evapo-transpiration, tend to lead over stocking of plantation and ultimately results in competition for soil moisture and nutrients and the end results could be natural thinning and growth retardation.

III.1.3. For judicious selection of number of species per Ha. a new concept of the Ecological Index has been adopted. The concept of Ecological Index dictates the number of seedlings that can be sustained by the existing eco-zone. By keeping Ecological Index, as a concept for deciding number of seedlings per Ha. in a particular site, the Working Circle has been revised and prescriptions are given accordingly. The basic approach before taking up plantation is intensive soil and moisture conservation measures, such as gully plugging, nala bunding, inverted bandhara etc.

III.1.4. Massive Afforestation Programme has been launched in this Division since 1987, in which afforestation techniques have been described in Sarwate Committee's Report, according to this report the number of seedlings to be planted is based on the soil depth only. However in Sarwate Committee's Report, other local factors like temperature, rainfall, number of rainy days, rate of evapo-transpiration were not considered.

In order to decide how many plants are to be planted in a particular area by considering local factors apart from edaphic factors, the following formula was evolved by Cindel :-

$$\text{Ecological Index} = \frac{P \times D}{\text{Tr.} \times \text{Ept.}}$$

Where

P = Annual precipitation in mm

D = No. of rainy days in a year.

Tr = Range of maximum temperature averages.

Ept = Potential Evapo- transpiration in mm.

In the afforestation in a particular area, it would be much more appropriate to plant number of seedling which a site can sustain, in proportion to Ecological Index of the area. More over planting of seedlings according to Ecological

Index will not alone serve the purpose unless it is coupled with intensive soil and moisture conservation works, so that the entire precipitation is properly harvested. There are number of models available for soil and moisture conservation works like gully plugging, nala bunding, etc in afforestation programme without consideration the effectiveness of such structures in harvesting annual precipitation.

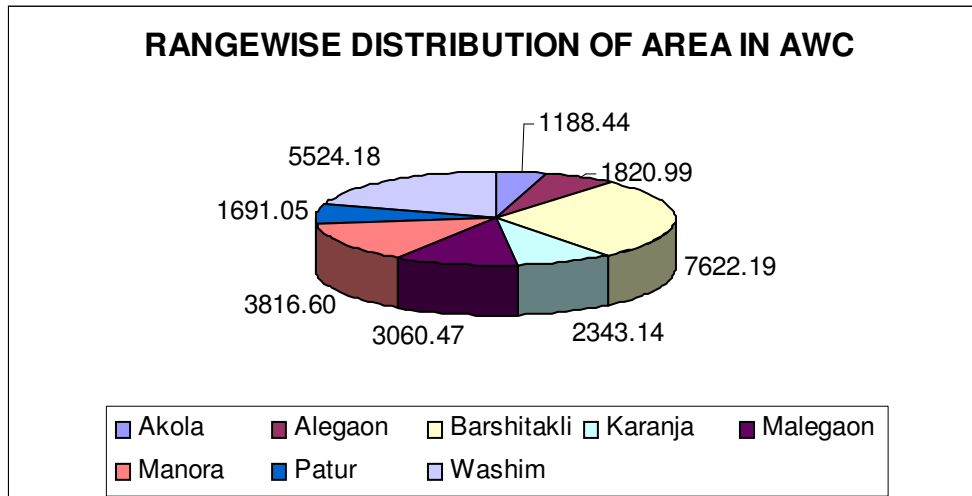
SECTION 2. GENERAL CONSTITUTION :-

III.2.1 This Working Circle includes about 27067.06 Ha. forest area. In general the areas included in this Working Circle are having less than 0.4 density. The categories of the areas included in this working circle are

- I. Areas managed under Coppice With Reserve system.
- II. Majority of 'C' class forests outside catchment area
- III. Areas included under Afforestation working Circle in Thengdi's Plan.

TABLE NO. – 74
RANGEWISE AND CATEGORYWISE DISTRIBUTION OF AREA IN
AFFORESTATION WORKING CIRCLE

Sr. No.	Range	Area of Range	Area allotted (ha.)					% to the area of the Range	% to the area of WC
			RF	PF	AQUI-RED LAND	U/F	TOTAL		
1	Akola	4421.21	1083.75	0.00	0.00	104.69	1188.44	26.88	4.39
2	Alegaon	11614.98	1064.51	697.01	59.47	0.00	1820.99	15.68	6.73
3	Barshitakli	14132.43	7387.91	0.00	0.00	234.28	7622.19	53.93	28.16
4	Karanja	9067.57	2343.14	0.00	0.00	0.00	2343.14	25.84	8.66
5	Malegaon	11736.65	498.16	0.00	0.00	2562.31	3060.47	26.08	11.31
6	Manora	14659.37	3738.60	0.00	0.00	78.00	3816.60	26.04	14.10
7	Patur	8923.33	1152.46	538.59	0.00	0.00	1691.05	18.95	6.25
8	Washim	6454.07	3281.46	0.00	0.00	2242.72	5524.18	85.59	20.41
	Total	81009.61	20549.99	1235.60	59.47	5222.00	27067.06	33.41	100.00



SECTION .3. GENERAL CHARACTERS OF VEGETATION :-

III.3.1. The main species in this forest areas allotted to working circle Teak (*Tectona grandis*) and it is found with its natural associates like Salai, Dawada, Moyan, Tiwas, Khair, Mokha, Gurguti, Char, Tendu, Ain, Anjan, etc. These areas in general are open understocked and at some places with blank patches. The site quality is confirmed to IVb. The density of the crop is less than 0.4, however, some of the better stocked patches are also noticed in some compartments. The soils of these areas are compact with little or no sub-soil moisture and highly impoverished due to heavy biotic pressure. The status of natural regeneration is poor and at some places, young recruits of Teak, Ain, Dhawada, are observed, but most of the young seedlings will die back without getting established. These forests greatly suffered from excessive biotic pressure, lack of appropriate protection, non-conducive soil and climatic conditions, which resulted in degradation of forests and poor natural regeneration.

SECTION .4. SPECIAL OBJECTS OF MANAGEMENT :-

III.4.1. The special objects of management, which govern the constitution of working circle, are as follows :-

1. To check further degradation of area and to increase vegetation cover in the area.
2. To improve the crop quality and composition
3. To meet the local demands for fuel-wood, fodder and small timber .

4. To provide the means of livelihood to the local people by improving the availability of non wood forest produce and employment opportunities.
5. To improve the site quality through soil and moisture conservation measures.

SECTION .5. BLOCKS AND COMPARTMENTS :-

III.5.1. The compartments allotted to this working circle are given in the following table. Different compartments and felling series proposed in this working circle is given in Appendix number XLIIb of volume II of the Plan.

TABLE NO. – 75

**ALLOTMENT OF COMPARTMENT TO VARIOUS FELLING SERIES IN
AFFPRESTATION WORKING CIRCLE**

Sr. No	Range		Felling Series	Comptt. No.	Total Area of F.S. (ha.)	Total Area allotted from each Range
1	Akola	1	ALEGAON(pt.)	386	7.60	1188.44
		2	KHERDA(pt.)	C64, C65, C66, C64b, C63.	447.94	
		3	PATUR(pt.)	C86, C65b, C19, C17, C18, C1, C16, C2, C3, 710, 705.	732.90	
2	Alegaon		ALEGAON (pt.)	12b, 13b , 14b, 18, 24b, C162, C201, C-202, C203, C204, C205, C206, 744.	1123.98	1820.99
		4	SAWERKHED(pt.)	703	697.01	
3	Barshitakli		ALEGAON (pt.)	C198, C199, C200.	91.36	7622.19
			KHERDA(pt.)	C59, C58, C60, C42, C44, C43, C44b, C35, C36, C37, C38, C39, C34, C31, C29b, C32, C33, C30, C29.	940.33	
		5	LOHGAD	84, 85, C73, C72, E119, C79, C74, C75, C76, C77, C78, C80, C67, C68, C70 C71, 707.	1691.76	
		6	MAHAN(pt.)	133, 134, 128b, 129b, 132, C69.	1454.39	
		7	PANGRA(pt.)	171	49.85	
			PATUR(pt.)	C26, C27, C28, C85, C84, C22, C23, C87.	664.28	
		8	PINJAR	C208, C211, C193, C51, C45, C192, C212, C46, C47, C48, C49, C50, C52, C53, C209, C210, C25.	1533.45	
		9	Rajankhed(pt.)	80, 81a, 81b, 81c, 82, 83, 706, 708, 709.	1177.71	
		10	SHIRPUTI(pt.)	C81, C82, C83.	19.06	

Sr. No	Range		Felling Series	Comptt. No.	Total Area of F.S.	Total Area allotted from each Range
4	Karanja	11	KARANJA(pt.)	C115, C213, C117, C122, C166, 424, 23, 224, 225, 226, 412, 412a.	603.63	2606.59
			KHERDA(pt.)	C40, C41	259.25	
			Rajankhed(pt.)	C88, C89, C90, C91, C92, C93, C94, C95.	269.08	
		12	SAWERGAON(pt.)	C156, C155, C152.	843.16	
		13	SHENDURJANA(pt.)	C157, C153, C154.	223.93	
			SHIRPUTI(pt.)	C217, C218b, C173, C174.	228.55	
			MAHAN(pt.)	121b, 122b, C40b	178.99	
5	Malegaon		ALEGAON (pt.)	E107, E108, E109, E112, E114, E115, E125, E126.	475.45	3060.47
		14	MALEGAON(pt.)	E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14, E15, E16, E17, E18, E19, E20, E21, E22, E23, E24, E25, E26, E27, E28, E29, E30, E31, E32, E33, E34, E35, E36, E37, E38, E39, E40, E41, E42, E43, E44, E45, E46, E47, E48, E49, E52, E53, E54, E55.	1444.05	
			PANGRA(pt.)	E99, 37, 38, 51, E100, E101, E102, E103, E105, E106, E118.	1019.20	
			Rajankhed(pt.)	E120, E121, E122, E123.	121.77	
			6	Manora	KARANJA(pt.)	
15	MENDRA	C207, C142.	1467.85			
	SAWERGAON(pt.)	140b, C147, C148	375.00			
		SHENDURJANA(pt.)	C151, C139, C214, C158, C142, C54, C55, 712.	1162.10		
7	Patur		PANGRA(pt.)	61a, 61b, 63b, C172, C195, C196, C197, C-188.	786.86	1691.05
			SAWERKHED(pt.)	701, 702, 62a, 62b.	904.19	
8	Washim	16	ANSING	157, C178, C179, C175, C176, C177, E71, E72, E73, E74, E75, E76, E77, E78, E79, E80, E81, E82, E83, E84, E85, E86, E87, E89, C107, E95, E96, E97, E98, E124.	1712.95	5260.73
			MALEGAON(pt.)	711, E50, E51, E56, E57	135.89	
		17	RISOD	209, 210, 211, 212, 187.	1593.70	
			SAWERGAON(pt.)	E90, E91, E92, E93, E94.	448.54	
			SHIRPUTI(pt.)	C218, E58, E59, E60, E61, E62, E63, E64, E67, C180, E65, C184, E68, E69, E70	1369.65	
		17	Felling Series		27067.06	27067.06

SECTION .6. ANALYSIS AND VALUATION OF THE CROP :-

III.6.1. The existing stock maps have been updated and stock is assessed with the help satellite imagery with adequate ground truth verification. It is also assessed with the help of satellite imagery of LISS – III of Nov. 2007 and the analysis carried out with the help of R.R.S.S.C. Nagpur. The enumeration survey of forest crop has been carried out by the SOFR unit Amaravati and the analysis of the enumeration data has been done by Chief Statistian of office of the Principal Chief Conservator of Forests M.S. Nagpur and the results of enumeration is given in the following table :-

TABLE NO. – 76

ENUMERATION DATA (GIRTH CLASSWISE) IN AFFORESTATION WORKING CIRCLE

Sr. No.	Girth Class in cm	Teak			Others			Total	
		No.	%age wrt Total Teak spp.	%age wrt Total stock	No.	%age wrt Total Misc. spp.	%age wrt Total stock	No.	%age wrt Total stock
1	15-30	30	43.48	14.42	69	49.64	33.2	99	47.60
2	31-45	21	30.43	10.1	36	25.90	17.3	57	27.40
3	46-60	10	14.49	4.81	17	12.23	8.17	27	12.98
4	61-75	6	7.25	2.4	8	5.76	3.85	13	6.25
5	76-90	2	2.90	0.96	5	3.60	2.4	7	3.37
6	91-105	1	1.45	0.48	2	1.44	0.96	3	1.44
7	106-120	0	0.00	0	1	0.72	0.48	1	0.48
8	121-135	0	0.00	0	1	0.72	0.48	1	0.48
9	136-150	0	0.00	0	0	0.00	0	0	0.00
10	151 above	0	0.00	0	0	0.00	0	0	0.00
		70	100.00	33.17	139	100.00	66.82	208	100.00

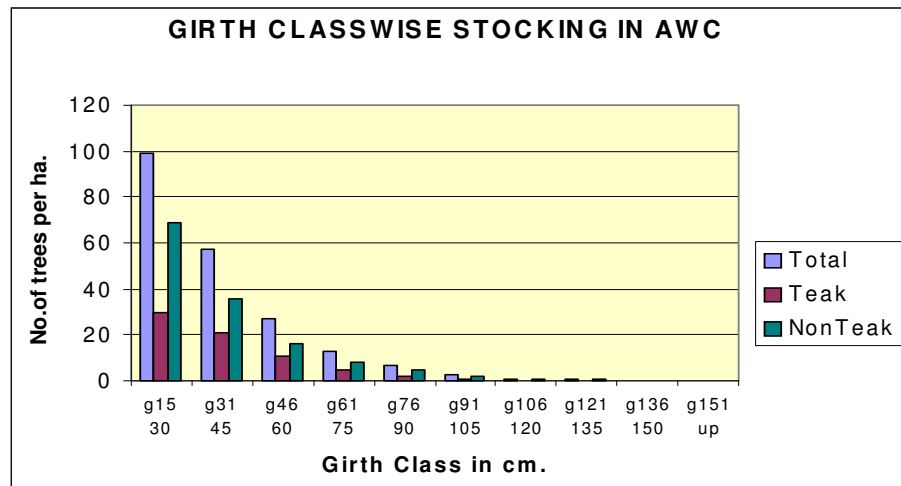
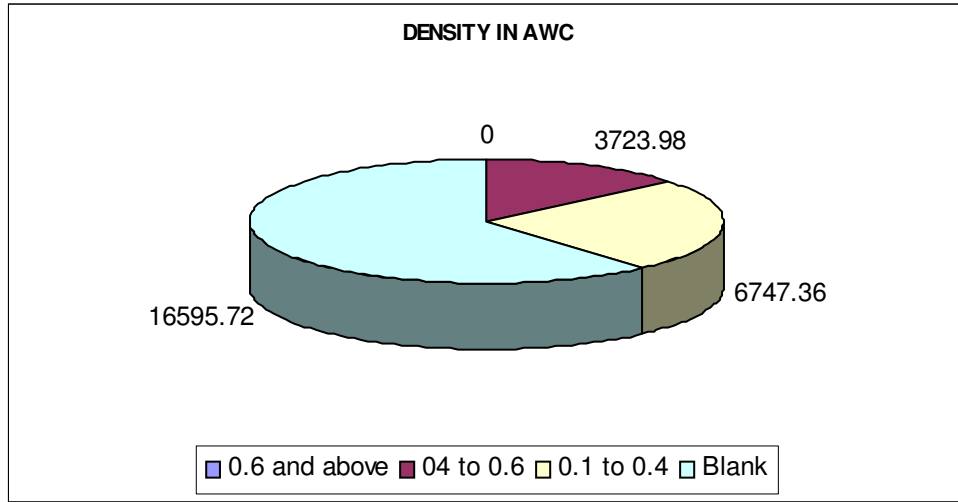


TABLE NO. – 77

DENSITYWISE AREA IN AWC WORKING CIRCLE

Sr. No.	Working Circle	Area Percentage	Total Area in ha.	Density Percentage to the W.C. area			Blank
				0.6 and above	0.4 to 0.6	0.1 to 0.4	
1	Afforestation Working Circle	33.41	27067.06	0.00	3723.98	6747.36	16595.72
			100	0	13.76	24.93	61.31



SECTION .7. SILVICULTURAL SYSTEM :-

III.7.1. The important limiting factors for the establishment of seedlings in this areas are insufficient sub-soil moisture, highly compact soil structure and heavy biotic pressure. Top soils have been washed away in a vast area, Since there is no sufficient vegetation and as a result of which most of the areas do not have adequate soil support, soil depth and porosity to support the tree crop, therefore improvement of soil conditions through intensive soil and moisture conservation measures is prescribed. Improvement of existing growth through tending operation to restore of existing stock in the area and afforestation of areas with suitable species are prescribed. Most of the forest area is undulating and degraded without the adequate soil to support vegetation. Afforestation of these areas shall be considered on the basis of Ecological Index to derive number of plants per ha. in a particular area.

As per the observations the earlier efforts of afforesting these areas have failed to a large extent and appropriate care is expected to afforest these areas. The areas should be treated with intensive soil and moisture conservation measures and site

specific treatment plans required to be prepared keeping in mind about the site condition, therefore for the purpose of afforestation treatment in this areas is in two phases.

A) Phase – I :- Restorative Phase :

This phase lasts for minimum one year. Survey and demarcation, soil and moisture conservation measures alongwith complete protection by live hedge fencing or barbed wire fencing should be undertaken. Nala bunding works, gully plugging, inverted bandara and other appropriate soil and moisture conservation measures shall be taken up on watershed basis i.e. ridge to valley approach. Based on the conditions in rooted stock singling and cut back operations shall be carried out in order to improve the rooted stock, available in the area. The models of soil and moisture conservation works shall be taken into consideration as given in Miscellaneous Regulations. The soil and moisture conservation works shall be carried out alongwith the marking and be completed before on set of monsoon.

A) Phase – II :- Productive Phase :

The duration of phase -II shall be of 5 years. The Range officers shall inspect the area completely and prepare the treatment map in the 2nd year. Minor repairs of soil and moisture conservation works shall be under taken if necessary or the P.P.O/PYO operations shall be taken up in 2nd year. The Range officer shall prepare the treatment map indicating the features of crop density, soil type, topography and natural regeneration areas of one Ha. at one place. The treatment map shall indicate about the treatment proposed to be given gridwise and species selection shall be purely on the basis of suitability of site and to be decided in consultation with the local people, especially the members of Joint Forest Management Committee. Joint Forest Management Committee members shall be motivated and involved in raising the successful plantation with their active participation. First preference shall be given to naturally regenerated species seedlings and tending operations shall be taken up to obtain healthy natural regeneration crop and it may be supplemented with Artificial regeneration. The number of plants per Ha. including natural regeneration and artificial regeneration shall be based on Ecological Index i.e. total number of plants as per

Ecological Index per Ha is to be decided by considering existing number of naturally regenerated species and species to be planted. Proper managerial inputs shall be (soil working, mulching, fertilizer application, better nursery stock etc.) applied to each seedling rather than planting more number of seedlings. Artificial regeneration activities shall not be taken up in those areas in which the established regeneration is adequately available and the results of seed sowing is excellent.

SECTION .8. CHOICE OF SPECIES :-

III.8.1. The choice of species is depending upon site conditions and local requirements.

SECTION .9. FORMATION OF COUPES AND PLANTATION SERIES :-

III.9.1. The entire working circle is divided in to 17 Felling Series and each felling series shall consists of 20 coupes. The details are given in Appendix No.XLII b of volume II. The coupe shall be laid in such a way so that equal area is made available for each year of afforestation.

SECTION .10. REGULATION OF YIELD :-

III.10.1. Since most of the area is degraded no appreciable yield will be realized.

SECTION .11. IMPLEMENTING AGENCY :-

III.11.1. All prescribed operations will be implemented departmentally including plantation works.

SECTION .12. METHOD OF EXECUTING THE WORK :-

III.12.1. Demarcation :- Annual coupes shall be demarcated one year in advance except coupe no.I, which will be demarcated and marked in the same year of main operation.

III.12.2. Preparation of the treatment map :- As soon as the demarcation is over, a treatment map will be prepared by the range officer and it shall be verified by the A.C.F. with an emphasis of the suitability of sites for plantation, as well as the

promising nature of the regeneration areas. The indicator data for all compartments showing A,B,C and D type areas alongwith the extent of area have been given in Appendix LII of Volume II of the present Plan and the officer while preparing treatment map can use the indicator data for guidance. The treatment map will show the contours alongwith important features like nala, streams and other protected areas. The treatment map will distinctively indicate the following categories of areas :-

TABLE NO. – 78

**DETAILS ABOUT VARIOUS TREATMENT TYPES IN AFFORESTATION
WORKING CIRCLE (in ha)**

Working circle	A			B		C + D	Total
	A1	A2	A3	B1	B2		
1	2	3	4	5	6	7	10
AWC	2760.91	2285.05	6207.37	3388.18	10357.19	2068.36	27067.06

NOTE A-1 type Area having more than 25° slope, A-2 type Twenty m. wide strip on both sides of stream, A-3 type Area susceptible to excessive erosion (Very severe), B-1 type Open forests (density < 0.4), B-2 type Under stock Area including blank area. C type Areas having pole crop D type Areas having density 0.4 and over.

The compartment wise details about various treatment types in Afforestation working circle is given in Appendix No.LII of Volume II of this Working Plan.

TABLE NO. – 79

**DETAILS ABOUT THE SITE SUITABILITY FOR DIFFERENT APPLICATIONS IN
AFFORESTATION WC. (in ha)**

Working circle	Waterbody	Protection areas	Massionary/Cement/Earthen Dam	Bamboo plantation (Seeding)	Percolation tank	Teak plantation	Miscellaneous plantation	Reforestation/Afforestation	Medow development/aromatic grasses	Gap filling/Enrichment planting	Tending/selection felling	Fodder Improvement	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
AWC	368.56	9005.97	160.68	1417.93	1168.70	1208.65	3376.57	4607.04	18.80	3407.29	1898.79	428.08	27067.06

The compartment wise details about the site suitability for different applications in Afforestation Working Circle is given in Appendix No.LIII of Volume II of this Working Plan.

TABLE NO. – 80**DETAILS ABOUT SOIL DEPTH IN AFFORESTATION WORKING CIRCLE.**

(in ha)

Working circle	Habitat ion	Shallow to very shallow (<10)	Shallow (10-25)	Moderately deep (25-50)	Deep (50-100 Cm)	Very deep (> 100)	Waterbody	Total
1	2	3	4	5	6	7	8	9
AWC	81.30	1406.09	14144.57	6196.07	2100.73	2745.52	392.78	27067.06

The compartment wise details about soil depth in Afforestation Working Circle is given in Appendix No. LIV of Volume II of this Working Plan.

TABLE NO. – 81**DETAILS ABOUT SOIL TEXTURE AFFORESTATION WORKING CIRCLE.**

(in ha)

Working circle	Habitat ion mask	Sandy clay loam	Gravelly sandy loam	Gravelly sandy clay loam	Gravelly clay	Gravelly clay loam	clayey	clay loam	Silty clay	Silty loam	Water body Mask	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
AWC	115.13	2125.10	3100.64	4441.88	3173.86	6690.05	5401.46	1525.14	82.16	86.31	222.61	102.72	27067.06

The compartment wise details about soil texture Afforestation Working Circle is given in Appendix No. LV of Volume II of this Working Plan.

TABLE NO. – 82**DETAILS ABOUT THE AREAS PRONE FOR SOIL EROSION IN AFFORESTATION WORKING CIRCLE. (in ha)**

Working circle	Habitat ion Mask	Slight	Slight to moderate	Moderate	Moderate to severe	Severe to very severe	Very severe	Water body Mask	Total
1	2	3	4	5	6	7	8	9	10
AWC	87.09	3528.33	3546.19	372.93	12412.32	6518.56	242.75	358.89	27067.06

The compartment wise details about the areas prone for soil erosion in Afforestation Working Circle is given in Appendix No. LVI of Volume II of this Working Plan.

TABLE NO. – 83

DETAILS ABOUT THE GROUND WATER POTENTIAL IN AWC (in ha)

Working circle	Excellent	Good	Moderate	Moderate to poor	Poor	Poor to nil	Habitation and Waterbody	Total
1	2	3	4	5	6	7	8	9
AWC	0.00	1004.05	2939.48	19.68	21116.81	1522.18	464.86	27067.06

The compartment-wise details about the ground water potential is given in Appendix No. LVI of Volume II of this Working Plan.

1. Category ‘A’ or Protection areas : - This category includes the following area :-

- (i) Protection area consisting of patches over 25° slopes or more
- (ii) Eroded areas or areas liable for erosion.
- (iii) 20 meters wide strip on both sides of the rivers or perinerial Nala or around water tanks.

2. Category ‘B’ or Under stocked area : - It includes the areas with crop density less than 0.4 and exceeding 5 Ha and above at one place.

3. Category ‘C’ or group of young poles and old plantation areas : - it includes the pole crop of established regeneration of Teak and other species suitable for retention as future crop in addition to old plantation. The survival of old plantation will be more than 30 % and extent of area should not be less than 1 ha. at one place.

4. Category ‘D’ or well stocked areas :- It includes the areas of crop density more than 0.4.

III.12.3. Treatment :- The various treatments prescribed for the different categories of areas are as under.

1. Category ‘A’ or Protection areas : - No felling is prescribed. Intensive soil and moisture conservation works shall be carried out as given in the Chapter on

Miscellaneous Regulations. Teak and other plantations shall be taken up in the understocked areas. While taking up such plantation care should be taken that the plantation work will not lead to any soil erosion. The area shall not be less than 5 Ha. for taking up plantation.

2. **Category ‘B’ or Under stocked area :** - Intensive soil and moisture conservation works shall be carried out in order to increase the productivity of the soil and to check soil erosion. Gap planting with Teak and other species and seed dribbling shall be undertaken as per the condition of the soil.

3. **Category ‘C’ or Pole Crop and Old Plantation areas :** - Thinning marking shall be carried out in young pole crop of natural regeneration in order to create appropriate spacement. In old plantation thinning shall be carried out as per the Stand Table. No planting shall be done in such areas.

4. **Category ‘D’ or well stocked areas :-** Fellings will be carried out as prescribed in marking rules. No planting will be done in these areas.

SECTION .13. MARKING TECHNIQUES AND MARKING RULES:-

III.13.1. Marking techniques :- Marking techniques for felling of the is as discussed in the chapter on Miscellaneous Regulations.

III.13.2. Marking rules :- Marking of tree will be carried out by the Range officer under the guidance of Assistant Conservator of Forests concerned. The Deputy Conservator Forests will himself inspects as many coupes as possible in order to give proper guidance and the instructions to the staff and also to have check against excess marking if any. The marking rules of various categories of areas are as under.

1. **Category ‘A’ or Protection areas :** - No tree will be marked for felling, except removal of dead trees leaving 2 trees per ha. which will act as snags and dens to wild life.

2. Category 'B' or Under stocked area : -

- (i) No tree will be marked for felling.
- (ii) All live high stumps shall be cut-back.
- (iii) The dead trees will be removed leaving 2 trees per Ha. which acts as snags and dens. Multiple coppice shoot will be reduced to 1 per stool retaining the most vigorous one.
- (iv) The unwanted under growth, which is preventing the development of seedling regeneration will be removed. Therefore, all efforts shall be made to protect and develop rooted stock.

3. Category 'C' or Pole Crop and Old Plantation areas : -

- (i) The congested young crop will be marked for thinning in order to create appropriate spacing in the crop.
- (ii) The dead, dying, diseased and malformed poles will be marked first before thinning.
- (iii) In old plantations thinning will be carried out as per Stand Table to retain appropriate number of trees per Ha. as prescribed in the Stand Table. Care shall be taken to retain poles of seedling origin while removing poles of coppice origin.
- (iv) No plantations shall be taken up in this category of areas.

4. Category 'D' or well stocked areas :-

- (i) All dead trees shall be marked retaining 2 trees per ha. which will act as snags and dens
- (ii) All live high stumps shall be cut- back
- (iii) Marking will be done to reduce number of coppice shoots or poles to one per stool retaining the most promising one in entire multiple coppice the crop. No planting will be done in the area.

SECTION .14. SOIL AND MOISTURE CONSERVATION WORKS:-

III.14.1. The soil and moisture conservation works shall be under taken in the restoration phase of Phase – I and these works will be carried out as discussed in Miscellaneous Regulations. The soil and moisture conservation works taken up along with marking operation and completed before the on set of monsoon of the next year.

SECTION .15. REGENERATION :-

III.15.1. Regeneration will be achieved in two ways 1) Natural regeneration and 2) Artificial regeneration.

III.15.1.1. NATURAL REGENERATION :- Natural regeneration is a best source of getting the better quality stock provided the available natural regeneration is optimum and it is well protected from its worst enemies like weeds, grazing, fires and other biotic interferences. Weed growth in natural regeneration areas creates a kind of competition i.e. inter-species competition, which results in improper growth of desirable species.

In these of forest areas where the weeds like Lantana is prevelent dangerously, which hinders the growth of natural regeneration of desired species and natural regeneration can be secured only by means of systematic weeding commencing in the first rainy season and continued there after until the plants are free from the suppression.

In these forest areas the natural regeneration has greatly suffered due to frequent fires resulting in die-back phenomenon. In deciduous forest, most of seedlings suffer from desiccation which needs mulching for each plant to reduce the effect of desiccation. In this forest natural regeneration of Teak and other species though noticed in some patches at certain places usually die before getting established due to highly compact soil, coupled with bad drainage and aeration and other biotic factors. These areas can be categorized into **I) Areas with adequate regeneration.** The regeneration will be considered as adequate if the area contains more than 625 seedlings per Ha. in

such natural regeneration areas, to help young recruits of Teak and other species for their development, the following prescriptions shall be adopted :-

- (i) Identification of the areas containing promising natural regeneration shall be done inside the coupe.
- (ii) The unwanted under growth, which is preventing or likely to prevent the growth of natural regeneration of desired species shall be removed.
- (iii) Identified patches of natural regeneration shall rigidly be protected from fire, grazing and other interferences. Suitable thinning and tending operations will be carried out to create congenial atmosphere in the growth of crop. Coppice shoots which interfering with the development of young natural seedlings shall be removed. A little opening up of canopy by felling marked trees and ground cover at some places shall boost in establishment of natural regeneration of Teak and other species by providing better light and aeration .

The natural regeneration shall be cleared out within the diameter of one meter and these weeds and grasses, leaf-litter and branches shall be arranged in 15 cm high layer around the seedlings within the cleared area to provide organic mulch. There after two to three spade full of earth shall be thrown to the mulch in place. Therefore it will keep the soil around the plants free from weeds as well as help securing the loosening of aeration of soil by worms and insects. In addition, stone mulching shall be done around the current year recruits in the areas where surface stones are available. Small stones shall be arranged in a circle closed around the very young seedlings, which will help in retention of surface moisture as well as avoid accidental trampling, by cattle or others. Wherever natural regeneration is not sufficient, there it shall be supplemented with artificial regeneration.

iv . Areas with inadequate regeneration : In these areas seed sowing of suitable species shall be done by staff apart from tending of available natural regeneration in the next year of the main felling.

III.15.1.2. ARTIFICIAL REGENERATION :-

Where ever natural regeneration is not sufficient or in open and blank areas plantation with suitable species shall be taken up under artificial regeneration. The number of species to be planted is governed by Ecological Index. Where as choice of species will depend upon the site suitability and climatic suitability. Various details regarding pre-planting, planting and post-planting operations, given in Artificial regeneration of Miscellaneous Regulations are to be referred.

III.15.1.2.1. PRE-PLANTING OPERATIONS: The PPO will be carried out one year before the actual planting is to be taken. The nursery stock should be raised and tended with great care so that the seedling of various species grow in to healthy and hardy planting stock and attain sufficient height when planted out. The seeds obtained for raising nursery stock shall be from known source specially from the plus trees of high forest.

III.15.1.2.2. CHOICE OF SPECIES : The choice of species will be depending upon climatic and edaphic conditions and also preference of local people. The species for planting which occur locally and of proven fodder grass species, fruits, Non Wood Forest Produce and some of the timber species shall be preferred. Some of the species suggested for afforestation are *Teak, Dhawada, Khair, Jamun, Anjan, Biba, Behda, Hirda, Neem, Babul, Nilgiri, Glyricidia, Bel, Apta, Bamboo* etc. The palatable grass species may be of Sheda, Paunya and Marvel shall be preferred. Bamboo can be planted in suitable areas especially along nala bank where sub-soil moisture is sufficient for better growth of Bamboo. Better planting stock shall be ensured and the area of plantation is closed either by TCM or live hedge fencing or by barbed wire fencing. It is advisable that on the mound of TCM a row of suitable fast growing thorny species shall be planted with Agave bulbils.

III.15.1.2.3. FIRST YEAR OPERATION :

1. PLANTING : Planting shall be completed within a fortnight from the out break of monsoons. The Teak seedlings or stumps shall be planted after first monsoon showers. The polypot plantation will be taken in case of Miscellaneous species.

2. WEEDING AND CASUALTY REPLACEMENT :

i. The weeding shall be done in the first year as per the following scheduled :-

Ist weeding	:	by end of July
IInd weeding	:	by beginning of September
III rd weeding	:	by mid of October.

ii. Casualty replacement shall be carried out alongwith Ist weeding, if required.

The natural regeneration is properly tended as prescribed in section 15.1.1 of this

Chapter.

III.15.1.2.4. SYO AND TYO : In the IInd year of plantation casualty replacement should be carried out immediately after the on-set of monsoon and having sufficient rainfall before mid-July. During IInd year two weedings, one by end of August and other is by end of October shall be carried out. Mulching and hoeing shall be done alongwith second weeding. During the time of IInd weeding mulching with leaves is preferable, especially leaves of leguminous species, which will facilitate recycling of the nutrients in the soil and effective mulching will be associated in reduction of sub-soil moisture loss. Apart from this, it will facilitate in reducing the evapo- transpiration.

In IIIrd year weeding shall be carried out in the month of September alongwith soil working. One more soil working shall be carried out in the month of October for proper retention of soil moisture. In both these years natural regeneration shall be properly tended as given in section 15.1.1. In the IIIrd year of the plantation cleaning shall be carried out . Coppice shoots of Teak will be removed if AR and NR are successful, otherwise coppice shoots will be cutback and reduced to one well grown coppice shoot per stool. The established advanced growth if any in that area of Teak and other valuable species will be spaced out suitably, through tending operations.

SECTION .16. SUBSIDIARY SILVICULTURAL OPERATIONS :-

III.16.1 CBO : Cutting Back Operation shall be carried out one year after the main felling in the coupe by the following prescriptions given as under :-

- i. All established multiple coppice shoots and poles shall be reduced to one per stool retaining the most promising one.
- ii All climbers except that of NTFP importance shall be cut.
- iii Newly established multiple coppice shoot shall be properly tended and reduced to one per stool retaining most promising one.

III.16.2 CLEANING: It will be carried out in the sixth year of main felling as per the following prescriptions.

- i. All climbers except that of NTFP importance shall be cut
- ii. All miscellaneous species including unwanted under growth interfering or liked to interfere with the growth of coppice shoot and seedling of artificial regeneration and natural regeneration of Teak and other valuable species shall be cutback.
- iii. The most promising coppice shoots out of the retained previously will be retained and all other new coppice shoots of Teak will be removed.
- iv. Established regeneration of Teak and other miscellaneous species shall be spaced out with appropriate tending operations. All coppice shoots interfering with the growth and development of seedlings regeneration of Teak and other species will be cut back.

III.16.3 THINNING: Thinning in old plantation shall be carried out as per the Stand Table based on age and site quality of the plantation. The first and second thinnings shall be carried out in the 11th and 18th year of planting respectively. These two thinnings are mechanical thinning if the survival percentage is more than 80% in the plantation. The silviculture thinnings shall be carried out in 25th and 35th year of planting respectively. The detailed procedure for thinning shall be followed as given in the Miscellaneous Regulations.

- i. All climbers except that of NTFP importance shall be cut.
- ii. All dead badly damaged and up-rooted trees shall be felled.
- iii. In groups of young pole crop of Teak which are naturally regenerated, thinnings shall be carried out so that the average spacement between two poles left shall be 1/3rd of the height of the adjoining poles.

- iv. Lantana and other unwanted undergrowth which is interfering or likely to interfere with the seedlings of NR and AR are removed. The coppice shoots will be cut back.
- v. In case of teak plantations thinning will be carried out as per the principles of Stand Table based on age and site quality.

SECTION .17. OTHER REGULATIONS :-

(I) FIRE PROTECTION :- The main felling coupes and plantation sites shall be fire traced and rigidly protected from fire. These areas will remain closed for grazing for a period of five years from the main felling. In the month of October/November after the fire tracing is over all the undergrowth of Lantana will be cut. The area shall be cleared off all the dry and cut bushes, leaves etc. by end of February to avoid fire hazard to crop, NR and AR. Effective protection shall be ensured against fire during the fire seasons so that the survival and establishment of the seedlings for development as future growing stock can be achieved.

(ii) Fire protection shall be achieved successfully by involving the members of Joint Forest Management Committee. Therefore the Dy. Conservator of Forest shall involve the active participation of Joint Forest Management Committee members by means of continuous persuasion. To ensure effective fire protection a workable fire protection scheme should be chalked out in which huge share of people (Joint Forest Management Committee members) those who have effectively protected forest from fire shall be given . A meaningful participation and modelities shall be worked out to protect forest from fire and impart training to members of JFM Committee shall be one of the important responsibilities of Dy. Conservator of Forests concerned.

The techniques of fire protection will be adopted as given in fire protection of Chapter No.XII : Forest Protection in the tract. The forest of Akola are very much prone for fire hazard and NR of species being is biggest casualty due to fire. This economic source of regeneration should rigidly be protected from fire so that the productive crop can be achieved. A comprehensive fire protection scheme shall be chalked out so that effective fire fighting force created for protection of forest for the period of 15th February to 15th June and 24 hours duty on the suitable area from where areas can be tackled easily in protecting fires.

(II) GRAZING :-

A. CLOSER TO GRAZING AND RAISING FODDER :-

The areas of main felling coupes shall remain closed to grazing for five years from the year of main planting, by taking up plantation in the understocked areas. Palatable fodder grasses, suitable for that area will be sown or planted by tussocks, so that palatable grasses will be available at the end five years when the coupes are opened for grazing and the villagers would have enough fodder for their cattle on rotational harvest basis from such coupes. The rotational harvest or grazing will facilitate the opening up of area on rotational basis. The closed areas should be specially mentioned in the grazing licence and the villagers be communicated of such closure by suitable means such as drum beating, notices on common places, village panchayat places, panchayat offices etc.

(III) PARTICIPATION :- The local people shall be made aware of the importance of forest protection from fire, illicit felling, illegal grazing, encroachment etc. Participation and active involvement of local people especially members of JFM Committees shall be encouraged in protection of forest and afforestation, for this purpose regular awareness camp or campaign shall be arranged to explain the people about its importance, benefit of regeneration and protection. Committees shall be formed and implemented through active participation of local people under the umbrella of JFM. The active participation will be as per the guidelines given a Chapter No VIII under JFM in this Plan.

CHAPTER-IV

WORKING PLAN FOR CATCHMENT AREA TREATMENT WORKING CIRCLE

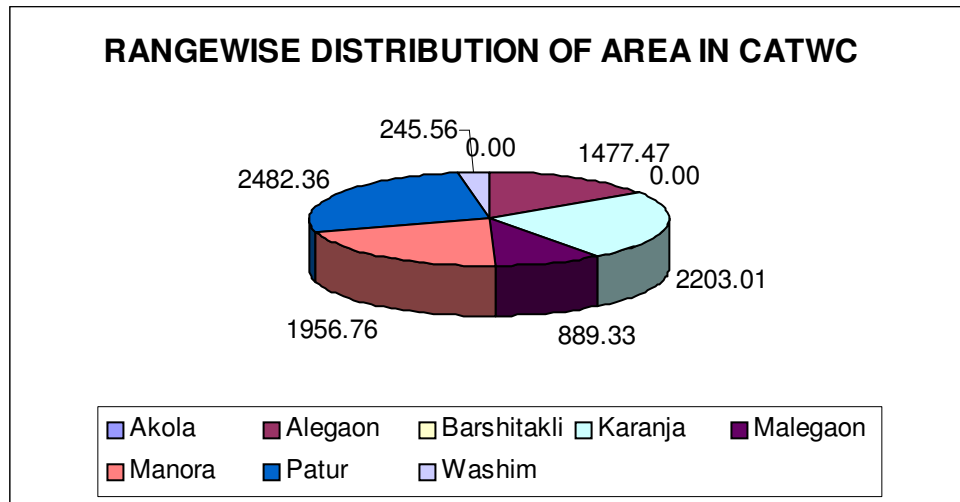
SECTION 1: GENERAL CONSTITUTION:

IV.1.1. This Working Circle comprises the forest areas situated in the catchment areas of various irrigation and drinking water projects of major, medium and minor projects, which are directly draining into water reservoirs. These areas were previously managed under Coppice with Reserved, SCI and Improvement Working Circles. In Thengdi's Plan these areas were managed under Catchment Working Circle, Conversion to High forest, Afforestation and Pasture Improvement Working Circle. The total area included in this Working Circle is 9254.49 Ha. Those compartments containing irrigation projects, which form compact blocks have been included in this Working Circle. The minimum catchment area of 100 Ha of each tank has been considered. This Working Circle includes both A -class and C- class Reserved Forests falling in to the catchments of irrigation and drinking water projects.

TABLE NO. – 84

RANGEWISE AND CATEGORYWISE DISTRIBUTION OF AREA IN CATCHMENT AREA TREATMENT WORKING CIRCLE

Sr. No.	Range	Area of Range	Area allotted (ha.)					% to the area of the Range	% to the area of WC
			RF	PF	AQUIR ED LAND	U/F	TOTAL		
1	Akola	4421.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Alegaon	11614.98	1477.47	0.00	0.00	0.00	1477.47	12.72	15.96
3	Barshitakli	14132.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Karanja	9067.57	2203.01	0.00	0.00	0.00	2203.01	24.30	23.80
5	Malegaon	11736.65	889.33	0.00	0.00	0.00	889.33	7.58	9.61
6	Manora	14659.37	1956.76	0.00	0.00	0.00	1956.76	13.35	21.14
7	Patur	8923.33	2482.36	0.00	0.00	0.00	2482.36	27.82	26.82
8	Washim	6454.07	245.56	0.00	0.00	0.00	245.56	3.80	2.65
Total		81009.61	9254.49	0.00	0.00	0.00	9254.49	11.42	100.00



SECTION 2: GENERAL CHARACTERS OF VEGETATION:

IV.2.1. The forest area in general is well stocked in some patches and under stocked with open patches in some areas. The site quality is IVb. The C- class reserve forest areas of the circle is mainly of open type with little or no vegetation which falls in local subtype of “Poor Quality Teak Forest or Degraded Scrub Forest” having stunted Teak growth. In these forests Teak represents as the main species and found in association with *Dhawada, Salai, Char, Tendu, Moyan, Tiwas, Khair, Anjan*, etc. The density of forest varies from 0.1 to 0.6. Most of the crop is of young to middle age. The soils of this working circle are poor, infertile and with little moisture due to erosion of top soils. The young recruits of Teak and its major associates are noticed in many compartments in patches especially in ridge areas where little bit soils are accumulated, however, most of the young recruits failed to establish due to poor soil conditions, recurrent fires, excessive biotic pressure, and lack of appropriate protection. As these areas fall in the catchments of various irrigation projects and water bodies, wildlife movement is noticed in these areas.

SECTION 3: SEPCIAL OBJECTS OF MANAGEMENT:

IV.3.1. The special objects of management in constitution of this Working Circle are as follows:

1. To prevent and reduce the rate of siltation of water tanks and irrigation projects by taking of intensive soil and moisture conservation measures.
2. To improve crop cover and quality in the catchment area to restore and improve ecological balance through scientific management of land, forest and rain water. In process to follow in-situ moisture conservation, introduction of network of run-off management structures and devices for recharge of ground water.
3. Treatment of nalas to safe guard against soil erosion and rapid run-off of rain water by taking of soil and water conservation measures on the basis of water-shed management model.

SECTION 4: BLOCKS AND COMPARTMENTS:

IV.4.1. The compartments proposed to be assigned to this Working Circle are given below :-

TABLE NO. – 85

Sr. No	Range	Felling Series	Comptt. No.	Total Area of F.S. (ha.)	Total Area allotted from each Range
1	Alegaon	UMARDARI	10, 11, 25, 33, 34.	1477.47	1477.47
2	Karanja	PANGRA(pt.)	120, 137	794.10	2203.01
		POHA(pt.)	426, C103, C97, C98, C99, C104, C105, C109, C106, C108.	904.25	
		MANORA(pt.)	C111, C118, C125, C119, C124, C164, C165.	504.66	

Sr. No	Range	Felling Series	Comptt. No.	Area (ha.)	Total Area of F.S.	Total Area allotted from each Range
3	Malegaon	ANDHARSAWANGI(pt.)	36	195.06	195.06	889.33
		MORNA(pt.)	79, 92.	374.34	374.34	
		PANGRA(pt.)	98	115.73	115.73	
		MANORA(pt.)	C185.	204.20	204.20	
4	Manora	PANGRA(pt.)	138	509.90	509.90	1956.76
		POHA(pt.)	C102, 154	286.08	286.08	
		MANORA(pt.)	C134, C136, C215, C133, C121, C131, C132	1160.78	1160.78	
5	Patur	ANDHARSAWANGI(pt.)	49, 63a, 70, 71	1316.85	1316.85	2482.36
		MORNA(pt.)	73, 74, 75, 76, 77, 78	1165.51	1165.51	
6	Washim	POHA(pt.)	159, 160	245.56	245.56	245.56
				9254.49	9254.49	9254.49

SECTION 5: ANALYSIS AND VALUATION OF THE CROP:

IV.5.1. Existing stock maps are updated. These stock maps are assessed with the help of classified vegetation map. It is also assessed with the help of satellite imagery of LISS – III of Nov. 2007 and the analysis carried out with the help of R.R.S.S.C. Nagpur. Adequate ground truth verification has been carried to confirm and update stock maps. The enumeration of forest stocking has been undertaken by SOFR unit Amravati and the same data obtained and analysed with the help of Shri. Dhabekar's software in the G.I.S. cell of office of the Conservator of Forests Working Plan Yavatmal. The same enumeration data has been sent to Chief Statistician M.S. Nagpur in office of the Principal Chief Conservator of Forests, Nagpur for further analysis. The results obtained are given in the following table :-

TABLE NO. – 86

ENUMERATION DATA (GIRTH CLASSWISE) IN CATCHMENT AREA
TREATMENT WORKING CIRCLE

Sr. No.	Girth Class in cm	Teak			Others			Total	
		No.	%age wrt Total Teak spp.	%age wrt Total stock	No.	%age wrt Total Misc. spp.	%age wrt Total stock	No.	%age wrt Total stock
1	15-30	70	31.67	18.28	71	43.83	18.54	141	36.81
2	31-45	79	35.75	20.63	46	28.40	12.01	125	32.64
3	46-60	46	20.81	12.01	24	14.81	6.27	70	18.28
4	61-75	17	7.69	4.44	11	6.79	2.87	28	7.31
5	76-90	7	3.17	1.83	5	3.09	1.31	12	3.13
6	91-105	2	0.90	0.52	2	1.23	0.52	4	1.04
7	106-120	0	0.00	0	2	1.23	0.52	2	0.52
8	121-135	0	0.00	0	1	0.62	0.26	1	0.26
9	136-150	0	0.00	0	0	0.00	0	0	0.00
10	151 above	0	0.00	0	0	0.00	0	0	0.00
		221	100.00	57.71	162	100.00	42.30	383	100.00

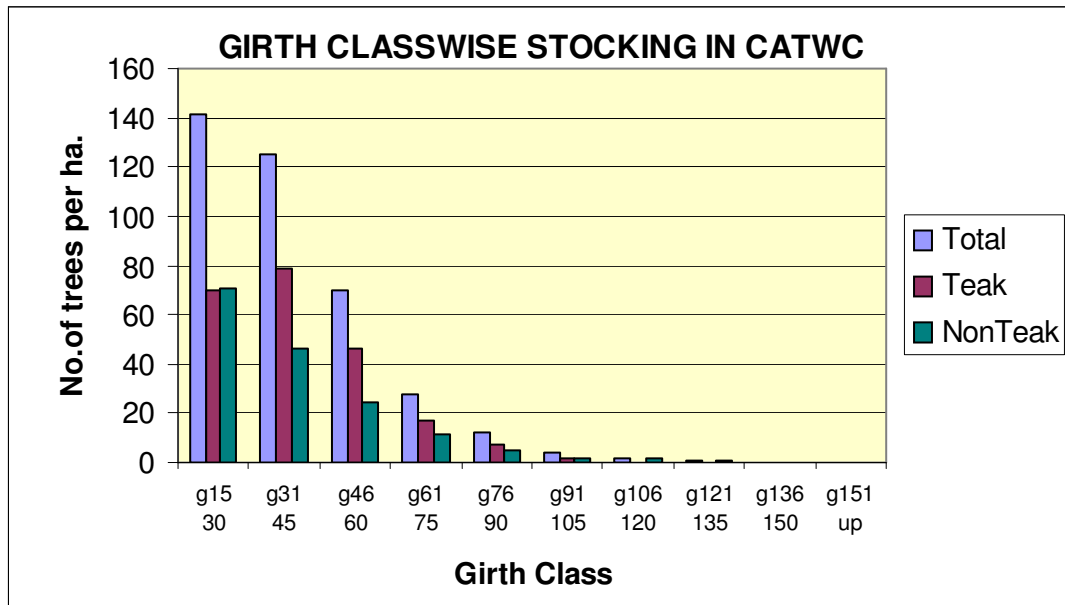
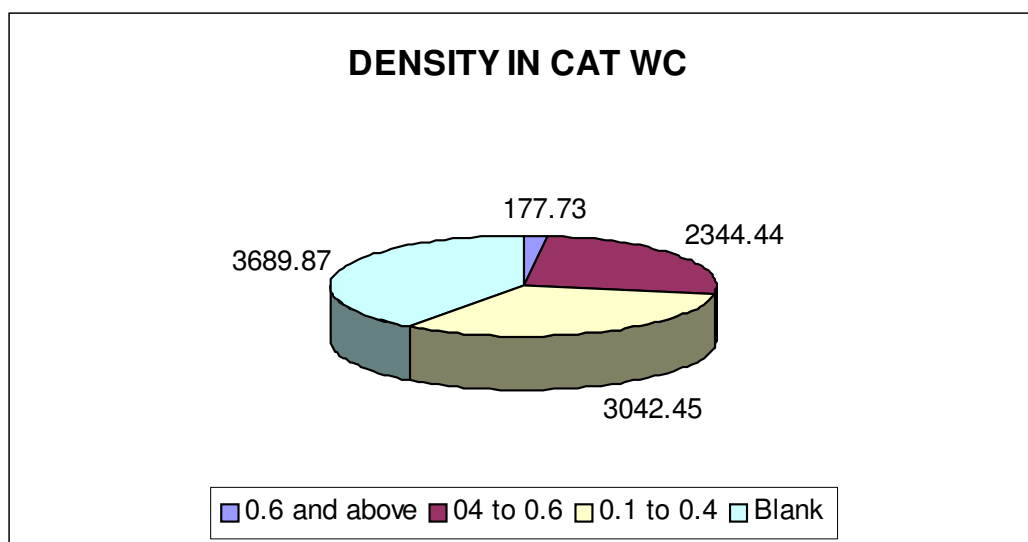


TABLE NO. – 87

DENSITYWISE AREA IN CAT WORKING CIRCLE

Sr. No.	Working Circle	Area Percentage	Total Area in ha.	Density Percentage to the W.C. area			Blank
				0.6 and above	0.4 to 0.6	0.1 to 0.4	
1	Catchment Area Treatment Working Circle	11.42	9254.49	177.73	2344.44	3042.45	3689.87
			100	1.92	25.33	32.88	39.87



SECTION 6: SILVICULTURAL SYSTEM/ NATURE OF TREATMENT:

IV.6.1. The forest areas allotted to this Working Circle are those which fall in the catchment limitations of different irrigation projects are other water bodies which are very fragile from the point of soil erosion and these areas will be completely protected irrespective of their crop density, quality, composition etc. No felling shall be carried out in the areas except removal of dead trees only, leaving two dead trees per Ha. which will act as dens and snags to wildlife.

SECTION 7: NATURAL REGENERATION :

IV.7.1. Natural regeneration shall be boosted with appropriate tending operations and supplemented by artificial regeneration, where ever required to have sufficient vegetation cover in the catchment areas.

The healthy coppice regeneration will be retained depending upon the requirement of the site and quality of crop. Appropriate soil and moisture conservation measures shall be taken up to check run-off and siltation of reservoirs. The treatment shall be on the basis of watershed management and the treatment should be from ridge to valley to allow recharging of ground water.

SECTION 8: FORMATION OF WORKING SERIES AND WORKING CYCLE:

IV.8.1. The total area allotted to this Working Circle has been divided into 6 Working Series and each series shall consists of 20 coupes and therefore the working cycle is of 20 years. The statement showing compartments allotted to various Felling Series are given in the Appendix No.XLIIIb of Volume II.

SECTION 9: REGULATION OF YIELD:

IV.9.1. No yield is expected from this area, except Non Wood Forest Produce. The coupes shall be laid in such a way so that equal area is made available each year for drainage and other treatments.

SECTION 10: IMPLEMENTING AGENCY:

IV.10.1. The treatment shall be carried out by Forest Department considering technical and time bound nature of the operations.

SECTION 11: METHOD OF EXECUTING THE TREATMENT:

IV.11.1. Except for coupe No.I in the sequence of working given in this Plan, coupes for working will be demarcated in one year in advance as per the procedure given in Chapter No. XIII of Miscellaneous Regulation of this Plan. However coupe no. I will be demarcated in 1st year of the operation and execution of treatment work will be carried out in the same year where as in other coupes it will be in the following year.

SECTION 12: PREPARATION OF TREATMENT MAP:

IV.12.1. After demarcation of coupe is over, a treatment map shall be prepared by the Range Forest Officer after thorough inspection of the area under the guidance of Assistant Conservator of Forests and treatment map shall be completely verified by the Assistant Conservator of Forest after complete inspection of that area for which, the Range Forest Officer submitted treatment map. The treatment map thus prepared will be submitted to the Dy. Conservator of Forests incharge of the Division, who will carry out sample checking and give sanction to it. The treatment maps will represent the following areas :-

TABLE NO. – 88
DETAILS ABOUT VARIOUS TREATMENT TYPES CATCHMENT AREA
TREATMENT WORKING CIRCLE (in ha)

Working circle	A			B		C + D	Total
	A1	A2	A3	B1	B2		
1	2	3	4	5	6	7	10
CATWC	2066.36	824.19	2014.30	1645.96	2126.55	692.88	9254.49

NOTE A-1 type Area having more than 25⁰ slope, A-2 type Twenty m. wide strip on both sides of stream, A-3 type Area susceptible to excessive erosion (Very severe), B-1 type Open forests (density < 0.4), B-2 type Under stock Area including blank area. C type Areas having pole crop, D type Areas having density 0.4 and over.

The compartment- wise details about various treatment types Catchment Area Treatment Working Circle is given in Appendix No. LII of Volume II of this Working Plan.

TABLE NO. – 89
DETAILS ABOUT THE SITE SUITABILITY FOR DIFFERENT
APPLICATIONS IN CATCHMENT AREA TREATMENT WORKING CIRCLE
 (in ha)

Working circle	Waterbody	Protection areas	Missionary/Cement/Earthen Dam	Bamboo plantation (Seeding)	Percolation tank	Teak plantation	Miscellaneous plantation	Reforestation/Afforestation	Medow development/aromatic grasses	Gap filling/Enrichment planting	Tending/selection felling	Fodder Improvement	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
CAT	49.15	4281.37	56.79	454.08	297.78	257.51	529.12	895.66	13.81	1596.27	692.57	130.38	9254.49

The compartment-wise details about the site suitability for different applications in types Catchment Area Treatment Working Circle is given in Appendix No. LIII of Volume II of this Working Plan.

TABLE NO. – 90
DETAILS ABOUT SOIL DEPTH IN CATCHMENT AREA TREATMENT
WORKING CIRCLE (in ha)

Working circle	Habitati on	Shallow to very shallow (<10)	Shallow (10-25)	Moderatel y deep (25-50)	Deep (15-100 Cm)	Very deep (> 100)	Waterbody	Total
1	2	3	4	5	6	7	8	9
CATWC	5.60	354.84	4782.95	2665.84	815.95	509.31	120.00	9254.49

The compartment-wise details about soil depth types Catchment Area Treatment Working Circle is given in Appendix No. LIV of Volume II of this Working Plan.

TABLE NO. – 91
DETAILS ABOUT SOIL TEXTURE IN CATCHMENT AREA TREATMENT
WORKING CIRCLE (in ha)

Workin g circle	Habitati on mask	Sandy clay loam	Gravelly sandy loam	Gravelly sandy clay loam	Gravelly clay	Gravelly clay loam	clayey	clay loam	Silty clay	Silty loam	Water body Mask	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
CAT	12.56	611.56	1349.80	2676.69	1632.02	1725.42	807.11	190.55	0.0	69.77	133.66	45.13	9254.49

The compartment-wise details about soil texture types in Catchment Area Treatment Working Circle is given in Appendix No.LV of Volume II of this Working Plan.

TABLE NO. – 92
DETAILS ABOUT THE AREAS PRONE FOR SOIL EROSION IN
CATCHMENT AREA TREATMENT WORKING CIRCLE (in ha)

Workin g circle	Habitati on Mask	Slight	Slight to moderate	Moderat e	Moderat e to severe	Severe to very severe	Very severe	Water body Mask	Total
1	2	3	4	5	6	7	8	9	10
CAT WC	6.04	484.07	592.13	0.00	5156.90	2895.68	0.00	119.67	9254.49

The compartment-wise details about the areas prone for soil erosion in types Catchment Area Treatment Working Circle is given in Appendix No. LVI of Volume II of this Working Plan.

TABLE NO. – 93
DETAILS ABOUT THE GROUND WATER POTENTIAL CATCHMENT AREA
TREATMENT WORKING CIRCLE (in ha)

Working circle	Excellent	Good	Moderate	Moderate to poor	Poor	Poor to nil	Habitation and Waterbody	Total
1	2	3	4	5	6	7	8	9
CATWC	0.00	159.96	806.84	18.99	7817.73	325.85	125.12	9254.49

The compartment-wise details about the ground water potential is given in Appendix No. LVII of Volume II of this Working Plan.

1. **Category ‘A’ or Protection area :** This will include the following type of area :
 1. The area having steep slopes i.e. more than 25°.
 2. Eroded areas or liable to erosion.
 3. 20 meter wide strip on both sides of any perennial water course and other water bodies.
 4. Riparian zones in the interest of wild life management.
2. **Category ‘B’ or Under stocked areas :** It includes the areas of open or blank areas with less than 0.4 density.
3. **Category ‘C’ or Natural pole crop and old plantations :**

Established natural regeneration with pole crop not less than 1 ha. advanced growth of any species shall be identified and included in this category. Old

plantation areas having survival more than 30% and area of 1 ha. extents at one place are also included in this category.

4. **Category 'D' or Well stocked areas :**

Areas having crop density more than 0.4 density are included in this category.

SECTION 13: TREATMENT PRESCRIBED :-

IV.13.1. Different types of treatments prescribed and adopted for these categories of area are as under :-

The entire coupe shall be treated with intensive soil and moisture conservation works, such as nala bunding, gully plugging etc. to check soil erosion and run-off as per the treatment map. For treatment of various types of forests site suitability for different categories given in Appendix No. LII of Volume II.

1. **Category 'A' or Protection areas :** In these areas no felling is prescribed.

2. **Category 'B' or Under stocked areas :** All dead trees shall be removed leaving two trees per Ha. which acts as snags and dens for wildlife. Teak and miscellaneous species will be planted as per the suitability of site conditions.

3. **Category 'C' or Natural pole crop and old plantations:**

1. No planting will be carried out in these areas.

2. Marking for thinning shall be carried out in the young pole crop for proper spacing where as in old plantation thinning marking shall be carried out as per the stand table.

4. **Category 'D' or Well stocked areas :** No felling except removal of dead trees leaving two trees per Ha. for snags and dens in these areas.

SECTION 14: METHOD OF EXECUTING TREATMENT :-

1. **Category 'A' or Protection areas :** Soil and moisture conservation works shall be taken up as mentioned in the Chapter on Miscellaneous Regulations, in this category of areas. No felling shall be carried out in these areas except removal of dead trees leaving two trees per hectare.

2. **Category 'B' or Under stocked areas :** Intensive soil and moisture conservation works shall be taken up as per the prescriptions given in Miscellaneous Regulations. Plantation of Teak and miscellaneous species as per the suitability of site, shall be taken up which will be followed by Bamboo under planting in the 4th year of main plantation.

3. **Category 'C' or Natural pole crop and old plantations :** Soil and moisture conservation works shall be under taken in such areas as given in Miscellaneous Regulations. No plantation will be carried out in these areas. Thinnings shall be carried out in group of young pole crops in order to have spacing of $1/3^{\text{rd}}$ of the crop height between two poles. Where as in old plantation thinning shall be on the basis of Stand Table.

4. **Category 'D' or Well stocked areas :** Soil and moisture conservation works shall be under taken. No felling except removal of dead trees leaving two trees per Ha. Bamboo under planting shall be taken up if the site is suitable for taking up Bamboo under planting.

SECTION 15: REGENERATION :-

IV.15.1. Before taking up regeneration activity intensive soil and moisture conservation works shall be taken up throughout the coupe. There are two ways of obtaining regeneration 1. Natural regeneration 2. Artificial regeneration.

IV.15.2. NATURAL REGENERATION :-

Existing natural regeneration will be protected and treated with soil working and mulching in order to boost the growth of seedlings. Identified natural regeneration will be rigidly protected from fire by under taking rigid fire protection measures applicable to current coupe of working. Existing natural regeneration of Teak and other species would be induced by opening of existing under growth interfering with the seedlings of natural regeneration and cutting and removing under growth which are likely to hinder the growth natural seedlings. The seedlings which spring up in abundance as a result of cleaning and removal of under growth are to be weeded right from the beginning and weeding requires to be continued for 3 years till the establishment of such seedlings. Therefore weeding out of Lantana and other unwanted under growth will be carried out in favour of natural regeneration of Teak and miscellaneous species up to 3rd year. Existing coppice shoots interfering with natural regeneration (N.R.) of seedlings origin shall be removed. The N.R. shall be cleared off within the diameter of one meter and mulching shall be done by spreading around the seedling the twigs and debris to the extent of 6 inches layer, followed by a layer of leaves, burnt- off material and a sufficient earth material over it (about a Ghamela) and such an arrangement will facilitate protection of seedlings from fire, drips, from the nearby undergrowth and leading to mulching. Lantana has become a weed in many places of the Division especially Alegaon and Patur ranges, which hinder the growth of seedlings. Therefore a systematic removal of Lantana shall be taken up.

IV.15.3. ARTIFICIAL REGENERATION :- Natural Regeneration will be supplemented with artificial regeneration as per the requirement of site. Mixed plantation with 50% Teak shall be under taken in category 'B' areas. The choice of species will be as per site quality potential and local community preference. The species are preferably indigenous, naturally occurring and of proven fodder, fruit, Non-Wood Forest Produces (NWFP's) value. Some of the species suggested are Babul, Khair, teak, Arjun, Dhawada, Chinch, Jamun, Ber, Apta, Anjan, Bibba, Bamboo, Behada, Hirda etc. Bamboo plantation shall be taken up in the 4th year of main plantation especially along the nalas. For Teak, superior quality of Teak stumps, poly-pots or root trainer seedlings depending upon their performance can be used. Seeds for such plantation can be obtained from a known source especially Plus Trees of High Forests. The plant population can be calculated on the basis of Ecological Index. The pit shall be of 30cm x 30cm x 30cm for poly pots seedlings. No pit shall be dug in the shadow of standing tree or 1m of existing seedlings. The Teak stumps or seedlings shall be planted after first monsoon showers and the other species seedlings after sufficient rains. The planting operations shall be completed within a fortnight from the time of its beginning. The detail procedure for taking up plantation shall be followed as given in Chapter XIII of Miscellaneous Regulations.

SECTION 16: SUBIDIARY SILVI- CULTURAL OPERATIONS :-

IV.16.1. The following operations can be carried out departmentally :-

A Cleaning :

- i. All climbers will be cut
- ii. The unwanted under growth including Lantana, which is interfering or likely to interfere with the regeneration of Teak and miscellaneous species will be cut. Established advance growth of Teak and other valuable species will be spaced out suitably.
- iii. Where ever NR and AR successful, there the coppice shoots shall be removed. Otherwise the coppice shoot will be reduced to one retaining the most promising one.

B Thinning :

Thinnings in old plantations.

- i. All climbers shall be cut
- ii. All dead and badly damaged and uprooted trees shall be removed.
- iii. In groups of young pole crop of Teak and other species, thinnings shall be carried out , so that the average spacement between poles left shall be 1\3rd of the crop height.
- iv. Lantana and other growth of inferior species interfering are likely to interfere with the growth of regeneration of Teak and other valuable species will be cut back.
- v. First thinning will be carried out in the 11th year of plantation.
- vi. Thinning in old plantation shall be carried out as per the Stand Table based on age and site quality of the plantation. The first and second thinnings shall be carried out in the 11th and 18th year of planting respectively. These two thinnings are mechanical thinning if the survival percentage is more than 80% in the plantation. The silviculture thinnings shall be carried out in 25th and 35th year of planting respectively. The detailed procedure for thinning shall be followed as given in thinning in Miscellaneous Regulations.

SECTION 17: OTHER REGULATIONS :-

IV.17.1.1 Protection from fire : Main felling coupes shall be fire traced and regularly protected from fire for a period of five years from the year of main working. In the month of November after fire tracing over all the undergrowth of Lantana and other inferior species will be cut . The cut material will be spreaded over the area to be planted in such a way that the cut material remains sufficiently away from stumps of the trees, so that burning does not harm the tree.

IV.17.1.2 The dry and cut remains of unwanted bushes will be burnt at the end of February to avoid fire hazard to the forest.

IV.17.1.3 The Natural Regeneration shall rigidly be protected from fire hazard, so that the regeneration could become qualitative growing stock, therefore the main trust should be on the fire protection for obtaining proper regeneration.

IV.17.1.4 In order to achieve effective fire protection a workable scheme of fire protection shall be chalked out and people's participation shall be sought in effective fire protection. Appropriate modalities shall be adopted to obtain people's participation in fire protection.

IV.17.1.5 The technique of fire protection shall be as per the prescriptions provided in Chapter No: XII Forest Protection in the tract.

IV.17.1.6 As such the areas being known to fire hazard and N.R. of species being the first and the biggest casualty therefore this economic source of regeneration shall be rigidly protected from fire. Fire causes lot of damage to the crop and have an ill-effect on the productivity of forest crop. A comprehensive fire protection scheme shall be chalked out so that effective fire protection force is created especially during fire season i.e. for the period of 15th February to 15th June and 24 hours duty at suitable areas of the forests, where ever the forest are very much prone for fire hazard.

IV.17.2.1 Grazing control : Due to increasing biotic interference, the population residing within the periphery of this Working Circle cause lot of damage to the forests by means of cattle grazing in these areas. The live stock belonging to this population depends upon forest areas for grazing. If the grazing is allowed in the catchment areas, sheet erosion is initiated and it will be further aggravated due to trampling by cattle. Therefore in such forests, situated in catchment areas grazing should not be permitted. To mitigate the problems the villagers shall be directed to raise fodder and grass fields in the vicinity of villages or common community lands. The local villagers will be reluctant to harvest fodder for stall feeding of their cattle and department shall earmark such areas to graze their cattle or to provide fodder for stall feeding based on the carrying capacity of the forests situated nearby villages.

CHAPTER – V

WORKING PLAN FOR THE BABUL WORKING CIRCLE

SECTION 1: GENERAL CONSTITUTION:

V.1.1. The Working Circle includes all the Babul Bans of Akola, Karanja and Barshitakli ranges. The area of Babul ban in these ranges is about 1962.59 Ha. which are situated in scattered patches, approximately 100 small patches, ranging from 2 ha to 50 Ha. In general the growth of Babul is good in black cotton soil along the nala banks

SECTION 2: GENERAL CHARACTERS OF VEGETATION:

V.2.1. Babul (*Acacia nilotica*) is a strong light demander and it does not tolerate shade. In many places it occurs in pure patches. However at some places it is found mixed with other species like *Behada, Amaltas, Bharati, Tendu, Jamun, Umbar, Kalam, Arjun, Lendiya, Maharukh, Palas, Ain, Pangra, Prosopis, Kala-Siris, Neem, Ghont, etc.* The undergrowth generally consists of *Chilati, Ber, Nirgudi, etc.* Most of the area is flat and contains deep black and red soils. In the patches where the growth is good which represents young to mature trees. In some of the areas natural regeneration of Babul is same. In many patches babul forest are under-stocked and contained scrub type forest due to scattered nature of forest and proximity to villages. As these areas nearer to villages, subjected to excessive biotic pressure and illicit felling resulted in degradation. Moreover the scientific management of these forests has been discontinued since 1974-75. Attempts were made to regenerate Babul in mixed with *Prosopis, Shiwan, Kala-siris, Neem etc.* There are 3 varieties of Babul identified *Telia, Kauria and Ramkati.*

SECTION 3: BLOCKS AND COMPARTMENTS:

V.3.1. Rangewise distribution of area is given below :-

TABLE NO. – 94

RANGEWISE AND CATEGORYWISE DISTRIBUTION OF AREA IN BABULBAN WORKING CIRCLE

Sr. No.	Range	Area of Range	Area allotted (ha.)					% to the area of the Range	% to the area of WS
			RF	PF	AQUIRED LAND	U/F	TOTAL		
1	Akola	4421.21	1223.92	0.00	0.00	0.00	1223.92	27.68	62.36
2	Alegaon	11614.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Barshitakli	14132.43	39.18	0.00	0.00	0.00	39.18	0.28	2.00
4	Karanja	9067.57	699.49	0.00	0.00	0.00	699.49	7.71	35.64
5	Malegaon	11736.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Manora	14659.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Patur	8923.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Washim	6454.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	81009.61	1962.59	0.00	0.00	0.00	1962.59		

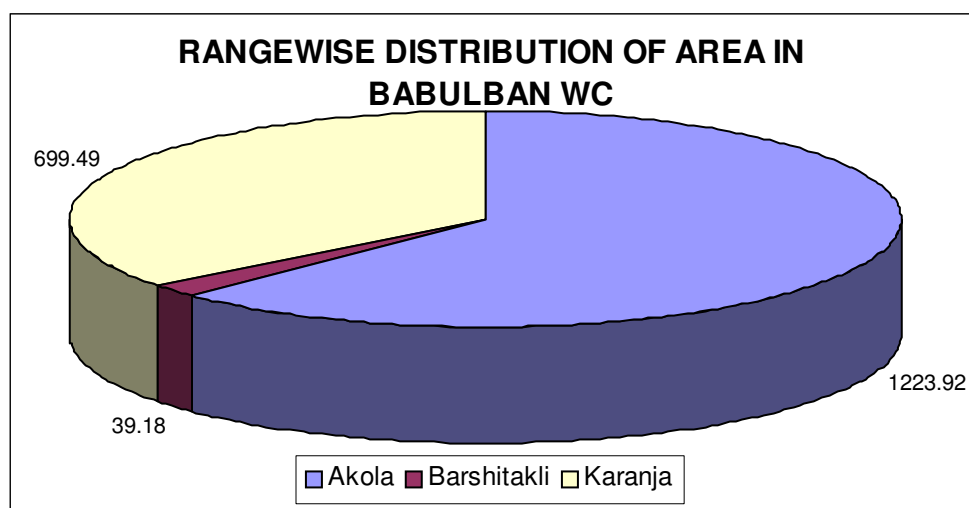


TABLE NO. – 95

Sr. No	Range	Felling Series	Comptt. No.	Total Area of F.S. (in ha.)	Total Area allotted from each Range
1	Akola	AKOT	B 18, B19, B1, B2, B10, B9, B46, B30, B31, B34, B12, B13, B43, B44, B17, B11, B21, B22, B24, B25, B45, B15, B39, B14, B42, B33, B32, B41, B37.	176.89	1223.92
		BARSHITAKLI	B 67, B65, B47, B48, B48, B66, B70, B80, B79, B67, B63, B71, B84, B86, B77, B73, B60, B16, B35, B36, B26, B28, B23, B27, B29, B38, B20, B40.	258.29	
		LONI(pt.)	B104, B105, B106, B109, B97, B100, B101, B102, B111, B112, B116, B119, B123, B124, B121, B92, B120, B122, B131, B136, B137, B74, B75, B76, B61, B87, B49, B72, B62, B64, B78, B85.	227.56	
		KATEPURNA (Pt.)	B95, B94, B90, B89, B88, B93, B99, B91, B96, B98, B126, B17, B128, 129, B125, B13, B132, B139, B135, B134, B138, B108, B110, B130, B103, B107, B159, B172.	202.79	
		HIRPUR(pt.)	B173, B150, B145, B146, B148, B151, B149, B174, B183, B142, B143, B140, B152, B175, B153, B156, B180, B181, B176, B177, B185, B147, B169, B161, B182, B154, B178, B175, B179, B162, B171, B186, B188, B170, B167, B168, B141, B163, B164, B160.	294.11	
		POHA(pt.)	B254, B184, B187, B144, B158, B194, B157, B166.	64.28	
		LONI(pt.)	B113, B114, B115, B118, B117,	39.18	39.18
3	Karanja	KATEPURNA(Pt.)	B189, B190, B201, B202.	29.86	699.49
		HIRPUR(pt.)	B196, B199, B200.	14.20	
		KARANJA	B279, B280, B281, B203, B219, B232, B238, B247, B268, B269, B265, B266, B267, B195, B288, B289, B270, B271, B209, B290, B211, B212, B252, B291, B210, B277, B278, B282, B286, B287, B283, B284, B285, B205, B217, B218, B208, B231, B236, B239, B240, B242, B243, B213, B214, B241.	430.66	
		POHA(pt.)	B228, B229, B230, B235, B251, B233, B234, B248, B249, B250, B215, B216, B227, B207, B226, B222, B223, B256, B206, B237, B244, B245, B246, B224, B225, B220, B221, B259, B275, B276, B272, B273, B274, B253, B193, B191, B165, B192, B197, B198.	224.77	
		7	Felling Series.	1962.59	1962.59

SECTION 4: SEPCIAL OBJECTS OF MANAGEMENT:

V.4.1. The special objects of management are as follows:

- i) To maintain sufficient tree cover to avoid ill-effects of soil erosion in general and along river and nala bank which are denuded frequently.
- ii) To reclaim exposed soils through intensive soil and moisture conservation measures.
- iii) To raise Babul plantation in the area with the involvement of local people so as to augment the supply of firewood, small timber for agricultural implements to the local people.

TABLE NO. – 96

DETAILS ABOUT VARIOUS TREATMENT TYPES IN BABUL WORKING

CIRCLE (in ha)

Working circle	A			B		C + D	Total
	A1	A2	A3	B1	B2		
1	2	3	4	5	6	7	10
BABUL WC	123.11	136.39	366.83	408.46	566.78	361.06	1962.59

NOTE A-1 type Area having more than 25° slope, A-2 type Twenty m. wide strip on both sides of stream, A-3 type Area susceptible to excessive erosion (Very severe), B-1 type Open forests (density < 0.4), B-2 type Under stock Area including blank area. C type Areas having pole crop, D type Areas having density 0.4 and over.

The compartment-wise details about various treatment types in Babul Working Circle is given in Appendix No.LII of volume II of this Working Plan.

TABLE NO. – 97**DETAILS ABOUT THE SITE SUITABILITY FOR DIFFERENT APPLICATIONS IN BABUL WORKING CIRCLE (in ha)**

Working circle	Waterbody	Protection areas	Massionary/Cement/Earthen Dam	Bamboo plantation (Seeding)	Percolation tank	Teak plantation	Miscellaneous plantation	Reforestation/Afforestation	Meadow development/aromatic grasses	Gap filling/Enrichment planting	Tending/selection felling	Fodder Improvement	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Babul wc	88.48	397.04	77.14	53.27	286.80	32.37	176.56	71.76	1.72	407.76	338.80	30.89	1962.59

The compartment-wise details about the site suitability for different applications in Babul Working Circle is given in Appendix No. LIII of Volume II of this Working Plan.

TABLE NO. – 98**DETAILS ABOUT SOIL DEPTH IN BABUL WORKING CIRCLE (in ha)**

Working circle	Habitatation	Shallow to very shallow (<10)	Shallow (10-25)	Moderately deep (25-50)	Deep (50-100 Cm)	Very deep (> 100)	Waterbody	Total
1	2	3	4	5	6	7	8	9
BABUL	4.00	49.51	396.90	293.30	147.82	963.40	107.66	1962.59

The compartment-wise details about soil depth in Babul Working Circle is given in Appendix No. LIV of Volume II of this Working Plan.

TABLE NO. – 99**DETAILS ABOUT SOIL TEXTURE IN BABUL WORKING CIRCLE (in ha)**

Working circle	Habitatation mask	Sandy clay loam	Gravelly sandy loam	Gravelly sandy clay loam	Gravelly clay	Gravelly clay loam	Clayey	clay loam	Silty clay	Silty loam	Water body Mask	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Babul wc	2.41	22.68	21.52	53.68	241.30	118.99	2835.97	555.94	0.00	71.21	115.54	3.71	1962.59

The compartment-wise details about soil texture in in Babul Working Circle is given in Appendix No. LV of Volume II of this Working Plan.

TABLE NO. – 100

DETAILS ABOUT THE AREAS PRONE FOR SOIL EROSION IN BABUL

WORKING CIRCLE (in ha)

Working circle	Habitat ion Mask	Slight	Slight to moderate	Moderate	Moderate to severe	Severe to very severe	Very severe	Water body Mask	Total
1	2	3	4	5	6	7	8	9	10
BABUL WC	2.46	637.40	564.11	17.63	247.67	374.16	0.00	119.16	1962.59

The compartment-wise details about the areas prone for soil in Babul Working Circle is given in Appendix No.LVI of Volume II of this Working Plan.

TABLE NO. – 101

DETAILS ABOUT THE GROUND WATER POTENTIAL IN BABUL

WORKING CIRCLE (in ha)

Working circle	Excellent	Good	Moderate	Moderate to poor	Poor	Poor to nil	Habitation and Waterbody	Total
1	2	3	4	5	6	7	8	9
BABUL WC	0.00	302.32	793.48	118.48	267.69	28.90	142.36	1962.59

The compartment-wise details about the ground water potential is given in Appendix No. LVII of Volume II of this Working Plan.

SECTION 5: ANALYSIS AND VALUATION OF THE CROP:

V.5.1. The total area has been stock mapped. It is also assessed with the help of satellite imagery of LISS – III of Nov. 2007 and the analysis carried out with the help of R.R.S.S.C. Nagpur. The results of stock mapping reveals that the forest are under stocked and have shrubby growth except in few patches where matured Babul trees exists.

SECTION 6: SILVICULTURAL SYSTEM / METHOD OF TREATMENT:

V.6.1. Babul regeneration comes up very well where there is no biotic pressure or heavy grazing pressure and more over it is not good coppicer. The method of treatment prescribed is improvement of existing crop and raising plantations in open patches. The silviculture system shall be improvement felling supplemented by artificial regeneration.

SECTION 7: FORMATION OF PLANTATION SERIES AND COUPES:

V.7.1. Formation of plantation series and coupes are given in Appendix No.XLV b of volume II.

SECTION 8 : CHOICE OF SPECIES :-

V.8.1. The main species of the crop is Babul. Tolia variety is considered as superior and live longer when compared to Kauria which is mostly preferred by local people but Kauria variety may also be used. Other species are *Neem*, *Prososis*, *Khair*, *Shirus*, *Shiwan*, *Maharukh* and at some places like moist localities , nala bank *Bamboo* can also be tried.

SECTION 9 : ROTATION

V.9.1. The rotation period of Babul was fixed at 30 years in Parasnis's Plan and the soil during this period is sufficiently enriched to support the Babul plantations so rotation is fixed at 30 years. Babul trees are expected to reach a size of 75 cms in girth at B.H. and about 12 mt. in height in 30 years.

SECTION 10: REGULATION OF YIELD:

V.10.1. No appreciable yield will be obtained. Yield is expected from the patches where good crop exists.

SECTION 11 : DEMARCATION AND MARKING :

V.11.1. Coupes due for working will be demarcated one year in advance. Except coupe No. I, in which the demarking and marking will be carried out in the some of felling. Since the areas are scattered in small patches one coupe may spread in more than one patch.

V.11.2. Marking – The following trees will be marked for felling :-

1. Dead and malformed trees leaving 2 trees per ha.
2. All trees above 75 cms. will be enumerated and 50% of which are to be marked.
3. All live high stumps.

SECTION 12 : AGENCY OF WORKING :

V.12.1. All operations in Babul Working Circle shall be carried out departmentally for executing works and raising plantation. JMFC members shall be involved.

SECTION 13: SOIL AND MOISTURE CONSERVATION WORKS :

V.13.1. Soil and Moisture conservation works will be taken over the entire coupe in the year of harvesting as given in Miscellaneous Regulations.

V.13.2. Artificial Regeneration – The areas of Babul ban are deficient of natural regeneration and these areas will be planted through artificial regeneration.

Choice of species :- The main species of the crop is Babul, which comes up very well in these areas of the Working Circle, especially, this species is out-crop of soda salts where no other species thrive well. Telia variety of Babul is much more preferable, however Kauria variety is also be used by local people. Other species such as Prosopis juliflora, Khair are preferable in lighter black calcareous soil and poor stoney soils. Some other species like Neem and Siris also give better results in such areas provided proper care is taken for protection of plantation. Bamboo species is preferable in moist locality and along nala bank and very much useful in protecting soils from erosion by annual floods.

In such areas, where ever soda salt soils are there, in which Babul plantation will be tried, where as in other areas Prosopis, Shiwan, Siris, Maharukh and in moist areas Bamboo (*Dendrocalamus strictus*) Arjun, Jamun plantation will be tried.

The plantation in the worked coupe will be taken in the next year of harvesting. Pre-monsoon works shall be taken up in the year of harvesting. JFM committies shall be involved in raising and protecting of plantations. To raise good nursery stocks source of

seed is very important. The seeds so collected should be treated in hot water and keeping the same in the water over night for cooling. The seeds will be sown in polythene bags in the nurseries and resulted seedlings will be used as planting stock. The boundaries of the coupe shall be planted with Neem seedlings so that Neem trees delineate Babul bans from that of agriculture fields. For raising seedlings of other species in the nursery appropriate methods can be used. To take up plantations in these areas procedure given in Afforestation Working Circle shall be followed.

V.13.3. Weeding – Repeated weedings will be done along with causality replacement as in the case of regular plantations. The congested rows will be thinned out earlier and the Babul plant spaced approximately to their own heights. 3 weedings in 1st year, 2 in 2nd and 1 in 3rd year will be carried out.

SECTION 14 : SUBSIDIARY SILVICULTURAL OPERATIONS:

V.14.1. A) Cutting Back Operations :- These operations will be carried out in the next year of the main felling. The following operation is prescribed :-

- i) All trees marked for felling but not felled will be felled.
- ii) All damaged trees which are not likely to recover will be cut.

B) Cleaning :- It is carried out in the 6th year of main felling. The activities are

- i) All unwanted undergrowth interfering with natural seedling or planted seedlings of Babul and other plants will be removed. Congested rows of Babul and other plants will be thinned.

C) Thinnings :- Thinnings will be carried out departmentally in the 6th , 11th and 21st year of plantation. Babul trees will be spaced approximately to their own height.

SECTION 15 : OTHER REGULATIONS :

V.15.1. Closure to grazing - The planted coupes will be closed to grazing for a period of 5 years from the year of planting. JFMC shall be involved in protection of such plantations.

V.15.2.Fire protection – The coupes will be rigidly protected from fire for the period of 5 years as per the procedure given in fire protection Chapter No: XII of Forest Protection in the tract.

SECTION 16 : INVOLVEMENT OF VILLAGE COMMUNITIES :

V.16.1 These Babul bans are situated in scattered patches in the midst of agriculture field or adjoining to villages. Due to their locational disadvantage, these forests are subjected to illicit felling, grazing, encroachment and other biotic pressures. To regenerate, and re-stock these areas active involvement and co-operation of local people in protection, management and development of Babul bans is necessary. The Dy. Conservator of Forests involve members JMFC on the basis of Government Resolutions and Circulars in relation to JFM.

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CHAPTER – VI

WORKING PLAN FOR THE FODDER IMPROVEMENT WORKING CIRCLE

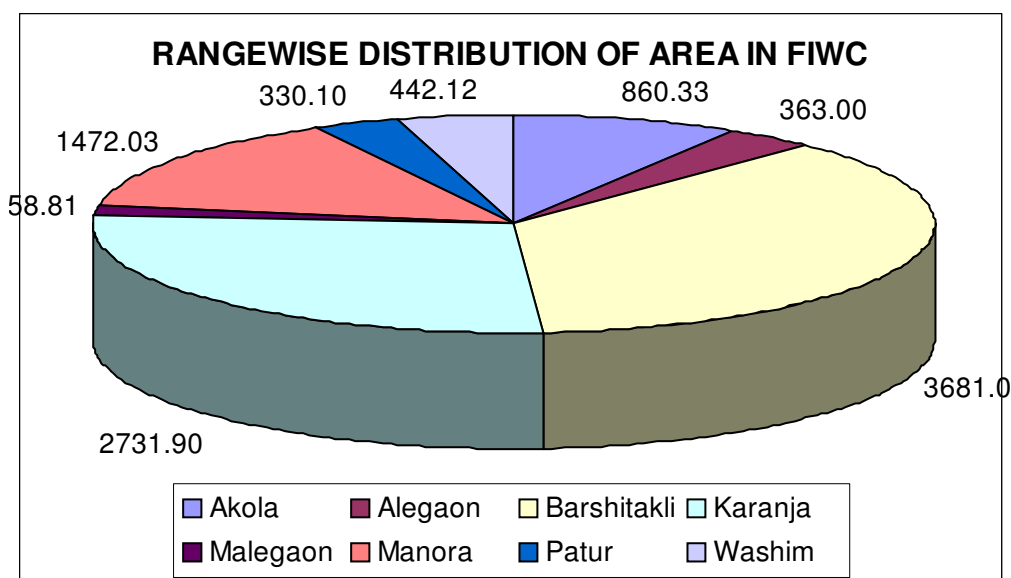
SECTION 1: GENERAL CONSTITUTION :

VI.1.1. This Working Circle includes the entire area of Fodder Reserved Working Circle and Pasture Improvement Working Circle of previous Plan. They are called as Ramnas locally. In Thengdi's Plan the area was managed under Fodder Working Circle. Total area included in this working circle is 10039.37 Ha. Rangewise distribution of area allotted to this working circle is given in the following table :-

TABLE NO. – 102

RANGEWISE AND CATEGORYWISE DISTRIBUTION OF AREA IN FODDER IMPROVEMENT WORKING CIRCLE

Sr. No	Range	Area of Range	Area allotted (ha.)					% to the area of the Range	% to the area of WC
			RF	PF	AQUIR ED LAND	U/F	TOTAL		
1	Akola	4421.21	860.33	0.00	0.00	0.00	860.33	19.46	8.57
2	Alegaon	11614.98	363.00	0.00	0.00	0.00	363.00	3.13	3.62
3	Barshitakli	14132.43	3681.08	0.00	0.00	0.00	3681.08	26.05	36.67
4	Karanja	9067.57	2731.90	0.00	0.00	0.00	2731.90	30.13	27.21
5	Malegaon	11736.65	158.81	0.00	0.00	0.00	158.81	1.35	1.58
6	Manora	14659.37	1472.03	0.00	0.00	0.00	1472.03	10.04	14.66
7	Patur	8923.33	330.10	0.00	0.00	0.00	330.10	3.70	3.29
8	Washim	6454.07	442.12	0.00	0.00	0.00	442.12	6.85	4.40
	Total	81009.61	10039.37	0.00	0.00	0.00	10039.37		100.00



VI.1.2. These areas in general are located adjoining to the villages. The areas have got potential for fodder development if properly managed, can meet the fodder demand of local cattle population to an appreciable extent

SECTION 2: GENERAL CHARACTERS OF VEGETATION:

VI.2.1. These areas are open forest with several grassy blanks having site quality IVb with sparsely wooded. Majority of the areas except a few have coarse and unpalatable grass species such as Kushal (*Andropogon contortus*) and Bhurbhusi (*Eragrostis tennela*). The good quality of palatable grasses such as *Sheda, Paunya and Marvel* are sparsely met with. The other tree species like *Palas, Bor, Khair* etc. are also noticed in this area. The local sub type of vegetation is “Degraded Scrub Forests”.

SECTION 3: BLOCKS AND COMPARTMENTS:

VI.3.1. The compartments allotted to this working circle are given below :-

TABLE NO. – 103

Sr. No	Range	Felling Series	Comptt. No.	Total Area of F.S. (in ha.)	Total Area allotted from each Range
1	Akola	BARSHITAKLI(pt.)	389, 390, 393, 393a.	616.19	860.33
		KURUM(pt.)	403	37.43	
		SOMTHANA(pt.)	408	206.71	
2	Alegaon	ALEGAON(Pt.)	1	363.00	363.00
3	Barshitakli	ALEGAON(Pt.)	136	227.03	3681.08
		BARSHITAKLI(pt.)	135, 391, 392, 395	839.14	
		BORGAON	C7, 394, 398, C12, 397, 396, C8, 399, C5, C6, C9	1549.58	
		KURUM(pt.)	C10, C11, C13, C14, C15, C20, C21, C24, C13b	1065.33	
4	Karanja	BARSHITAKLI(pt.)	C61, C62.	90.16	2731.90
		KURUM(pt.)	C167, C168, C169, C170, 404, 405, 406, 407.	408.97	
		SOMTHANA(pt.)	418, C96, C97b, 423, C123, C123b, C128, 409, 410, 411, 411a, 413, 414, 415, 416, 417, 419, 420, 421, 422, C100, C101, 425, C126, C127, C129, C130, C120, C110, C112, C113.	1064.82	
		SAWARGAON(pt.)	427, C159, C114, C116, C57, C194.	1049.29	
		PALODI(pt.)	428, 430, 431, 432, 433, 434.	118.66	
5	Malegaon	ALEGAON(Pt.)	C181, C182, C183.	158.81	158.81
6	Manora	SAWARGAON(pt.)	C160, C216.	404.39	1472.03
		PALODI(pt.)	429, 435, 436, 437.	1067.64	
7	Patur	ALEGAON(Pt.)	387, 388	330.1	330.1
8	Washim	ALEGAON(Pt.)	158, 401, 402	442.12	442.12
		Felling Series		10039.37	

SECTION 4: SPECIAL OBJECTS OF MANAGEMETNT:

VI.4.1. To improve the fodder quality and quantity in the areas, by introducing the palatable species of grasses and tree species of fodder value.

VI.4.2. To meet the demands of local cattle population for palatable fodder.

VI.4.3. To improve site conditions through intensive soil and moisture conservation measures in order to achieve qualitative vegetal cover.

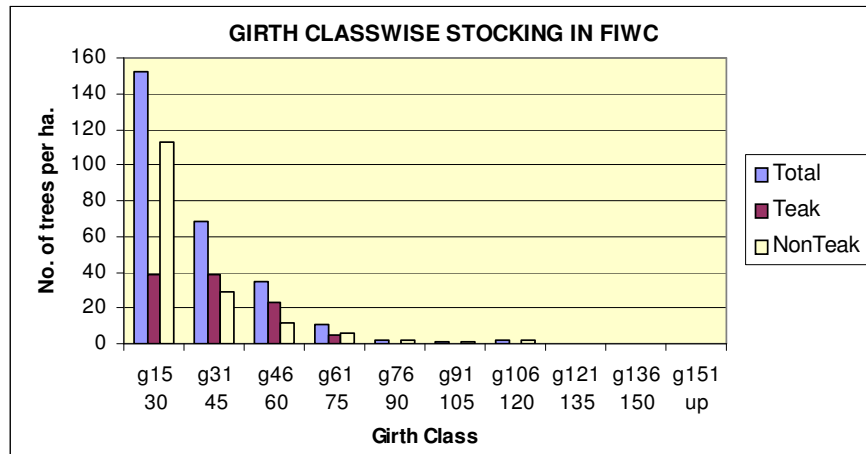
SECTION 5: ANALYSIS AND VALUATION OF THE CROP:

VI.5.1. Existing stock maps have been updated. The stock is assessed with the help of satellite imagery of LIS – III of Nov. 2007 and the analysis carried out with the help of R.R.S.S.C. Nagpur and with adequate ground truth verification. The results of analysis are given below :-

TABLE NO. – 104

ANALYSIS AND VALUATION OF THE CROP

Sr. No.	Girth Class in cm	Teak			Others			Total	
		No.	%age wrt Total teak spp.	%age wrt Total stock	No.	%age wrt Total Misc. spp.	%age wrt Total stock	No.	%age wrt Total stock
1	15-30	39	36.79	14.39	113	68.48	41.7	152	56.09
2	31-45	39	36.79	14.39	29	17.58	10.7	68	25.09
3	46-60	23	21.70	8.49	12	7.27	4.43	35	12.92
4	61-75	5	4.72	1.85	6	3.64	2.21	11	4.06
5	76-90	0	0.00	0	2	1.21	0.74	2	0.74
6	91-105	0	0.00	0	1	0.61	0.37	1	0.37
7	106-120	0	0.00	0	2	1.21	0.74	2	0.74
8	121-135	0	0.00	0	0	0.00	0	0	0.00
9	136-150	0	0.00	0	0	0.00	0	0	0.00
10	151 above	0	0.00	0	0	0.00	0	0	0.00
		106	100	39.12	165	100	60.89	271	100



SECTION 6: METHOD OF TREATMENT:

VI.6.1. The areas will be closed with barbed wire fencing or live hedge fencing in phased manner for effective protection from illegal grazing.

VI.6.2. Intensive soil and moisture conservation works (nala bunding, plugging, cement plugs etc.) shall be undertaken. Nala bunding shall be on the basis of watershed depending upon site condition and requirement of the area. Obnoxious weeds shall be uprooted and burnt. Sowing of seeds of grasses at suitable and selected places shall also be under-taken.

VI.6.3. The area shall be ploughed for sowing of seeds of grasses at suitable and selected places. The unpalatable grasses shall be removed from the ploughed area in pre-flowering stage.

VI.6.4. Seeds of superior fodder grasses shall be broadcasted in the ploughed area at the onset of monsoon.

VI.6.5. The fodder grasses raised shall be allowed to be cut only from 3rd year onwards after seeding.

VI.6.6. Planting of tree species of fodder value like *Anjan*, *Shisoo*, *Siris*, *Kanchan*, *Babul*, *Tiwas*, etc shall be undertaken by poly-pot planting method after the onset of monsoon.

TABLE NO. – 105

DETAILS ABOUT VARIOUS TREATMENT TYPES IN FIWC (in ha)

Working circle	A			B		C + D	Total
	A1	A2	A3	B1	B2		
1	2	3	4	5	6	7	8
FIWC	351.42	771.34	2476.72	1276.45	4877.27	286.17	10039.37

NOTE A-1 type Area having more than 25⁰ slope, A-2 type Twenty m. wide strip on both sides of stream, A-3 type Area susceptible to excessive erosion (Very severe), B-1 type Open forests (density < 0.4), B-2 type Under stock Area including blank area., C type Areas having pole crop, D type Areas having density 0.4 and over.

The compartment-wise details about various treatment types in Fodder Improvement Working Circle is given in Appendix No. LII of Volume II of this Working Plan.

TABLE NO. – 106

DETAILS ABOUT THE SITE SUITABILITY FOR DIFFERENT APPLICATIONS IN FIWC (in ha)

Working circle	Waterbody	Protection areas	Massionary/Cement/Earthen Dam	Bamboo plantation (Seeding)	Percolation tank	Teak plantation	Miscellaneous plantation	Reforestation/Afforestation	Meadow development/aromatic grasses	Gap filling/Enrichment planting	Tending/selection felling	Fodder Improvement	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
FIWC	107.42	2207.15	57.64	443.06	481.83	383.13	2100.64	2122.83	4.60	1472.82	521.19	137.06	10039.37

The compartment-wise details about the site suitability for different applications in Fodder Improvement Working Circle is given in Appendix No. LIII of Volume II of this Working Plan.

TABLE NO. – 107

DETAILS ABOUT SOIL DEPTH IN FIWC (in ha)

Working circle	Habitatation	Shallow to very shallow (<10)	Shallow (10-25)	Moderately deep (25-50)	Deep (50-100 Cm)	Very deep (> 100)	Waterbody	Total
1	2	3	4	5	6	7	8	9
FIWC	13.34	496.09	5361.29	2194.01	1061.30	786.02	127.32	10039.37

The Details about soil depth in Fodder Improvement Working Circle is given in Appendix No. LIV of Volume II of this Working Plan.

TABLE NO. – 108

DETAILS ABOUT SOIL TEXTURE IN FIWC (in ha)

Working circle	Habitatation mask	Sandy clay loam	Gravelly sandy loam	Gravelly sandy clay loam	Gravelly clay	Gravelly clay loam	clayey	Clay loam	Silty clay	Silty loam	Water body Mask	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
FIWC	52.01	739.74	483.78	496.91	1868.51	2812.93	1215.08	71.76	15.78	95.92	97.30	9.29	10039.37

The compartment-wise details about soil texture in Fodder improvement working circle is given in appendix No. LV of Volume II of this Working Plan.

TABLE NO. – 109

DETAILS ABOUT THE AREAS PRONE FOR SOIL EROSION IN FIWC (in ha)

Working circle	Habitat Mask	Slight	Slight to moderate	Moderate	Moderate to severe	Severe to very severe	Very severe	Water body Mask	Total
1	2	3	4	5	6	7	8	9	10
FIWC	9.62	749.46	1869.15	0.00	4914.34	2389.94	0.00	106.86	10039.37

The compartment-wise details about the areas prone for soil erosion in Fodder Improvement Working Circle is given in Appendix No. LVI of Volume II of this Working Plan

TABLE NO. – 110

DETAILS ABOUT THE GROUND WATER POTENTIAL IN FIWC (in ha)

Working circle	Excellent	Good	Moderate	Moderate to poor	Poor	Poor to nil	Habitat and Waterbody	Total
1	2	3	4	5	6	7	8	9
FIWC	0.00	330.02	1038.09	0.67	8540.07	10.03	120.49	10039.37

The compartment-wise details about the ground water potential is given in Appendix No. LVII of Volume II of this Working Plan.

VI.6.7. TREATMENT FOR RAMNAS :-

- (i) All the Ramnas shall be completely closed with barbed wire fencing or with T.C.M. or live hedge fencing.
- (ii) These Ramnas shall be completely closed to grazing.
- (iii) The entire area of Ramna is divided into 7 Working Series and in each Working Series 20 coupes are laid down. A treatment map shall be prepared indicating coupe area of the Ramna as a coupe of Working Series. The area selected for treatment shall be kept closed from cutting for the same year.

The Ramnas shall be auctioned in the month of June or July for the disposal of the grass from the closed coupes as per the instructions contained in G.R. No.MFD/1169/118931(6)F-2/Dt. 29/10/1976, in which it is stated that , the grasses from closed coupes will annually be offered on cutting terns to Gram-Panchayat or

public bodies or FLCs in the neighbouring area at a reasonable price to be fixed by the Department considering availability of grass and current market trends. In case these public bodies do not come forward to purchase the grass, then it may be sold in public auction or may allow to be removed by the local people at free of cost without damaging the forest.

As per the instructions contained in the Government Resolution No./ MAC/ 2000/ C.N.143/ F-2 dated: 25/4/2003, in which specific instructions have been given regarding utilization of Non Timber Forest Produce. As fodder is Non Timber Forest Produce it is made available except from protected areas for the members of the JFM Committee for domestic use at the rates fixed by the JFM Committee. The members those who do not take part in the protection of forest, they will not be entitled for such a benefit.

In case of fodder areas allotted to JFM Committee's free grazing and removal of grasses at free of cost shall not be permitted. As per the provisions contained Government Resolution No./ MAC/ 2000/ C.N.143/ F-2 dated: 25/4/2003, if anybody in need of grazing area to graze their cattle areas shall be reserved for fodder development by looking to the capacity of fodder production of the area and rotational grazing will be permitted. For such areas rates of grazing fee are fixed by the JFM Committee. In case of other areas the JFM Committee will give permission for cut and carry of grasses as per the rates fixed by the JFM Committee. Those villages which resort to complete stall feeding of the cattle shall be encouraged as decided by the JFM Committee.

SECTION 7: FORMATION OF COUPES: The entire area is divided into 7 Working Series and 20 coupes, in each Working Series and the detailed statement showing Working Series and coupes in each series given in Appendix No. XLIVb of Volume II of the Plan.

Implementing Agencies : All the operations in this Working Circle shall be carried out through Department.

SECTION 8: CHOICE OF THE SPECIES:

VI.8.1. Seed broadcasting of good palatable grasses like Sheda (*Sehima nervosum*), Paunya (*Sehima sulcatum*), Marvel (*Dicanthium annulatum*), Neel Gavati (*Panicum antidotale*) etc. and fodder tree species Babul (*Acacia nilotica*) Siris (*Albizia lebbek*), Anjan (*Hardwickia binata*), Apta (*Bauhinia* sp.), Tiwas (*Ougenia dalbergioides*) etc. shall be favoured. The final selection of species shall be as per the site requirement.

SECTION 9: SOIL AND MOISTURE CONSERVATION WORKS:

VI.9.1. The entire area of the coupe shall be treated with intensive soil and moisture conservation measures as given in the chapter of miscellaneous regulations.

SECTION 10: REGENERATION :

VI.10.1. These areas are basically earmarked for raising grasses and fodder. Superior palatable grass seeds such as Paunya, Sheda, Mushan, Marvel etc. shall be sown to raise palatable grasses in order to meet the demand for grasses of local people to feed their cattle. Apart from this superior fodder yielding fodder species shall be planted at suitable places based on the site conditions with species such as Anjan, Babul, Siris, Tiwas etc.

SECTION 11: OTHER REGULATIONS:

VI.11.1. Fire Protection: - The area under treatment shall be effectively fire traced every year and protected rigidly from fire as given in fire protection in Chapter No: XII of Forest Protection in the tract.

VI.11.2. Grazing: -No grazing shall be allowed for first three years of planting. Cutting of grass shall be allowed from 3rd year onwards after 31st October. The grazing shall be regulated on the basis of Govt. of Maharashtra, Revenue and Forest Department, Resolution No.MFP-1365/ 132211-Y, Date: 6th December 1968 and Resolution No. MFP/1369/63695-Z/ Date: 3rd November 1973.

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CHAPTER. VII

AREA TRANSFERRED TO OTHER DEPARTMENTS

SECTION VII. 1:- STATUS OF AREAS:-

- 1.0 The areas handed over to other departments but not disforested.
- 2.0 The areas handed over to other department but not cleared under F.C.A. 1980 by the Central Government.

TABLE NO. – 111

STATEMENT SHOWING THE DETAILS OF AREAS TRANSFERRED TO OTHER DEPARTMENT BUT NOT NOTIFIED

Sr. No.	Legal Status/ Name of Project	Beat	Village	Compt. No./ Survey No.	Range	Area Trans.to oth.Dept./ Disforested	Remarks
1	2	3	4	5	6	7	8
1	RF (A'Class)	---	---	137	Washim	73.52	
2	RF (A'Class)	---	---	162	b	70.81	
3	RF (A'Class)	---	---	163	b	67.99	
4	RF (A'Class)	---	---	170	b	10.93	
						223.25	
	RF (C'Class)	Bhildongar	Giroli	---	40(Pt), 43 to 46, 50, 54, 61, 62, 63, 68(Pt), 67, 238, 239, 240,	Karanja	18.36
	RF (C'Class)	Kolambi	Kalamba	---	54, 116 to 128,	Karanja	161.87
	RF (C'Class)	Kolambi	Savergaon (Kanhoba)	---	6, 7, 8, 19, 20, 21, 46, 57to 69,	Karanja	46.84
	RF (C'Class)	Dadgaon	Pimpri Bharat	---	2(Pt) 9 to 10(Pt) 13, 14, 15(Pt)	Karanja	20.67
	RF (C'Class)	Girda	Waghhol	---	61, 62, 63, 65, 68 to 72, 75,	Karanja	22.41
	RF (C'Class)	Karanja	Koli	---	75, 76,	Karanja	3.21
	RF (C'Class)	Somathana	Bagapur	---	3(pt) 6,	Karanja	0.52
	RF (C'Class)	Wai	Murambi	---	4 to 8, 10, 12, 17 to 25, 53, 62, 66, 67, 69, 72,	Karanja	3.24

	RF (C'Class)	Wai	Poha	---	2 to 5, 9, 10, 66, 67, 129, 136,137, 234, 235, 240, 265, 267 to 272, 274, 276 to 279	Karanja	95.68	
	RF (C'Class)	Zodga	Inja	---	15, 18, 20, 23, 24, 25, 26, 30, 32, 35, 36, 37(Pt) 38, 50,	Karanja	0.40	
	RF (C'Class)	Hatoli	Hatoli	---	153(Pt),	Karanja	40.47	
	RF (C'Class)	Pohradevi	Pohradevi	---	3, 4, 5, 13 to 22, 29, 30,	Karanja	1.88	
	RF (C'Class)	Pohradevi	Wigul(Naigaon)	---	66, 70, 93 to 100, 105, 112, 125 to 132, 137, 158, 159(Pt), 160,	Karanja	43.96	
	RF (C'Class)	Sawergaon T	Lohara	---	29 to 33, 38 to 40, 42, 49, 50,	Karanja	115.75	
	RF (C'Class)	Sawergaon T	Umardari	---	16, 17, 20, 21, 23 to 29, 31 32,	Karanja	74.29	
	RF (C'Class)	Shendurjana	Khambala	---	19(Pt), 33 to 40,	Karanja	131.88	
	RF (C'Class)	Fulumri	Godegaon	---	37,	Karanja	5.26	
	RF (C'Class)		Fulamri	---		Karanja	32.27	
	RF (C'Class)		Naigaon	---		Karanja	145.40	
	RF (C'Class)	Sawergaon	Sivrala	---		Alegaon	0.00	24.17 Ha. Area handed over to Buldana Divn.
	RF (C'Class)	Jamkeshwar	Pimpalgaon (H)	---	8 to 13, 15 to 20, 27 to 32, 34, 39, 5(Pt).	Akola	45.85	
	RF (C'Class)	Shahanur	Rajur (G)	---	22 to 24, 26, 27, 29 to 39.	Akola	161.84	
							1172.05	
3	RF			B 3	---		7.34	
4	RF			B 4	---		4.56	
5	RF			B 5	---		13.21	
6	RF			B 6	---		7.51	
7	RF			B 7	---		10.13	
8	RF			B 8	---		4.30	
51	RF			B 50	---		14.32	
52	RF			B 51	---		14.57	
53	RF			B 52	---		14.16	
54	RF			B 53	---		14.87	
55	RF			B 54	---		14.57	

56	RF			B 55	---		14.57
57	RF			B 56	---		12.95
58	RF			B 57	---		6.59
59	RF			B 58	---		13.76
60	RF			B 59	---		5.95
71	RF			B 69	---		8.24
85	RF			B 81	---		4.10
86	RF			B 82	---		2.43
87	RF			B 83	---		5.33
							193.46
1	Wan River Project			---	---		72.96
2	Uma River Project			---	---		49.12
3	Amdari Project			---	---		25.97
4	Kolambi Project			---	---		9.60
5	Madhapuri Pipe Line			---	---		0.10
6	Tandali Pipe Line			---	---		0.18
7	Waki Girda Pipe Line			---	---		0.14
8	Pimpri Pipe Line			---	---		0.03
9	Patur Pangra Road			---	---		1.44
10	Moharja Storage Tank			---	---		23.55
11	Adan Project			---	---		13.74
12	Mamatwadi 99 KV Line			---	---		0.32
13	Patur Talav			---	---		40.80
14	Dhamandari Talav			---	---		1.02
15	Dagad Parva Nala Bunding			---	---		0.38
16	Lohgad Nala Bunding			---	---		0.65
17	Karanja Bypass		Bhilkhed	---	30		0.38
			Sherpur	---	17		0.50
			Nagapur	---	6,7. (0.27+0.81)		1.08
18	1x250 MV Expansion Project at Paras TPS		Kasarkheda	---	16, 17 /-/ 386		8.73
19	MIT Gondgaon		Umri	---	96		12.04

20	MIT Undri Tq Karanja	Jamti	---	22	1.90
		Vilegaon	---	39	2.74
21	Zarandi Storage Tank	Sawergaon	---	4, 5	10.40
		Vasadani	---	237, 251, 252, 265.	
22	Ujaleshwar St. Tank	Ujaleshwar	---	55, 59.	0.77
23	Dodhani Trans. Line	Malrajura	---	131/104, 28/--	0.04
24	11KV Shanur to Malkapur Line	Malkapur	---	7 (0.21)	0.64
		Shahapur	---	13 (0.07), 16(0.126), 17(0.126), 19(0.105)	
25	Popatkhed MIT	Dahikhed	---	59	8.50
26	Ansing St. Tank	Ansing	---	275	28.84
27	Dagad Parva MIT	Dagadparva	---	3/-/-	0.97
28	Dagad Parva Pipeline	Dagadparva	---	22, 23, 24.	0.04
29	Dhumka Pipeline	Dhumka	---	135/ 60	0.03
30	Manora W.S.	Palodi	---	59/142, 49/143, 53/154, 54/153 Compt 144A, 145A	0.20
					317.80
					1906.56

SECTION VII 2 :- GENERAL CHARACTERISTICS OF VEGETATION :-

The nature of vegetation is of scrub or open type with poor quality of Teak in few pockets. Majority of the area has already been handed over to other departments.

SECTION VII 3 :- LEGAL STATUS :-

1. The areas which are handed over to other departments will have the same legal status until they are denotified. Therefore proposal shall be moved to denotify these areas and necessary entries should be made in form no. 1 after denotification.

CHAPTER – VIII

WORKING PLAN FOR NON-WOOD FOREST PRODUCE (OVERLAPPING)

WORKING CIRCLE

VIII.1. SECTION : GENERAL CONSTITUTION :

This Working Circle includes total forest of Akola Forest Division except the areas transferred to wildlife wing i.e. Narnala, Katepurna Sanctuaries and Karanja Sohal Sanctuary.

The Non-Wood Forest Produce includes both Minor Forest Produce that are available in the forest area and also medicinal products extracted out of medicinal plants available in the forest area.

TABLE NO. – 112

**NUMBER OF MINOR FOREST PRODUCE YIELDING SPECIES AND
PERCENTAGE IN AKOLA FOREST DIVISION.**

Sr. No.	Species	Total Number of Trees	Percentage
1	Anjan	555840	7.40
2	Aonla	397594	5.30
3	Behda	314020	4.18
4	Biba	212149	2.82
5	Char	424298	5.65
6	Dhawda	2730739	36.38
7	Kadai	375341	5.00
8	Khair	498476	6.64
9	Moha	305613	4.07
10	Salai	519246	6.92
11	Tendu	1173496	15.64
	Total	7506812	100.00

VIII.2. SECTION : GENERAL CHARACTERS OF VEGETATION :

Main species of Non Wood Forest Produce situated in this forest area are Mahua, Behda, Hirda, Char, Tendu, Dhawda, Aonla, Bel etc. The species of Non Wood Forest Produce are scattered all over the forest area well mixed with other species. Teak constitutes as principle species with its natural associates such as Tendu, Mahua, Salai Char, Dhaoda, Ain, Hirda, Behda, etc. In this division Tendu is a major Non-Wood Forest Produce species followed by Mahua seeds, Mahua flower, Myrobalon (Hirda, Behda, Aonla) Charoli, Kulu, honey, broom-grass. The compartmentwise distribution of a few important Non-Wood Forest Produce species in different girth classes as per analysis of enumeration data have been given in Appendix XXXVe of volume II of this plan. The site quality in this forest in general is IVb and IVa at some places. This Non-Wood Forest Produce yielding species are found in varying proportions in under stocked or in well stocked areas. Different Non-Wood Forest Produces are extracted from various parts of Non-Wood Forest Produce yielding species depending upon their utility.

VIII.3. SECTION : NON WOOD FOREST PRODUCE OF THE TRACT :

VIII.3.1 Minor Forest Produce : The species of Non-Wood Forest Produce are available throughout the tract with varying degree. These contribute to a large extent to meet the Non-Wood Forest Produce demands of the local forest dwellers directly or indirectly. Non-Wood Forest Produce not only plays an important role in economy but also generate employment to the local people.

VIII.3.2 Medicinal plants :

In this tract variety of medicinal plants are available which yield different types of medicines and are as used for curing different diseases by the local people. Medicinal plants occupying an important position in the socio-economic, cultural, spiritual and the medicinal arena of local people. Their sustainable management and harvesting can preserve and conserve bio-diversity retaining human and environmental health, generate employment and earn foreign exchange by promoting exports.

It is a world-wide felt need of community about the importance of medicinal plants and their uses in the modern society. These plants are not only necessary for maintaining the environmental balance and bio-diversity, but also they are considered as future source of medicare of human. In medicinal plants arena the resources are still to be explored and their appropriate uses are to be brought to the knowledge domain of people at grass root and acceptable level. This division is considered as very important treasure for future as far as the medicinal plants are concerned. At present the knowledge about the use of various products of medicinal is meagre. The knowledge and the method of extraction of medicinal plants are not favourable for future conservation of medicinal plants. In this area, many people donot know the methods of scientific and non destructive harvesting of products from medicinal plants.

Some of the medicinal plants in the division are not identified which requires intensified surveys and studies at micro level do not give proper picture about most of the medicinal plants. Many medicinal plants appear during rainy season and if the survey is not carried out in that season, many species of medicinal plants may not appear in the survey report of SOFR because of their life cycle. Mere identification of species of medicinal plants is not sufficient for better understanding, and in this direction intensive surveys and studies need to be carried out during the season before completion of their life cycles. More over most of the field staff do not have appropriate knowledge to identify with the phenological characters and study these medicinal plants. The subject of medicinal plants is one of the neglected aspects among the foresters. The field staff are required to oriented themselves towards medicinal plants in identification, conservation, harvesting, uses and knowledge about lifecycle of medicinal plants. It is necessary to impart appropriate training to the field staff about such aspects of medicinal plants. Some of the important medicinal plants identified along with the produces and uses given in the following table :-

TABLE NO. – 113

**TABLE SHOWING THE MEDICINAL PLANTS IDENTIFIED IN
AKOLA FOREST DIVISION AND THEIR USES**

Sr. No.	Local Name	Botanical Name	Parts used for Medicine	Use or Purpose	Other Uses
1	2	3	4	5	6
1	Apta	Bauhinia racemosa Lamk	Flowers and Leaves	Eye Treatment , Headache, Cough	Leaves are used for B.D.
2	Bibba	Semacarpus anacardium	Seeds	Cough and Cold Headache and Body Ace	Seeds used as Tonic
3	Dhawada	Anogeissus latifolia	Seeds, Gum Bark	Decentry and Tonic	Gum used as Tonic
		Wall			
4	Jambhul	Syzyium cumini	Leaves,Seeds and Bark	Decentry and Omating	Used in Dibeties
				Urinal Problem	
5	Moha	Madhuca (latifolia)	Flowers, Seeds,	Urinal Problem, Decentry,	Flowers are used
		Congifolia	Leaves and Bark	Heel Crack	for Tonic
6	Muradshenga	Helicteres isora	Flowers and Seeds	Stomach Problem and	
				Ear Problem	
7	Palas	Butea monosperna	Seeds,Flowers and Root	Pregnacy, Urinal	Root Bark is used
			Bark	Problem,Scorpin Bite	as a Rope
8	Katsawar	Bombax ceiba	Bark,Gum,Flowers and	Gyenic Problem,Tonic	Roots are used
			Roots	Decentry	as Tonic
9	Umbar	Ficus racemosa	Seeds,Leaves,Laticus	Mouth, Skin problem	
10	Khair	Acacia catechu	Leaves,Seeds and Bark	Skin,Mouth Problem	Kattha manufac-turing.
11	Karanj	Pongamia pinnata	Seeds and Leaves	Skin Problem, Wound	Oil is extracted
				Stomach Problem	from seed.
12	Adulsa	Adhatoda vasica	Fruits and Seeds	Cough and Asthama	Tonic.
13	Kalmegh	Andrographis paniculata	Whole plant	Rabbies and Snake repellent	
14	Gokarna	Barleria cristata	Leaves and Roots	Boddy pains	Tooth Powder
				Swelling	
15	Gajkarni	Rhinacanthus nasuta	Roots and Leaves	Anti Cancer	
16	Agadha	Achyinthes aspra.	Seeds and Oil	Cough, Rabies	Tonning
17	Cashew nut	Anacardium	Seeds , Bark and Root	Tonning, Skin,	Tonic

		occidentale			
18	Ghingan	Lannea coromandelica	Bark and Leaves	Wounds, Swelling	
19	Sitaphal	Annona suamosa	Fruits and Leaves	Killing lice, Wounds	Tonic
20	Brahami	Cantella asiatica	Whole Plant	Asthma, Fever and Leprosy	Tonic
21	Saptaparni	Alstonia scholaris	Bark	Asthma, Malaria and Child birth	
22	Sadafully	Catharanthus roseus	Whole Plant	Cancer, Diabetes	
23	Kuda	Holarrhena antidysenterica	Bark and Seeds	Cough, Fever and Dysentery	
24	Pandhara Chapha	Plumericaumnita	Latex	Scabies and Gum	
25	Sarpagandha	Rauvolfia serpentina	Roots	Snake bite, Fever	
26	Kala Kuda	Wrightia tinctoria	Bark and leave	Anti dots, Snake bite	
27	Vacha	Acorus calamus	Rhizomes	Asthama, Dysentery Anlegesic	
28	Suran	Amoriphophalus paeoniifolus	Corm	Piles, Throat, Weakness	Tonic
29	Rui	Calotropis gigantea	Whole Plant	Asthama, Leprosy and Antidot	
30	Medsing	Gymnema sylvestre	Whole Plant	Diabetes, Leucodрма	
31	Anantmool	Memidesmus hemidesmus	Roots	Skin diseases, Fever	
32	Akkalkara	Anacyclus pyrethrum	Roots	Tooth decay, Fever	Heart Tonic
33	Kadujire	Cntratherum anthelminiticum	Whole Plant	Against wormas	
34	Maka	Eclipta alba	Whole Plant	Skin diseases, Jaundice	Hair Tonic
35	Gorakhmundi	Sphaerantus indicus	Whole Plant	Cough, and Gastric	Blood purification
36	Kurmudi	Tridax procumbens	Whole Plant, Flower	Wounds, Skin diseases Scorpion bite	
37	Samudraphal	Barringtonia acutangula	Bark, Seeds	Liver, Disorders	
38	Rakta-rohida	Tecomella andulata	Bark	Skin diseases, Injuries	
39	Kanchan	Bauhinia varniegat	Bark and Flower	Dysentery, Leprosy	

40	Sagargota	Caesalpinia bonducella	Seeds,Roots	Malaria,Fever	Tonic
41	Chilahar	Caesalpinia sepiaria	Seeds	Uterine	Tonic
42	Amaltas	Cassifistula	Seeds,Flower and Roots	Asthama,Cancer	Blood purification
				Antidot	
43	Waghati	Cappri moonii	Fruits,	Cough,	Tonic
44	Behada	Terminalia bellirica	Bark, Fruits	Aniemia, Cough,Fever	Tonic
45	Hirda	Terminalia Chebula	Fruits,	Skin diseases,Fever	Tonic
46	Amarbel	Cuscuta reflexa	Whole Plant	Burns, Eye diseases	Tonic
47	Dudhavel	Lettsomia setosa	Leaves	Medicinal uses	
48	Bhokar	Cordia dichotoma,	Fruits, Barks and seeds	Dyspepsia,Dysentery,	
				Urinary disorders	
49	Keokand, Kust	Costus speciosus	Rhizomes,	Skin iseases,leprosy,	
				Asthma	
50	Chirati	Mukia maderaspatana	Roots	Tooth decay,	
51	Musta	Cyperus rotundus	Tubers	Dysentry, Cough	
52	Dukkerkand	Dioscorea bulbifera	Tubers	Abdomen pains, bone	
				Fracture, skin deseases	
				and jaundice	
53	Jamalgota	Baliospermum montanum	Leaves,Seeds	Asthma,Bronchitis,	
				Purgative,	
54	Ratanjot	Jatropa curcas	Roots, Latex	Abortifacient agent,	
				Burns, Cancer and	
				Inflammation	
55	Rohini	Mallotus philippensis	Seeds	Treatment of Blisters	
56	Aonla	Phyllanthus emblica	Fruits	Asthma,Bronchitis,	Liver Tonic
				Cold,Constipation	
57	Bhuiawalki	Phyllanthus fraternus	Whole Plants	Allergy,Dysentery	
				Jaundice,Gastro,	
				Urinal disorders	
58	Tendu	Diospyros melanoxylon	Fruits	Skin deseases,	
				Urinary complains	
				Germicidal	
59	Gunj	Abrus precatorius	Roots, Plants	Aphrodisiac, blood purifier	tonic, sore throat
				Eczema,Asthma,Cough	
				Diarrohoea,pains,menstrual	
				Disorders,	
60	Palas	Butea monosperma	Seeds, gum, & bark	Treatment of ringworms, and	
				Pimple, ulcers,dysentery,	
				Dyspepsia and worm-infestation	
				Flowers to treat Leprosy	

61	Gokarni	Clitoria ternatea	Roots	Antidot to snake bite	
62	Salaparni	Desmodium gangeticum	Roots	Chronic fever, vomiting and General debility	
63	Jyesthmadh	Clycyrrhiza glabra	Roots	Cough, Urinary disorders	
64	Tiwas	Ougeinia oojeinensis	Bark	Diarrhoea and dysentery	
65	Karanj	Pongamia pinnata	Seed	Bronchitis, cough, cold, ear complains, joint pains, Itching, eczema & rheumatism	
66	Bibla	Pterocarpus marsupium	Wood	Body pain, diarrhoea	
67	Raktchandan	Pterocarpus marsupium	Wood	Dysentery, skin diseases	
68	Bajradanti	Tephrosea purpurea	Plant	Asthma, Snake bite	
69	Bhira	Chloraxylon swietenia	Roots, Leaves, and Bark	Aphrodisiac, and neck pains	
70	Kali musali	Curculigi orchioides	Roots	Asthma, blindness, cough, cold, epilepsy and Jaundices	
71	Patharchur	Coleus aromaticus	Whole plant	Urinary problems, asthma and Ulcers	
72	Dimpal	Leonotis nepetaefolia	Flowers	Ringworm and swellings on Breast and body	
73	Droon Duru, Patota	Leucas plukeneti	Leaves	Headache, nose bleeding Scabies, skin disease Stomachache, constipation and fever	
74	Van tushi	Ocimum basilicum	Entire plant	Cholera, snake bites and Detoxication of alcohol	
75	Satavari	Asparagus racemosus	Tubers roots	Nervous disorders, tumors, Dysentery, leprosy, Leucorrhoea Fatigue, cardiac debility, Cough and bronchitis.	
76	Safed musali	Chlorophytum tuberosum	Tuberous roots	Sex tonic for men and women	Tonic and treat leucorrhoea
77	Ran-kanda	Drimia indica	Bulb	Cardic stimulator Fevers and skin diseases	
78	Karihari	Gloriossa superba	Seeds	Treat the gout.	
79	Madang	Dendrophthoe falcata	Plant	Antifertility, skin diseases	
80	Sonchaffa	Michelia champaca	Plant	Inflammation, Antifertility, Asthma, bronchitis, fever, Menstrual complains	
81	Antibala	Abutilon indicum	Seeds, leaves & roots	Demulcent, bronchitis Leprosy, piles and ulcers	

82	Jasvant	Hibiscus rosa	Bark	Skin diseases	
83	Bala	Sida cordifolia	Whole plant	Dysentery, gonorrhoea	
84	Jangli-methi	Sida rhombifolia	Roots	Child birth, tonic and against	
				Dysentery, gonorrhoea	
				heart ailments.	
85	Neem	Azadirachta indica	Leaves and seeds	Antiseptic, Antipyretic,	Leaves smoke is also
				Jaundice, skin diseases	used Insect repellent
86	Bakain	Melia azedarach	Leaves and flowers	Against skin diseases	
87	Vasan vel	Cocculus hirsutus	Leaves and roots	Dysentery, cuts, eczema,	
				Fevers	
88	Gulvel	Tinospora cordifolia	Whole plant	Asthma, bone fracture,	Health tonics
				Diarrhoea, fevers, dysentery,	
				Jaundice, malaria and skin dis.	
89	Khari	Acacia catchu	Heartwood and bark	Diarrhoea, eruption of skin,	
				Diabetes and anaemia	
90	Shikakai	Acacia concinna	Leaves and pods	Hairs and Lever tonic and	
				Against skin diseases	
91	Ratan Gunj	Adenanthera pavonina	Seeds	Wounds and swellings	
92	Lajkuli	Mimosa pudica	Roots and Leaves	Antifertility, boils, sores,	
				Child-birth, epilepsy,	
				gum trouble	
93	Phanas	Artocarpus heterophyllus	Leaf, root and fruit	Latex is used against	
				skin diseases	
94	Shevga	Moringa oleifera	Bark, Fruits and roots	Snake bite	Oil is use perfume
					industry.
95	Vidanga	Embelia ribes	Roots, Fruits and leaves	Cough, diarrhoea, fevers	
				skin diseases	
96	Widang	Embelia tsjeriam	Bark and roots	Throat complains, tonsils,	
				Treating burns, fever	
				and pneumonia	
97	Parijat	Nyctanthes arbor	Leaves and flowers	Bone fracture, rheumatism,	
				Malaria, sciatica, ulcers.	
98	Nagvel, Pan	Piper betel	Roots and Leaves	Antiseptic, Asthma and	
				eye disorders.	
99	Kalamire	Piper nigrum	Fruits	Treat arthritis, asthma,	
				Cough fever	

100	Kevada	Pandanus odoratissimus	Roots, Leaves and fruits	Miscarriage, scabies, leprosy, Snake bite
101	Lemon grass	Cymbopogon citratus	Leaves	Lemon grass oil, against Fever, headache, vomiting, Dysentery
102	Vala - Khus	Vetiveria zizanioides	Roots	Treating burns, sensation, Ulcers, skin diseases
103	Ranjai	Clematis triloba	Whole plant	Treatment of boils, itching And skin disorders
104	Maniphal	Catunargegam nutans	Roots and Fruits	Cramps
105	Bartondi (podophul)	Morinda pubescens	Fruit, root and leaves	Small pox, urinary complains
106	Bel	Aegle marmelos	Fruits, Leaves and roots	Laxative and heart and brain Tonic
107	Kavath	Feronia elephantum	Roots and Fruits	Asthma, bronchitis Relieving body pains
108	Safed chandan	Santalum album	Bark	Malaria,
109	Ritha	Sapindus trifoliatus	Bark and roots	Bodyache, headache
110	Moha	Madhuca longifolia	Bark, flowers, seeds and Heartwood	Sprains, digestive, disorders, Seeds oil laxative and& good for Rheumatism
111	Khirmi	Manilkara hexandra	Bark and fruits	Body ache, stomachache and chest pains
112	Bakul	Mimusops elengi	Bark, flowers and fruits	Plant parts are used Small pox.
113	Maharukh	Ailanthus excelsa	Bark	Tonic and treatment of cough Skin diseases
114	Datura	Datura metel	Leaves and fruits	Narcotice and antispasmodic Tooth decay
115	Mothi-ringani	Solanum ferox	Roots Fruits Leaves	Against Ashthma, Blood purification , Stomach disorders
116	Kangni	Solanum nigrum	Leaves	Antidot to opium toxications skin infections
117	Bhuriningani	Solanum surattense	Roots, Flowers	Swellings Bronchitis, chest pains

			and Fruits	cold, paralysis and snake bite	
118	Asvagandha	Withania somnifera	Roots	Leucoderma	
119	Kadai	Sterculia urens	Gum, roots, barks	Tonic bone dislocation and	
			and flowers	Fractures, dysentery	
120	Surankanda	Tacca leontopetaloides	Tubers	Bodyache, headache	
121	Dhaman	Grewia tiliifolia	Bark	Dysentey and itching	
			Roots	Syphilis and blood purification	
122	Arni	Clerodendrum multiflorum	Plant	Bodyache, cholera and fever	
123	Shivan	Gmelina arborea	Bark and Leaves	Bone fracture, cough,	
				Bronchitis	
124	Arni	Premna serratifolia	Roots	Cardic disorders, cough and	
				Asthma, bronchitis	
125	Nirgudi	Vitex negundo	Leaves	Body ache, headache	
126	Hadjod	Cissus quadrangularis	Roots	Bone fracture	
127	Ran halad	Curcuma zedoaria	Roots stocks palmately	Spike	
			Branched		

SECTION VIII. 4 :- SPECIAL OBJECTS OF MANAGEMENT :-

The National Forest Policy 1988 clearly pronounced that the development of Non-Wood Forest Produce has been one of the objectives in forest management. In consistent with National Forest Policy the special objects of management of Non-Wood Forest Produce are given below.

1. To improve the stocking of Non-Wood Forest Produce yielding species in the forest.
2. To protect and manage Non-Wood Forest Produce and the medicinal plants to utilize the existing potential optimally and to enhance the productivity of the species.
3. To take up appropriate measures for conservation and sustainable use of the species identified as Non-Wood Forest Produce.
4. To generate employment through Non-Wood Forest Produce there by improving socio-economic conditions of the local people.

5. To provide better and improved quality of life of tribal through traditions which support their life styles with sustainable harvest and use of Non-Wood Forest Produce.
6. To provide technical know-how for scientific and non- destructive extraction of medicinal plants.
7. To identify and conserve forest areas of Non-Wood Forest Produce yielding species and medicinal plants.

SECTION VIII.5 :- METHOD OF TREATMENT :-

Different types of treatment are prescribed for various kinds of Non wood forest Produce therefore the treatment suggested for Non-Wood Forest Produce species is as follows.

1. MAHUA :-

1) **Mahua flower** is rich source of food for forest dwellers which contain Sugar, Vitamins and Calcium. In some of the areas local people also prepare Mahua spirit out of Mahua flowers. The Mahua flower in its ripe form, has almost 73% of sugar. Mahua flowers are eaten in raw or cooked form and also eaten after frying or baking into cakes. In general the corolla tubes, after removing the stamens, are boiled for about 6 hours and left to simmer until water evaporates completely. The odour disappears as a result of cooking and the material becomes soft and a jelly like. It is often eaten with rice,tamarind,sai seeds,grains or other food as sweet meat. Dried Mahua flower is also boiled with rice and mixed with wheat and this provide a total food for local people.

Mahua spirit is prepared by local people by distillation of liquid containing fermented Moha flowers is the most important alcoholic drink in the tribal pockets of this division. The flowers are also used for preparation of certain kinds of non-alcoholic food drinks by some tribes. The flowers are used for the preparation of vinegar. Mahua flowers are rich in proteins,vitamins,sugar etc. which is one of the highly nutritious foods for local tribal.

2) **Mahua Fruit** is cream in colour and edible which are eaten either in raw or cooked. The seed of mahua are rich in oil content. Oil is extracted by local people for their domestic consumption as well as for sale. The Mahua fruits are also eaten by

cattle, sheep, goats, monkey and parrots. These fruits are having medicinal value and these are easily attacked by insects and ants, once they are fallen on the ground which become unfit for human consumption. Mahua oil extracted from seeds, is light yellow in colour used for cooking, for light in place of kerosene and for applying to hair purpose by the local people. It is also used in the manufacture of soaps, especially in laundry chips. In some places it is adopted in place of 'Ghee'. The crude oil of Mahua has a deep colour, highly acidic, unpleasant odour and bitter taste. After treatment it is used for cooking oil and some of the lubricants are also extracted from this oil. The oil is also used for candle, as a batching oil in Jute Industry and as a raw material for the production of stearic acid. 20 to 30% oil out of weight of the Kernels can be extracted depending upon the efficiency of the equipment used for crushing them. The Mahua cake which is a product of Mahua seed after extraction of oil, has got highly nutritive value and it is being exported to foreign countries as cattle feed specially to European countries.

Mahua oil has got a set of specific characteristics. For this purpose ISI standards has been prescribed which are given in the following table :-

TABLE NO. – 114

TABLE SHOWING CHARACTERISTICS OF MAHUA SEED OIL AS PER ISI STANDARD

Sr. No	Characteristics	Grade		
		I	II	III
1	Moisture and insoluble impurities % by mass maximum	0.10	0.25	0.50
2	Colour in a ¼ in cell on the Loviband scale expressed are Y+ 5R not deeper than	20	30	50
3	Refractive index at 40° c	1.459	to	1.460
4	Specific gravity at 30° c	0.852	to	0.875
5	Saponification	187	to	196
6	Iodine value	58	to	70
7	Unsaponification matter % by mass	200	3	300
8	Acid value maximum	05	200	>20

Studies conducted by MVSS, regarding production of Mahua flowers and seeds are given in the following table.

TABLE NO. – 115
PRODUCTION OF MAHUA FLOWERS AND SEEDS

Sr.No	GBH in cm	Weight in Kg	
		Flower	Seed
1	076-090	0800	120
2	091-105	1000	100
3	106-120	1125	2000
4	136-150	1330	275
5	151-175	1300	380
6	176-190	1500	400
7	191-220	2000	430
	Average	1234	272

3) Agency for collection of seeds : It is observed that the collection of Mahua flowers and seeds is presently being done by individuals in each village. Mahua seeds and flower collection is limited to vicinity of the villages and almost total collection of Mahua flower and seed available in the forest are collected by local people and there is no need to have a separate agency for collection.

4) MARKET : Local people after collecting Mahua flowers and seeds, majority of the collection is consumed locally and excess quantity is sold in the market to private purchasers as the Tribal Development Corporation (TDC) is not operating in this area under Monopoly Act.

SECTION VIII.6: OTHER REGULATIONS :

(i) Enumeration of all Mahua trees shall be conducted compartment wise and record of the same shall be kept at beat, round, range level.

(ii) The marked Mahua trees should be allotted to particular individual family for collection of flowers and fruits depending upon the number of trees and number families around it under Joint Forest Management.

(iii) During the collection of Mahua flowers and seeds local people burn the leaf-litter, which may sometimes lead to accidental fire in the forest. Therefore families who has been allotted trees may be educated to fire trace around Mahua trees then go for burning of leaf-litter on the ground within the radius of crown of Mahua trees. This process must be closely supervised by the concerned Beat Guard.

(iv) To enhance the number of trees in the forest special efforts must be taken up by the forest department with the help of local people, by taking up Mahua plantations under special schemes and in general plantation Mahua should become one of the fruit species and other special efforts for increasing the percentage of Mahua trees in the forests.

Yield :- Mahua trees start bearing flowers between 10 to 15 years of their plantation. Studies have been conducted by MVSS, Chandrapur regarding the yield of Mahua flowers and fruits. The studies of MVSS reveal that average Mahua tree will yield. Mahua flowers of 1235 Kg in weight and 272 Kg. of seed (on average).

3. GUM :- a) Dhawda Gum (*Anogiessus latifolia*) is the main source of gum in this area. This gum is mainly used for Medicine, Chemical, Cosmetic and Food Industries. For disposal of Dhawada gum, range area is constituted as one unit and these units are sold in public auction at the Divisional, head-quarter at Akola. The table given below indicates about Dhawda gum collection and revenue earned year wise :-

TABLE NO. – 116
GUM AUCTIONED AND REVENUE COLLECTED

Year	Quantity (Qtl.)	Revenue (Rs.)
1994-95	0	0.00
1995-96	0	0.00
1996-97	56	139074.00
1997-98	40	93130.00
1998-99	60	120866.00
99-2000	45	88750.00
2000-01	86	170842.00
2001-02	65	131960.00
2002-03	25	82300.00
2003-04	40	112501.00
2004-05	51	116450.00
2005-06	50	140030.00
2006-07	874	343200.00

b) Yield :- Yearwise production of Dhawada gum is given in Appendix No. XX of Volume II. For the purpose of collection of Dhawda gum the entire division is divided into eight gum units which are sold by auction. In this area the tapping of gum is through traditional methods as scientific tapping or non destructive method of tapping is not in practice.

4. Tapping rules :-

The tapping rules of gum derived by the FRI Dehradun are as follows :-

1. The tapping season will commence from November to end of May each year. No tree below 90 cm in girth will be tapped.
2. Tapping will be confined to the main bole of trees between 15 cm from ground level to the point from which first branch is given off.

3. Only trees above 90 cm in girth at breast height will be tapped.
4. Each tree will be tapped continuously for 3 years and will be given a rest for 3 years thereafter. The second tapping cycle will begin in the 7th year after the commencement of tapping season and will continue for another period of 3 years.
5. The initial blaze of 20 cm wide and 30 cm in length or height may be made in the month of November on trees at 15 cm above ground level with a sharp edge having 75cm wide blade the blaze is made 06 cm deep in the dark. Blaze may be made horizontally leaving approximately equal space between two blazes the blazes should not have any loose fiber. The lower surface of the blaze should slightly slopping towards to avoiding of guggul in the blaze pocket in case initial blazing is done by adze.
6. The guggul starts oozing out soon after blaze are made and may be collected initially after a month, i.e. about December when the blaze may also be freshened. Subsequent collection and freshening may be done fortnightly up to May. Thus 12 freshening may be required to be made during the year.
7. In each freshening the lower surface is not to be freshened. The age may be scraped so that only 38 cm increase is on either side in width at the end of 12 freshening. This means that about 03 cm should scrap off either side in width in each freshening.
8. The lowest row of blaze will be at 1 mtr. above the ground level. The next row of blaze will be made at the height of 60 cm from the lower i.e. at a total height of 1.6 mtr. from the ground level, the vertical portion of the blaze of upper row will alternate with similar portion of the row and no 2 blazes of the two rows will be directly one above the other.
9. The number of blazes to be made on each tree will depend on its girth at breast height as given in the following table :

TABLE NO. – 117

TABLE SHOWING THE NO. OF BLAZES ON TREE FOR GUM

Sr.No.	Girth at breast height	Maximum no. of blazes to be made on each tree.
1	0.9 mtr. to 1.3 mtr.	2
2	1.3 mtr to 2 mtr	3
3	2 mtr. to 3 mtr.	4
4	Over 3 mtr.	1 blaze for every 45 cm girth in addition to category 3 above.

10. No fresh blaze will be made on the partially healed up surface or old wounds. Each blaze will be in a shape of parabola with a 2.5 cm side base. The curved side of parabola will be up wards and of height not more than 7.5 cm and depth of the blaze will not be exceed 0.6 cm in the wood.

11. At the end of the season, the height of the blaze shall not be grater than 12.5 cm. Maximum permissible dimension of each blaze shall be 10X 12.5X 0.6 cm in width, height and depth respectively.

Since the tapping is to be done continuously for 3 years the total height of blaze at end of 3 years of tapping will be 37.5 cm the width and depth remaining the same. In the second cycle i.e. in the 7th year (after 3 years rest) new blazes will be made in the same way in the unblazed portion, in between the blazed portion of the first cycle. This blazing will continue for another 3 years in the manner described above and operation will be repeated till unblazed is fully covered.

Formation of units :-At present there are 5 units in the division for collection and disposal of Dhawda gum. One range is constituted as one unit.

Agency :- All units are sold in open auction.

Other Regulations :-

- (i) It is prescribed compartment wise list of Dhawada trees should be prepared and maintained Beat, Round, Range and Division level.
- (ii) Proper cleaning around the tree to facilitate gum collection and to avoid fire hazards.
- (iii) The gum yielding trees should be reserved from felling.
- (iv) The tapping rules shall be strictly implemented.

3. TENDU LEAVES :-

- a) **Use :-** Tendu leaves is one of the most important Non-Wood Forest Produces which gives handsome revenue to exchequer and provide gainful employment to the local people. Tendu leaves are used for manufacturing 'Bidis' which has got tremendous potential to generate employment directly or indirectly.
- b) **Yield :-** Yearwise production and revenue obtained for the last 10 years are furnished in table given in Appendix no.XVII of Volume II of this Plan. In order to increase the production of Tendu pruning and pollarding of Tendu trees are carried out every year to get good flush of Tendu leaves. No other scientific efforts are made to improve the production of Tendu. Sometimes local people put fire to forest to get good flush of Tendu leaves in connivance with Tendu contractors which causes adverse impact on regeneration while carrying out pruning all small size plants of both seed and coppice origin plants are cut every year resulted into threat to future seed bearers. If the pruning of trees carried out repeatedly the seed bearers will be diminished year after year which will lead to vanishing of the species in this tract.
- c) **Formation of units :-** The entire division is divided into 14 Tendu units and which are constituted for the purpose of regulation of trade of Tendu leaves under its Forest Produce (Regulation of Trade) Act 1969 vide its no./MFP 2182/240911/F-1, dt. 19th November 1983 of Government of Maharashtra. The Tendu units formed in this division are given below :-

TABLE NO. – 118
TENDU UNITS

Sr. No.	Range Before Reorganisation	Name of Tendu Unit and number
1.	Akola	2 – Pinjar
2.	Akola	3 – Sakharwira
3.	Akola	4 – Bormali
4.	Alegaon	5- Alegaon
5.	Patur	6 – Patur
6.	Patur	7 – Mungala
7.	Washim	8 – Kinhiraja
8.	Washim	9 – Risod
9.	Washim	10- Ansing
10.	Washim	11 – Wanoja
11.	Karanja	12 – Khapardari
12.	Karanja	23 – Palodi
13.	Karanja	14 – Manora
14.	Karanja	15 – Karanja

d) Agency for Tendu leaves collection :- With the effect of Maharashtra Forest Produce (Regulation of Trade) Act 1969 the trade of Tendu leaves has been nationalized under this act. As per the procedure the Tendu units are auctioned through tender to pluck, process and disposal of Tendu leaves. The system adopted is standard bag system in which production of standard bag is fixed as per the production capacity of the unit. The successful tenderer (Licensee) is allowed to pluck the leaves to the extent of target fixed for the unit.

e) Other regulations :-

- (i) To improve Tendu stocking in the forest, soil around Tendu trees should be dug up 15 to 20 Cms. depth in a circular ring of diameter to the extent of crown so as to promote the root suckers.

- (ii) The trees above 45 Cms. girth shall be selected for such operations. Yearly pruning and lopping will adversely affect the future crop, therefore pruning and lopping are suggested once in three years and such an interval will allow some seedlings to establish.

4. MEDICINAL PLANTS :- Rich variety of medicinal plants are found in the tract of Akola Forest Division which yield a variety of medicines that are used for curing diseases by the local people. The medicinal plants play a vital role in socio-economic culture, spiritual and medicinal arena of local villagers or tribes. Preservation and conservation and sustainable management can help in maintenance of bio-diversity retaining human and environmental health, generate employment and earn foreign exchange by way of exports.

Present day focus is on medicine obtained from medicinal plants by many health organizations including World Health Organisation. There are many species in the forest of this division about which the knowledge available at present is very meagre. The method of extraction of medicinal plants is not favourable for future conservation of the same due to lack of knowledge to the people for scientific extraction of medicinal plants. Some of the medicinal plants are still to be identified and studied at micro level for appropriate knowledge of in-situ conservation. Many medicinal plants do not find place in enumeration survey of SOFR because of their seasonality. Separate survey is required, exclusively for medicinal plants and knowledge about identification and their uses are essential.

There is no separate survey conducted by SOFR, Amravati to assess the quantitative distribution of medicinal plants in this tract. It is suggested that a separate survey should be conducted with the help of experts on medicinal plants to assess the distribution of medicinal plants in this area. It is observed during the field visits that some of the local Vaid (local Ayurvedic doctor) practice Ayurvedic medicine extracted from medicinal plants in these areas for curing of various ailments.

Management of Area :-

Medicinal plants are mostly herbaceous, tubers, shrubs and some trees. The management of medicinal plants is the same as that of Non Wood Forest Produce. In the new concept of forest management, the medicinal plant management has been given lot of importance. As on today the extraction of various products out of different parts of medicinal plants is under practice on traditional methods and scientific and non-destructive methods of extractions have not been reached to the ground which needs to be addressed on scientific lines. Detailed studies need to be conducted about the occurrence, area, extent, phenology and production.

Method of treatment :-

In Akola Forest Division no systematic method of treatment for the management of medicinal plants has been adopted so far. There is lot of potential of medicinal plants in this division and approximately 127 species have been identified and their extracts used as medicine in different parts of division by local Vaidyas (Local Ayurvedic Doctor).

In the previous management plan separate treatment for managing medicinal plants was not suggested. In order to have intensive management of medicinal plants, it is necessary to study intensively about their occurrence, area, phenology and judicious utilization of their products. It is prescribed to involve the Joint Forest Management Committees in the management of medicinal plants and to augment their income source. The division should organize training to the members of JFM Committees regarding identification, treatment, and management of the medicinal plants and their products along with marketing. Basically, the identification of these species can be carried out through the experts of local universities and colleges. Creation of market links and the bank guarantees for sale of produce of medicinal plants will create confidence for medicinal plants management. The methodologies shall be adopted as given below :-

- (i) Identification of suitable patches of medicinal plants in which the collection of medicinal plants is already under way.

- (ii) Organisation of local community through competent NGO.
- (iii) Establishing a system of sustainable harvest based on collection guidelines for specific species that are advocated by “conservation science”.
- (iv) Specific forest areas shall be assigned to Joint Forest Management Committees with the clear delegation of responsibilities and complete accountability. The usufructs shall be shared between the department and members of Joint Forest Management Committee on the basis of JFM frame work.
- (v) Establishment of market links for sale of produce well recognized values of medicinal plants and their parts shall be concentrated.
- (vi) Removal of plants or parts of plants other than specified species shall totally be prohibited. Lopping of branches to collect fruits, leaves and buds shall be totally prohibited. The fruits or seeds that have fallen on the grounds shall be collected and branches can be gently shaken to facilitate the shedding of fruits and seeds.
- (vii) The rich medicinal plants or species about 1 to 2 % of population shall be left as a seed bearer to encourage the natural regeneration and seed collection. These shall be properly marked for identification.
- (viii) Species that may be used for primary health care shall be listed out category - wise well in advance to facilitate nursery operations.
- (ix) Proportion of medicinal plants shall be increased in the reforestation programmes based on the proportion of medicinal plants after conducting survey.
- (x) Tending of rooted stock or coppice shoots of existing crop shall be taken up and natural regeneration shall be encouraged.
- (xi) In the barren patches the seeds shall be shown or seedlings shall be planted and maintained by caring out weeding and soil working.

- (xii) The medicinal plant species like climbers shall be planted close to the natural host, trees or shrubs.
- (xiii) Building and strengthening community institutions for sustainable management.
- (xiv) It should be made compulsory that only such part or parts of the plants specified for each species, whose medicinal values recognized are to be collected.
- (xv) In swamp areas especially along nalas, streams, water spread areas and aprons checkdam and percolation tanks, hydrophytes like Neerbrahmi (*Bacopa monnerieri*), Vallarari (*Centella asiatica*), Vasambu (*Acorus calamus*), Arathai (*Alphinia calcarata*) etc. can be planted.

Sustainable harvesting of Medicinal plants :-

The norms regarding sustainable harvest shall be worked out by territorial Dy. Conservator of Forests taking into consideration the results of vegetation survey and availability of medicinal plant species and the parts of plants or trees used for medicinal purpose.

Harvesting the parts of medicinal plant species shall not be permitted in a way which will affect natural regeneration. In case where the roots, tubers, rhizomes and other specific parts are used in medicine. The natural regeneration of these species shall be ensured by leaving well distributed and the adequate number of seed bearers. Destructive collection of plant parts, seed and fruits should strictly be prohibited and also uprooting of old tree or plant should be avoided.

In general it is prescribed that while harvesting parts or seeds, fruits and leaves care should be taken for further natural regeneration.

General Rules to be followed: -

1. The estimation of annual collection of Non Wood Forest Produce shall be based on experiences i.e. averaging of previous annual collection. The annual estimates of Non Wood Forest Produce collection shall be approved by the Chief Conservator of Forests of concerned circle.

2. The Range Forest Officers shall issue passes for collection of Non Wood Forest Produce to the Joint Forest Management Committees are lessees and keep record of the collection.

3. The measures shall be taken to improve Non Wood Forest Produce by way of protecting the species and by introducing approximate percentage in the population.

5) MYRABOLONS :- Hirda, Behda, Aonla are commonly called as Triphal. These Minor Forest Produces are used in many ways in Akola Forest Division. Hirda species is very rare and Behda and Aonla are commonly found. These are of high medicinal value and used in many Aurvedic medicines. Hirda and Behda are administered to children in villages invariably for cold, cough and stomach dis-order. Hirda and Behda are used in tanning industry. Many products are prepared out of Aonla fruits such as Aonla Achar, Supari, drinks, Chavanprash etc. and it is rich in Vitamin- C and used in many Aurvedic medicines.

VII.5.1. YIELD : There are no specific studies regarding the yield of fruits from such species so far. The compartment-wise distribution of these species is given in Appendix XXXV b of Volume II. of this Plan, on the basis of enumeration data of forest resources. It is envisaged that under Joint Forest Management Committee members in the area assigned to them should enumerate the trees of these species and yield should be recorded yearly and the collected data should be recorded and updated at divisional level.

VIII.5.2. FORMATION OF UNITS AND COUPES : Range will be formed as one unit since it is overlapping working circle.

VIII.5.3. AGENCY FOR HARVESTING:-In this area there is no separate agency for harvesting. The local people collect the fruits and sale in open market. The forest department will facilitate in providing technical guidance about non-destructive collection of these forest produces.

VIII.5.4. OTHER REGULATIONS: -

- (1) The annual out-turn of these forest produces should be maintained at range level and division level.
- (2) The list of such species should be prepared and maintained at beat, round, range and division level.
- (3) These species should be excluded from felling.

VIII.5.5. GRASS: There is heavy demand for grass and fodder in this area. Grass is used for stall feeding where as thatching grass is used for cattle sheds, huts and houses of the villagers.

VIII.5.5.1. Regulations:

- 1) The demand for grass and thatching grass should be assessed yearly and the production of these grasses should be recorded in separate registers and these records are maintained at beat, round, range level.
- 2) For collection of grass each range is considered as one unit.
- 3) The collection and disposal is as per the procedure laid down by the government from time to time.

VIII.5.6. ROSHA GRASS (Tikhadi): Rosha grass is available in workable quantity in many reserves such as Palodhi in Karanja range, around Narnala in Akola range and Rui in Washim range.

VIII.5.7. OTHER NON-WOOD PRODUCES : Char fruits, Babul gum, Khair gum, Salai gum are available in workable quantity in this division.

6) Research Works : - In this division there are many Non Wood Forest Produce yielding species, which are unidentified and untraced, the department should make efforts to explore and manage them scientifically. It is need of the hour for intensive studies conducted for identification, localization and phenological studies by employing expert's teams in this connection.

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CHAPTER – IX

JOINT FOREST MANAGEMENT

SECTION IX.1: INTRODUCTION :-

The National Forest Policy 1988 emphasises protecting of traditional rights of forest dwellers and their role in protecting forest resources. As suggested in policy priority shall be given to local people to meet the demands for fuel wood, small timber, fodder and minor forest produce.

The National Forest Policy envisages, creating massive people movement, specially involvement of women in protection and management of the forest and minimizing excessive pressure on existing forests. The policy also clearly mention that forests should not be considered as a source of revenue but as a national asset which is to be protected and enhanced for the well bearing of the nation and the future generations.

The Govt. of India issued directions to all the state governments vide letter No.621/89-PP dated 1st June, 1990 a framework for creating massive people's movement through involvement of village communities in the protection and management of degraded forest lands. The Ministry of Forests and Environment of Govt. of India issued circulars No. 22-8/98-FPD dated February 11, 2000 and No. 22-8/2000-JFM (FPD), dated February 21, 2000 in which detailed guidelines are incorporated for the Joint Forest Management Programmes to be taken up by the States.

The Forestry Project of F.A.O. (Food and Agriculture Organization) clearly emphasized participation of rural people has been defined as “as set of inter connected actions and works executed primarily by local community residents to improve their own welfare, those may be outside in-puts i.e. extension, training, guidance, technical help, financing etc. but its basic focus is on community involvement in doing something for itself.”

The Govt. of Maharashtra also issued guidelines vide Government Resolution No. SLF-1091/ PK119/F-11 dated March 16, 1992 directing to the Forest Department to constitute "JFM Committees realizing the fact that forest protection can not be achieved without active participation and cooperation of local people. Their co-operation is essential in management, protection and regeneration activities of the forest. As per the guidelines of GR of 16th March 1992 instructions issued for preparation of management plans for implementation of Joint Forest Management.

The GR of 16th March, 1992 clearly indicated that preparation of Management Plan for degraded areas in the state involving local inhabitants from adjoining to Forests and seeking their participation through JFM.

The reference of Govt. of India dated 22-8/2000- JFM(FPD) dated February 21, 2000 instructed all the State Government to extend JFM programmes to good forest areas also and State Government must seek the participation of women and the member should be 50% of total members of JFM committee and 33% of executive committee members. According circular the JFM activities in good areas is to confine to NWFP activities only, and under no circumstances, the silvi-cultural prescriptions should be altered. The sharing mechanism should be different from the usual and sharing of profit from timber will be only when the committee protect the areas, at least 10 years and sharing percentage not to exceed 20% of the final harvest. The JFM activities extend to good forest areas shall not exceed 100 ha and within 2 km radius. The extension of JFM in good area shall be on a pilot basis and should be done only after the degraded areas have exhausted.

The Akola Forest Division is having 896 compartments with 356 villages, which reflects that two compartments having one village. The quality of forest is degraded near by habitations and protection of these areas cannot be achieved unless there is people participation and cooperation.

The villagers with homogenous population and forest areas having sizable population of SC and ST and other economically dependent people shall be given preference, to be included in JFM.

SECTION IX.2:-GENERAL CHARACTERISTICS OF THE VEGETATION

As the number of villages are more in this Division, naturally, heavy biotic pressure in this Division resulted in degradation of forests specially adjoining to habitations. Those forests required to be regenerated through intensive protection and development of rooted stock and Natural Regeneration. If necessary the natural regeneration will be supplemented with Artificial Regeneration with the active involvement and cooperation of the members of JFM Committees. Such areas generally degraded with density less than 0.4, open forest with eroded soils and non-conducive conditions for Natural Regeneration.

SECTION IX.3:- NEED FOR IMPLEMENTATION OF JOINT FOREST MANAGEMENT :

In consonance with National Forest Policy 1988, special emphasis given on Joint Forest Management due to increasing biotic pressure, depletion of soil, due to soil erosion and degradation of forests. Demand for timber and fuel wood, heavy grazing pressure, repeated forest fires, diversion of forest land for agriculture, industries, housing and irrigation projects etc. To check further loss of forest cover and forest area and to regenerate the degraded forest. The below mentioned aspects are given thrust while implementing Joint Forest Management :-

1. Protection and management of forests by developing a sense of ownership and belongingness about the forests among the local people and to regenerate the degraded forest areas with the active participation and cooperation of the local people.
2. To increase the vegetation cover and to carry out soil and moisture conservation works with the active co-operation of local people.
3. To involve local people in forest protection and to provide both tangible and intangible benefits in lieu of their cooperation in forest protection.

SECTION IX. 4:- SOCIO-ECONOMIC CONDITION OF THE PEOPLE

The Socio-economic survey published by economic and strategical rate for Akola and Washim district pertaining to Akola division. The total human population of entire division is 26,50,450 as per 2001 census. Population density is 250 per Sq.km. S.T. constitutes about 6.41% and SC is about 12.31% of total population. The male – female sex ratio is 1000/938 and 38.49% of population lives in urban area and 61.59% of population lives in rural area.

TABLE NO. – 119

TABLE SHOWING POPULATION (CATEGORYWISE) SEX RATIO AND LITERACY RATE

Taluka	Total Population	SC	ST	Others	Sex Ratio	Literacy Rate%
Akola	656746	62660	29324	564762	934	72.81
BarshiTakli	132720	9063	10822	112835	934	65.62
Akot	232493	31940	24524	176029	940	68.03
Telhara	156776	12027	9376	135373	937	66.53
Balapur	169159	10397	5366	153396	943	66.94
Patur	120684	10063	13345	97276	946	65.49
Murtijapur	161661	27322	6294	128045	938	71.29
Washim	212644	37213	5954	169477	940	72.40
Malegao	156922.00	21499.00	21184	114239	942	70.30
Risod	177123.00	34893.00	7971	134259	948	71.97
Mangrulpir	149855.00	28023.00	8242	113590	925	85.00
Manora	135132.00	17297.00	21756	96079	933	70.10
Karanja	188540.00	23756.00	5845	158939	944	78.60

TABLE NO. – 120**CATTLE POPULATION & CATTLE UNITS AND GRAZING LICENCE ISSUED**

Cattle/ Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Buffalow	3757	NA	NA	8429	2104	2481	1636	1993	1884	4530	4840	1693	1900
Cows & Bullocks	33563	NA	NA	19127	29240	24299	25221	23187	22301	13695	13246	25351	19071
Goats & Sheeps	6513	NA	NA	11910	1603	1615	30	894	4009	3459	5693	6420	298
Camel	0	NA	NA	0	0	0	0	436	0	0	0	0	0
Other animal	933	NA	NA	896	1319	3444	7202	2308	3942	8280	1351	289	0
Total	44766	0	0	40362	34266	31839	34089	28818	32136	29964	25130	33753	21269
Total Cattle Unit.	48137	NA	NA	35985	33448	29261	28493	27173	26069	22755	22926	28737	22871

Some of the areas of Akola Forest Division are remote specially the areas of Alegaon and Patur ranges. The population mostly based on agriculture and allied activities for the livelihood and most of the SC, ST population will work as land less, agricultural labourers. The population adjoining to forest areas mostly depends upon forest for day to day needs, naturally cause pressure on forests. The cattle population also cause lot of pressure on adjoining forests for grazing, though there is a separate fodder development working circle. The local people hardly utilize these areas for stall feeding of their cattle. Heavy grazing pressure over adjoining areas of habitats resulted in degradation of the forests. In some pockets sheep and goats grazing also noticed and they cause extensive damage to the regeneration. Apart from local cattle pressure the migratory cattle also add pressure to forest in this Division. This situation creates the kind of imbalance between the production and utilization levels. It is therefore, to meet the requirements of forest produces to the local people participatory approach is sought for.

In Akola Forest Division the most important factor for the implementation JFM is willingness of the local people to participate in these activities in this regard the guidelines of Govt. of Maharashtra GR No. MSC/ 2000/ C.N. 143/ F-2 dated 25th April, 2003 shall be followed. At present there are 240 committees constituted in the division and total number of compartments allotted to these committees is having an area of 24491.94 Ha. out of this area 1200 Ha. area allotted for taking up plantation. Micro plans have been prepared in 48 villages for the area allotted to JFM Committees in consonance with the prescriptions of given for the area in the working plan. Any deviation shall be required sanctioned from the competent authority.

SECTION IX 5 :- PRINCIPLES AND ETHICS.

Certain principles and ethics should be follows as per guidelines during the implementation of JFM in any village.

- 1 Eco system conservation and sustainable use of resources is the goal of resource management.
- 2 To enable development of strong institutional system in the long run for JFM implementation it is necessary to have participatory and democratic structure.
- 3 Open communication system and gender equity are of the prime concern.
- 4 Management responsibility and benefit sharing in relation to traditional usage should be ensured.
- 5 The community shall take the responsibility to maintain the system.
- 6 Effective conflict resolution should be ensured.
- 7 Traditional rights and uses shall be respected and rational approach should be adopted in accepting or rejecting same.
- 8 Discrete jurisdiction and proper terms of agreements should be ensured.
- 9 Effective monitoring and appraisal systems should be adopted.

SECTION . IX .6 :- PROCEDURE FOR IMPLEMENTATION OF JOINT FOREST MANAGEMENT: -

In the system of JFM the forest staff must know the principle and approach of JFM. The first and foremost thing is to address and convince the local people about the importance of forestry and their role in meeting daily needs of them. The villagers those who are willing to take part in JFM committee and memorandum of understanding shall be signed. The Deputy Conservator of Forests of Akola Division shall prepare a Micro plans for the areas to be assigned to concerned JFM Committee as provided in the GR dated 25th April, 2003 and guidelines issued by Govt. of India from time to time.

- The Micro plan prepared for the particular village shall be in consonance with the prescriptions contained in Working Plan.
- The Micro Plan shall be sanctioned by a committee constituted by the Government as per GR of dated 25th April, 2003.
- The assigning of the area to committee and execution of works shall be strictly in accordance with the guidelines issued by Government of India as well as Government of Maharashtra.
- The Micro Plan and the Joint Forest Management Scheme shall be implemented through Forest Department or any other agency sanctioned or approved by competent authority.
- MOU shall be signed to extend of areas assigned to JFM Committee and there should not be any ambiguity in terms and conditions of the guidelines.
- The area allotted to particular forest committee should be strictly shown on the map and incorporated in the memorandum of understanding.
- The Micro Plan is scientific document should be prepared with active involvement of members of JFM Committee on scientific lines and the site specific estimates shall be prepared for the works which would be taken up and sanctioned by competent authority before implementation.

SECTION . IX.7 :- ACTIVITIES TO BE TAKEN

Forest Protection Committee should be involved to take up the under mentioned activities in the areas assigned to them:-

- 1 Stringent protection of forests allotted to JFM committee.
- 2 Active participation of member of JFM committee in protecting, improving and developing Natural Regeneration of the forests.
- 3 Protection of forest from fire, grazing and encroachment upon forest land, collection of NWFP on scientific lines or non- destructive collection methods.
- 4 Helping the forest officials in patrols and enforcement of law for forest protection.
- 5 Timely organizing of the meeting and helping the Govt. official in this regard.

For protection of forest from grazing integrated efforts should be taken to improve the breed of cattle so that, the income may be increased with less number of cattle, In this regard the rural development and other departments should be requested to help the member of JFM committee. The forest officials will have to play the role of facilitator for implementation of various development works. The fire protection should be achieved through JFM Committee by assigning certain fire lines and forest area to the JFM Committee.

The grant for protection of forest from fires i.e. burning of the fire lines, hedges for fire works shall be directly remitted to JFM Committee after successful protection of the forest from the fire. Necessary legal and moral help should be provided to members of JFM Committee for the protecting the forests from illicit felling, encroachment, grazing, fire protecting etc.

SECTION. IX 8 :- ROLE OF FOREST OFFICIALS

The role of forest officials in implementing of JFM is as the facilitator.

- 1 Providing technical input and support for the activities prepared under JFM and ensure implementation scientific forest management.
- 2 Creation of awareness amongst the member of JFM Committee about the role and various benefits may be available in the forest management.

- 3 The forest officials shall act as a facilitator for implementation of various development activities by other departments
- 4 The responsibility and benefit of local people should be thoroughly briefed by forest officials.

While implementing of Joint Forest Management ecological factors combined with social, economic and site specific to provide both opportunities and limitations on the type of management may be considered in particular village. The ecological viability of the forest and status of regeneration are influenced by a range of biological conditions including species compositions, utilization of produce, soil and climate. Joint Forest Management requires strong institutional capacity to make collaborative to efforts for forest protection activities and make it successful ultimately at the end in getting the economic returns and regeneration of the forests. The efforts must be to the extent which will yield sufficient income to sustain the activities of management on perpetual basis. Therefore the forest officials have to take adequate measures and persecutions in formalizing participatory management in a particular forest area. The details of village under JFM implementation are given in the table.

TABLE NO. – 121

DETAILS OF VILLAGES UNDER JFM IN AKOLA FOREST DIVISION

Sr. No.	Number of JFM committees in division	Number of Registered committees	Area allotted for protection		Plantation area (Ha) (2006 Rains)
			No. of Comptts.	Area Ha.	
1	2	3	5	6	7
1	240	48	263	24491.94 Ha.	1200

Various Government Resolutions, Orders and guidelines in relation to JFM are given in appendix No.LXVII of Volume II of the present Plan.

SECTION IX .9 :- ACTIVE PARTICIPATION

It is the proper duty and responsibility of forest officials to create awareness among the members of Forest Protection Committee as well as villagers about the importance of forest, its intangible benefits and protection of the forest from fire, illicit felling, encroachment, grazing, etc. The active participation of local people must be encouraged in management, protection and developmental activities of the forest assigned to them. For achieving effective results in this regard it is required to take up regular efforts like taking of meeting, conducting workshops and visit to successful areas shall be arranged to explain about the protection of forests and achievements by other villagers. A comprehensive fire protection scheme shall be prepared and explained to JFM members for prevention and protection of forest from fire. The Forest Protection Committee members shall be made to aware of their duties and responsibilities to have their active participation in the protection and management of the forests, therefore, increased the products will be obtained from the assigned areas which will ultimate play an important role for the improvement of economy of JFM members as well as restoration and improvement of the forest areas.

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CHAPTER- X

WILDLIFE MANAGEMENT

SECTION X.1 :- Akola Forest Division is not very much rich in wild life due to scattered nature of forest, shrinkage of habitat, breaking of corridors for wild life movement and the forest patches surrounded by human habitations. Most of the wild life is restricted to remote parts of the forest such as Alegaon, Medshi, Patur, etc. Due to nature and occurrence of forest the wild life is very much subjected to biotic pressure of indiscriminate shooting, poaching resulted in dwindling of wild life. Some of the herbivore species like Nilgai, Black bucks seen in agriculture fields due to disturbances in their original habitat. It is interesting to note that at some places these species made agriculture fields as their abode.

SECTION X.2 :- THE STATUS AND DISTRIBUTION OF WILDLIFE

The wild fauna are widely distributed in the dense patches of the forests. The wild animals commonly found in this tract are as follows.

TABLE NO. – 122

TABLE SHOWING DISTRIBUTION OF WILD LIFE IN AKOLA DIVISION

(As per Census in 2003-04)

Wild Boar	Barking Deer	Nilgai	Four horned antelope	Black Buck	Wolf	Jackal
80	08	32	--	70	23	25
Hyaena	Langur	Rhesus Monkey	Hare	Mongoose	Peacock	Owl
03	108	--	34	--	36	03

SECTION IX .3 :- SPECIAL OBJECTS OF MANAGEMENT :-

1. To protect and conserve Wild Life in this area.
2. To ensure maintenance of viable population of Wild Life.
3. To increase the population of Wild Life by providing by proper habitat management including shelter, water, food, etc.
4. To preserve the areas of biological importance for all times to come as natural heritage for the benefit of education, research and enjoyment of the people.
5. To involve local people in Wild Life conservation.
6. To enhance the scope of employment potential and additional income generation by promoting Eco-Tourism in the areas where ever there is potential.

SECTION X.4 :- DISTRIBUTION OF WILD LIFE :-

Fragmentation of habitation, degradation of shelter, scarcity of fodder and water are some of the reasons for dwindling of wild animal population in this tract. These factors are coupled with Man-animal conflict, ineffective protection of wild life, further lead to decline of wild life population. The other factors which causes declining of wild life are shrinkage of forest coverage due to heavy biotic pressure, poaching, lack of understanding about the Wild Life conservation among the people etc. Some of the wild animals found in the division are given in the following table:-

CARNIVORE

TABLE NO. – 123

Sr. No	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL
1	Bagh/Sher/Tiger	<i>Panthera tigris</i>	I/I,(39)
2	Bibta/Panther/Tendua	<i>Panthera pardus</i>	I/I, (16B)
3	Fox/Lomdi/Lomas	<i>Vulpes bengalensis</i>	II/II (1-B)
4	Jackal /Kolha/Siyar	<i>Canis aureus</i>	II/II (2-B)
5	Jungle cat/Ran Manjar	<i>Felis chaus</i>	II/II (2-C)
6	Tadas/Lakadbagha	<i>Hyaena Hyaena</i>	III (12)
7	Wolf/Landaga/ Bhedia	<i>Canis lupus pallipus</i>	I/I (13)

HERBIVORES

TABLE NO. – 124

Sr. No	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL
1	Aswal/Bhalu/Riksha /Bear	Melursus ursinus	I/I (31C)
2	Bandar/ Monkey	Rhesus mulatta	II/I (17A)
3	Bhekar/Barking Deer	Muntiacus muntjak	III (2)
4	Chausingha/Four horned antelope	Tetraceros quadricornis	I/I, (8A)
5	Cheetal/Deer/Hiran	Axis axis	III (5)
6	Common languor /Hanuman bandar	Presbytis entellus	II/I (4A)
7	Hare /Sasha	Lepus runigracollis	IV (4)
8	Kalvit /Kalamrue / Black Buck	Antelope cervicapra	I/I, (2)
9	Nilgai /Blue Bull	Boselaphus tragocamelus	III (14)
10	Wild boar / Ran Dukar/ Jungali suar	Sus scorta	III (19)

RODENTS

TABLE NO. – 125

Sr. No	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL
1	Giant squirrel	Ratufa macroura	II/II (I-C)
2	Mongoose	Herpestes spp	II/II (16)
3	Porcupine / Shahi	Hystrix indica	IV (4E)
4	Mice		V (5)
5	Rats		V (6)

BIRDS

TABLE NO. – 126

Sr. No	COMMON NAME	SCIENTIFIC NAME	SCHEDULE/PART/SERIAL
1	Painted Sandgrouse	Pterocles indicus	IV 11 (60)
2	Common Sandgrouse	Pterocles exustus	IV 11 (60)
3	Pea Fowl/Mayur /Mor	Pavo cristatus	I/III (11)
4	Grey Jungle Fowl /Jungli Murga	Gallus sonneratti	II/II (17)
5	Painted Partridge	Francolinus pondicerianus	IV 11 (51)
6	Black breasted Quail	Coturnix coromandelicus	IV 11(57)
7	Red Spour Fowl	Galloperdix spadicea	IV 11 (36-A)
8	Crane	Galloperdix spadicea	IV 11 (16)
9	Spotted Bill Duck	Anas poecillorhyncho	IV 11 (21)
10	Pigeon	Treron phoenicoptera	IV 11 (54)
11	Dove	Streptopelia spp	IV 11(79)
12	Cotton Teal	Nettapus	IV 11 (70)

		coromandelienus	
13	Cuckoo	Cuculus varius	IV 11 (170)
14	Snipe	Capella galliachges	IV 11 (62)
15	Great Indian Horn Bill	Buceros bicornis	I/III (4)
16	Vultures	Gyps indicus, Gyps Bengalensis	I/III (21)
17	Whistling Teal	Dendrocygna javanica	I/III (7A)
18	Woodpecker	Picidae spp	IV 11 (79)

A. Reptiles:- Red sand boa (*Eryx conicus*), Indian cobra(*Naja naja*), Python (*Python molurus*), Rat snake(*Ptyas mucosus*), Varanus sp, Chameleon sp.

B. Fish:- Catla (Catla catla), Rohu (Labiso rhoita), Carp (Cyprinus carpio),

The wild flora found in Akola Forest Division have been listed and mentioned below :-

Upper Storey: - Teak (*Tectona grandis*) is principal species and main associates are Dhawda (*Anogeisus latifolia*), Ain (*Terminalia tomalata*), Tiwas (*Ougenia oojeiressis*), Lendia (*Lagerstroemia parviflora*) and Tendu (*Diospyros melanoxylon*). Some of the other associates are satpudi (*Dalbergia paniculata*), Bhirra (*Chlooxylon swetenia*), Kalam (*Mitragyna parviflora*), Rohan (*Soymida febrifuga*), Salai (*Boswellia serrata*), Semal (*Bombax ceiba*), Beheda (*Terminalia bellirica*). Shisham (*Dalbergia latifolia*), Bija (*Pterocarpus marsupium*) and Bel (*Aegle marmelos*).

Under Storey:- The understorey consists of trees the shrubs, grasses and climbers. The major species are-

Trees:- Amaltash (*Cassia fistula*), Aonla (*Emblica officinalis*), Char (*Buchanania lanzan*), Dudhi (*Wrightia tinctoria*), Ghoti (*Zizyphus xylocarpa*), Palas (*Butea monosperma*), Dhaman (*Grewia tiliaefolia*), Moyen (*Lannea grandis*), Bartondi (*Morinda tinctoria*), Lokhandi (*Ixora parviflora*).

Shrubs:- Bharati (*Gymnosporia montana*), Parijatak (*Nyctanthus arbortristis*), Moroghphali – (*Helicteres isora*), Dhayati (*Woodfordia fruticosa*), Raymunya (*Lantana camara*), Tendu (*Diospyros melanoxylon*).

Grasses:- Bhurbhusi (*Eragrostis tenella*), Kodmor (*Apluda varia*), Marvel (*Dilanthium annulatus*), Dub (*Cynodon dactylon*), Paonya (*Schima sulcatum*).

Climbers:- Palasvel (*Butea superba*), Mahul (*Bauhinia vahlli*), Pivervel (*Combretum ovalifolium*), Chilati (*Acacia pinnata*), Iruni (*Zizyphus oenoplia*) Gunj (*Abrus precatorius*), Ran kand (*Dioscorea bulbifera*) Ran draksh (*Cayratia auriculata*)

SECTION X.5 :- STATUS AND DISTRIBUTION OF WILDLIFE :-

(1) **TIGER** (*Panthera tigris*) :- This animal is almost absent in this division, because it was not reported by Dy. Conservator of Forests, in the last census. However there are evidences that tigers from Narnala sanctuary occasionally cross over to this division.

(2) **PANTHER** (*Panthera pardus*) :- It is also a very less common animal in this division No panthers reported during the last census by the Deputy Conservator of Forests Akola. Panthers are limited to certain pockets of forests of the division and these are noticed in Shendurjana village of Shendurjana round of Manora range, Rajakinhi of Washim range, around Morna project of Medsi round of Patur range, Chikhwal of Alegaon range and Akot, Sakharvira, Pinjar, Mahan of Akola range.

(3) **CHETHAL** (*Axis axis*) :- Cheetal are found in many places of this division. 20 to 30 Chethal form into herds and move in the forest, however in census of report of 2003-04, these animals not reported.

(4) **BLUE BULL** (*Boselaphus tragocamelus*) :- Blue bull is found in entire tract of this division. More often these animals are located in Alegaon, Patur, Karanja and Washim ranges. These are mostly move around human habitations, and cause lots of damage to agriculture fields. Reported figure as per wildlife census is 32.

(4) **BARKING DEER** (*Muntiacus muntjak*) : They are found in Washim and Akola ranges mostly and the reported number is 8 as per 2003-04 wildlife census.

(5) **SLOTH BEAR** (*Melursus ursinus*) : This is a very dangerous animal in the forest and people are very much afraid of this animal, as it attacks unprovoked. Sloth bear are found in Alegaon, Patur and Popatkhedda of Shahanur beat of Akola range.

(6) **WILD BOAR** (*Sus scorfa*) : These animals are commonly found in this area and some times they cause lots of damage to agriculture fields. The local farmers always complaint about the crop damage caused by this animal. Wild boar move in scroll. Reported figure as per the wildlife census is 80.

(7) **BLACK BUCK** (*Antelope Cervicapra*) : These animals are commonly found in this area, almost distributed in entire forest tract of the division. Sometimes these animals are noticed in open agriculture fields. These animals made agriculture fields as their abode at certain places, best example is the village Chandas, where people donot cause any harm to these animals because of religious centiments and more over they protect these animals because of such centiment.

(8) **Wolf** (*Canis lupus pallipus*) : Wolves are not common in this division and these are mostly restricted to Karanja, Rajakinhi, Malegaon, Chandas. Wolves some times lift the lambs of goats and cause injuries to human beings.

Common animals : Common animals in this division are Jackal(*Canis aureus*), Hyaena(*Hyaena hyaena*) Porcupine(*Hystrix indica*) Langur, Bandar, monkey (*Rhesus macaque*), Jangle cat (*Felis chaus*), Mongoose(*Herpestes spp*) Indian Hare (*Lepus nigricollis*) etc.

BIRDS : Commoly found birds in this division are Pea fowl (*Pavo cristatus*), Ducks, Titar (*Francolinus pondicerianus*), Bater (*Coturnix coromandelicus*) Saras Crane (*Antigone antigen*)

REPTILES : Snakes and many species of other reptiles are found all over the tract.

SECTION X.6 :- PAST HISTORY OF MANAGEMENT AND THEIR RESULTS

In the past wild life used to be protected as per provisions of Wild Birds and Animals Protection Act 1912, Central Berar Provinces Game Act 1935, Restriction on issue of arms licences under Indian arm rules 1924, Shooting rules made under Sec. 26(1) and 76 (d) of Indian Forest Act detailed in the appendix of C.P. and Berar Forest Manual Volume II. The Conservator of Forests in consultation with Divisional Forest Officer used to declare certain block of reserve forest as open for shooting permits then issued by Divisional Forest Officer. There were 6 shooting blocks in Akola Forest Division

In 1952 the Indian Board for Wild life was constituted to co ordinate the legislative and administrative measure for wild life conservation. In 1961 Bombay Wild Animal and Wild Birds Protection Act 1951 was enforced in Vidarbha. This Act provides the salient features to extend the provisions of protection of wild life out side reserve forest area also. The license holders for game were to get them registered with wild life preservation officer. Hunting license were categorized into 1) Small Game, 2) Big Game, 3) Special Game, 4) Pet Animals. Unauthorised trading in wild life trophies was prohibited. In 1972 Wild Life (Protection) Act was enacted for entire India except Jammu and Kashmir and hunting and shooting of all birds have been banned under the provisions of this act. In 1991 the Wild Life (Protection) Act 1972 was amended and made it more powerful. The hunting of all wild animals except as provided in Sec. 11 and 12 and issuing of hunting license have been banned after amendment. Protection to some special plants has been provided and given in Schedule VI. Trade in all wild animals and trophies and articles have been banned. The punishment of violation of any of the provisions has been enhanced to 3 years imprisonment and fine Rs.25,000/-.

In this division not much emphasis was given on wild life management, especially habitat improvement except introducing some fruit and fodder species in the plantations, nala bunding, bandhara construction etc. The staff is not very much oriented towards wildlife management. More over it is observed that the majority of the staff is ignorant of the provisions of Wildlife (protection) Act, provisions of wildlife census and the principles of wildlife management.

SECTION X.7:- LEGAL POSITION :-

X.7.1. Indian Forest Act, 1878 was applicable to the tract. The section 2 (b)(iii) included in wildlife in its definition of the forest produce under section 25(I) of the said Act, any person in contravention of any rules which the local Government any time to time prescribe, kills or catches elephants, hunts, shoots, fishes, poisons water or set traps or snares shall be punishable with imprisonment for a term which may extend to six months or with time not exceeding five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting court may direct to be paid.

X.7.2. The Bombay Wild Animals and Wild Birds Protection Act, 1951 for the protection of wildlife, was extended to Vidarbha region with effect from June 1, 1961. Though this Act did not propose a significant change in the management of game in Reserved and Protected Forests, yet it was important as it operated in areas outside Reserved and Protected Forests also. Under the provision of this Act, arms license holders for sports were to register themselves with the wildlife preservation officer. This Act prescribed a closed season for hunting and classified games into four categories, viz small game, special big game and pet animals. It also sought to control transaction in trophies and other wildlife products. The statutory Wildlife Advisory Board was constituted under this Act to advise the Government on various important matters concerning wildlife.

X.7.3. The Indian Board of Wildlife was constituted in 1952 with the main object of devising ways and means for conservation of wildlife through coordinated legislative and practical measures and sponsoring the resetting up of National Parks and Wildlife Sanctuaries. A comprehensive and unified National and State Park Act, 1972 was passed which provided for appointment of any Advisory Committee to advise in constitution and declaration of National Parks, Sanctuaries and formulation of administrative posts.

The parliament then enacted the Wildlife (Protection) Act, 1972, which came into force in the state of Maharashtra with effect from June 1, 1973. From the commencement of this Act, every other Act relating to any matter, contained in this Act and in force in the State stood repealed. The subsequent rules made under the Act are as follows :-

(a) The Wildlife (Stock Declaration) Rules, 1973 (became effective in Maharashtra with effect from June 1, 1973).

(b) The Wildlife (Transactions and Taxidermy) Rules, 1973 (became effective in Maharashtra with effect from June 1, 1973).

(c) The Wildlife (Protection) Rules, 1975 (became effective from March 6, 1975)

(d) The Wildlife (Protection) Licensing (Additional matters for consideration) Rules, 1983 (became effective i.e. April 14, 1983).

X.7.4. The Wildlife (Protection) Act, 1972 is a piece of comprehensive legislation which provides for effective protection and preservation of wildlife, restriction on hunting and regulation of trade in wild animals articles made out of wild animals. Hunting of wild animals is strictly prohibited under this Act unless it is specially permitted. Wild animals have been categorized in five Schedules and animals included in Schedule-I and part II of Schedule-II received the privilege of strict protection. Animals specified in these Schedules are permitted to be hunted only if they are threat to or cause damage to life or property and animals in Schedule-II has become as disabled or diseased as beyond recovery.

X.7.5. Animals specified in Schedule-II(part-I), III and IV were prohibited from hunting, except under and in accordance with specific license issued under that Act or it has become dangerous to human life or property or had become diseased or disabled beyond recovery. Only vermin included in Schedule-V had been excluded form strict protection.

X.7.6. Hunting of young and female of any wild animals other than vermin or any deer with antlers in velvet is strictly prohibited unless specially permitted (Section-15) The Act pacifically requires declaration to be furnished by the individuals as well as trophies etc. in their control, custody or possession.

X.7.7 The Government of India, vide letter dated September 18, 1975 stated that the control over tanks and rivers in National Parks and Sanctuaries should be vested with management authorities and not with the fisheries or irrigation department.

X.7.8. Government of India, vide letter no 1-E-11011/3/75/FRY-9/(WLF) has clarified that the certificate of legal procurement to be issued by the Chief Wildlife Warden is not necessary where an animal is not included in any Schedule of the Wildlife (Protection) Act,1972. The export will be regulated by the Ministry of Commerce.

X.7.9. Subsequently, the delegation of power and duties of the Chief Wildlife Warden to the police Sub-Inspector for the Purpose of section 41(1) and section 55 of the Wildlife (Protection) Act, 1972 was granted by Government Resolution no.WLP-1973/197578-FI/ dated April 5, 1976.

X.7.10. The Schedules are revised by the Government on and off as it was required under Section 61 of the Wildlife (Protection) Act, 1972. The Government of Maharashtra, under Section 64 of the Wildlife (Protection) Act, 1972, framed Rules vide No.WLP-1679/95507/F-5. These rules were amended further by the Wildlife (Protection), Maharashtra Rules, 1975.

IX.11. The wildlife (Protection) Act was again amended to be called as Wildlife (Protection) Amendment Act, 1986 and it came into force from November25,1986. Under Section- 44 of the (Wildlife Protection) Act, 1972, the Government vide letter No. WLP/1682/100208/CR-43(1)/F-5 permitted the trapping of Cobra and Russell's Viper by a licensed dealer for the purpose of extracting venom. Under the power conferred under sub section (1) and sub section (2) of the Section 64, the Government of India vide No WLP/1683/10020(iii)/F-5 framed the new rules called Wildlife (Frong

leg Industry) Rules, 1987 and it came into force from November 25, 1987. The Government of India vide letter no. F-No1-2/91/WL/1, dated October 21, 1991, further amended the Wildlife (Protection) Act, 1972. The following are the important amendments :-

- (1) The plants have also been included under the purview of this Act.
- (2) The zoo and circus have been defined and included under this Act.
- (3) The game reserves have been dropped.

Section 9 of Wildlife (Protection) Act 1972 has been amended and there is a total prohibition of hunting of animals specified in schedule II, III, IV and I except as provided under section 11 and 12.

X.7.12 . The following are the restrictions on hunting as per Section 17 of wildlife (Protection) Act, 1972. The following acts are prohibited, i.e.

- (1) Hunting any wild animal, from or by means of a wheeled or mechanically propelled vehicle on water or land or by aircraft.
- (2) Use of mechanically propelled vehicle for the purpose of driving or stampeding any wild animals.
- (3) Use of chemical, explosive, pitfalls, poisons, poisoned weapons, snares or traps, except in as far as these relate to the capture of wild animals under a Wild Animals trapping Licence.
- (4) Hunting of special game or big game other than with a rifle, unless specially authorised by the licence.
- (5) Setting fire to vegetation for the purpose of hunting.
- (6) Using artificial light for the purpose, of hunting except when specially authorised to do so under a license in the case of carnivore over a kill.

- (7) Hunting during night, except when specially authorised.
- (8) Hunting any animals on water holes or a salt-lick or other drinking places or on path or approaches to the same, except water-birds and sand-goose.
- (9) Hunting any wild animal on any land not owned by Government without the consent of the owner, or his agent or lawful occupiers of such claim.
- (10) Hunting during closed period as per section 16.
- (11) Hunting with the help of dogs, any wild animals, except water-bird, chakor, partridge or quail.

X.7.13 In 1991, the Government of India has passed the Wildlife (Protection) Amendment Act, 1991, which came into force with effect from October 2, 1991, except the Sections 35, 44, 55(c), Chapter IIIA and Chapter IVA the salient features of this amended Act in brief are as follows:-

- (i) The words “ game reserves, big game and small game” have been omitted from the Act.
- (ii) Hunting the wild animals specified in Schedule I, II, III and IV of the Act has been banned, except as per the provisions of Section 11.
- (iii) A new Chapter III-A has been introduced for the protection of specified plants. The specified plants have been included in a new schedule.
- (iv) Section 29 of the Act has been amended and like National Parks on wildlife can be exploited or removed from a Sanctuary too. This means all concentrated felling and collection of minor forest produce from Sanctuaries would be stopped.
- (v) A new section has been added in the Act to provide that no new arm licenses shall be issued within 10 Km of a Sanctuary without prior concurrence of the Chief Wildlife Warden of the State.

- (vi) A ban has been imposed on dealing with the imported ivory and articles made therefrom.
- (vii) A new chapter, IVA has been introduced for Central Zoo Authority and reorganization of zoos.
- (viii) The penalties for wildlife offences have been enhanced substantially Sections 51 of The Wild Life (Protection) Act, 1972 has been amended from time to time and heavy penalties and punishment have been prescribed As follow: S51(1): Any person who contravenes any provisions of this Act except Chapter V-A and Section 38 or any rule or order made thereunder or who commits a breach of the conditions of any license or permit granted under this Act, shall be guilty of an offence against this Act, and shall, on conviction, be punishable with imprisonment for a term which may extend to three years or with fine which may extend to twenty five thousand rupees or with both.

Provided that where the offence committed is in relation to any animal specified in Schedule I or Part II of Schedule II or meat of any such animal or animal article, trophy, or uncured trophy derived from such animal or where offence relates to hunting in sanctuary or National Park, or altering the boundaries of Sanctuary or a National park, such offence shall be punishable with imprisonment for term which shall not be less than three years but may extend to seven years and also with fine which shall not be less than ten thousand rupees.

Provided further that in case of a second or subsequent offence of the nature mentioned in this sub section, the term of imprisonment shall not be less than three years but may extend to seven years and also with fine which shall not be less than twenty- five thousand rupees.

- (ix) Section 61(I) of the Act has been amended and now the power to make any change in the Schedules of the Act vests only with the Central Government.

X.7.14. Recent amendments to Wildlife (Protection) Act 1972 have been made for strict protection of wildlife in Protected Areas. The concept of Community Reserve and Conservation Reserves has been forwarded to protect the wildlife outside the Protected Areas and Reserved Forests to encompass the wildlife found outside the PA and RF.

SECTION. X.8 : RIGHTS AND CONCESSIONS: -

X.8.1. There are no rights and privileges granted to any person over wildlife. However a member of schedule tribes can pick, collect or possess in the district where he lives, any specified plants or plant derivative thereof for his bonafide personal use, subjected to the provisions of Chapter IV of Wildlife Protection Act 1972. The Chief Wildlife Warden can grant or permit with prior approval of the State Government for special purposes, which are education, scientific research and collection of specimen for recognized Zoos, museums and similar institutions.

SECTION X.9 :- INJURIES TO WILD LIFE :-

The wild life in this area dwindled over a period of time due to various reasons like poaching, fire, etc.

- 1. Poaching :-** Poaching is increasing due to development of infrastructural facilities, specially roads and communication in the interior areas lead to the accessibility of the areas of wild life. The outside poachers or the poachers adjoining to forest and the meat lovers can easily reach to the interior areas and kill the animals for various purposes.
- 2. Fire :-** The tract of Akola Division is subjected to repeated fires every year which cause extensive damage to the wild life and its habitat. Repeated fires cause accessibility of wild animals to human habitations and provides opportunity to be hunted. Fires in vegetation, bring about changes in vegetal cover and quality in vegetation which may be detrimental to the survival of wild life in perpetuity due to destruction of the habitats.

3. **Water :-** In this tract most of the streams and water courses will be dried during summer seasons except a few water bodies. The wild animals are required to visit limited water holes at least twice in a day. The fact is that the water holes will become hunting places for poachers during summer season.

Section No. X.10 : Measures to be undertaken for wildlife management in Eco-Sensitive zone : -

In this division there are 3 wildlife sanctuaries 1. Katepurna Wildlife Sanctuary 2. Narnala Bird Sanctuary 3. Karanja – Sohal Black-buck Wildlife Sanctuary. Presently the management of Narnala Bird Sanctuary and Katepurna Wildlife Sanctuary is with the wildlife wing as these areas have been transferred to wildlife wing . Where as the management of Karanja-Sohal Black-buck Wildlife Sanctuary is with the Dy. Conservator of Forests, Akola.

In these Protected Areas there has been an intensive management of wild life under separate wildlife management plans. The movement of wildlife may not be restricted to the boundaries of concerned sanctuaries and very frequently the wildlife cross over the boundaries of sanctuaries and move in the forests adjoining to the boundaries of these sancturies. The migration of these animals to outside Protected Area boundaries may be for different reasons such as food, water, breeding, sometimes disturbances in their original habitats etc. The Hounarable Supreme Court had given direction not to take up any forestry activity especially felling and other activities which disturb the wild animals in ecologically fragil zone considered as the area within 10 Km radius around Protected Areas. These are considered as eco-sensitive zones from the point of wildlife.

As the movement of wildlife is seen much more in eco-sensitive zones when compared to other parts of the division and these zones should be protected and special measures be adopted for wildlife management, such as 1. Protection measures 2.Habitat Improvement measures 3. Monitoring of wildlife health 4. Other Activities.

1. PROTECTION MEASURES :- special protection measures should be undertaken by the territorial staff in the eco-sensitive zones, of above mentioned -3- Sanctuaries in this division.

- (a) **External Boundary :-** The boundaries of eco-sensitive zones, i.e. 10 Km within radius of eco-sensitive zones shall be properly maintained with special boundary marks by fixing RCC pillars on the lines of 1/5th boundary demarcation scheme.
- (b) **Internal Boundary :-** The beat, round and compartment boundaries and boundary between forest and village should be maintained properly on the lines of 1/5th boundary demarcation.
- (c) **Entry point and establishment of check post :-** The eco-sensitive zones are very much fragile and surrounded by number of villages, it is necessary to check the entry of outside people by establishing check posts at strategic places.
- (d) **Illicit Felling, Poaching and Fishing :-** These areas should be protected from illicit felling, poaching of wild animals and fishing and any other activities which disturb wildlife to achieve well-controlled protection status in these areas. The Mobile Squad Range Forest Officer of concerned areas shall be assigned a special task to protect wildlife in these areas and for combing the area apart from regular territorial staff. The territorial staff as well as Mobile Squad staff would frequently camp in the jungle and gather information about network of roads, bridle paths used by illicit cutters and poachers. The wildlife offences and enquiries would be done carefully with legal assistance.
- (e) **Grazing Regulations :-** Grazing regulation should be carried out properly by
 1. Developing awareness among the villagers about the ill-effects of grazing
 2. Stall feeding of cattle
 3. Strict prohibition on grazing of migratory cattle.

- (f) **Fire Protection :** Strict fire protection measures shall be undertaken in such areas. All the class-I fire lines would be cut during November- December and burnt around February 15th . The Class – II fire lines, which pass along the roads and pass through vulnerable areas shall be cut and burnt as per the rules. The areas surrounding waterholes would be fire traced on top priority as many animals tend to hang around the water source.
- (g) **Encroachment :-** These areas are strictly protected form encroachment in the interest of wildlife management.

2. **HABITAT IMPROVEMENT MEASURES :-**

- (i) **Preparation of compartment wise cover maps :-** In these eco-sensitive zones, composition of crops, information about caves, burrows, etc. used by wild animals be collected. The systematic information about wild animals movement and type of vegetation should be collected and compiled. All palatable grasses, herbs and endangered and endemic species of flora and fauna should be listed out.
- (ii) **Water Management :-** In the habitat improvement water management is one of the most important aspects, which covers the maintenance and strengthening of all the existing waterholes, creation of new waterholes and artificial supply of water. The existing water holes would be cleaned every year and bandharas construction and de-siltation of waterholes shall be taken up. Special budgetary provisions shall be made for these waterholes.
- (iii) **Artificial supply of water :-** In such eco-sensitive zones, artificial supply of water is necessary especially in summers where there are no natural waterholes available. Creation of saucer-shaped cement ponds, arrangement of half cut hume pipes sealed on one side and some places bore-wells with the hand pump would be provided.

- (iv) **Maintenance of Waterholes :-** To ensure longer and reliable water availability the following measures may be undertaken:-
- (a) De-siltation and removal of debris would be done in the month of December and January.
 - (b) Removal of leaf-litter from waterholes during April and May.
 - (c) The approach ways to waterholes could be made by providing rough surface and smooth slopes.
 - (d) Regular maintenance of bore-wells
 - (e) The springs or aquifers shall be tackled with a small trough constructed near such source of discharge, so that there is pool of water available to wildlife.
- (v) **Soil Conservation Works :-** To check soil erosion and increase water availability, intensive soil and moisture conservation measures shall be taken up in these areas, such as loose boulder structures, Gabian structures, gully lugging, pitching, inverted bandara etc.in the nalas.
- (vi) **Meadow Development :-** The existing grass lands, open areas in eco-sensitive zones should be increased by improving palatable grass species. Unpalatable grass species shall be removed from such areas. The browse species would be pollarded to provide sufficient foliage to wild animals. The seeds of palatable perennial grass and legume species would be sown after ploughing in some of the open areas, and important fruit species like Pipal, Ber, Aonla, Jamun, Mahua etc. will be planted in such areas to provide food to wild animals.
- (vii) **Management of Wetlands and Unique Habitats: -** The existing wetlands in eco-sensitive zones and inhabitat flora and fauna would be studied. These wetlands are the abodes of aquatic fauna such as fishes, aquatic birds and migratory birds which visit these wetlands. The nesting sites should be identified and protected without disturbances and for this purpose planting of suitable species shall be taken up along the boundaries of wetlands. Unique habitats like caves, cliffs would be studied and protected from the management point of wild animals.

3. MONITORING OF WILDLIFE HEALTH :- Wildlife health should be monitored regularly because of communicable diseases of viral, bacterial, protozoan and rickettsial origin may lead to dwindling of wild animal population due to death, and increase in vulnerability to perdition, reduction in competitive ability etc. In order to maintain proper health of wild animal the following measures would be adopted to control disease transmitting agents :-

- (i) Assessment of cattle population in and around Sanctuary areas.
- (ii) Vaccination of domestic cattle.
- (iii) Studies to be conducted on cattle and wild animal common diseases
- (iv) Hot stamping of permitted to cattle for grazing
- (v) Proper hygienic conditions shall be maintained in the habitat of wild animals.
- (vi) The common waterholes used by both cattle and wildlife would be identified and disinfected, so that the communicable diseases are not transferred to wild animals.

4. Other Activities :-

- (i) Salt-licks and mud bath shall be provided at suitable places.
- (ii) Multipurpose watch towers shall be erected to observe the movement of wild animals and to trace fire incidences for controlling fires.

SECTION X.11 :- MEASURES TO BE UNDERTAKEN TO PROTECT WILDLIFE IN NON- PA'S :-

The management of most of the PA's is with the wildlife wing of the State. At present there are 35 Wildlife Sanctuaries, 5 National Parks which includes 3 Tiger Projects in the State. To manage these PA, separate management plan have been prepared and the management of these areas is being carried out as per the provisions of approved management plans for these areas. The wildlife wing is specilized in wildlife protection, habitat management etc. Therefore special emphasis has been given for effective management of PA's, from time to time. The situation is not that much

effective in case of Non-Protected Areas where the wildlife management is not with the wildlife wing and it is with the territorial wing.

In order to have effective wildlife protection and conservation in Non-PA's the following consolidated Standing Order are issued by the Principle Chief Conservator of Forests, Wildlife in the name of “ **Standing Order 001**” for immediate implementation.

The Standing Order clearly states about the following aspects :-

(I) Establishment of secret information network for wildlife protection:

In order to have effective informer network at all level to prevent and investigate into offences related to wildlife. In this connection local villagers, Vanmajurs and Forest Guards form an important linkages in the network. It is clearly mentioned in the Standing Order that the senior officers should interact more with the local staff and villagers for important information and they should also offer suitable rewards to the officers and staff, who excel themselves in curbing illegal poaching and trade in wildlife. A note of such matter should be taken in their Service Books.

Territorial forest officers managing wildlife outside PA have been given specific instructions in the above mentioned Standing Order to implement the following protection and anti-poaching measures in their respective jurisdiction :-

- (1) All forest officers, right from the forest guard onward will always remain alert in their daily duties regarding wildlife protection and conservation.
- (2) The concerned Deputy Conservator of Forests will prepare an annual plan for their jurisdiction including budgetary provisions. They are required to inform their higher officers immediately about illegal hunting and other incidences.
- (3) The above mentioned measures include following aspects :-

A) Measures to be taken by the Forest Guard : - Forest guard plays a crucial role in wildlife protection by obtaining all preliminary information related to wildlife offences and pass on this information to higher authorities in controlling the wildlife offences. In doing so, the forest guard should therefore :-

- 1) Always move in his jurisdiction and acquaint himself thoroughly with the entire area including wildlife habitats and water holes and other related aspects in protection and management of wildlife in his jurisdiction.
- 2) Get conversant with all important wildlife species in his Beat and he must gather information about location and movement of wildlife and soliciting information from local people by moving around in the Beat.
- 3) The Forest Guard must keep watch on electric lines regularly passing through his Beat, since poaching by tapping electric transmission lines is on the rise, to prevent poaching by electrocution and also to avoid touching them while at night.

B) Measures to be taken by the Forester: -

- 1) Supervise the Forest Guards regarding performance of duties as prescribed above.
- 2) Keep record of all water bodies especially those water holes, which hold water even during acute scarcity period and depict them on a suitable map of his Round.
- 3) Regularly inspect all these water holes and ensure that miscreants do not poison them.
- 4) Take up night patrolling along with the Forest Guards and their assistants.

- 5) Report all cases of cattle kills and human loss due to wild to higher officers within 12 hours.
- 6) Take precaution that the carcass of dead cattle is not poisoned
- 7) Keep record of all weapon holders in his jurisdiction.

c) Measures to be taken by Range Forest Officer :-

1. Take regular review of all the measures taken by foresters and forest guards under his control.
2. Earmark sensitive zones on his range map, which will include details like an electric transmission lines, areas of abundant wild animals, location of licensed weapon holders etc.
3. Ensure that the Foresters/Forest Guards regularly patrol the sensitive area and also obtain Beat “Khariyat” report. The report will include information on movement of wild animals especially that of Tigers and Panthers.
4. Regularly visit and if required, stay overnights at the beat headquarters and keep contact with the locals and thereby build his own secret network.
5. Deal promptly in cases of cattle kills by wild animals to compensate their owners expeditiously.
6. Ensure that no illegal sale of wild animal meat is carried out, specially in weekly bazaars and he must obtain regular reports of the same from his subordinates.
7. Ensure that there is no illegal collection of Tendu leaves from PAs and there surrounds (3 kms) and see that legal action is initiated against the concerned, including the contractors accepting such Tendu leaves.

D) Measures to be taken by Assistant Conservator of Forests :-

1. Regularly obtain reports regarding wildlife protection from their Forest Guards/Forester and RFOs, and through surprise checks ensure all his subordinate staff are carrying out their duties as prescribed.
2. Regularly patrol the sensitive areas under his jurisdiction with local staff and monitor the movements of suspicious offenders.
3. Supervise and ensure that fire protection measures are carried out timely and effectively.
4. Powers to enquire in to the offences related to wildlife are vested with Assistant Conservator of Forests. Therefore he should pay proper attention to every enquiry and ensure that self contained and water tight complaints are filed in the Court. He should submit regular review of all the court cases to his Deputy Conservator of Forests/Conservator of Forests. He also must ensure that all the witnesses attend their cases timely. If this is not happening then he should report the matter to the Hon.court.

(E) The Deputy Conservator of Forests should regularly monitor works of subordinate staff and check their wildlife related records.

The Deputy Conservator of Forests must educate local people, school students regarding importance of wildlife protection and management. The Deputy Conservator of Forests and Conservator of Forests (Territorial) must look into the aspects of conducting workshops held for Forest Guard/ Forester/ Village Protection Committee and locals in every range and in every year. In this connection the cooperation of wildlife wing may be taken.

Considering gradual decrease in the wildlife population the Deputy Conservator of Forest/Conservator of Forests (Territorial) will identify the areas, where endangered and Shedule-I animals such as Tiger, Panther, Bear, Wilddog are normally found and take their shelter, and use as breeding grounds. Such area should be declared as “ Sensitive areas” and special measures should be taken in such areas by making budgetary provisions. These measures are :-

(I) A critical report shall be prepared at divisional level for sensitive area regarding population of existing animals, their status and whether they are on the verge of extinction at local as well as state level.

(ii) The information gathered about the sensitive area to be shown on each range map depicting the animal's habitat, breeding grounds, movements etc. the perceptible threats to their survival must be identified and measures to be implemented to overcome those problems.

(iii) The information about the availability of water and fodder and measures must be implementing to overcome the problems of the same.

(II) Keeping tract of wild animals movement :

The movement of wild animal inside or even outside the forest area should be traced by the local staff. Especially Tiger, Panther and Black buck. Wild animals stay out side the forest specially in summer and rainy seasons are highly prone for hunting and poaching and the local forest staff must keep a trap to prevent any unwanted incidence happen to them.

(III) Help of the local forest protection committees :

A) There are number of Forest Protection Committees which have been established, the local staff must seek their cooperation in preventing wildlife offences especially on the boundaries of National Parks and Sanctuaries.

B) Wild animal protection committee : There are number of Joint Forest Management Committees have been established and it is instructed in the Standing Order that a Sub Committee will be formed under Joint Forest Management Committee termed as “ Wild Animal Protection Committee” which will help in protection of wild animals.

IV) Illegal trade in wild animal :- Many number of wildlife cases are pending in various courts which are not maintained regularly by the forest officers results in acquittal of offenders and therefore all these cases must be monitor closely. A list of accused and suspicious offenders must be maintained at division level and a list with photograph of all habitual offenders must be maintained and kept in range office.

(v) Man- Animal Conflict :- In the recent past wild animals especially herbivores used to visit the agriculture field due to shrinkage of their natural abode, thus causing damage to the agriculture field resulted in man- animal conflict. More over enhancement of human habitation within and outside forest area led to braking of natural corridors of wild animals is also another aspect of man-animal conflict. Due to intensive protection of PA areas, the population of herbivores is on increasing trend and these herbivores increasingly raiding the adjoining fields and cause severe crop damage. To mitigate this problem a Secretary Level Committee under the chairmanship of Chief Secretary (Maharashtra State) has taken the following three decisions :-

- 1) Insurance against crop damage
- 2) Raising stonewall between fields and forest to prevent crop-damage.
- 3) Hunting wild-pigs, if it is unavoidable.

VI) APPOINTMENT OF HONORARY WILD LIFE WARDENS :

Honorary Wildlife Wardens have been appointed for each district as per Section 4 (1)(bb) of Wildlife (Protection) Act 1972. They have been delegated to use powers of Section 55 of Wildlife (Protection) Act vide Govt. Resolution dated 27/9/2002 for protection and management of wildlife and the honorary wildlife warden are expected to perform the certain duties given in “Standing Order 001” of the Principle Chief Conservator of Forests, Wildlife.

VII) Establishment of “control cell” at Circle level :- A Tiger cell has been formed by the State vide Govt. Resolution dated 7.11.2000 under the chairmanship of Additional Director General of Police (Head quarters) for co-ordination between the Police, Forest and other Departments to check poaching and illegal trading of wildlife. Similar committees have been formed at commissionerate and district levels for proper coordination for controlling wildlife offences.

VIII) Apart from above mentioned measures, the following measures to be undertaken for protection and management of wildlife outside PA's :-

1. Periodical estimation survey of wild animal is a must to assess the population of wild animal and their distribution in the tract which help in taking up appropriate measures to protect and manage habitats.
2. In summer most of the water bodies and streams shall dry up and wild animals are required to visit water holes twice in a day for drinking and the water bodies may be vulnerable spots for poaching, therefore it is prescribed alternative water resources and water shall be provided in the form of water holes at appropriate places where the wild animals can meet their water demands safely.
3. In Akola Forest Division in some of the areas alternative water sources are provided by means of anicuts, Van Talav and water holes. These water holes will be filled up with water on a regular basis and these should be strictly protected from poaching.
4. Multipurpose Watch Towers will be erected to observe the movement of wild animals and to trace the fire incidence for fire control and to check grazing.
5. Salt licks and dust and mud bars shall be provided at suitable places.

6. Census shall be conducted regularly to assess the status of wild animal population.
7. Vaccination of the cattle grazing in the forest shall be carried out in order to prevent contagious diseases to wild animals and grazing process are required to be verified regularly.
8. The cattle kill and human kill cases are required to decide promptly and the compensation shall be paid as per the Government policy.

SECTION X.12 : OTHER MEASURES ADOPTED FOR PROTECTING WILDLIFE : Apart from legal measures to protect wildlife under Wildlife (Protection) Act 1972, amended from time to time and the various rules made thereunder, following measures have been taken to protect the wildlife :-

X.11.1. The State Government has issued various Government Resolutions for compensation to be paid to the owner of cattle are killed by a Tiger from time to time. These Government resolutions are 1. No.WLP/1570/224482-x-II dated September 30, 1971, 2. No.Misc.-1075/113554/F-1/, dated March 25, 1977 and 3. No.WLP/ 1579/ 6200/4/F-1, dated May 29, 1979. This provision was extended to the cattle killed by panther subsequently and cattle killed by tiger or panther outside the forest areas also was included vide Government Resolution No WLP/1581/116974/f-5, dated August 22, 1984 and amended from time to time.

The State Government vide Government Resolution No.WLP/1002/Pr.kr.258/ F-1/ dated January 17, 2003, a provision has been made for compensation in case of death of injuries to human life by wild animals . In this Government Resolution maximum amount of compensation in case of death is Rs.2,00,000/-, in case of serious injury Rs. 50,000/- and for minor injuries Rs. 7500/-. As per Government Resolution issued from time to time in case of cattle killing the amount of compensation is increased upto Rs. 9000/-.

The State Government with a view to check illicit shooting of wild animals, sanctioned of grant of reward to the informants in respect of unlicensed shooting provided that the information is found to be valid and leads to the conviction of the offender. The State Government has also decided to sanction the rewards equal to 50% of the compensation actually recovered from the offender for illegal shooting to the Gram- panchayat or its office bearers or individuals who cooperated with the department in detecting such illegal shootings. Besides, the above mentioned legal provision for protection of wildlife, public awareness by protection and preservation of wildlife has been created through celebration of Wildlife Week from October 2nd every year since 1951. Number of offences registered under the purview of aforesaid Act, Rules and Government Resolutions have been given in this Plan. The details of cattle lifting, injuries or killing of human being are given in Appendix XXVI of Volume II.

Involvement of Joint Forest Management Committee in Protection of Wild Life :-

The Man-Animal conflict has been there in the nature since the time immemorial. The developmental activities for the benefit of human always cause damage to wild animal existence. To protect wild animals effectively, the co-operation and active participation of local people is necessary. In Joint Forest Management the wild life protection should be a focal point. The wild life should not be considered as competitor in utilization of resources in the forest but it is to be looked upon as co - sharer of common resources. It is the need of the hour that there should be a symbiotic relationship between mankind and wild life in a particular habitat. The wild life protection shall be entrusted to Joint Forest Management Committee and the funds flow for wild life protection and management shall invariably through Joint Forest Management Committees. Efforts shall be made to have a fair competition among various Joint Forest Management Committee for the protection of wild life as well as other natural resources.

CHAPTER – XI

ECO -TOURISM IN AKOLA FOREST DIVISION

SECTION : XI.1 : NEED OF ECO – TOURISM :

XI.1.1. Eco - Tourism is a new concept in forest management, and it has gained momentum in the recent past. Eco-Tourism in this tract encompasses entire area of the division. The tract is rich in distinct flora and fauna, natural resources, natural landscapes, natural scenic beauty of various irrigation projects contribute enormous potential for Eco tourism in this tract. Keeping in view the above mentioned potential resources a separate chapter on Eco – tourism has been formulated.

XI.1.2 As per “Eco – Tourism in India – Policy and Guidelines, 1998”, Ministry of Tourism, Government of India : Eco - Tourism can be defined as follows : **“The activities of persons traveling to and staying in places outside their usual place of residence for not more than one consecutive year for leisure, business or other purposes constitute tourism. Such visits for being close to enjoy its enormous creations, both biotic and abiotic, in most environment - friendly manner, without any adverse impact on the ecosystem, is particularly known as eco tourism.”** The tract of Akola division forms a distinct vegetation cover with important rivers like the Penganga, the Purna, the Adan etc.

XI.1.3 According to World Tourism Organization (WTO), **“Tourism that involves traveling to relatively undisturbed natural areas with specified object of studying, admiring and enjoying the scenery and its wild plants and animals, as well as existing cultural aspects (both of the past or the present) found in this areas”** is defined as ecotourism. Nature tourism (ecotourism) is distinguished from mass tourism or resort tourism by having a lower impact on the environment and by requiring less infrastructure development.

XI.1.4 The key elements of eco-tourism include a natural environment as the prime attraction, an optimum number of environment-friendly visitors,

activities which do not have any serious impact on the eco system and the positive involvement of the local community in maintaining the ecological balance.

XI.1.5 Eco-tourism provides pleasure of beautiful natural forest or landscape-watching of animals, birds and trees in forests and engaging in trekking, boating or rafting, corals and marine life, wandering in sand dune zones are some of the common forms of eco tourism.

SECTION XI.2 : GENERAL CHARACTER OF VEGETATION, LANDSCAPE

XI.2.1. The vegetation of this tract is “**Southern Tropical Dry, Deciduous**” with varied floristic composition, edaphic and climatic variations. The forest situated along the river Purna and its tributaries is of better quality which represents site quality III and IV A. Akola Forest Division has got many spots with beautiful vegetation. Some of which are mentioned below. Variety of wild animals are noticed in this area like Panther, Black buck, Nilgai, Barking deer, Jungle Fowl, Peacock, etc will mesmerise the visitors in this area. Akola Forest Division is drained by many rivers mainly of Purna, Morna, Katepurna, Mun, Uma, Adan, Pus with their tributaries.

1) Morna Dam :- It is situated in compartment No. 73 and 74, 40 kms away from Akola and 8 km away from Patur. This is an irrigation project having a fascinating scenic beauty with water all round the year. On the banks of the projects rich forests mainly constitute Teak and its associates like Dhawda, Salai, Dudhi, Tendu, Char, etc with lot of herbs and shrubs. The spiraling climbers embracing and curling trees are definitely memories the visitors to this part. Chirping of Jungle fowl, Peacock and dancing heads of Black bucks and wandering of Nilgai will definitely attract the visitors to this part. This is a medium project having hillocks around the project situated in the midst of the forest. This project is very much suitable for boating and fishing throughout the year. The presence of cunning Leopard and dancing Sloth Bear bound to attract anybody to watch the nature around this dam.

2) **Adan project area** :- It is in compartment No. 426 located 10 km away from Karanja. Karanja-Sohal Wild Life Sanctuary in Karanja range is situated on the bank of this project. Total area of this project is around 700 ha. This area can be developed in to Eco tourism spot. The Karanja Sohal Wild Life sanctuary is situated in compartment no. 427, famous for Black bucks. Herds of Black bucks and other animals definitely attract the visitors. Teak and its associates will definately provide greenery and attract visitors. It is very much suitable place for boating and fishing. This is very big project provides scenic beauty. This area is rich in wild life. The wild animals seen are Panther, Chital, Nilgai, Black bucks, Barking deer, Jungle Fowl, Peacock and reptiles.

3) **Tapovan** :- It is in compartment No. 161. It is an old and famous “Mahadeo Temple” which is 15 km away from Washim. It is a potential Eco tourism spot having rich forest and wild life. This temple is surrounded by beautiful vegetation having composition of Teak, Ain, Dhawda, Lendia, Salai with lot of herbs and shrubs. Wild animals like Panther, Nilgai, Blackbucks, Fox, etc and wild birds like Peacock, Jungle Fowl will definitely attract to visitors. Adjoining to temple, Tapovan project is located. It is having water through out year with rich forest around it. “Jatra” takes place at this place during “Mahashivratri” and also in the month of “Shravan”. It attracts many pilgrims from Akola and Washim districts.

4) **Rudrani Devi** :- It is situated in compartment No. 80 of Akola range, 35 km away from Akola. Famous Rudrani Devi temple is situated here. Adjoining to this temple Rudrani Tank which is famous for water birds and very attractive spot. It is surrounded by rich vegetation. During “Navaratri” Jatra takes place here and pilgrims from Akola and adjoining villages visit to the spot, to pay tributes to Rudrani Devi and local people visit every Tuesday and Full moon days. This part witnessed by rich forest and wild animals which attract visitors to this spot. This can be developed into Eco-tourism spot.

These eco-tourism spots can be developed for the attraction of tourists without disturbing the nature’s beauty.

SECTION XI.3: SPECIAL OBJECTS OF MANAGEMENT :-

XI.3.1. In the National Wild Life Action Plan 2002, the special objects of management of eco-tourism states that tourism should become a unifying force nationally, internationally fostering better understanding through travel. It should also help to preserve, retain and enrich, the life style and cultural expression and heritage in all its manifestations. The policy objective of eco-tourism could involve a selective approach, scientific planning, effective control and continuous monitoring. To develop the process of eco-tourism the following cardinal principles shall be adopted :-

1. It should involve the local community and lead to the over all development area.
2. It should identify likely conflicts between resource use of tourism and livelihood of local inhabitants.
3. The development of tourism should be compatible in environment and the socio-cultural aspects of local people.
4. It should focus overall development strategy with better land use plan and expansion of public services.

The special objects evolved on the basis of above mentioned cardinal principles are :-

1. Development of eco tourism without disturbing socio-cultural and ecological environment of the area or with low impact on it.
2. Involvement of local people and over all socio-economic development by maintaining ecological balance.
3. Exposure to ethnic groups to the main stream of social, cultural and temporal life and involve them in harnessing potential of eco tourism for their development.
4. Involvement of Government and Non Government Organizations to create awareness for environment.

SECTION XI.4 ROLE OF FOREST DEPARTMENT :-

XI.4.1. The Forest Department will develop the centers of ecotourism with controlled accessible points at strategic places. Eco tourism centres include roads, self guided nature drive, transport options interpretation centers, signs, observation towers, adequate lodging and dining facilities, garbage disposal facility and other amenities as per the requirement. Any development of buildings and other infrastructural facilities shall be eco-friendly.

XI.4.2. Specify environmental, physical and social carrying capacity to limit the developmental activities. The division will provide information regarding 1) What to see ?, 2) How to see ?, 3) How to behave ?, by providing brochures, leaflets and specified guides and visitor information centres.

XI.4.3. Division will prepare and distribute code of conduct to all visitors. Organising training programme for forest personal and general public and JFM Committees to enhance the eco-tourism.

SECTION XI.5: CODE OF CONDUCT AND EXCEPTIONS FROM VISITORS

XI.5.1. Proper guidelines shall be prepared and the visitors shall be abide by these guidelines :-

- i. The habitats of flora, fauna and any sites of natural or cultural shall not be affected by tourism.
- ii. Make no open fires and discourage others from doing so. If water is to be heated with scarce firewood, use as little as possible. Wherever feasible, use kerosene or fuel efficient wood stove.
- iii. Remove litter, burn or bury paper, and carry back non-degradable litter.
- iv. Keep local water clean and avoid using pollutants such as detergents in streams or springs. If no toilet facilities are available, try to relieve yourself at least 30 meters away from water sources and bury or cover the waste.

- v. Plants should be left to flourish in their natural environment and avoid taking away cuttings, seeds and roots.
- vi. Leave the camp sides clean after use.
- vii. Remember that another party will be using the same camp side after your departure.
- viii. Help guides and porters follow conservation measures. Do not allow groups / porters to throw garbage in the streams or rivers.
- ix. Respect the natural and cultural heritage of the area and follow local customs.
- x. Respect local etiquette and wear loose cloths. Kissing in public is disapproved off.
- xi. Respect privacy of individuals and ask permission and use retrained in taking photographs of local inhabitants.
- xii. Respect holly places. Do not remove religious objects.
- xiii. Strictly follow the guidelines for personal safety and security and always take your own precautions and safety measures.

SECTION XI.6: ROLE OF NON-GOVERNMENT ORGANIZATIONS/ SCIENTIFIC AND RESEARCH INSTITUTIONS:-

XI.6.1 The N.G.Os will be allowed to take lead in eco-tourism in this tract and harness the potential of eco-tourism for the development of local people.

XI.6.2 The role of N.G.O. will be creation of awareness in all aspects of eco tourism, motivation of local community in participation of sustainable eco-tourism activity.

XI.6.3 Conducting trainings in easy guiding of eco-tourism, catering, transportation, affording house, etc.

XI.6.4. Motivate the local community to increase their involvement in sustainable ecotourism.

SECTION XI.7 ROLE OF COMMUNITY :-

The local people by participating in all aspects of eco- tourism development and make the outsiders aware about, without disturbing eco logical and biological balance available in the tract.

XI.7.1. In eco-tourism tourist development in the major forest is on environment, people and eco-tourist. The role of local community is to develop eco-tourism as means of ecodevelopment, improvement of living standards of the people and to make them aware the outsiders about ecological and biological diversity available in the tract without disturbing these aspects.

XI.7.2. Realize and react to potential threat of investors, who see the opportunities in his development but lack of sensitivity to local value.

XI.7.3. JFM members with forest department shall act as efficient caterers, guide to eco-tourists.

XI.7.4. To be friendly with visitors and help them in eco-tourism practice.

XI.7.5. Practice conservation of nature and culture as a way of life.

XI.7.6. Respect the values of environment flora and fauna, the monuments and their cultural heritage.

XI.7.7 Become effective nature guides and conservationists of natural areas by enhancing the practical and ancestral knowledge of the natural features of the area.

SECTION XI.8: THE ENVIRONMENTAL PLEDGE :-

XI.8.1. In course of promoting ecotourism in the tract following environmental pledge should be displayed at strategic places :-

- (1) **STATIONERY AND OTHER PUBLICITY MATERIAL ON RECYCLED PAPER** : - We will introduce the use of recycled paper for our stationery and other publicity items such as brochures and establish recycling programmes.
- (2) **POLYTHENE BAGS** : We will convert to, wherever possible, from use of polythene bags to paper bags, clothe bags and other alternatives.
- (3) **ALTERNATE SOURCE OF ENERGY FOR FUEL** : Wherever possible, we will convert to solar power such as solar heating and lighting, to reduce the use of thermal electricity.
- (4) **GARBAGE DISPOSAL** : We will introduce the system of separating recyclable and non-recyclable garbage emanating from our operations and dispose non-recyclable garbage in a responsible way, so as to not harm the environment.
- (5) **WATER CATCHMENT AND TREATMENT** : Whenever possible we, will recycle water by incorporating water treatment schemes. We will also make storage and catchments facilities for rain water to be used for our operations.
- (6) **ECO -LODGES AND RESORTS** : We pledge to conserve the ecology, animal and birdlife of the area, our properties are located in.
- (7) **PLANTING OF SAPLINGS** : We will encourage the planting of saplings and greening of the local environment. We will take saplings and encourage our tourists to help plant them near our camp sites or on the trails.
- (8) **ALTERNATE USE OF FUELS** : We will limit the burning of firewood and use alternate sources of fuel for both cooking and heating.
- (9) **USE OF LOCAL ETHNIC MATERIALS IN CONSTRUCTION OF PROPERTIES** : In keeping with the local landscaping we will incorporate architectural styles typical to the area, thus blending with environment.
- (10) **EMPLOYMENT OF LOCAL COMMUNITIES** : Where possible, we will hire locally for our business, to enhance the economy of our area.

(11) **LIMIT DISFORESTATION** : We will make no open fires and discourage others from doing so. Wherever waste is heated using scarce firewood, we will not use it of use as little of it as possible. Wherever possible, we will choose accommodation that uses kerosene or fuel-efficient firewood stoves.

(12) **NON BIODEGRADABLE GARBAGE** : We will leave common sites clean and take back all non-biodegradable litter to the road heads towns for proper disposal. We will bury only biodegradable food waste.

(13) **KEEP LOCAL WATER CLEAN** : Toilet facilities will be pitched at least 30 meters away from the water source and all waste will be covered properly. We will not allow detergents to be used in streams and springs.

(14) **PLANTS LEFT IN THEIR NATURAL ENVIRONMENT** : We will not take away cuttings, seeds and roots of plant if not permitted to do so.

(15) **RESPECT LOCAL CULTURES** : We will promote the appreciation and preservation of religious places and local villages by never allowing clients to buy religious objects or heirlooms from remote villages.

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CHAPTER NO. XII

FOREST PROTECTION IN THE TRACT

SECTION XII.1: INTRODUCTION :-

The forest protection is one of the most important and difficult aspects of forest management. Lot of degradation of forest has already been taken place due to increase of human and cattle population and consequently their requirements. The developmental works carried out under Five Year Plans resulted in diversion of forest land for non forestry purposes i.e. cultivation, irrigation projects, industries, etc. leading to shrinkage of forest cover as well as reduction in forest area. This situation resulted in huge gap between demand and supply for forest produce.

The inclination of people towards tangible short term individual benefits rather than intangible gains for long term well being of society as such are some of the leading causes which work against the interest of forest protection.

In the National Working Plan Code of 2004 the Government of India made it mandatory to have Forest Protection Working Circle after duly considering the problems of forest protection. In the Working Plan Committee meeting held on 27th March 2008 Dr. B.N. Mohanty, Chief Conservator of Forests, (Central) Bhopal, suggested that although, the Working Circles of Joint Forest Management (Overlapping) Working Circles, Wildlife Conservation (Overlapping) Working Circle, Non-Wood Forest Produce (Overlapping) Working Circle and Forest Protection (Overlapping) Working Circle are mandatory as per the National Working Plan Code – 2004, all except the NTFP (Overlapping) Working Circle be incorporated as separate Chapters in the Working Plan.

The forest protection is a complex problem, management of which requires multipronged approach for solution.

The forest of this division have tremendous pressure of illicit felling, encroachment, grazing and fire because of excessive biotic pressure of the adjoining villagers and nature of vegetation, climate and social factors. As most of the forest constitutes maximum Teak, the problem of illicit felling is more acute in the patches where Teak percentage is more, specially the forest of Patur and Alegaon ranges. There has been a perpetual threat of illicit felling in Patur range which is highly sensitive from the point of illicit felling. The local people move in groups, indulges in illicit felling and there have been many cases of assaulting local staff by illicit cutters. In this division out of 125 beats 67 beats are considered as Hyper sensitive and 25 beats are Sensitive and 33 beats are Normal. All 125 beats constitute 81009.61 Ha. of forest area.

The average volume per ha. as per the enumeration data is about 76 cub.mtr. per Ha., therefore the total volume comes around 3308701.80 Cub.mtr considering the total forest area as 43535.55 Ha. (Area of Density 0.1 to 0.4 + 0.4 to 0.6+ above 0.6) The existing value of timber, fuel wood has the market worth of about Rs. 5955.66 crores considering market value of Cub.mtr worth Rs.18000/-. This is a huge forest wealth which contributes to the State as well as national economy by providing both tangible and intangible benefits, which are required to be protected by all means. Therefore, there is a need to have a separate chapter on Forest Protection, accordingly this chapter is provided in the management plan which highlights the problems of forest protection in the area along with probable solutions for forest protection. The forest tract of Akola is very much dry and due to nature of the forest and hot temperature, the forest of this deciduous tract is very much vulnerable for fires.

The cause of fire is mainly due to ignorance of local people and wrong practices of collection of Minor Forest Produces. In this tract the nature of fire is creeping fire, and the regeneration of Teak and other species in general suffer due to such fires. Repeated fires cause desiccation phenomenon in Teak as well as other species and even production good fodder and grasses suffer to a large extent. Many heritage species getting their existence in danger and wildlife also suffer from fires.

Grazing cause lot of damage to the establishment of regeneration due to trampling. To control grazing, 26 Grazing Units were formed in the Division. The number of cattle head in each grazing unit was fixed as per the carrying capacity of the

area and the area is open for grazing all the times, then the impact of grazing could be negligible. But the villages are located mainly along the rivers or water bodies and hence the cattle. The incidence of grazing is very high in and around the forest areas where the villages are situated and the impact of grazing, illicit felling, fire encroachment is tremendous around the villages. Therefore as a result of above such impact, the forest areas around villages are deprived of regeneration due to over grazing and trampling of seedlings. Some seedlings seldom established and at certain places especially areas around villages, the ground storey is completely missing. Number of various offence cases are given in the following table :-

TABLE NO. – 127

STATEMENT SHOWING NUMBER OF OFFENCE CASES REGISTERED

Sr. No.	Year	Fire	Grazing	Illicit felling	Others	Total cases
1	1994-95	30	78	1375	119	1602
2	1995-96	29	84	957	172	1242
3	1996-97	31	49	971	180	1231
4	1997-98	12	43	825	108	988
5	1998-99	32	74	823	114	1043
6	99-2000	29	33	827	182	1071
7	2000-01	45	35	1534	131	1745
8	2001-02	5	49	1152	167	1373
9	2002-03	11	63	1212	245	1531
10	2003-04	42	40	503	151	736
11	2004-05	22	7	1215	128	1372
12	2005-06	10	0	1024	345	1379
13	2006-07	41	17	840	325	1379
14	2007-08	89	20	757	336	1202

SECTION XII.2 :- STRATEGY FOR FOREST PROTECTION :-

The strategy to be adopted to protect forest is of integrated approach and it shall be applied at various fronts by undertaking collective measures based on situation and

time. The strategy shall be direct / field oriented in a participatory manner with active involvement and co-operation of local people specially members of Joint Forest Management Committee. Total villages in this Division are 356 whereas 87 Forest Guards are placed at various places to protect the forest. Therefore, for effective protection there is a need to seek the co-operation and involve local people in forest protection. Some of the effective measures proposed are :-

1. Existing forest needs to be well protected and developmental works like soil and moisture conservation measures, natural and artificial regeneration works and other cultural operations shall be carried out in order to increase the productivity of the forests.
2. Regulation of grazing and controlling the fire.
3. Seeking co-operation and active participation of local people in all operations of forest management.
4. Employment generation to local people during lean period.
5. Fulfilling the demands of local people for forest produce.
6. Effective utilization of existing infrastructure, strengthen and updating infra-structural facilities.
7. Installation of new Check Nakas at Hyper Sensitive and Sensitive points apart from existing Check Nakas.
8. Improvement in communication facility and mobility of the forest staff.
9. Patrolling the sensitive forest areas along with the local people / Joint Forest Management Committee members.
10. Introducing Rewards and Awards and informer system and making the forest offences high risk low gain process.

The forest protection can not be achieved in isolation without active participation and co operation of local people in other words Joint Forest Management approach will be the main strategy to protect existing forests of the division.

SECTION XII.3 :- FOREST PROTECTION :-

The most important factors for the degradation of forest cover and forest land shall be dealt with the following points :-

Illicit Felling :- It is the major problem in this division. The forests area of Patur range is very sensitive from the point of illicit felling. To have effective protection regular patrolling needs to be undertaken by the field staff and the members of the Joint Forest Management Committee as “Shramdan”. In order to control the illicit felling in transit new Check Nakas to be established apart from existing Check Nakas at sensitive and hyper sensitive places. The vehicle and enforcing staff shall always be kept ready for contingent situation. The early detection of illicit felling cases, prosecution in the court of law and making list of habitual offender.

There is a need to create local network system for information by providing cash incentive to the staff as well as local people those who help in providing information for nabbing offender and seizing the illicitly felled material.

Presently there are 3 Check Nakas are established at various strategic points to control the transportation of illicit forest produce and one more Naka is proposed to be established.

The Check Nakas must be duly notified by competent authority and published for the benefit of public as well as law enforcing authorities.

TABLE NO. – 128

LIST OF EXISTING NAKAS AND PROPOSED NAKAS

Sr. No.	Range	Existing Naka	Temporary Naka	Proposed Naka
1	2	3	4	5
1	Akola	Washim – 1	--	--
2	Akola	Bypass – 1 Akola	--	--
3	Alegaon	Babulgaon -1	--	--
4	Washim	--	-	Rajgaon-1

These Check Nakas are manned by Forest Guard and Vanmajur and they do not have modern system of communication like Walky-Talky or Wireless connection. It is required to strengthen existing Check Nakas with effective controlling force i.e. manpower and modern communication system.

1. MOBILE SQUAD :- The Dy. Conservator of Forests has been provided two Mobile Squads with the staff of Range Forest Officer 1, Forester 1, Forest Guard 4, Forest Labours 1, Police constable 1, And Driver 1 along with a Jeep. Out of two Mobile Squad Range Forest Officers, one Mobile Squad Range Forest Officer is having his head quarter at Akola alongwith the staff who supervises the protection of Akola, Patur, Alegaon and Barshitakli ranges and the other Mobile Squad Range Forest Officer is having head quarter at Manglurpir, who looks after protection of Washim, Karanja, Malegaon and Manora ranges and both these Range Forest Officers are directly under the control of the Deputy Conservator of Forests, Akola Division.

The Government have issued various directions and circulars from time to time in relation to handling of forest offences. The Government have given directions vide its letter no. TRS-1087/102380/F-2/R and FD, Dt. 18th June 1981. The offences of illicit felling valuing Rs.25,000/- and more at a place should be reported directly to the Government within 3 days after receipt of report from the Range Forest Officer by the Chief Conservator of Forests, Conservator of Forests and Dy.Conservator of Forests.

The following time schedule has been provided for inspection of illicit felling by the concerned officers vide Government Circular dated 8/5/2003.

TABLE NO. -129

Sr. No	In situ value of illicit cutting at a place	Designation of the Inspecting Officer	Period within which inspection should be completed
1	Upto Rs.50000/-	RFO	3 days from detection/ receipt of intimation of detection
2	Above Rs.50000/- but not exceeding Rs.2,00,000/-	ACF	3 days from the receipt of information.
3	Above Rs.200000/- but not exceeding Rs.500000/-	Dy.C.F.	3 days from the receipt of information.
4	Above Rs.500000/-	CF	7 days from the receipt of information.

The Government vide its letter no.TRS-1082/36/F-6, Dt. 8th September 1982 directed the department to launch the offence cases above Rs.2,000/- in court of law for prosecution unless the prosecution is difficult to succeed .

2. WIRELESS NETWORK :-

Presently there is no wireless network in this division. In the present day society modern type of communication has become easy and faster and the offenders making use of modern communication system like Mobile phones in committing forest offences and transporting the forest produce. As this type of modern system of communication is not provided to the staff, they find it difficult to prevent the forest offences or to nab the forest offenders. Therefore it is prescribed that modern communication system like mobile phones should be provided to the entire staff for effective protection of the forest.

3. MOBILITY OF THE STAFF :-

In Akola Division 6 government vehicles i.e. 5 - jeep and one Gypsy are provided to Dy.Conservator of Forests, Assistant Conservator of Forests and Range Forest Officer, Mobile Squad for Protection. With the existing road network by using modern speedy vehicles, the forest offenders are easily transporting the illicit material to the converting and utilizing points within the district or out side the district. The Territorial Range Forest Officer are not provided with any mode of transportation for patrolling and protecting forest property. It is prescribed that the staff involved in the

protection of forest area shall be provided with modern and effective transportation facilities. It is necessary to provide jeeps to the territorial range officers those who are not provided with jeeps for effective mobility to control forest offences.

As good quality forest are in Alegaon and Patur ranges, Patur and other villages involve in illicit felling in this belt and transport the illicitly felled material with the help bullock carts or logs on head loads or by motor vehicle to the point of conversion and market.

The distribution of Jeeps is as under

Sr.No	To whom the vehicle is allotted	No. of vehicle
1	Deputy Conservator of Forests Akola Division	Jeep – 1
2	Range Forest Officer (Mobile Squad) Akola	Gypsy – 1
3	Range Forest Officer (Mobile Squad) Mangulpir	Jeep – 1
4	Range Forest Officer (Territorial) Patur	Jeep –1
5	Range Forest Officer (Territorial) Alegaon	Jeep –1
6	Range Forest Officer (Territorial) Karanja	Jeep –1

Two seized vehicles are given to 3- Assistant Conservator of Forests for field work.

4. PROVISION OF ARMS :-

The forest offenders are resorting to use of modern weapons like fire arms in committing forest offences. The forest staff without, modern weapons, can not prevent those offenders from committing forest offences. With a view of providing weapons to the forest staff the Government have sanctioned five Pistols and five Rifles to the staff for forest protection and for self protection in the division. The fire arms provided to the staff members are not sufficient to deal with the offenders and the fire arms may be provided even to the lower rank staff those who are involved in forest protection.

A) The distribution of pistols is as under :-

1. Range Forest Officer Mobile Squad, Akola 1 - Pistol
2. Range Forest Officer Mobile Squad, Manglurpir 1 - Pistol
3. Range Forest Officer Akola (Territorial) 1 - Pistol

- | | | |
|----|---|------------|
| 4. | Range Forest Officer Washim (Territorial) | 1 - Pistol |
| 5. | Range Forest Officer Patur (Territorial) | 1 – Pistol |

The range forest officers are trained in handling weapons.

B) Distribution of Rifles is as under :- The rifles are given for forest protection to trained forest guards and distribution of rifles is as under :-

- 1) 3 – Rifles are given to 3 – Forest Guards in Karanja range.
- 2) 1- Rifle is given to 1 – Forest Guard in Washim range.
- 3) 1- Rifle is given to 1 – Forest Guard in Patur range.

5. TERRITORIAL INSPECTIONS :-

1. Beat checking :- In order to have stringent protection of forest it is necessary that the protective staff required to carry out patrolling in their respective jurisdictions and the officers concern will exercise effective supervision and control at all levels. It is utmost necessary to report every forest offence promptly as per directions given in the Standing Order 37, Chapter 9. The instructions issued for the guidance and strict compliance with a view to take effective measures in relation to efficient forest protection as given below :

- i. **Beat Guard :-** Every Beat Guard must carry out patrolling in his beat regularly. After thorough, inspection of entire forest area of his jurisdiction of every fortnight and issue POR for all the damages detected in his beat within the 1st instant.
- ii. **Round Officer :-** The Round Officer of a Round is required to inspect each beat at least once in 3 months and he should verify and enumerate the damage not reported by the concern Beat Guard . His report must reach to the Dy. Conservator of Forests through Range Forest Officer after thorough inspection.
- iii. **Range Officer :-** The primary responsibility of the Range Forest Officer is to verify whether the Round officer and Forest Guard are carrying proper patrolling of the forests of their jurisdiction or not. He should inspect a specific

portion covering at least 1/4th of the area of the Beat once in 6 months and the findings are required to be submitted to Dy. Conservator of Forests and Conservator of Forests punctually. In case of the quantum of illicit felling is more the Range Forest Officer will take appropriate measures to inspect Beat thoroughly.

- iv. **Supervisory Officer :-** The supervisory officer while on tours will inspect the specific areas of illicit felling. It is prescribed that the supervisory officer must spend one day for inspection of such vulnerable area within 15 days.

The forest offences shall be reviewed regularly at various levels regarding the nature of offence, quantum of offence, whether the case is compoundable or required to launch in court of law, etc.

While dealing forest offences, the offences not only be booked under the provisions of Indian Forest Act 1927, Wild Life (Protection) Act 1972, Forest (Conservation) Act 1980 but also these cases shall be dealt under IPC, CRPC, etc for effectiveness of the case.

2. Transit rules for Forest Produce :- The regulation of transportation of forest produce under Bombay Transit of Forest Rules 1960 published by the Agriculture and Forest Department under No. IFA-1057/22947-(VI), Dt. 23rd April 1960. The Government of Maharashtra vide its notification no. 1083/91822/(II)/CR 87/F-6, Dt. May 30th 1995 has amended Section 61 of Indian Forest Act 1927 making the law more stringent. Under this amendment some of the Assistant Conservators of Forests and above have been designated as Authorised Officers for the purpose of this act who are competent to confiscate the vehicles, instruments, forest produces, etc. involve in forest offences related to the illicit removal of notified forest produce.

As per the provisions contained in Government letter no. TRS-1089/PK-27/89/F-6, Dt. May 14th 1990 the transit pass required to be issued within 45 days from the date of submission of application.

6. FIRE PROTECTION :-

The areas of Akola Forest Division are subjected to repeated fires due to heavy biotic pressure and the nature of vegetation and atmosphere due to deciduous nature and the dry climate. Fire caused extensive damage to the forest specially the regeneration, forest growth, ground flora, soil organisms and the soil productivity.

Prevention of fires and effective control of fires as prescribed in the Plan is essential for the forest development. The fall of leaf-litter on the ground combined with highly combustible under growth consist of grasses, even a small spark and trigger of a conflagration in a short time. In summer high speed of hot winds make the fire to spread easily when it occurs and wrangle rest of area before it can be brought under control by counter firing.

The areas needed to be protected from fire are classified into the following categories based on purpose of fire protection :-

1. Class I :- Forest completely protected ; This area includes.

- i. All main felling coupes, thinning coupes, all the forest of SCI, Afforestation, Babul and Fodder Improvement Working Circle.
- ii. All regenerated coupes of all Working Circle till the young crop has attained the age of 10 years.
- iii. All plantations.
- iv. All forest nurseries.
- v. All Government timber depots both permanent and temporary.

- vi. Special habitat areas of any other special important areas as specified by the concerned circle incharge.
- vii. These areas are cleared with appropriate width of fire line as per the guide lines and patrolled by fire watchers. If any fire incidence takes place in this area is treated as calamity and should be reported to the concerned Dy.Conservator of Forests in detail.

2. Class II :- (General Fire Protection):-

- i. The remaining areas of Selection Cum Improvement, Afforestation, Babul and Fodder Improvement Working Circle.
- ii. All the other areas as specially directed by the circle incharge of Yavatmal Circle on special grounds.
- iii. These areas are separated from surrounding areas by means of external fire lines and will be divided into suitable blocks of interior fire lines and no guidelines will be cut. Fire watchers may be engaged as sanctioned by the concerned circle incharge.

3. Class III :- (Forests Protected by Law only) :- Those categories which are not included in class I and II are included in this class. Generally deliberate burning is prohibited and no special measures of fire protection will be undertaken. The following categories of fire lines will be maintained kept clean of all the growth and combustible material :-

- i. All external boundaries of reserve forest to the extent of width of 12 mtrs.
- ii. 6th mtr width around all the plantation upto 10th year from planting.
- iii. 3 mtr. wide coupe lines upto 10 years of main felling.
- iv. 6 mtr. wide line on both sides all along the roads and cart tracts that are passing through forests.
- v. 40 mtr. wideline around timber and fuel wood depots.

To control and reduce fire the following operations shall be undertaken :-

1. The cutting and cleaning of fire lines shall be completed by end of December and control burning shall be completed by end of February.
2. Whatever leaf litter that falls on the fire lines shall be collected from time to time and burnt before the fire season starts.
3. No fire line shall be burnt after February unless there is a special order from the concerned Dy. Conservator of Forests.

7. FIRE CONTROL MEASURES :-

1. A consolidated fire protection scheme shall be prepared in consistent with the prescription given in the Working Plan with the provisions of watch point, strategic location, fire watcher at each location, deployment of vehicles and the supervisory forest staff.
2. The fire watchers and the forest staff are required to be given training in fire protection and handling of fire fighting tools.
3. The fire watcher shall constantly patrol the areas of class I and class II.
4. The fire watching towers shall be erected at a strategic points where the fire watchers sit on the tower and observe location of fire.
5. After receiving information the fire watchers move in group to particular location and extinguish fire with the help of fire fighting tools.
6. The Division office will maintain a register of fire lines showing the length and width of fire line and the period of cutting and burning and a consolidated map will be prepared based on the actual position of the fire lines. Any negligence in fire protection duty shall be viewed as dereliction of duty and the supervisory officer must extensively tour in the area and verify the fire control measures.
7. The members of Joint Forest Management Committee shall be involved in the fire protection and their participation and cooperation shall be obtained to have effective fire protection.

8. The vehicles that are available will be deployed at strategic location where the fire protection gangs can reach easily when ever they requires vehicles. These vehicles are means for transporting fire protection labourers and fire protection equipments.

8. LEGAL PROVISIONS AVAILABLE :-

The Indian Forest Act 1927 provides legal measures to control forest fires under some of the sections of the act.

I. Reserve Forests :- The following acts are prohibited in the Reserve Forest under the provision of Indian Forest Act 1927.

1. Indian Forest Act 1927, Sec. 26 (1) (b) – to set fire.
2. Indian Forest Act 1927, Sec 26 (1) (c) – handling, keeping and carrying any fire except such season as the Forest Officer may notify in this behalf.
3. Sec. 26 (1) (f) – burning of any tree.
4. Sec. 26 (1) (g) – burning of lime or charcoal.
5. Sec. 26 (3) – The State Government may suspend or exercise of all rights of pasture or forest produce in the Reserve Forest whenever the fire is caused willfully.

II. Village Forests :- Sec. 28 (3).

As per this section all the provisions for fire control that exists in Reserve Forest will be equally applied to village forests.

III. Protected Forests :- Sec. 33 (1) (a) (b) (d) (e) and 30.

Provide all legal measures to control the fire incidences in the Protected Forests.

Any person who commits any of the following offences under section 33(I) (a), (b),(d) and (e) namely burns any tree reserved under Section 30, burns any lime or charcoal contrary to prohibition under Section 30, sets fires to such forests to kindle a fire without taking all reasonable precautions to prevent its spreading on any tree reserved under Section 30 and leaves burning any fire kindled by him in the vicinity of any such tree or closed portion under Section 30, shall be punishable with imprisonment for a term which may extend to one year or with fine which may extend to two thousand rupees or with both.

IV. Provisions contained in the Maharashtra Forest (Protection of forest from fires) Rules 1982 : - under Indian Forest Act 1927, Sec. 32 (6), 76 (1) (d) the Government of Maharashtra made rules for the protection of Protected Forest from fire called as Maharashtra Forest (Protection of Forest from fires) rules 1982 and issue notification no. 1074/252379/F-6, dt. February 14th 1982.

V. Various provisions made under Rule 3 to 7.

Rule 3 :- A ban is imposed on handling of fire from 1 km. of forest boundary.

Rule 4 :- If any body wants to make a fire line in the forest beyond 1 km. distance from the boundary, he has to clear at least 10 M. wide on either side of area which he proposes to burn and he should keep fire watchers.

Rule 5 :- Under this rule anybody desires to burn rab he should inform to the nearest forest officer one week in advance. A clean belt of at least 10 m. width should be left in between the boundary of the forest and the place where the rab is to be burnt to prevent spread of fire in the forest.

Rule 6 :- Under this rule any person who collects inflammable forest produce such as grass, fire wood, leaves, Bamboos, who is a permit holder shall stock in the open space from a reasonable distance of the forests.

Rule 7 :- Under this rule the camping places along the boundary of within the limits of forest area shall be cleared and the visitors are not allowed to such areas.

Provisions contained in Bombay Forest Manual :-

Volume II, Part IV :-

Rule152 :- Fire offences should not as a rule is compounded : In cases involving injury to forests by fire the provisions of Section 68 of Indian Forest Act, should only be applied cautiously and for very special reasons for such acts any body puts fire ignorantly whether of such purpose or through culpable negligence, is not a serious offence.

Rule153:- Under this clear-cut guidance is given regarding duties of magistrate in trying offenders in forest fire offence cases.

Rule154 :- Speaks about findings of Magistrates in fire cases.

Rule157 :- Continuous protection of valuable forest from fire.

Rule158 :- Communal punishment for bad fires in exceptional cases.

Rule159 :- Duties of village officers with regard to forest protection.

Rule160 :- Rewards for helping fire protection and powers of officer to sanction them : Rewards may be granted to the villager who assist the forests department in protecting forest from the fire. The DFO concerned should submit recommendations to the sanctioning authority regarding the form of reward suitable in each case, within the budget allotment sanction for the further purpose.

Provisions contained under the “Maharashtra Minor Forest Produce (Regulation of Trade) Act 1969 :- In the agent’s Agreement Form made under the provisions of the above Act as per the terms and conditions No.6(xix),(xx),(xxi),(xxii) and 8, the agent appointed by the Government for collection of Tendu leaves are responsible for any damage done to the forest by their negligence and they have to observe all rules and regulations under Indian Forest Act, 1927.

Provisions contained in “ The Maharashtra Felling of Trees (Regulation) Act, 1964 : As per section 2(e) of the above Act burning trees on private lands is included in the definition of “Felling of trees” and such act on the part of any person without obtaining felling permission from the competent authority of the Revenue and Forest Department under section 3, is punishable under section 4 of the above Act. The punishment to be done by the competent officer may extend upto Rs. 1000/- besides the tree so felled is also liable to be forfeited to the Government.

9. FOREST FIRES :-

When ever the fire incidence or smoke is seen raising any where in or near the forest by any forest staff. He shall immediately rush to the spot along with necessary aid and extinguish the fire. If the fire is outside his jurisdiction it will continue till the fire is extinguish and the concern staff arrives on the spot.

Proper care should be taken to extinguish fire completely and ensure that there should not be any burning material which may cause fire again and it should be covered with soil.

10. USE OF WIRELESS :-

For effective communication use of modern communication system like wireless is necessary and a separate scheme shall be prepared for establishment of wireless network in the entire division. This system not only helps in fire protection but also use full in overall forest protection.

11. RESPONSIBILITY :-

The Range Forest Officer is personally responsible for efficient fire protection in his range. If there is a common boundary in 2 ranges the responsibility of clearing fire line will be decided by the Dy. Conservator of Forests, Akola. In case of common boundary in 2 divisions the fire line cutting and maintenance will be decided by the concern circle incharge.

The Dy. Conservator of Forests, of Akola is personally responsible for carrying out efficiently all prohibitive and protective measures in this regard in his jurisdiction. The Dy. Conservator of Forests, Akola Division must satisfy himself that external fire lines and other fire lines are prepared before February by carrying out extensive tours in the area. He is required to move in the jurisdiction extensively during fire season and during his tour must keep a strict watch on fire protection by means of local enquires and inspections. A constant watch should be kept on Tendu contractors and their agents who engage local labours to put fire to the forest to get good flash of Tendu leaves. The period is generally from 1st March to 15th April of every year.

12. FIRE REPORTS :-

If any fire incidence takes place the concerned Range Forest Officer must inform to concerned Dy. Conservator of Forests at once. If necessary through special messengers. The Range Forest Officer must keep a proper communication and co - ordination with the Dy. Conservator of Forests Akola. After the fire is extinguished, a detail report shall be submitted to Dy. Conservator of Forests Akola with extent of area damaged, value of damage with the detail map within 15 days.

The Dy. Conservator of Forests Akola shall submit monthly return in prescribed proforma (no. IX-74) to the Chief Conservator of Forests showing serial number of fires, date of occurrence, cause, area burnt, extent of damage and the steps taken to extinguish fire. A register of fire record shall be maintained by Dy.C.F. Akola giving details of length fire line Class I,II and III. The fire incidence that takes place in class I, II, III areas shall be indicated with different marks on the map.

The deliberate burning of debris on silviculture principles to encourage regeneration need not be included in fire protection scheme and fire should not spread out side the targeted area. The deliberate burning is admissible. It is sanctioned in Working Plan or by Conservator of Forests. Such operation shall be carried out in consultation with Dy.Conservator of Forests.

SECTION XII.4 :- GRAZING CONTROL :-

Two major minaces like fire and grazing hamper the success of regeneration of forest to a great extent. In Akola Forest Division, due to heavy cattle population pressure the forest have been degraded to a great extent specially those forest which are situated adjoining villages. The number of villages in this Division is 374 whereas the number of compartment is 896 including Babul, E-class, A-class and C-class. The 'C' class Reserve Forests are excessively grazed, therefore these forests are mostly open or scrub type. There are 26 grazing units in the division and the carrying capacity of these units is 29285 cattle units. The forest area allotted to these grazing units is 60138.65 Ha.

The Government of Maharashtra formulated the grazing policy vide its Resolution no. MFP-1365/1322-Y, Dt. 6/12/1968 and the grazing rules were framed vide its G.R. no. MFP/137/237035-Z, Dt. 3/11/1973. According to which the grazing to be allowed as per the carrying capacity of each class of forest. The grazing incidence in SCI Working Circle area comes to 1.3 cattle per ha and for Catchment and Afforestation Working Circle it comes about 0.6 to 0.8 cattle per Ha.

There are 26 grazing units formed in the division as per the carrying capacity of the forests and number of cattle to be allowed in each unit are fixed. The proposed grazing settlement of Shri. Marathe, Assistant Conservator of Forest is given in the Chapter XIII of Miscellaneous Regulations.

The main felling coupes of all working circles will remain closed for a period of 5 years from the main felling as the felling cycle is fixed at 20 years, 1/4th area of the felling series will remain closed for grazing at any time. All the forests are not possible to open for grazing at a time and as the cattle population is not uniformly distributed

therefore it is prescribed the cattle exceeding carrying capacity of an area open for grazing should not be allowed to enter into the forest. The excess cattle units can be managed through fodder development activity on common community lands and waste lands. The villagers shall be persuaded to go for stall feeding of some of their cattle which are more than carrying capacity of the forest adjoining to them and the local people shall be educated and made aware of ill-effects of excessive grazing on forest growth. Apart from this the forest staff should open a dialogue with the local villagers to discuss regarding grazing policy, carrying capacity of forests and the area available to graze their cattle in the adjoining forests. The Dy. Conservator of Forests of Akola division by considering all the factors should prepare a consolidated plan based on area, cattle units, carrying capacity, rotational grazing and avenue for excess cattle units. The grazing rules made applicable by the Government of Maharashtra Revenue and Forest Department Resolution No.MFP/1371/237035-2/dated 3rd November 1973 have been given in Appendix No.LXIX of Volume II.

SECTION XII.5 :- ENCROACHMENT :-

The problem of encroachment is common in almost all the areas specially the forest areas located adjoining to habitations. The problem of encroachment shall be mainly because lack of appropriate survey and demarcation on the ground, the greed of the people and the apathy of local people towards Government lands. In order to mitigate the problem, it is essential to take up survey and demarcation works on top priority. Precast pillars of 1st and 2nd class type shall be erected after the survey is over which can be completed in a phased manner. The existing cairns shall be repaired and maintained under 1/5th boundary demarcation scheme. The powers that were entrusted to the officers of Assistant Conservator of Forests and above rank under Sec. 53 and 54 of Land Revenue Code will effectively be utilized. The encroachment if any can be tried summarily and evicted as early as possible.

SECTION XII.6 :- ROLE OF JOINT FOREST MANAGEMENT :-

JFM committee will contribute to a large extent in protection of the forest from illicit felling, encroachment fire, grazing, etc provided if the forest staff have a constant

dialogue with the members of the committees and involve them for joint patrolling, management and development of the forest.

The JFM committees shall be entrusted with a specific area earmarked them for the protection, management and development of the area. The committee members needed to be given training in technical matters of protection at the same time they should be provided with gainful employment by taking up management and developmental activities in the areas entrusted to them.

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CHAPTER NO. XIII
MISCELANEOUS REGULATIONS

SECTION XIII.1.1. DEMARCATION AND MARKING TECHNIQUES :

The coupes due for felling shall be demarcated one year in advance of its due year except first year, coupe No. I of main operation in which demarcations, marking and main operation of felling will be carried out in the first year of operation of Working Plan. It is in view of working of last year of main operation of working to be carried out in that particular year itself, as given in Appendix No.XLI a. After demarcation a treatment map will be prepared by the Range Forest Office and it should be verified by the Asstt. Conservator of Forests. After the coupe is demarcated along with treatment map coupe demarcation certificate will be furnished by concerned Range Forest Officer in the following format :-

I, -----, RFO, -----certify that I have personally inspected the demarcation of coupe No. -----in compartment No -----of ----- FS ----- WC on dated -----month ----- year ---- and have prepared the treatment map as per the prescriptions of the Working Plan for Akola Forest Division.

The area of the coupe is ----- ha.

Place -----

Date-----

Signature

(-----)

(Range Forest Office-----)

Place

Countersign

Date-----

(-----)

Assistant Conservator of Forests,-----)

After demarcation having been certified by the RFO, stock map and treatment map shall be prepared by the Assistant Conservator of Forests or the RFO concerned as given in the prescriptions of Working Circles. The areas distinguished for the purpose of marking, shall be delimited as per the instructions given in the text of the Plan report.

A. Demarcation and Preparation of treatment map :-

1. The coupes due for felling will be demarcated by cutting and clearing the bushy under growth with a 3 meter width of line. Pillars of 2 meter height will be erected in the middle of the line at suitable intervals (one pillar should be visible from the other) except where the coupe boundary coincides with a permanent feature like a big nala, fire line or road. The pillars will bear coupes details like coupe number, name of felling series, compartment number, year and working circle on the side away from the coupe area.

2. The boundary trees of the coupes will be given 2 coal tar bands and geru band in between after scraping loose dead bark. The lower coal tar band shall be at breast height while upper coal tar band will be 15 cms. above it. These trees so selected shall be above 45 cms girth and selected at suitable intervals. These trees will be numbered serially and number to be at just below lower coal tar band and the numbers will be entered in the marking register in the following form :-

TABLE NO. – 130

Sr. No.	Species	GBH	Remarks
1	2	3	4

TABLE NO. – 131

Sr. No.	Species	Girth at Bh(ob) in cms	Remarks
1	2	3	4
1/1	--	110	Not to be felled
11/1	Teak	80	Not to be felled
111/1	Moyen	105	Not to be felled

3. No tree will be marked for felling.

B. Demarcation of Sections :-

For the effective management of the coupe each coupe will be divided into 4 sections approximately having equal areas. The sectional line shall have 1.5 mtr. width and the lines are prepared by cutting and clearing brush wood except the section lines coincides with the permanent features.

The trees above 45 GBH selected at suitable intervals and the inner edge of 1.5 mtr. wide cleared section line will be given 2 coal tar bands 15 cms apart, the lower one being at the breast height just below lower coal tar band. Section number will be given on the side away from the area they would denote.

C. Demarcation of Protection areas :- On the periphery of protection areas trees will be selected and given 2 geru bands, 15 cm. apart and lower band being at GBH. Apart from this a cross (X) in geru colour between 2 bands will be given on the opposite side of protection areas. All these trees shall be serially numbered and the number will be given below the lower geru band on the side bearing the cross. All protection areas will be numbered in Roman numerals and the standing tree on the periphery of each protection area will be numbered in Arabic. Identification with separated series in each area so that the periphery trees of each protected area will be a separate series of Roman numerals. The periphery trees marked with a number should not be felled.

TABLE NO. – 132

Sr.No.	Species	Girth at bh(ob) in cms	Remarks
1	2	3	4
1/1	Ain	115	Not to be felled
11/1	Dhaoda	75	Not to be felled
111/1	Teak	90	Not to be felled

D. Marking Technique :-

1. All the trees to be marked for felling will be given a geru band at breast height and base the impression marking hammer at the breast as well as at the bottom by marking a clear blaze of size 10 cm. X 10 cm.

2. The following trees will bear a digit Sr. No. of both breast height and base. A) All trees of Teak, Bija, Shisham, Ain, Tiwas, Haldu, Dhawada and Shivan of 45 cms and above in girth at breast height to over bark. B) Trees of all other species of 60 cms and above girth at breast height.

3. All remaining trees marked will bear a Sr. No. which will be given coal tar. The digit and coal tar numbers will form a separate series. Only malformed trees will be recorded as fuel trees except that of Teak and a tree shall be categorized as fuel tree, when it is not capable of yielding any sawn timber or poles.

4. All the trees bearing Sr.No. will be duly recorded in marking book with the following details :-

Sr.No.		Species	Girth at breast height (ob) in cms	Remarks
Digital	Coal Tar			

5. The abstract of trees marked for felling will be given in 15 cm girth classes. Timber, poles and fuel wood trees will be shown separately. The marking number on the trees will be put in vertical direction as shown below :-

2

For eg. Tree no. 245 --->

4

5

SECTION XIII.1.2 :- HARVESTING AND DISPOSAL OF FOREST PRODUCE :-

1. Timber and Fire wood :-

All the marked coupes of main felling will be worked departmentally or allotted to FLCS or as per the policy of the Government. However the tending operations like thinning need to be carried out only through department as it highly technical. All the timber and firewood shall be extracted to Government depot or duly sanctioned depots by the competent authority for sale or auction or disposal. Timber, poles and fire wood to be given on “Nistar” at concessional rate shall be kept separately in these depots.

2. Tendu Leaves :-

The trade of Tendu leaves have been nationalized with the enactment of “Maharashtra Forest Produce (Regulation of Trade) Act 1969”. The disposal of Tendu leaves as per the procedure laid down in the Act and for this purpose Tendu areas this division divided into 14 Tendu units. Tendu units are sold in accordance with the provisions of this Act by the Chief Conservator of Forests (Evaluation and Nationalisation), M.S. Nagpur. For lopping branches below 23 cm in girth of Tendu trees are permitted and the seedlings below 1.25 meter in height are permitted to be coppiced. Research studies required to be conducted regarding coppicing and pruning of Tendu seedlings/trees to perpetual production of quality Tendu leaves.

3. Grasses :-

The instructions contained in G.R.No.MFP-1169/118931- (6) - F-2, Dt. 29/10/1976 will facilitate the disposal of grass coupes. The grass from closed coupes will annually be offered on cutting terms to Grampanchyats, Public bodies or FLCS of adjoining area at a reasonable price fixed by the Department. If the Grampanchyat or the public bodies are not interested in purchasing grass coupes, it may be auctioned or may sold by rated passes. To encourage stall feeding the villagers may be allowed to take away grasses, free of cost without damaging forests.

Disposal of grasses as per the instructions contained in the Panchayati- Raj extension to Schedule Areas and ownership to the Minor Forest Produces to Panchayat- Raj institution and also involvement of the Joint Forest Management Committees in protection of forests and utilization of inter-meditary forest produces for their benifits to be adhered.

4. Gums :- In this area Dhawada gum is extracted and it is disposed through tender system by forming units. Apart from Dhawda gum other gum like Babul gum, Salai gums are also available in this division. The method of harvesting gum is to be followed as per gum tapping rules given in Chapter- VIII Section 5.

While tapping gum, making injuries to trees should be avoided and non destructive harvesting methods will be adopted.

5. Honey, Wax, Broom grass :- These items also formed Minor Forest Produce, and are cover under the ownership to Panchayat-Raj institutions. It is therefore the collection and disposal is as per the letter and guidelines of that Act and as per the Joint Forest Management Committee's involvement to protect the forests on the norms prevailing from time to time as decided by the competent authority.

6. All other minor forest produces :- The remaining Minor Forest Produces shall also be collected and disposed of as per the existing government policies in this regard.

7. General :-The sound and young growth of all important species yielding NWFP or medicinal plants such as Mahua, Hirda, Behada, Aonla, Charoli, Tendu, fruits, etc. will be retained in areas earmarked for harvesting in such a manner that they are suitably disposed and would also serve as subsidiary crop to main species and NWFP to people residing in and around the forests.

SECTION XIII.1.3 :- IRREGULAR HARVESTING :-

Irregular harvesting of any forest produce such as timber, fire wood, NWFP, etc. is prohibited except in the following cases :-

1. Removal of dead, fallen and fire wood and wind fallen trees except coupe due for working will be carried out as per the procedure mentioned below :-

The Beat Guard shall prepare compartment wise availability of dead, fallen fire wood and wind fallen timber and report to concerned Range Forest Officer in the month of October. The Range Forest Officer will then prepare compartment wise estimates for such material by marking these trees. While marking 2 dead trees will be left for the benefit of wild life in the forest. The material is extracted by the Range Forest Officer after obtaining estimate sanction and due permission by the concerned Dy. Conservator of Forests. The material so extracted from the forest may be given to Grampanchayat or Forest Protection Committee at concessional rates as sanctioned by the Conservator of Forests or disposed off as per the existing Government policy in this regard. The material extracted and the manner in which it is disposed shall be entered in compartment history.

1. The felling of trees on fire lines if necessary may be carried out with the permission of Dy. Conservator of Forests with reference to Conservator of Forests regarding the approval of fire line and its category for which the Conservator of Forests is to decide whether the fire line is to be maintained or not.

2. Approval of felling of trees under electric line and telephone line existing prior to enforcement of Forest Conservation 1980 or after that may be given by the Dy. Conservator of Forests as per the sanctioned accorded by the competent authority.

3. Removal of trees on forest land by other agency required by other department like Irrigation, PWD, etc shall be undertaken after their proposals for the use of forest land for non forestry purposes are sanctioned by Government of India under Forest Conservation Act 1980. The cost for removal shall be born by concern department.

4. Felling of trees for the purpose of study, research for preparation of Volume Table, Yield Table shall be carried out by the Working Plan wing and the permission is not required to be obtained from Central Government except giving details of plan of work to the territorial Conservator of Forests well in advance getting sanctioned from him. The felling should be restricted to only objects of work proposed.

5. Disposal of forest produce obtained from submergence areas of dams and tanks and from construction of roads etc. will be carried out as per the instructions of competent authority.

6. Irregular harvesting will not be carried out for the purpose of undertaking plantations / afforestation works under various schemes, outside the scope of the Working Plan and in any of the areas under this plan.

7. **Removal of dead trees :-** Some times due to insects , fungus attacks there is a large scale mortality of pole or tree crop and removal of such trees shall be permitted as a part of irregular harvesting.

8. This high stumps are left over by the illicit cutters shall be cut and flushed to the ground after preparation of inventory of such stumps and duly verified by the Assistant Conservator of Forests.

9. Some times the leaning trees may become dangerous to public as well as private property likely to cause damage shall be removed as under irregular harvesting.

SECTION XIII.1.4.:- MAINTENANCE OF THE BOUNDARIES :-

The present state of boundary maintenance in Akola Division is not up to the mark. The Reserve Forest boundaries though they are clearly demarcated on the ground, the boundary marks are not seen at many places. The survey and demarcation of 'C' class Reserve Forests has not been yet completed. The observations made that the boundary demarcation between the Reserve Forest and adjoining private agriculture field or revenue land is not clearly distinguishable therefore it is necessary for the Dy.C.F. Akola Forest Division should take up place the work on top priority and get the area demarcated and prepare accurate maps. The maps of the division were prepared showing boundary pillars and should be given to Working Plan wing. The external and internal boundaries will be maintained in accordance with the 1/5th boundary demarcation scheme as given in Appendix no. XLVIII. The boundaries of the forest shall be maintained as details given below :-

1. The outer boundary of Government forest shall be maintained with a clear cut width of 12 mtr. The under growth that inhibits the view and prevents one forest boundary marks being seen from the neighbouring one shall be cleared. The boundary trees shall not be removed so long as they do not obstruct the view of boundary marks one from the other except where natural features forms the boundaries. After clear cut demarcation on the ground cairn erected. The Principal Chief Conservator of Forests letter dt. 29/5/2001 issued instructions regarding specifications such as shape, description, foundation, dimensions, colour wash, etc. of boundary marks (Cairns). The boundary marks shall be erected at such a convenient place both can be seen from one place to another place. Generally the distance between 2 cairns is of 500 mtr. if the line is straight. Each boundary pillar will bear a serial number and a fresh series shall be given to each adjoining village.

SECTION XIII.1.5 :- BOUNDARY MARKS SPECIFICATIONS :-

The boundary marks specifications shall be as approved by the Principal Chief conservator of Forests, Maharashtra State.

Apart from boundary marks tin plates will be fixed on the boundary trees at a height of 3 mtrs. preferably at the boundary of the compartments. These plates will indicate the compartment numbers with the arrows and below them will be pillar number on either side of plate. The metal plate will be of 45X45 cm. size. This will be painted with white, compartment number and pillar number will be written in red colour. Special attention needs to be taken in annual maintenance of boundary marks.

- (i) Whether the boundary pillars are correctly located as per the map and demarcation register.
- (ii) The boundary width is to the extent of required measurement or not.
- (iii) Regular maintenance of cairns and wooden post is replaced where necessary.
- (iv) That the boundary post bare the correct number and same is engraved and written in coal tar or paint.
- (v) If any encroachments are there the matter should be persuaded and removed.

SECTION XIII.1.6 :- RULES FOR INSPECTION AND MAINTENANCE OF FOREST BOUNDARIES :-

1. The Forest Guard of concern beat is mainly responsible to protect and maintain the boundary pillars every year. He himself colour wash them annually after rains and make a special report after completing this job. All boundary marks shall be specially inspected by the Beat Guard at least once in year in his beat. The boundary marks inspection will be mentioned in his diary and sent it to Range Forest Officer.

2. The Round Officer is also equally responsible for protection and maintenance of all boundary marks in the forest in his round. He is required to see proper maintenance and colour wash by the Beat Guard as directed. Round Officer is responsible to inspect all boundary marks in a year which are due for maintenance and repairs as per 1/5th boundary demarcation scheme. This matter will be mentioned in diary and send it to Range Forest Officer.

I Shri, ----- R.O. -----
----- certify that the annual length of the boundary lines as prescribed under the scheme given in the Appendix --- of the Working Plan for Akola Division has been verified by me personally and that boundary line and marks are found to be correct as per the maps. I further certify that each cairn bears a correct serial number and next cairn is visible from either side of each cairn. There are no encroachments or encroachments are as detailed below :-

Signature of the R.O. with date.

3. The Range Forest Officer will be required to check 25% of annual boundary line as per the 5 year programme and 5% verification will be done by Assistant conservator of Forests.

SECTION XIII.1.7 :- MAINTENANCE OF COMPARTMENT BOUNDARIES :-

The compartment boundary shall be maintained regularly by clearing under growth to the extent of 3 mtr. width except where the boundary coincides with the natural features. Tin plates of compartment boundaries with a size of 30 X 30 cm indicating compartment numbers should be affixed on the trees at a height of 3 mtrs. These plates are painted with white and number shall be put in red colour.

SECTION XIII.1.8 :- LEGAL PROVISIONS AVAILABLE FOR MAINTENANCE OF BOUNDARY MARKS :-

Altering, moving, destroying or defacing of any boundary mark of any forest is punishable with an imprisonment for a term up to 2 years or with fine or both under section 63 (c) of Indian Forest Act 1927. This offence is non compoundable under Sec. 68 of Indian Forest Act 1927. A register shall be maintained by the Dy. Conservator of Akola and updated every year after completing of survey and demarcation works as prescribed above. A copy of updated register and corrected maps shall be supplied to Conservator of Forest, Working Plans, Yavatmal every year in the month of June. Area register shall be maintained in the office of the Deputy Conservator of Forests Akola and it shall be updated every year after execution of survey and demarcation works described as above. The Dy. Conservator of forests Akola shall take all preventive and legal measures to prevent illegal action and the Dy. Conservator is bound by law to prevent encroachment of forest area.

SECTION XIII.2 :- ARTIFICIAL REGENERATION :-

SECTION XIII.2.1 :- Planting of teak and miscellaneous species :-

Plantation of suitable Teak and miscellaneous species will be taken up in the following year of main felling as per the suitability of site. In case of Teak plantation of stump planting or root trainer planting will be carried out, whereas in case of miscellaneous species root trainer or poly pot plants will be planted. The planting works will be carried out as given below :-

SECTION XIII.2.2 :-Pre-monsoon works :- These operations will be done in the next year of main felling and different operations of pre-monsoon works are given below :-

Fencing or TCM will be prepared for the protection of plantation. The TCM will be having standard cross section 1.90 X 0.60 X 1.0 mtr. will be dug where the boundary runs along the contour. No TCM will be aligned which runs across the contour and in that case live it fencing shall be undertaken with thorny shrubs like. Acacia Senegal, Babul and cutting of shrubs like Vitex and Dodonea, etc will be planted.

SECTION XIII.2.3 :-Pits digging :- The size of pit will be 30 X 30 cm. for Misc. plantation and the pits digging will be completed before of March and it should be allowed to whether during summer. The pits refilling will be completed before end of May. Generally the number of plants or Teak stumps per. ha. is 2500 and the number of plants may be decided on the basis site and model of scheme. The formula of Ecological Index will be taken into consideration while deciding number of plants to be planted in a particular locality.

SECTION XIII.3 :- NURSERY OPERATIONS :-

SECTION XIII.3.1 :-Teak Stumps :- These will be prepared from one year old seedlings raised on the beds as per standard nursery techniques. The seed sources must be from a known place and duly certified by the competent authority. The stumps will be prepared by following standard technique and 'A' class root shoots shall be used for raising good quality of plantation.

SECTION XIII.3.2 :-Miscellaneous Plants :- These plants will be raised in polythene bags by following a standard miscellaneous nursery techniques. Standard size of poly bags shall be used for raising miscellaneous plants to obtain optimum size of plants. The nursery will be started by October of the previous year of the planting. The height of plants will vary from species to species. Shifting of poly bags will be taken up with in nursery, every 15 days once the plant attained 10 cm. Height, however while shifting

care should be taken that the plants shall not be damaged. The potting mixture shall be managed properly and application of suitable mixture and fertilizer will be carried out at appropriate intervals. Before plantation good quality, healthy and appropriate size plants will be selected and these will be inspected by the officer not below the rank of Asstt. Conservator of Forests.

1st Year Operation :-

The seed sowing of species of live hedge species shall be taken up in three rows. Planting of Agave on the outer two rows of two edge fencing at a spacing of 50 cm and planting of shrub cutting in inner three rows will be done. The Teak stump plantation will be done in crowbar holes whereas the polythene bag planting will be done in pits after the onset of monsoon. The polythene bags will be planted in such a manner that their collars are at the ground level and it will be covered with soil upto a height of 5 cms above collar. All these operations will be completed in not more than 15 days after the break of monsoon.

Subsequent Operations :-

1st weeding along with causality replacement shall be completed within 20 to 25 days after the plantation is over. 2nd and 3rd weeding will be carried out in the month of September and October respectively. The 3rd weeding shall be coupled with soil working and mulching to reduce vaporization losses. One more soil working will be done in the month of January if there are winter rains, based on availability of funds. Weeding and soil working to the seedlings and livehedge will also improve the growth and survival of plants on live hedge. In the second year plantation the causality replacement will be carried out after onset of monsoon and weeding will be done in the month of August and October respectively. Soil mulching will be carried out along with 2nd weeding. In case of Teak, debudding will be done in the month of May. In 3rd year plantation only one weeding along with soil mulching will be done in the month of September. Debudding in Teak plantation will be done in 2nd year plantation.

BAMBOO PLANTATION

To take a Bamboo plantation at suitable areas at a spacemen of 5 mtr. to 6 mtr in the 4th years form the year of main plantation if prescriptions are made in the plan.

Pre-monsoon works :-

In 3rd year of main plantation pits of the size of 45 cm X 45cm X 45 cm. will be dug before March and allow the soil for weathering. Pits refilling will be done at the end of May.

Nursery :-

To raise the stock for Bamboo planting the Nursery will be started two years in advance of planting and maintain in the nursery till the rhizomes are formed and these rhizomes will be used for planting. The Bamboo rhizome bank will be established at suitable site in each range and Bamboo seeds shall be obtained form known sources and sown on beds. After one month the small seedling shall be transplanted to polythene bags after cutting their branches above 3 to 4 nods. Suitable fertilizer will be applied to achieve proper growth and rhizome formation.

1st year operation :-

With the on-set monsoon the Bamboo polypots will be transported to the site and planted in the pits. The casual replacement will be done at the end of July or August 1st week, weeding and soil working will be carried out. At the time of planting, suitable fertilizers, insecticides will be given to each plant in the pits. In the year three weedings and soil working will be done.

Subsequent Operations :-

In the 2nd, two weedings and soil working, in 3rd year one weeding and soil working are prescribed and if necessary, insecticide may be applied to protect from termites.

SECTION XIII.4. SUBSIDIARY SILVICULTURAL OPERATIONS :-

Sec. All these operations shall be carried out departmentally. These operations shall include –

1. Cut back operations :- CBO shall be carried out in the following year of the main felling.

- i. Climber cutting of entire area.
- ii. Removal of badly damaged or broken trees during main felling. Cutting back of malformed advance growth.
- iii. The unwanted under growth interfering with the Teak and other valuable miscellaneous species shall be removed.
- iv. The multiple coppice shoots or poles shall be reduced to one per stool. In eroded areas or areas liable for erosion soil conservation measures shall be taken up by way of gully plugging, nala bunding, check dams, etc.

2. Cleaning :- This operation will be carried out departmentally in the 6th year of main felling.

- i. Climber cutting of entire area of the coupe.
- ii. Removal of damaged and malformed saplings in Teak plantation area.
- iii. All coppice shoots shall be completely cut except in areas where planting stock has not come up successfully and in such areas multiple coppice shoots shall be reduced to 1 per stool which is most promising and vigorous one.
- iv. The undesirable growth interfering with Teak and other valuable miscellaneous species will be cut.
- v. In the patches of advance growth of Teak and other valuable species proper spacement will be created by removing inferior force in tree growth.

- vi. Cleaning of weeds at the base of Teak plants and intensive soil mulching shall be carried out immediately after rainy season is over.
- vii. Cleaning shall be carried out before 1st thinning.

3. THINNING :-

a. Thinning in plantations is very much essential and one of the silvicultural requirements particularly creation of tree cover to the soil and the spacing is to be created by keeping in mind the number of plants required in a site in relation to age of crop. For appropriate utilization of soil many of the original number of plants of planted have to be removed when they are of little of sale value to permit satisfactory development of those retained. In the plantations thinning operation shall be carried out as per standard technique for thinning in Teak plantation.

b. Thinning in Teak plantation :- The 1st thinning will be carried out at the age of 11th year of plantation and subsequent thinning shall be carried out at the 18th year, 25th year and 35th year of plantation.

c. Demarcation, Preparation of treatment map and cleaning :- The area due for thinning shall be demarcated on the ground and a treatment map will be prepared by the Range Officer. He will prepare a grid map of 100mtrs X 100 mtrs. Grid wise enumeration of stem of Teak of seed origin and coppice origin and other species will be carried out. The treatment map prepared by Range Officer shall be verified by concern ACF and inspected by the Dy.C.F., will have following categories.

1. **Type- 1 :-** It will indicate fully stocked areas i.e. successful plantation areas.
2. **Type – 2 :-** This type includes patches of failure plantation.
3. **Type – 3 :-** It will indicate partially successful and partially failure i.e. areas having Teak stumps not conforming to Stand Table.

Cleaning of Teak plantation is very much essential as Teak is highly susceptible to root competition and removal of unwanted growth will allow the valuable and promising stumps to attain proper growth. In young plantations lot of unwanted bushes and weeds come up which will be required to remove for healthy growth of plantation. The rate for cleaning shall be fixed by Chief Conservator of Forests (T).

d. Thinning Procedure for old plantation :- 1st thinning shall be carried out at the age of 11 years and it is of B grade thinning. First of all age of the plantation shall be ascertained with available data of plantation or carrying out stem analysis of few stumps. In the plantation grid wise enumeration of tree shall be carried out and these will be listed in the following table :-

TABLE NO. – 133

Sr. No.	GBH (OB)	Species		Origin	Status	Remarks
		Teak	Non Teak			
1	45	Teak		Seed	D	To be retained
2	51		Ain	Seed	D	To be felled
3	36	Teak		Coppice	S	To be felled

Where:

GBH(OB)- girth at breast height over bark.

D- Dominant.

C- Codominant

S- Suppressed.

M- Malformed.

I- Intermediate.

The grid wise average girth of the crop will be computed. The basal area will be ascertained with the help of wedge prism. The basal area will be the average of basal area obtained from at least 3 places and after obtaining average girth and basal area, the data will be compared with the Stand Table. If the basal area of the crop is more than that in Stand Table for corresponding age then the thinning will be carried out in the following procedure. (If the basal area of the crop is equal or less than that of Stand Table then no thinning shall be carried out except dead Teak and all misc. species)

The non -Teak species will be marked for felling except fruit bearing species and the Teak trees of coppice origin will be marked for felling. After that the malformed, suppressed, intermediate, co dominant and dominant species will be marked for felling in respective order to the extent of number of marked trees for felling are available leaving behind retained number of trees confirming to Stand Table data of number of crop girth and basal area. The retained stumps shall be uniformly distributed over the area. After confirming marking with the Stand Table these marked trees shall be felled. After that the basal area will be obtained with the help of wedge prism by means of Stand Table leaving the marked trees from total count. If it is comparable to Stand Table then marking is perfect.

In case of old Teak plantation in which thinning had not been carried out and the crop is congested the above principle shall not be applicable. Instead of that, the average girth of the stand will be worked out on the basis of average girth the corresponding age nearest to the multiple of 5 mtr. higher side will be read from Stand Table then the thinning will be carried out as if the crop of that age. Utmost care shall be taken that over thinning will not be carried out. The thinning shall be carried out through department and after thinning the area shall be protected from fire and grazing. The Stand Table is given in Appendix No. LX of Volume II can be used as reference to carryout thinning.

E) FIRE PROTECTION :-

Repeated fires cause intensive damage to the forest in the form of damaging flora and fauna, young crop, regeneration and fertility of soil. The forest of Akola Division shall be protected from fire by taking up effective protection. For the purpose of fire protection the forest areas are classified into following categories : -

1. Class I :- Forest completely protected. This area includes.

1. All main felling coupes, thinning coupes, all the forest of Selection Cum Improvement Working Circle, Afforestation Working Circle, Babul Working Circle and Fodder Improvement Working Circle.
2. All regenerated coupes of all working circle till the young crop has attained the age of 10 years.
3. All plantations.
4. All forest nurseries.
5. All Government timber depot both permanent and temporary.
6. Special habitat areas of any other special important areas as specified by the concern circle incharge.
7. These areas are cleared with appropriate width of fire line as per the guide lines are patrolled by fire watchers. If any fire incidence takes place in this area is treated as climate and should be reported to the concern Dy.Conservator of Forests in detail.

2. Class II :- (General Fire Protection):-

- i. The remaining areas of Selection Cum Improvement Working Circle, Afforestation

Working Circle, Babul Working Circle and Fodder Improvement Working Circle.

ii. All other areas as specially directed by the circle incharge of Yavatmal Circle on special grounds.

iii. These areas are separated from surrounding areas by means of external fire lines and will be divided into suitable blocks of interior fire lines and no guidelines will be cut. Fire watchers may be engaged as sanctioned by the concern circle incharge.

3. Class III :- Those categories which are not included in class I and II are included in this class. Generally deliberate burning is prohibited and no special measures of fire protection will be undertaken. The following categories of fire lines will be maintained kept clean of all the under growth combustibile material :-

i. All external boundaries of reserve forest to the extent of width of 12 mtrs.

ii. 6th mtr width around all the plantation upto 10th year from planting.

iii. 3 mtr. wide coupe lines upto 10 years of main felling.

iv. 6 mtr. Wide line on both sides all along the roads and cart tracts that are passing through forest.

v. 40 mtr. Wide line around timber and fuel wood depots. To control and reduce fire the following operations shall be undertaken :-

a. The cutting and cleaning of fire lines shall be completed by end of December and control burning shall be completed by end of February.

b. Whatever leaf-litter that falls on the fire lines shall be collected from time to time and burnt before the fire season starts.

No fire line shall be burnt after February unless there is a special order from the concern Dy. Conservator of Forests.

4. FIRE CONTROL MEASURES :-

1. A consolidated fire protection scheme shall be prepared in consistent with the prescription given in the Working Plan with the provisions of watch point, strategic location, fire watcher at each location, deployment of vehicles and the supervisory forest staff.
2. The fire watchers and the forest staff are required to be given training in fire protection and handling of fire fighting tools.
3. The fire watcher shall constantly patrol the areas of class I and class II.
4. The fire watching towers shall be erected at a strategic points where the fire watchers sit on the tower observe location of fire.
5. After receiving information the fire watchers move in group to particular location and extinguish fire with the help of fire fighting tools.
6. The Division office will maintain a register of fire lines showing the length and width of fire line and the period of cutting and burning and a consolidated map will be prepared based on the actual position of the fire lines. Any negligence in fire protection duty shall be viewed as dereliction of duty and the supervisory officer must extensively tour in the area and verify the fire control measures.
7. The members of Joint Forest Management Committee shall be involved in the fire protection and their participation and cooperation shall be obtained to have effective fire protection.
8. The vehicles that are available will be deployed at strategic location where the fire protection gangs can reach easily when ever they requires vehicles. These vehicles are means for transporting fire protection labourers and fire protection equipments.

SECTION XIII.5:- GRAZING CONTROL :-

Two major menaces like fire and grazing hamper the success of regeneration of forest to a great extent. In Akola Forest Division due to heavy cattle population pressure the forest have been degraded to a great extent specially those forest which are situated adjoining villages. The number of villages in this division are 374 whereas the number of compartment is 896. The 'C' class Reserve Forest are excessively grazed therefore these forests are mostly open or scrub type. There are 26 grazing units in Akola Forest Division.

The carrying capacity of these units is about 54815 cattle units. Total area included in 26 grazing units is 34571.09 Ha. The Government of Maharashtra formulated the grazing policy vide its Resolution no. MFP-1365/1322-Y, Dt. 6/12/1968 and the grazing rules were framed vide its G.R. no. MFP/137/237035-Z, Dt. 3/11/1973. According to which the grazing to be allowed as per the carrying capacity of each class of forest. The grazing incidence in SCI working circle area comes to 1.3 cattle per ha and for catchment and afforestation working circle it comes about 0.6 to 0.8 cattle per Ha. The Government Resolution No. MFP-1371/1237035-Z is given in Appendix No. LX (a and b) of volume II.

As per the direction contained in Land Revenue Department ex- Madhya-Pradesh Memorandum No.1290-1227-XXVIII dated, 4th sept. 1953 sheep and goats were not allowed to graze in the forest which was set- aside for the production of timber or in the forest area, where the villagers generally exercised their Nistar-rights. As per the Govt. Resolution of Revenue and Forest Department No.MFP/1365/1322ii dated, 6th Dec.1968, separate areas are to be assigned for sheep grazing and the subsequent Govt. Resolution No.MFP/1365/13211-Z/ dated 22nd Dec. 1971 clearly fixed the sheep grazing as equal to one unit and its grazing rate was reduced to Rs. 0.50 vide letter No. MFP/1372/134577-Z/ dated 16th Sept. 1972. Subsequently grazing fee for sheep grazing was waived as per the G.R. No. MFP-2195/C.N.102/F-1/ Dt. 11.9.1995.

In the areas where the grazing settlement has been effected will be governed by the new grazing policy where as in un-settled areas the old grazing rules obtained in Central provinces and Berar Forest Manual volume II shall apply.

The State Government vide Govt. Resolution No.MFP/2103/C.No.135/ F-1/ Dated 21st March 2005 directed the Department to submit a proposal for sheep grazing policy from all the forest divisions of the State. The Government in the above said Govt. Resolution also directed to appoint Grazing Settlement Officer i.e. Assistant Conservator of Forest from concerned forest division. Accordingly in Akola Forest Division Shri. D,G. Marathe, Assistant Conservator of Forests (M.A.P) has been appointed as Grazing Settlement Officer. Shri Marathe, A.C.F after intensive studies in this regard submitted a proposal of grazing settlement in Akola Forest Division.

In proposing the grazing settlement Shri. Marathe made the following observations and recommendations :-

(I) In S.S. Parasnis's Plan 1965-66 to 1979-80 grazing the prescription were made in detailed and 26 grazing unit were formed in 'A' class Reserved Forest of Akola Forest Division.

(II) As per the report from range forest officer the grazing passes were issued unitwise.

(III) In Thengdi's Plan (1994-95 to 2008-09) as there is no mention of grazing and the grazing passes are given as per the prescriptions of Parasnis's Plan.

(IV) The observations made in the meeting of local staff of Akola, Alegaon, Patur, Washim and Karanja ranges regarding cattle population and population of sheep and available area for grazing. As per the observations made in the meeting the grazing units are proposed and as some of the areas have been transferred to wild life wing those areas has been excluded form new grazing units.

(V) In Karanja range Wai,Karanja, Dadgaon,Zadgu, Somthana, Girda Kherda and Kajaleshwar having an area 2343 ha 'C' class area as per the report of Range Forest Officer and local people used to graze their cattle in this area and grazing passes are also issued by the Forest Department . The above mentioned 'C' class forest was not included in any of the grazing units of the division and this area is surrounded by many villages. Therefore Shri. Marathe formed this area as new grazing unit i.e. unit no.23.

(VI) He also observed, in Alegaon, Patur and Washim ranges sheep rearing is not noticed where as in Karanja and Akola ranges some local people rear sheep.

(VII) In grazing unit No 22 Pangari Pasture the compartment No. 135,136 allotted to Fodder Improvement Working Circle being withdrawn from the grazing units.

(VIII) In the on going plan of Shri Thengdi, the grazing incidence is 1.2 ha. per cattle head and in Conversion to High Forest Working Circle and in Catchment Area Treatment Working Circle that is basically a protection working circle, that is why no area included in grazing unit. However under certain circumstances the grazing is allowed to 0.4 ha per cattle head in that area.

(IX) The 'C' Class forest areas were not included in the existing grazing unit as per Govt. Resolution no.MFP/1365/13211-7/ Dated, 6th Dece. 1968 and these areas are presently included as per the procedure laid down in the Govt. Resolution No./MFP/2103/C.NO.135/F-1/Dated 21st March, 2005.

(X) In this division there are some sheep in some of grazing units and these sheep belong to local people, therefore some the areas adjoining to these units are included for sheep grazing, because in the rainy season sheep are not allowed in private areas and they graze in adjoining areas.

(XI) In this division the cattle population is more than the carrying capacity of grazing units, therefore while issuing grazing passes preference should be given to the cattle and sheep from the villages adjoining to forests. The grazing passes should not be given more than the number fixed in that unit.

2.00 In Akola Forest Division the existing of sheep population is about 4345. Sheep rearing and increase in the population of sheep will have adverse impact on the forest area, therefore free passes should not be given to sheep grazing and he recommended grazing fee of Rs. 20/- for each sheep.

2.1 While issuing passes the carrying capacity of the unit should be kept in mind and no excess passes should be issued more than the carrying capacity.

In the Akola Forest Division the units of 1 to 7, 10,11,13 to 22 and 24 the permission to local sheep should not be given. The local sheep are approximately 4345. Shri. Marathe recommended that grazing licenses for sheep grazing in the following units as per the carrying capacity in 5 grazing units and the details are given in the following table :-

TABLE NO. – 134

Range	Grazing Unit	Beat	Name of village	No of sheep	Area reserved
Akola	8- Nibhi	Somthana	Arandgaon	425	'C'-class 425 Ha
	9-Chohogaon	Patur – Nandapur	Patur – Nandapur	1720	C'-class 1720 Ha
	12-Wagha	Vanoja	Vastapur	400	C'-class 400 Ha
Karanja	23-Palodhi	Poharadevi	Poharadevi	200	C'-class 200 Ha
	25- Karanja	Shivnagar Somthana	Karanja	1600	C'-class 1600 Ha
			Total	4345	

It is further observed in the Grazing Settlement Report of Shri. D.G.Marathe, total grazing units formed in the division are 25 and out of these in 5 units he recommended to issue grazing licence to local sheep and number is also fixed unitwise. Where as in the remaining twenty grazing units only cattle grazing is recommended by Shri. Marathe. The total area included in 25 grazing units is 60138.65 Ha. and total cattle units as per the carrying capacity is fixed at 29285.

The details regarding grazing units, carrying capacity, cattle units fixed as per the report of Shri. D.G.Marathe are given in the Appendix No.XXXVII b of Volume II of this plan.

The main felling coupes of all working circles will remain closed for a period of 5 years from the main felling as the felling cycle is fixed at 20 years, 1/4th area of the

felling series will remain close for grazing at any time. All the forest are not possible to open for grazing at a time and as the cattle population is not uniformly distributed therefore it is prescribed the cattle exceeding carrying capacity of an area open for grazing should not be allowed to enter into the forests. The excess cattle units can be managed through fodder development activity on common community lands and wastelands. The villagers shall be persuaded to go for stall feeding of some of their cattle which are more than carrying capacity of the forest adjoining to them and the local people shall be educated and made aware of ill-effects of excessive grazing on forest growth. Apart from this the forest staff should open a dialogue with the local villagers to discuss regarding Grazing Policy, carrying capacity of forest and the area available to graze their cattle in the adjoining forests. The Dy. Conservator of Forests of Akola Division by considering all the factors should prepare a consolidated grazing plan based on area, cattle units, carrying capacity, rotational grazing and avenue for excess cattle units.

SECTION XIII.6 :-SOIL AND MOISTURE CONSERVATION MEASURES :-

Due to increase in human and cattle population the forests of Akola Division are subjected to heavy biotic pressure resulted degradation of forest, compaction of soil, poor percolation of water, heavy run off, etc. Most of the forest area adjoining to habitations the forests are with little or no humus lead to little sub-soil moisture. All the above factors contribute to the non establishment of natural regeneration Teak and its associates, although, the natural regeneration of various species appear but they do not get established as they die before getting established. To rejuvenate the soil conditions of the areas of Akola Division the soil and moisture conservation works are of utmost importance. The Dy. Conservator of Forests will prepare a consolidated plan for soil and moisture conservation measures for entire division including contour trenching, nala bunding, check dams, etc. after thorough survey of the entire division.

The main purpose of nala bund or check dams to reduce the run off of water and to arrest siltation. Nala bunding will be from ridge to valley. Nala bunds and check dams will be constructed by using loose boulders available on nala bands. No blasting

or digging will be done if boulders are not available, brush wood may be used for this purpose. Simple nala bunds will be effective to the extent of 8 mtr. length, beyond that these structures are not useful and permanent engineering structured will be required to design nala bunds. The nalas have been divided into 3 categories. 1) upto 4 mtr. width. 2) 4 to 6 mtr. width, 3) and 6 to 8 mtr. width. The nala bunds shall be approved by competent authority and the design must be from one side of bed to the other side of bed. The boulder pitching in a semi circular fashion on the top of the bunds so that the stones are compacts and are not washed away by water. The distance between two successful bunds will be such that standing on the site of lower bund the base of upper bund should be the line of eye sight of the person standing on the nala. In general the distance between successive bunds for different slopes will be the same as that for contour trenches. These nala bunding and check dams shall be on the basis of watershed management.

Some of the designs of nala bunding are given in Appendix No. L(a) of Volume II. The check dams may be cement bandhara wherever cement bandhara are suitable there construction of cement bandhara shall be taken up, in extent places, like formation of small gullies, construction of brush-wood bandharas will be sufficient in nalas in which nala beds are complete with sands there inverted badhara shall be taken.

SECTION XIII.7. DEVIATION : -

Following is the format of Deviation Statement :

STATEMENT SHOWING DEVIATIONS FROM WORLING PLAN PRESCRIPTIONS
 Year..... Division.....

Serial No.of deviaton	Control book name, form no. Page.	Reference to Working Plan		Natural of deviation requiring PCCF's sanction
		Paragraph	Nature of prescription	

The DFO will forward through the Territorial Conservator typed copice of this form in triplicate yearly with his copy of control forms. No. explanatory remarks are required on this form, but these should be given in the forwarding letter. One copy of the

statement will be returned to the DFO and another to the Territorial Conservator after the deviations have been sanctioned by the PCCF. If the PCCF or the Working Plan Conservator's sanction has been obtained in advance, the sanction number and date should be quoted in the last column.

All deviations, which permanently alter the basis of management laid down in a working plan, will require prior sanction of the PCCF. All deviations, which do not permanently alter the basis of management and with the necessity of which he agrees, may be approved and sanctioned by the Working Plan Chief Conservator on behalf of the PCCF. In case where there is difference of opinion between the Working Plan Conservator and the Territorial Conservator, the former will refer them to the PCCF for instructions. The PCCF/CCFWP, as the case may be, will countersign the deviation statement.

Minor deviations can be sanctioned at the level of the CCF Working Plan or the PCCF as the case may be; but the PCCF, before sanctioning the major deviations of following nature, will necessarily take prior approval of the Regional CCF of the Ministry of Environment & Forests.:

- 1 Change in Silvicultural System;
- 2 Clear Felling of Natural Forest;
- 3 Formation of new Felling Series; and
- 4 Large scale felling due to natural calamities, Which cannot be adjusted against future yield.

CRITERIA AND INDICATORS OF SUSTAINABLE FOREST MANAGEMENT

The Government of India, the State Government, and IIFM-Bhopal are in the process of finalizing the criteria and indicators for monitoring and evaluation of Sustainable Forest Management. As and when these are finalized, the monitoring and evaluation of implementation of the working plan will be done accordingly.

SECTION XIII.8:- IMPLEMENTATION OF WORKING PLAN :-

The Territorial Chief Conservator of Forests shall ensure all the prescriptions of working plan shall scrupulously implemented by the Dy. Conservator of Forests (T). The work shall be inspected are as under.

Conservator of Forests	2%
Dy. Conservator of Forests	5%
Asstt. Conservator of Forests	20%
RFO/Fr/Forest Guards	100%

The norms for inspection of work are as per the standing orders and circulars issued by Government of Maharashtra and the department in this behalf. Any lapses in discharging responsibilities shall be treated as dereliction of duties and the erring staff is liable for disciplinary action. The Chief Conservator of Forests (T) shall be the competent authority to decide any technical matter prescribed in the Working Plan and he will guide the subordinate staff in all such matters.

SECTION XIII.9 :- SAW MILLS :-

The rules for regulating Saw mills in the state are incorporated in Bombay Forest Rules 1942 and these rules have been updated from time to time.

1. No person shall establish a Saw pit for cutting or converting of timber or manufacturing of Char coal without prior sanction in writing of the Range Forest Officer under Sec. 4 of Indian Forest Act 1927. If the Government declaring that it has been decided to constitute any land as Reserve Forest and for this also above rule is applicable.

2. Within the limits of 80 kms. of any Reserve or Protected Forest any land required in clause (I), no person shall erect or operate any machinery or saw mill for cutting or converting of timber without obtaining license in this behalf.
3. Any person intend to establish a saw pit or manufacturing Charcoal under class (I) of sub rule (1) shall make an application in that behalf to the Range Forest Officer and Dy. Conservator of Forests respectively.
4. If the applicant fails to receive sanction within one month under clause (I) of sub rule (1) the applicant may proceed to establish the saw pit or to manufacture char coal without violating the provisions of the act or any rule made there under.
5. On receipt of an application under sub rule (2) the Range Forest Officer, The Dy. Conservator of Forests shall make such enquiry as he deems fit after satisfying himself regarding the safeguard of forest protection and grant sanctioned or license in the form in scheduled E, subject to the conditions set out there in or refuse to grant the sanctioned of license.
6. Every license granted is renewed under this rule subject to the provisions contained in this rule regarding cancellation, be effective for a period not beyond the day of 31st December from next month following date, the date of issue or renewal. The Dy. Conservator of Forests may on application made to him renew the license issued under sub rule (3) with effect form the date of its expiry.
7. If the licenses does not make application before expiry or failed to renew the license is liable for punishment and can not operate licensee without renewal.
8. The Dy. Conservator of Forests not with standing contained in the forgoing sub rules may, where he has reason to believe that a licensee is operating a saw mill in contravention with the provisions of these rules and the conditions of rule or the license is indulging in illegal activity which may be detrimental for forest protection, can revoke the license granted under the sub rules.

9. The Dy. Conservator of Forests refuses to issue or renew or any matter related to license, the order shall be communicated to concern in writing.

10. Any person aggrieved by an order made under sub rule (8), may within 30 days after receipt of order, appeal the Chief Conservator of Forests who shall decide the appeal after giving opportunity for personal hearing. The decision of Chief Conservator of Forests shall be final.

XIII.9.1: Subsequently, the State Government has issued amendment vide notification No SWM 1081/ 106836/ F-6, dated 16th July , 1981, the State Government put a ban on issue of new license However, if the applicant has already spent the money and completed the formalities, the licenses can be issued vide SWM 1081/ 106836 (A) F-6, dated August 18, 1981. The licenses of saw mill can be suspended for three months. Saw mill owners are required to maintain three registers by the Government Orders No SWM- 1082/ CR-20/ F-6, R and F D dated February 22, 1984 in Fno, 1- intake, FN2- out- turn, Fno3- disposal Vide SWM 1082/ 2590/ CR/ F-6, dated December 17, 1986, no saw mill can operate after sunset to sunrise without the written prior permission of the Divisional Forest Officer. The Govt vide letter No. TRS 1081/ 102380/ F-2 R & F D dated July 18, 1981 has laid down the inspection norms of saw mills by the officers or various ranks. The Range Forest Officer is to inspect- twelve, the Assistant Conservator of Forests-6 the Divisional Forest Officer-3 and the Conservator of Forests-1 saw mills in a month.

Apart from above mentioned Govt. Resolutions there are number of G.R.'s circulars issued by the Government from time to time regarding issue of saw mill license, restoration of license, shifting of saw mills, issue of duplicate licenses, maintenance of timber accounts in saw mills etc. some of the Govt. Resolutions and circulars issued by Govt. based on the directions and observations of the High Court and the Supreme Court. A list of different Govt. Resolutions and circulars is given as below.

S. No.	Govt. Resolutions/circulars	Subject
1	SWM-1091/ 106836/ F-6, dt. 29.8.1981	Grant of licenses for erecting or operating machinery or saw mills for cutting or converting of timber.
2	Circular No.SWM-1081/ 106836/ F-6/ Dt.26.10.1981	Grant of license for erecting or operating machinery or saw mills for cutting or converting of timber.
3	Circular No.SWM-1081/ 106836/ F-6/ Dt.31.10.1981	1. The Bombay Forest (Amendment) Rules, 1981. 2. The Bombay Transit of Forests Produce (Vidarbha Region and Saurashtra and Katch areas)(Amendment) Rules 1981.
4	Govt. letter No. SWM-1081/ 132654/ F-6/ Dt.19.11.1981	Scrutiny of application of Grant of sawmill license.
5	Notification SWM – 4582 / 200/ F-6/ Dt. 8.7.1982	Restorations of License
6	Gazette- SWM - 1082/ 96225-(i)/ F-6, dated. 1/8/1982.	Amendment on notification dated 16/7/81.
7	Circular – SWM - 1080/ 112274/ F-6, dated. 20/9/1982.	Precautions and measures to take while issuing license.
8	Notification - SWM- 183/ A- 61/ CR-4(iii) / F-6, dated. 30/6/1983.	Change in decisions taken by Chief Conservator of Forests / Forest Officers
9	Circular No. - SWM- 183/ A- 61/ CR-4(iii) F-6, dated. 7/7/83.	Grant of saw mill license Procedure regarding.
10	Gazette – Dt. 18.8.1984	Grant of licenses within the forest limit
11	Notification - SWM- 1084/ CR- 12 / AF-6, dated. 17/5/1985.	Provisions of Mumbai Forest Act, Rule No. 8 (3)
12	Gazette - SWM- 1084/ CR-12 / AF-6, dated. 17/5/1985.	Provisions of Mumbai Forest Act, Rule No. 8 (3)
13	Notification - SWM- 1084/ CR- 32 / A/F-6, dated. 22/1/1986.	Issue of duplicate licenses
14	Gazette - SWM- 1084/ CR-32 / A/F-6, dated. 22/1/1986.	Issue of duplicate licenses
15	Govt. letter No.SWM/1085 / CR- 134 /F-6/ Dt. 3.2.1986	Saw mill Rules
16	Circular SWM-1082/CR-20/ F-6 Dt.8.11.1989	Registers maintained by private Saw mill owner.
17	Govt. letter SWM-1090/CR-57 /F-6/ Dt.1.10.1989	Mumbai Forest Rules 1942 – Sawmill license Rule No. 88
18	Gazette SWM-1090/CR- 57/F-6/ Dt. 28.8.1991	Transfer and shifting of Sawmill license – instructions
19	Notification- SWM-1090/CR- 57/F-6/ Dt. 28.8.1991	Transfer and shifting of Sawmill license – instructions
20	Notification- SWM-192/CR –94/ (i)/ F-6/ Dt. 14.7.1992	Regarding fixation of Fees for Transfer/ shifting and issuing of Sawmill license

21	Gazette -SWM/1093/CR-27I(L)/ F-6 Dt. 16.6.1993	Defination of small scale works does not include carpentry of sawmill operate.
22	Govt. letter No.SWM-1094/CR-40/ F-6/ Dt. 15.9.1994	Permission for fixing additional horizontal band saw to Sawmill.
23	Gazette – SWM-1096/CR – 123(1)/ F-6 Dt. 31.7.1997	Modification in License fee / Revised fees for the period of 10 years.
24	Gazette - SWM-1096/ CR-123 (1) / F-6 Dt. 6.11.1998	Modification in License fee / Revised fees for the period of 10 years.
25	Notification – TRS-1095/ CR – 109/ F-6/ Dt. 22/9/1999	Indian Forest Act – 1960, The Bombay Transit of Forests Produce (Vidarbha & Katch areas) Rule 1960, The Haidrabad Transit of Forests Produce (Mumbai) Rules 1958 (Amendment) Bombay Forest Rules 1942 (Amendment)
26	Govt. letter SWM/1090/CR-57/F-6 Dt. 13.1.2000	Guidelines for Transfer/ shifting and issuing of Sawmill license.
27	Gazette – TRS- 11/ 2000/ CR – 534/ F-6 / Dt. 7/6/2001	Fixation of fees for Transfer/ shifting and issuing of Sawmill license
28	Gazette- SWM/1090/CR-57/F-6 Dt. 6.11.2001	Guidelines for Transfer/ shifting and issuing of Sawmill license.
29	Notification dt. 15.3.2003	Para No. 16(ii) and (iv) and guidelines by the order passed on dt.7/2/2002 in Writ Petition 3652/2001.
30	Gazette- SWM-1097/CR-379/F-6/ dt. 17.3.2003	Order passed in Writ Petition no. 3652/2001 dt. 7/2/2002.
31	Govt. letter No.S-30/122/2001/ CR – 505/ F-6/ dt. 20.3.2003	Order passed in Writ Petition no. 3652/2001 dt. 7/2/2002. --- 10 Km distance ----
32	Gazette – SWM-1093/CR-331/ F-6/ dt. 3.11.2003	Concessions for 12 inch or less than diameter round band
33	Govt. letter No. SWM-03/ 2001/ CR-154/ Part-2/F-6/ dt.11.1.2005	Bombay High Court – Bench Nagpur - order passed on 7/2/2002, Para 16(iv) ----
34	Govt. letter No. SWM-03/ 2001/ CR-154/ Part-2/F-6/ dt.12.1.2005	Bombay High Court – Bench Nagpur - order passed on 7/2/2002, Para 16(iv) ----
35	Govt. letter-SWM-09/2001/CR-350/ F-6/ dt. 23.6.2006	Decision taken by Central High Power Committee regarding Plywood/ Vinier.

XIII.9.2.: Section 129 Bombay Forest Rules, 1942 states that who so ever contravenes the provisions of Rule 88, shall be punishable with imprisonment for a term which may extend to six months or with fine which may extend to five hundred rupees or both.

Section XIII.10: Charcoal kilns :-

Permission shall not be granted to manufacture charcoal to private person in Reserve Forest or Protected Forest or in private areas up to one kilometer boundary from the forests.

Section XIII.11: Use of Hammer :-

The Territorial Chief Conservator of Forests shall issue guidelines and orders regarding the shape and size of various types of hammer which will be used for the following works :-

1. Marking of coupes.
2. POR cases material to be marked by Forest Guard.
3. POR cases material to be marked by Forester.
4. POR cases material to be marked by Range Forest Officer.
5. POR cases material to be marked by Asstt. Conservator of Forests
6. Marking of material from Jungle Depot to Coupe depot.
7. Marking of material from Coupe Depot to Sale Depot.
8. Marking of sold material.
9. Marking of Malki material / timber by ACFs.

SECTION XIII.12 :- SCHEDULED RATES FOR OFFENCE CASES MATERIAL

The Chief Conservator of Forests (T) shall sanctioned the scheduled rates for offence case material in consultation with Dy. Conservator of Forests (T) in his circle.

SECTION XIII.13 :- TRIBAL WELFARE :-

The forest tribal co-exists and their bond is inseparable. In order to maintain proper ecological balance, It is necessary to take care the socio -economic well being and cultural survival of the tribals. It is extremely difficult to protect the forest without active participation and cooperation of local people. To improve economic standard of tribals by taking up various programmes, industries, safe guarding their domestic needs for forest produce like Bamboo, fire wood and small timber. For all the activities of non-wood forest produce a separate non wood forest produce working circle has been constituted.

In the prescription of various working circles care has been taken to retain fruit trees from felling and in the plantation 20% fruits trees are to be planted for the purpose of local tribals of the forest.

In the 73rd Amendment of Constitution of India facilitated Extension of Panchayat Raj Act in Scheduled Area has opened new avenues for tribal development. In the said amendment the tribal people are given rights over Non-Wood Forest Produce and the Gram-Sabha has been given enormous powers for collection and disposal of Minor Forest Produce and accordingly whatever the Non- Wood Forest Produce is available in the forest. The Gram- Panchayat can collect and dispose through Gram-Sabha and the revenue can be shared among the village people.

The Government of India has enacted “ The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which facilitate to recognise and vest the forest rights and occupation in forest lands in forest dwelling Scheduled Tribes and Other Traditional Forest Dwellers who have been residing in the forest for generations but whose rights could not be recorded, to provide for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land.

The recognised rights of the forest dwelling Scheduled Tribes and Other Traditional Forest Dwellers include the responsibilities and authority for sustainable use, conservation of bio-diversity and maintenance of ecological balance and thereby strengthening the conservation regime of the forests while ensuring livelihood and food security of above mentioned groups. The forests rights on ancestral lands and their habitat were not adequately recognised in the consolidation of State Forests in pre-independence and post independence period resulted in historical injustice to these groups, who are integral part to the very survival and sustainability of the forest ecosystem. The act also recognised the necessity to address the long standing insecurity of tenurial and access rights of forest dwelling Schedule Tribes and Other Traditional Forest Dwellers including those who are forced to relocate their dwelling due to state development interventions.

FOREST RIGHTS :-

Chapter II of this act clearly specified about forest rights, these rights are as :-

- (i) Right to hold land and live in the forest under the individual or common occupation for habitation by a member or members of these groups.
- (ii) Community rights such as Nistar.
- (iii) Rights of ownership for minor forest produce.
- (iv) Other community rights, other rights of uses such as fishing, other products of water-bodies, grazing etc.
- (v) Rights including community tenures of habitat of habitation for primitive tribal groups.
- (vi) Rights in or over all disputed lands.
- (vii) Rights for conversion of Pattas or leases or grants issued by state Government.

- (viii) Rights of settlement and conversion of all forest villages, old habitation other village in the forests not recorded into revenue village.
- (ix) Right to protect, regenerate or conserve or manage any community forest resource.
- (x) Rights which are recognized under any state law.
- (xi) Rights of access of bio-diversity and community right etc.
- (xii) Any other traditional right customarily enjoyed by these groups.
- (xiii) Rights to in-situ rehabilitation including alternative land.
- (xiv) For the development of various infra-structural facilities in the forest areas the Central Government shall provide for diversion of forest land, which involve tree felling not exceeding 75 trees per Ha. under Forest Conservation Act.

Chapter III of this act speaks about recognition, restoration and vesting of rights and related matters, notwithstanding any other act, the Central Government recognizes and vest forest rights of forest dwelling scheduled tribes and all the forest rights mentioned in section 3 of this act.

As per this act the Gram-sabha shall be the authority to initiate the process and determine nature and extent of individual of community forest right of forest dwelling tribes and other traditional forest dwellers within local limits and accordingly the Gram-sabha shall pass a resolution and there after a copy forward to Sub-divisional local committee.

This act has enabled for recognition, protection and transfer of rights to these groups who have been deprived of the legal rights for centuries together.

SECTION XIII.14 :- PRIVILEGES AND CONCESSIONS FOR FOREST PRODUCE :-

The National Forest Policy 1988 clearly indicated that the local people shall have first charge on forest produce. The forest produce obtained from forest will first be supplied to local people at the rates fixed by Conservator of Forests. The arrangement should be made at such a places nearer to villagers within 2 km. of radius from their habitation.

SECTION XIII.15 :- SMALL TIMBER, POLES AND FIRE WOOD :-

Small timbers and poles will be used by local people for agriculture as well as house construction. Firewood shall be supplied from the local depots at concessional rates. To meet the demand of local people for forest produce such as small timber, poles, fire wood, etc. for constructions and repairs to the houses and for agriculture purposes and fire wood for domestic use will be supplied at concessional rates from local depots. These materials after harvesting from the forest as per the prescriptions of Working Plan shall be transported to local depots. The demand of local people shall be obtained through Gram-Panchayat and their demand for above mentioned material shall be met.

SECTION XIII.16 :- METEOROLOGICAL OBSERVATIONS :-

Since there is a well established Meteorological Department in the State with its offices in the rural areas, it is unnecessary to incur expenditure on instruments meant for meteorological observations. The necessary meteorological observations can be obtained from Meteorological Department. However it is necessary to know about number of rainy days and quantum of rain for plantation activities, therefore instruments regarding the same are required to be installed at suitable places. Automatic self recording rain guage may be used in this connection. The meteorological observations are very much necessary to calculate number of plants to be planted in a particular site as per the Ecological Index.

SECTION XIII.17 :- BUILDINGS :-

The Akola Forest Division was created in 3rd February 1964. Presently Dy. C.F. office is accommodated in P.W.Deptt. building. The residential buildings available in the division are not sufficient to accommodate entire staff. Therefore the Dy.C.F. , Akola will be required to prepare a scheme for construction of division office as well as the residential buildings for accommodating the staff those who do not have residential quarters in a phased manner and obtain necessary sanction from competent authority. The details of available building given in Appendix No. VII Volume II of this Plan.

Presently, maintenance of existing building of offices, Rest Houses and Residential quarters is very poor due to paucity of funds and these buildings require regular maintenance.

SECTION XIII.18:- ROADS, CART TRACTS AND CULVERTS :-

The details of Roads, Cart tracts and Culverts have been given in Appendix No.VIII of Volume II. Construction of new roads on the forest land is not permitted under Forest Conservation Act 1980 without prior permission of Government of India. These Roads, Cart tracts and Culverts require regular maintenance for effective management of the forests.

SECTION XIII.19 :- ESTABLISHMENT AND LABOUR :-

The total area of the division 81009.61. Some of the patches of forest or very much prone for illicit felling in those pockets the protection staff shall not be entrusted with other activities of management. In other pockets where problems are less for illicit felling, the staff can better implement working plan operations. The Range Forest Officers and subordinate staff shall be properly placed for implementations of Working Plan operations and the Dy.C.F. Akola will fix the head quarters of subordinate staff as per the workload. As per the protection problems of the forest the following norms have been fixed for Beat. Round and Ranges :-

Beat Norms :- 400 to 800 Ha. in thickly populated area, well connected to adjoining cities and industries and 800 to 1100 Ha. for other areas.

Round Norms :- 2000 to 3000 Ha. in the areas there is heavy biotic pressure and for other areas it is 3000 to 4000 Ha.

Range Norms :- 95 to 150 Sq. Kms. in thickly populated area and 180 to 225 Sq. Kms. in other areas.

SECTION XIII.20: RE-ORGANISATION :

In 1964 reorganisation of West Berar Forest Division effected resulted in creation of Akola and Buldhana Forest Division in 1964. In 1996 the forest areas of Narnala and Katepurna Wildlife Sancturaries i.e. 5111.52 Ha. area has been transferred to wildlife wing Akot and Akola Wildlife Division respectively. Total geographical area of the division is 159578.00 Ha out of which 77890.91 Ha is reserved forest and 1527.00 Ha. area is Protected Forest. The forest area of Akola Division is 7.34 % of the geographical area of the division. Most of the forest area are open and degraded. In this division there has been perpetual problem of protection and due to such problem the forest have degraded over a period of time. In this division there are 112 saw-mills and 2 – timber depots. By taking into consideration of growing population of division, there is a huge gap between demand and supply for forest produce especially timber and fuel wood resulted in protection related problems. The time has come to reorganise ranges, rounds, beats in the interest of forest protection, management and development.

Before reorganization there were 87 -beats, 21-rounds and 5 - ranges in this forest division. The High-court Mumbai, Bench Nagpur, gave directions to the forest department, while delivering judgement in connection with Writ petition 1275/2002, to reorganize beats, round, ranges in the interest of forest protection. Accordingly the Govt. of Maharashtra issued a letter 15th November 2002 a committee was formed under the chairmanship of Shri. Sarvesh Kumar to revise the norms of beats, rounds, ranges. Shri. Sarvesh Kumar committee submitted its report and G.R. is issued on 8th May 2003, indicating the norms of beats, round, ranges depending upon the sensitivity from the point of forest protection. As per these norms, normal beats to be the extent of 1000 Ha., the area of sensitive beat is to be extent of 750 Ha. and the area of hyper sensitive beat is to the extent of 500 Ha. As per these norms, the reorganization

proposals of Akola Forest Division has been effected after thorough scrutiny by High Power Committee under the chairmanship of the Principle Chief Conservator of forests, Nagpur (M.S.).

The reorganization of Akola Forest Division has been effected vide letter No./PCCF.Ng/1523/ dated 15.12.2008. During the reorganization the divisional boundary of this division is not at all changed, therefore the reorganization of ranges, rounds and beats has been effected at the High Power of Committee level headed by the Principle Chief Conservator of Forests, Nagpur (M.S.)

A) Before reorganization the number of ranges, rounds and beats were as follows:

1. Total number of Ranges –5, these were (1) Akola (2) Karanja (3) Patur (4) Washim (5) Alegaon.
2. Total number of rounds - 21
3. Total number of beats - 87
- (i) Average area of Range - 15578.18 Ha.
- (x) Average area of Round - 3709.09 Ha.
- (xi) Average area of Beat - 895.30 Ha.

B) After reorganization the number of ranges, rounds, beats are as given below:

1. Total number of Ranges – 8, these are (1) Akola (2) Karanja (3) Patur (4) Washim (5) Alegaon (6) Manora (7) Malegaon (8) Barshitakli.
2. Total number of rounds - 29
3. Total number of beats - 125
- (i) Average area of Range - 9736.36 Ha.
- (ii) Average area of Round - 2685.89 Ha.
- (xii) Average area of Beat - 623.13 Ha.

As per the sensitivity the normal beat area is 835.54, sensitive beat area 653.34 Ha. and the hyper sensitive beat area 587.73 Ha.

TABLE NO. – 135

Talukawise Area Before and After Reorganization						
Division	Range	Before organization		Range	After organization	
		Taluka	Area(Ha)		Taluka	Area(Ha)
Akola	1)Akola	Akola	2216.06	1) Akola	Akola	2216.06
		Akot	1114.68		Akot	1114.68
		Balapur	54.6		Balapur	70.93
		Baarshitakli	13530.29		Murtijapur	599.79
		Karanja	141.93		Telhara	221.14
		Malegaon	962.81		--	--
		Mangrulpir	691.22		--	--
		Telhara	221.14		--	--
		Total	18932.73		Total	4222.60
		2)Patur	Malegaon		Malegaon	4268.33
Patur	9283.43					
Total	13551.76			Total	9283.43	
3)Alegaon	Balapur	Balapur	16.33	3)Alegaon	Patur	11614.13
		Malegaon	680.99		--	--
		Patur	11614.13		--	--
		Total	12311.45		Total	11614.13
4)Karanja	Karanja	Karanja	5148.26	4)Karanja	Karanja	5290.19
		Mangrulpir	926.76		Mangrulpir	2579.12
		Manora	14107.17		--	--
		Murtijapur	599.79		--	--
		Total	20781.98		Total	7869.31
5)Washim	Barshitakli	Barshitakli	456.89	5)Washim	Risod	1593.44
		Malegaon	5221.96		Washim	4079.56
		Mangrulpir	961.14		--	--
		Risod	1593.44		--	--
		Washim	4079.56		--	--
		Total	12312.99		Total	5673
				6)Barshitakli	Barshitakli	13987.18
				7)Malegaon	Malegaon	11134.09
				8)Manora	Manora	14107.17
						39228.44
		Total	77890.91			77890.91

While effecting reorganization of ranges, round and beats care has been taken that the boundary of range is approximately coterminous with the tehsil boundaries and in the range area one or more complete tehsil areas are included from the point of administration. With the effect of reorganization the area is comparatively manageable as mentioned above three levels of range, round and beat based on the sensitivity from the point of forest protection.

SECTION XIII.21 :- MAINTENANCE OF LAND RECORDS :-

The Dy.C.F. Akola is mainly responsible for maintenance of land record which will constitutes –

1. 7/12 record of all survey numbers belongs to Forest.
2. Village maps on 1:5000 scale shall be procured.
3. A comparative chart of 3 surveys i.e. 'Jamabandi', resurvey and consolidation and different area of forest survey numbers in each survey shall be prepared.
4. 7/12 extract on which the record of right is not mutated in the name of forest department earlier, shall be persuade to transfer in the name of forest department. The newly acquired areas shall be persuade to transfer in the name of Forest Department.
5. In each 7/12 extract the following entries were recorded. The Government of Maharashtra, Forest Department, Reserve Forest and Protected Forest. The above entries shall be written on hand writing and no stamps shall be used to show this prescriptions.

SECTION XIII.22:- ENCROACHMENT :-

Encroachment is a constant problem for forest protection. The Government of Maharashtra had taken decision in 1978 and 1979 to regularize the encroachment pertaining to period 1/4/1972 to 31/3/1978 and certain conditions laid down to confirm

eligible encroachers. Accordingly most of the encroachments pertaining to that period were regularized. However some of the encroachments of that period remain without regularization due to various reasons of non availability of record, encroachments not pertaining to that period, etc.

SECTION XIII.23 :- FOREST CONSERVATION ACT IMPLEMENTATION :-

In Akola Forest Division there are 9 medium and 57 minor irrigation projects are existing in the division. For construction of these projects 285.69 Ha. of forest area has been diverted and the legal status of the area transferred remain as such.

SECTION XIII.24 :- WORKING PLAN NOTE :-

The Territorial Chief Conservator of Forests in consultation with Dy. Conservator of Forests, Akola Division shall prepare a note on Working Plan at the end of Working Plan period and the note shall be forwarded to the Conservator of Forests, Working Plans for preparation and revision of working plan of the forest division.

CHAPTER XIV

THE ESTIMATED VALUE OF THE FORESTS

The forest of Akola division is tropical dry, deceased forests dominated by Teak (*Tectona grandis*) distributed throughout the forest along with its natural associates like Dhawada, Ain, Lendia, Tiwas, Tendu, Behada, Salai, Bija, etc. The Teak is of mostly coppice origin. There are about 101 varieties of timber species exists in this forest and all of them may not be economically profitable. An attempt has been made here to calculate the total capital value of the forest by using standard deviation method. The capital value has been calculated for various working circle as the stocking position is different in various working circles.

SECTION XIV.1 : THE ESTIMATED CAPITAL VALUE OF THE FORESTS.

XIV.1.1 The forest of Akola Division is a tropical of dry-deciduous forests, with nearly 101 varieties of timber species, not all of them economically profitable. An attempt has been made here to calculate the total capital value of the forests by using devastation method. The capital value has been calculated for various Working Circle, since the stocking position is different is various felling series.

Capital value of the Selection Cum Improvement Working Circle :- Total Area = 30779.54 Ha.

Capital Value of Forest allotted to Selection Cum Improvement Working Circle.

TABLE NO. – 136

Sr. No.	Name of Working Circle	Girth Class	Number of Trees/Ha		Stumpage value		Capital Value Forest/Ha	
			Teak	Non-Teak	Teak	Non-Teak	Teak	Non-Teak
1	S.C.I.	15-30	63	67	90.12	27.5	5677.56	1842.5
2		31-45	65	47	605.17	178.75	39336.05	8401.25
3		46-60	46	26	1320.62	395	60748.52	10270
4		61-75	26	14	2707.05	812.5	70383.3	11375
5		76-90	13	9	4764.72	1430	61941.36	12870
6		91-105	4	4	8245.32	2222.75	32981.28	8891
7		106-120	1	2	11828.47	3547.25	11828.47	7094.5
8		121-135	0	1	13598.35	4071.82	0	4071.82
9		136 & above	0	1	14848.35	4455	0	4455
	Total					282896.5	69271.07	

The value per Hectare = 3.52167 lac

Total Value = Area x Value per hectare = 30779.54 Ha. X 3.52167 lac

= 108395.38 lac. Say 108395 Lac

2) Capital value of the forests allotted to the Afforestation Working Circle.

Area = 27067.06 Ha.

TABLE NO. – 137

Sr. No	Name of Working Circle	Girth Class	No.of Trees/Ha		Stumpage value		Capital Value Forest/Ha	
			Teak	Non-Teak	Teak	Non – Teak	Teak	Non- Teak
1	A.W.C	15-30	30	69	90.12	27.5	2703.6	1897.5
2		31-45	21	36	605.17	178.75	12708.57	6435
3		46-60	11	16	1320.62	395	14526.82	6320
4		61-75	5	8	2707.05	812.5	13535.25	6500
5		76-90	2	5	4764.72	1430	9529.44	7150
6		91-105	1	2	8245.32	2222.75	8245.32	4445.5
7		106-120	0	1	11828.47	3547.25	0	3547.25
8		121-135	0	1	13598.35	4079.82	0	4079.82
9		136 & above	0	0	14848.35	4455	0	0
	Total						61249	40375.07

The value per Hectare = 1.01624 lac

Total Value = Area x Value per hectare = 27067.06 Ha.X 1.01624 lac

= 27506.63 lac. Say 27507 Lac

3) Capital value of the forests allotted to the Catchment Area Treatment Working Circle. Area = 9254.49 Ha.

TABLE NO. – 138

Sr. No.	Name of Working Circle	Girth Class	No.of Trees/Ha		Stumpage value		Capital Value Forest/Ha	
			Teak	Non-Teak	Teak	Non-Teak	Teak	Non-Teak
1	C.A.T. W.C	15-30	70	71	90.12	27.5	6308.4	1952.5
2		31-45	79	46	605.17	178.75	47808.43	8222.5
3		46-60	46	24	1320.62	395	60748.52	9480
4		61-75	17	11	2707.05	812.5	46019.85	8937.5
5		76-90	7	5	4767.72	1430	33374.04	7150
6		91-105	2	2	8245.32	2222.75	16490.64	4445.5
7		106-120	0	2	11828.47	3547.25	0	7094.5
8		121-135	0	1	13598.35	4079.82	0	4079.82
9		136 & above	0	0	14848.35	4455	0	0
	Total						210749.9	51362.32

The value per Hectare = 2.62112 lac.

Total Value = Area x Value per hectare = 9254.49 Ha.X 2.62112 lac.

= 242571.13 lac Say 24257 Lac

Capital value of the forests allotted to the Fodder Improvement Working Circle.

Area = 10039.37 Ha

TABLE NO. – 139

Sr. No	Name of Working Circle	Girth Class	No.of Trees/Ha		Stumpage value		Capital Value Forest/Ha	
			Teak	Non Teak	Teak	Non Teak	Teak	Non Teak
1	F.I.W.C	15-30	39	113	90.12	27.5	3514.68	3107.5
2		31-45	39	29	605.17	178.75	23601.63	5183.75
3		46-60	23	12	1320.62	395	30374.26	4740
4		61-75	5	6	2707.05	812.5	13535.25	4875
5		76-90	0	2	4764.72	1430	0	2860
6		91-105	0	1	8245.32	2222.75	0	2222.75
7		106-120	0	2	11828.47	3547.25	0	7094.5
8		121-135	0	0	13598.35	4079.82	0	0
9		136 & above	0	0	14848.35	4455	0	0
	Total						71025.82	30083.5

The value per Hectare = 1.01109 lac.

Total Value = Area x Value per hectare = 10039.37 Ha. X 101109.32 Rupees.
= 10150.70 lac. Say 10151 Lac

TOTAL CAPITAL VALUE OF THE FOREST OF AKOLA FOREST DIVISION

Working Circle	Value of Forests in Lac
S.C.I.W.C.	108395
A.W.C.	27507
C.A.T.W.C.	24257
F.I.W.C.	10151
Total	170310

SECTION XIV.2 :

XIV.2.1 The total forest area of Forest Division is 79103.05 Ha. The capital value of the forest estimated is Rs.170310 Lac by using the standard deviation method. Without considering other intangible benefits. The Government have issued G.R.No./FLB-1002/ C.No. 199/ F-10, Dt. 9/12/2003 in which the procedure is given how to calculate Net Present Value (NPV) based on quality, density and species. In view of instructions in above mentioned G.R. an attempt has been made to calculate Net Present Value (NPV) of Akola Forest Division. The extent of area density wise is given in the following table :-

TABLE NO. – 140
DENSITY WISE AREA OF AKOLA FOREST DIVISION.

DENSITY	AREA IN HA.
0.6 and above	1528.73
0.4 to 0.6	17724.48
0.1 to 0.4	24282.34
0.1 and below (blank)	35567.50
E.Total	79103.05

XIII.2.2. As per the G.R. different rates are given for different density classes and different working circle. The Net Present Value calculated is given in the below mentioned table :-

TABLE NO. – 141
N.P.V. CALCULATION

W.C.	DENSITY	AREA IN Ha.	RATE in Lac.	NPV in Lac.
S.C.I.	0.6 & above	1351.00	9.20	12429.20
	0.4 to 0.6	22338.47	9.00	201046.23
Other W.C. (AWC, CAT, FIWC, MISC.)	0.6 & above	177.73	7.70	1368.52
	0.4 to 0.6	7113.99	Av. 7.13	50722.74
	0.1 to 0.4	12554.36	Av .6.56	82356.60
	o.1 & below (blank)	35567.50	5.80	206291.50
		79103.05	TOTAL	554214.79

The net present value (NPV) of forest of Akola is Rs.554214.79 Lakhs.

SECTION XIV.3: ESTIMATED VALUE OF OUT TURN OF FOREST :

XIV.3.1 The forest of this division is being managed on a sustained annual yield basis. The net annual realization represents the return on the capital out-turn of calculated by formula

$$\text{Capital out-turn} = \frac{R}{0.0P}$$

Where 'r' is the net annual income and 'p' is the rate of interest.

The average annual income from this division for last 10 years is

Rs. @ 7 % interest the capital out-turn of this net income is.

$$\text{Capital out-turn} = R/0.0p = \frac{27663041}{0.07} = 395186300$$

The total area covered under this plan is 79103.05 ha.

$$\text{Hence capital value per ha is : } \frac{27663041}{79103.05} = \text{Rs. } 4995.80$$

CHAPTER - XV
CONTROL AND RECORDS

SECTION XV.1: CONTROL AND RECORDS

XV.1 The following records will be maintained in the division office.

1. Control forms
2. Compartment History
3. Plantation and Nursery Registers
4. Divisional Note Book.

XV.1.1 CONTROL FORMS:

i. Control forms should be prepared to include each of Working Plan prescriptions as well as definite suggestions regarding other operations. For the control of all harvesting, subsidiary cultural operation, cleaning, thinning, burning, regeneration works and soil and moisture conservation works carried out as per the working plans prescription. It will be maintained in the control forms for controlling and maintaining a record of all trees. The prescribed proforma of the following forms will be given in the Volume II of the this plan.

ii. Three permanent sets of these control forms will be prepared. One set will be kept in the Division Office, the other set will be flying set for the use of the Conservator of Forests Working Plan. Third set will be kept in the Territorial Chief Conservators office. Dy. C.F. Akola will annually make entries in the flying set and will be sent annually to Conservator of Forests Working Plan Yavatmal on or before December 1st and latter should send them to the Chief Conservator of Forests Yavatmal on or before January each year. All the entries showing the deviation from the prescription of Working Plan will be underlined in red ink. The Conservator of Forests Working Plan will scrutinized and will send it to the CCF (T) Yavatmal. CCF Yavatmal will be in turn send it to CCF W.P. Nagpur with his remarks not latter February 1st of following year. CCF WP Nagpur in turn will forwarded them to the APCCF (Production and management) for perusal and order where required.

XV.1.2 COMPARTMENT HISTORIES

Compartment histories i.e. the record of various activities and observations made in the past year will be maintained in forms No. 1 to 5 as given in Appendix No LXIII of Volume II of Working Plan.

1. FORM NO. 1 : Compartment description written by Conservator of forests Working Plan, Yavatmal as per his inspections and forest proceeds.
2. FORM NO. 2: Record of changes in the growing stock and plantations.
3. FORM NO. 3: Record of operations and out turn.
4. FORM NO. 4: Record of observations.
5. FORM NO. 5: Record of injuries.

Each compartment or sub compartment must have a separate file for its each record. Compartment history must be maintained by the division since they keep the record of past management practices and their effects on the growing stock.

Every year in July the Range Forests Officer should fill in the necessary information and will send to the Deputy Conservator of Forests for scrutinizing and editing through the concern ACF who after doing so will get them typed and sign them. One copy of the forms will be filed in the divisional compartment history file while one copy of each will be sent to Range Forest Officer and Conservator of Forests, Working Plan in the month of August.

XV.1.3 PLANTATION AND NURSERY REGISTERS.

Plantation register will be maintained for all the areas regenerated artificially in the form No. 1 to 9 as given in the Volume II Appendix No. LXIV.

Nursery registers will be maintained in Form No. 1 to 10 as given in the Volume II Appendix No. LXV of this Working Plan.

XV.1.4 DIVISIONAL NOTE BOOK.

The matter of divisional importance will be recorded under standard heading for records and ready reference in the divisional note book. A brief note on the plantation will also be recorded by the Dy. C.F. under the appropriate heads. The forms of Divisional Note Book is given in the Volume - II Appendix No. LXVI of this Working Plan.

CHAPTER - XVI

FINANCIAL FORECAST

SECTION : XVI.1 : WHY FINANCIAL FORECAST

Working plan for the Akola has been prepared with specific objectives in respective working circles. Various prescriptions have been given to achieve these objectives. Execution of works needs proper planning and adequate financial provision for that. Execution of works will generate some services and revenue to exchequer. That is why we need financial forecast for the plan.

SECTION : XVI.2 : EXPENDITURE

XVI.2.1: EXPENDITURE ON ESTABLISHMENT :

To run the proper administration, an efficient administrative set up is required. It is recurring expenditure on the set up of organization i.e. on salary and other benefits to officials and staff. Maintenance of offices vehicles, roads, buildings, machines, communications and other paraphernalia.

XVI.2.2: EXPENDITURE ON EXPLOITATION OF FOREST PRODUCES:

During the implementation of prescriptions of the draft report, some forest produces are going to be harvested. In selection cum improvement working circle and non wood forest produce working circle, forest produces in the form of timber, firewood, or other produces like tendu leaves, gums etc will be certainly harvested, It will need expenditure to be incurred on various activities.

XVI.2.3: EXPENDITURE ON REGENERATION ACTIVITIES:

Main objective of this plan report is to have sustainable development of forests. Which ultimately requires regeneration of forests either naturally or artificially. Regeneration activities will can not be executed without spending expenditure and services..

XVI.2.4: EXPENDITURE ON CONTROLLING ACTIVITIES:

Draft plan report envisages to have controlling activities to achieve its objectives. Such as fire and grazing control need constant controlling activities and expenditures.

XVI .2.5: EXPENDITURE ON SOIL AND MOISTURE CONSERVATION:

Soil and moisture conservation measures will require expenditures to be incurred for their executions.

XVI.2.6: EXPENDITURE ON WILDLIFE PROTECTION, ECO-TOURISM AND CONSERVATIONS:

Protection of wildlife in both forms faunal and floral and their conservation and practicing Eco-tourism certainly leads to incurring of expenditures.

XVI.2.7: EXPENDITURE DETAILS:-

Since the expenditure on various items are linked with minimum wage rate for wages and the prevailing salaries of staffs and officers in a dynamic linkage with market rate and dearness to the point of time. It is not possible to work out the expenditure on specific item at a point of time. We can have the glimpses of it based on certain assumptions. First of all we assume that wage rate and salaries and other commodities consumption are going to be static. The quantum of works to be carried out also going to be constant and furthermore the areas to be tackled yearly are also not going to vary. Based on these assumptions, the calculations are made. These are symbolic and not final.

A) TIMBER: Cost of exploitation per cubic meter timber = Rs. 1165/-

Cost of exploitation per beat firewood = Rs. 320/-

TABLE NO. – 142

Sr. No	Working Circles	Area in ha.	Area/ year in ha.	Yield		Expenditure in Rupees in lac.	
				Timber	Fire wood	Timber, Firewood	Total
1	2	3	4	5	6	7	8
1	SCIWC	11961.49	629.55	766.13	460	10.40	10.40
	Total	11961.49	629.55	766.13	460	10.40	10.40

Yield calculation has been done in respective working cycles.

(B) REGENERATION:-

(i) NATURAL REGENERATION :

Natural regeneration will be carried out in Selection Cum Improvement Working Circle, Afforestation Working Circle, Catchment Area Treatment Working Circle and Fodder Improvement Working Circle.

TABLE NO. – 143

Sr. No.	Working Circles	Area in ha.	Area/ year in ha.	Expenditure (Rupees in lacs (Rate @ 5 man days/ ha and @ 83.61/- per daily wage)	No. of Mandays to be generated.
1	2	3	4	5	6
1	SCIWC	30779.54	1619.97	6.77	8100
2	AWC	27067.06	1592.18	6.65	7961
3	CATWC	9254.49	1542.41	6.45	7712
4	FIWC	10039.37	1434.19	5.99	7171
5	Babul	1962.59	280.37	1.17	1402
	Total	79103.05	6469.12	27.03	32346

(ii) ARTIFICIAL REGENERATION:

Artificial regeneration works are required in Old Teak Plantations. The expenditure will incurred as per the rate sanctioned by the office of PCCF MS.

TABLE NO. – 144

Sr No	Plantation work	Area in ha.	Area/year in ha.	Operation	Expenditure in Rupees in lacs Rate of exp. @ 11612/ha and @ 83.61/- per daily wage.	No. of Mandays to be generated.
1	2	3	4	5	6	7
1	Teak Plantation and other	3000	150	PPO/PYO	10.00	11960
				FYO	16.00	19136
				SYO	8.00	9568
				TYO	4.00	4784
				4 TH YO	2.00	2392
				5 TH YO	4.00	4784
				Total	44.00	52624

(c) SOIL AND MOISTURE AND OTHER ITEMS:-

Exhaustive plan will be prepared and expenditure will be procured from Employment Guarantee Schemes and Rural Development Schemes and Water Conservation Schemes of Central and State Department. Hence no quantification has been attempted.

XVI.2.2.1:- YEAR WISE DETAILS OF EXPENDITURE: Expenditure to be incurred during Plan period summarized in following table :-

TABLE NO. – 145

Year	Establishment	Boundary, fire, grazing	Timber	S & m works	N R	Artificial Regeneration expenditure in Lacs						Total	No of mandays to be generated 160268
						P P O	F Y O	S Y O	T Y O	4 th Y O	5 th Y O		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2009-10	335	50	10	8	27	10	-	-	-	-	-	440	125583
2010-11	335	50	10	8	27	10	16	-	-	-	-	456	144719
2011-12	335	50	10	8	27	10	16	8	-	-	-	464	154287
2012-13	335	50	10	8	27	10	16	8	4	-	-	468	159071
2013-14	335	50	10	8	27	10	16	8	4	2	-	470	161463
2014-15	335	50	10	8	27	10	16	8	4	2	4	474	166248
2015-16	335	50	10	8	27	10	16	8	4	2	4	474	166248
2016-17	335	50	10	8	27	10	16	8	4	2	4	474	166248
2017-18	335	50	10	8	27	10	16	8	4	2	4	474	166248
2018-19	335	50	10	8	27	10	16	8	4	2	4	474	166248

SECTION: XVI.3: ANNUAL REVENUE EXPECTED FROM ALL SOURCES:**XVI.3.1. REVENUE FROM EXPLOITATION OF FOREST PRODUCES:**

Exploitation of forest produces not only leads to incurring expenditure but also generates revenue in the forms services and goods. Revenue is going to be received from exploitation of timber, firewood, bamboo, tendu leaves, services of grazing, Eco-tourism, minor forest produces etc.

XV.3.2: REVENUE FROM ALL SOURCES:**TABLE NO. – 146**

Sr. No.	Item	Quantity	Rate	Revenue in lac.
1	2	3	4	5
1	Timber	766.13 Cum	18000/Cmt	138.00
2	Fuel Beats	460 Beat	2500/beat	12.00
3	Pole	6000 Nos	200/pole	12.00
4	Tendu	11300 Std. bag	Lump-Sum	40.00
5	Miscellaneous	--	Lump-Sum	5.00
	Total			207.00

XVI. 3.2.1:- STATEMENT OF REVENUE AND EXPENDITURE FOR THE ENTIRE PLAN PERIOD: (In Rupees in lacs)

TABLE NO. – 147

Sr. No.	Year	Timber	Fuel Beat	Pole	Tendu	Other	Total Revenue	Total Expenditure	No of Mandays to be generated
1	2	3	4	5	6	7	8	9	10
1	2009-10	138	12	12	40	5	207	440	125583
2	2010-11	138	12	12	40	5	207	456	144719
3	2011-12	138	12	12	40	5	207	464	154287
4	2012-13	138	12	12	40	5	207	468	159071
5	2013-14	138	12	12	40	5	207	470	161463
6	2014-15	138	12	12	40	5	207	474	166248
7	2015-16	138	12	12	40	5	207	474	166248
8	2016-17	138	12	12	40	5	207	474	166248
9	2017-18	138	12	12	40	5	207	474	166248
10	2018-19	138	12	12	40	5	207	474	166248

SECTION: XVI.4: EXPENDITURE ON PLAN PREPARATION:

Expenditure on Plan of Akola Forest Division cannot be separately worked out. Working Plan Division has been given the responsibility of preparing of various forest divisions. Revision of Working plan for Akola Forest Division was taken up in 2007-08 and simultaneously, revision of Pusad Forest Division had been carried out since then. Office of the Chief Conservator of Forests Working Plan Nagpur also incurs expenditure on GIS works and instruments. Hence actual expenditure on preparation of this Plan cannot be segregated. Proportionate expenditure has been worked out.


Proportionate Expenditure	-	Rs. 37,88,966/-.
Working Plan Area.	-	81009.61 ha.
Per Unit Area Cost.	-	Rs.46.77/ ha.

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State Level Committee Meeting held on 27th and 28th February 2009

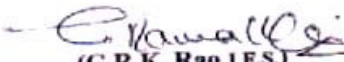
Ref: 1) Govt. G.R. Revenue and Forest Department MSC 2004/CR-102/F2, dated 25.06.2004

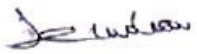
With reference to the Govt. Resolution at Sr. No.1, the Draft Working Plan of Akola Forest Division was discussed and approved under the Chairmanship of The Principal Chief Conservator of Forests, M.S. Nagpur.


(P.K. Mahajan I.F.S.)
Dy. Conservator of Forests
Akola

(Muthu Krishnan Sankar Narayan)
Collector Akola

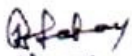
(B.R. Pokharkar)
Collector Washim

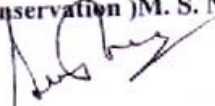

(G.R.K. Rao I.F.S.)
Conservator of Forests
Working Plan Yavatmal



(Krishna Mohan I.F.S.)
Chief Conservator of Forests
Working Plan, Nagpur.


(Ramannj Choudhary I.F.S.)
Chief Conservator of Forests (T),
Yavatmal.

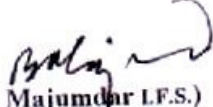
(Tasneem Ahmad I.F.S.)
Chief Conservator of Forests
(Conservation) M. S. Nagpur.



(R.R. Sahay I.F.S.)
Chief Conservator of Forests (PT & SP)
M. S. Nagpur.


(S.K. Sood I.F.S.)
Addl. Principal Chief Conservator of
Forests (HRM & Admn.)
M. S. Nagpur


(A.K. Joshi I.F.S.)
Addl. Principal Chief Conservator of
Forests (P & M)
M. S. Nagpur


(D.C. Pant I.F.S.)
Addl. Principal Chief Conservator of
Forests (BP & D) M. S. Nagpur


(B. Majumdar I.F.S.)
Principal Chief Conservator of Forests
(WL) M. S. Nagpur


(B. Majumdar I.F.S.)
Principal Chief Conservator of Forests,
M.S. Nagpur

(A.K. Rana I.F.S.)
Chief Conservator of Forests (Central),
Regional Office, Western Region,
Bhopal



सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण एवं वन मंत्रालय
MINISTRY OF ENVIRONMENT & FORESTS

क्षेत्रीय कार्यालय, पश्चिम क्षेत्र,
Regional Office, Western Region
"केन्द्रीय पर्यावरण भवन"
"Kendriya Paryavaran Bhavan"
लिंक रोड नं०-३/Link Road No. 3
E-5, रविशंकर नगर/Ravishankar Nagar,
दूरभाष /Phone: 2466525, 2465496, 2426615
फैक्स /Fax: 0755-2463102

No. : 12-15/2005 (FOR) 2933,

To. The Principal Secretary,
Revenue and Forest Department,
Mantralaya,
MUMBAI

भोपाल (म०प्र०)/Bhopal-462016 (M.P.)
अणु डाक /E-mail: rccfbhopal@gmail.com
Dt 04-12-2009,

Sub : Approval of Working Plan proposal of Akola Forest Division, written by Shri G.R.K. Rao, IFS, for the period of 2009-2010 to 2018-2019.

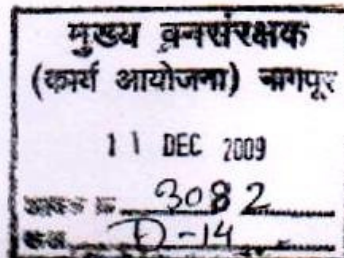
Ref : Revenue and Forest Department, Government of Maharashtra letter FDM-2009/CR 56/F-2, dated 08.10.2009.

Sir,

With reference to the above mentioned subject, I am to inform you that after careful examination of the Working Plan of Akola Forest Division, the Central Government hereby conveys its approval to the said working plan in accordance with the powers vested under Forest (Conservation) Act, 1980 subject to following conditions:-

- (1) The currency of the Working Plan shall be for a period of 10 years i.e. from 2009-10 to 2018-19.
- (2) The orders of Hon'ble Supreme Court of India in the matter of Godaverman Therumalkpad Vs Union of India in W.P. (Civil) No. 202/95 and related Inter Locutory applications shall be strictly adhered to. Any prescription or operation at variance with the Hon'ble Supreme Court's order shall be kept in abeyance till the order is in force or otherwise modified.
- (3) Further, in compliance with orders of Hon'ble Supreme Court's dated 22.09.2000, the State Government of Maharashtra shall ensure that regeneration of forests is commensurate with fellings carried out under this working plan.
- (4) No felling shall be carried out without allocating necessary fund for implementation of regeneration operation so as to make regeneration commensurate with fellings. In the event of failure in regeneration or any shortfall in carrying out regeneration operation, no further felling shall be undertaken until the failure/shortfall is made up.
- (5) Following the directions of the Hon'ble Supreme Court of India in their order dated 22.09.2000, a Core Group has been constituted under the Chairmanship of the Director General of Forests and Special Secretary for deciding the extent of harvesting that could be permitted under approved Working Plans for ensuring

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मुख्य वनसंरक्षक
(कार्य-आयोजना)
नागपुर.
2/10/09

regeneration to be commensurate with fellings. Instructions/directions of the Central Government in the matter to be issued in future shall be strictly complied with. Felling is to be done by State Government only after seeking permission from the Core Group constituted by the MOEF, New Delhi.

- (6) No forests bearing naturally grown trees shall be clear felled for any purpose whatsoever.
- (7) Prescriptions of microplans for JFM (if made) should not deviate the broad framework/guidelines of the working plan and shall be in accordance with various orders of Hon'ble Supreme Court.
- (8) Felling carried out on forest land after seeking approval of the Central Government under Forest (Conservation) Act, 1980 will not be treated as deviation. However, proposed felling in the forest division shall be restricted proportionately in the current/following years to compensate this removal.
- (9) No deviations shall be made from the prescriptions of working plan read with the conditions stipulated herein without prior approval by the Central Government under Forest (Conservation) Act, 1980. However, deviations of positive nature i.e. out of turn plantations carried out outside the worked area under any project, schemes and compensatory afforestation may be approved by the competent authority of the State Government.
- (10) The Central Government reserves the right to review, modify, withdraw this approval at any time if any of the conditions of approval are not implemented or relevant modification in the working plan is required so as to keep it in conformity with the orders, circulars and guidelines issued from time to time by the Central Government or the Apex Court under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy.

Yours faithfully,

(Pradeep Vasudeva)

Deputy Conservator of Forests (Central)

Copy to :

1. The Additional Director General of Forests (FC), Ministry of Environment and Forests, Paryavaran Bhawan, CGO Complex, Lodi Road, New Delhi - 110 003.
2. The Principal Chief Conservator of Forests, Govt. of Maharashtra, Seminary Hills, Nagpur.
3. The Chief Conservator of Forests (Working Plan), Government of Maharashtra, Nagpur.


(Pradeep Vasudeva)

Deputy Conservator of Forests (Central)